



GROUNDWATER MONITORING AND MONITORING WELL INSTALLATION REPORT OCTOBER 2014

STATE 16-16I4 FLOW LINE COGCC REMEDIATION #8264

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted groundwater monitoring activities at the State 16-16I4 Flow Line (Site). The Site is located on the north side of County Road 44 approximately 0.35 miles west of County Road 55 in Weld County, Colorado. The legal site description is the southwest quarter of the southeast quarter of Section 16, Township 4 North, Range 64 West, 6th Principal Meridian. The Site Location Map is provided as Figure 1. Site history and remediation activities were described in preceding reports.

On January 22, 2014, five soil borings (SB01 through SB05) were advanced and completed as temporary monitoring wells. On February 19 and April 21, 2014, seven monitoring wells (SB06 through SB12) were installed to delineate the potential extent of dissolved-phase petroleum hydrocarbon impact at the Site.

Soil Boring Advancement

On September 16, 2014, under the direction of Noble, LTE personnel advanced one soil boring (SB13) to establish a point of compliance monitoring well southwest of the excavated area. The soil boring was advanced using a direct-push drill rig operated by Elite Drilling Services, LLC of Aurora, Colorado, and completed as a temporary monitoring well.

The soil boring was logged by an LTE geologist, and the soil was characterized by visual inspection of the collected soil sample. The total depth of the soil boring was 11 feet below ground surface (bgs). The soil was continuously logged from ground surface to total depth. The estimated depth to groundwater observed in the soil boring was 6 feet bgs. Soil identified in the boring was fine-grained sand from ground surface to total depth. There were no elevated photo-ionization detector readings (greater than 10 parts per million) or petroleum hydrocarbon staining or odor observed in the soil boring.

Soil Sampling

The soil boring was advanced using direct-push methods and sampled using a continuous sampler. During soil boring advancement, a soil sample was submitted for laboratory analysis based on the sample interval that exhibited visible soil staining or where the highest PID reading was observed above the groundwater saturated zone. On September 16, 2014, one soil sample (SB13@5') was collected, placed on ice, then submitted with a complete chain of custody form to Origins Laboratory, Inc. (Origins) of Denver, Colorado, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) by United States Environmental Protection Agency (EPA) Method 8260C and TPH as diesel range organics (DRO) by EPA Method 8015C.

Groundwater Monitoring Well Installation

The monitoring well (SB13) was constructed of 1-inch diameter polyvinyl chloride (PVC) casing extending from the surface stickup to a depth of 11 feet bgs. The lower 10 feet of the monitoring well consists of 0.010-inch factory-slotted PVC well screen. Silica sand was placed from the bottom of the soil boring to the top of the screened interval to act as filter pack for the monitoring well. Bentonite chips were placed from the top of the silica sand to the ground surface and hydrated to provide a seal against surface contamination and precipitation infiltration. The Well Completion Diagram is included as Attachment 1.

Groundwater Sampling

On October 16, 2014, under the direction of Noble, LTE personnel conducted groundwater monitoring activities in 13 monitoring wells (SB01 through SB13). Prior to purging, depth to groundwater was measured and recorded for calculating well-specific target purge volumes and groundwater elevations. Following well development and purging, groundwater samples were collected, placed on ice, then submitted with a complete chain of custody form to Origins for analysis of BTEX by EPA Method 8260C.

Soil Analytical Results

The Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 standards for BTEX, naphthalene, and TPH in soil are 0.17 milligrams per kilogram (mg/kg), 85 mg/kg, 100 mg/kg, 175 mg/kg, 23 mg/kg, and 500 mg/kg, respectively. Soil analytical results indicated the soil sample is in compliance with applicable COGCC Table 910-1 standards. The soil analytical results are presented on Figure 2 and summarized in Table 1. The laboratory soil analytical report is included in Attachment 2.

Hydrogeology

During the October 2014 monitoring event, depth to groundwater ranged from 5.96 feet below top of casing (btoc) in monitoring well SB05 to 8.18 feet btoc in monitoring well SB13. On August 25, 2014, Bohannon Huston, Inc. personnel, under the direction of LTE, were on site to survey the monitoring wells to calculate groundwater elevations. Bohannon Huston, Inc. personnel conducting the survey included a Professional Land Surveyor licensed in the State of Colorado. Groundwater was calculated to flow north-northeast with an average hydraulic gradient of 0.012 feet per foot. The Groundwater Elevation Map is provided as Figure 3.

Groundwater Analytical Results

The Colorado Department of Public Health and Environment-Water Quality Control Commission has established Regulation 41-The Basic Standards for Ground Water (WQCC Reg 41) for BTEX at 5.0 micrograms per liter ($\mu\text{g/L}$), 560 $\mu\text{g/L}$, 700 $\mu\text{g/L}$, and 1,400 $\mu\text{g/L}$, respectively. Laboratory groundwater analytical results indicated monitoring wells SB02, SB03, and SB08 exceeded the WQCC Reg 41 standard for benzene at concentrations of 580 $\mu\text{g/L}$, 35.3 $\mu\text{g/L}$, and 12.3 $\mu\text{g/L}$, respectively. All remaining analytical results were in compliance with applicable WQCC Reg 41 standards. Groundwater analytical results are presented on Figure 4

and summarized in Table 2. The laboratory groundwater analytical report is included in Attachment 2.

Summary and Conclusions

One soil boring (SB13) was advanced at the Site to establish a point of compliance monitoring well southwest of the excavated area. Laboratory soil analytical results indicated soil sample SB13@5' was in compliance with applicable COGCC Table 910-1 standards.

The excavation confirmation soil samples, in conjunction with the laboratory analytical results of soil samples collected from the monitoring well installations, indicated that all impacted soil has been removed. Laboratory groundwater analytical results indicated monitoring wells SB02, SB03, and SB08 exceeded the WQCC Reg 41 standard for benzene at concentrations of 580 µg/L, 35.3 µg/L, and 12.3 µg/L, respectively. Groundwater remediation efforts will be described in future correspondence. LTE, under the direction of Noble, will continue to conduct quarterly groundwater monitoring with the goal of obtaining four consecutive quarters with laboratory analytical results in compliance with applicable WQCC Reg 41 standards. The next quarterly groundwater monitoring event is scheduled for January 2015.

FIGURES

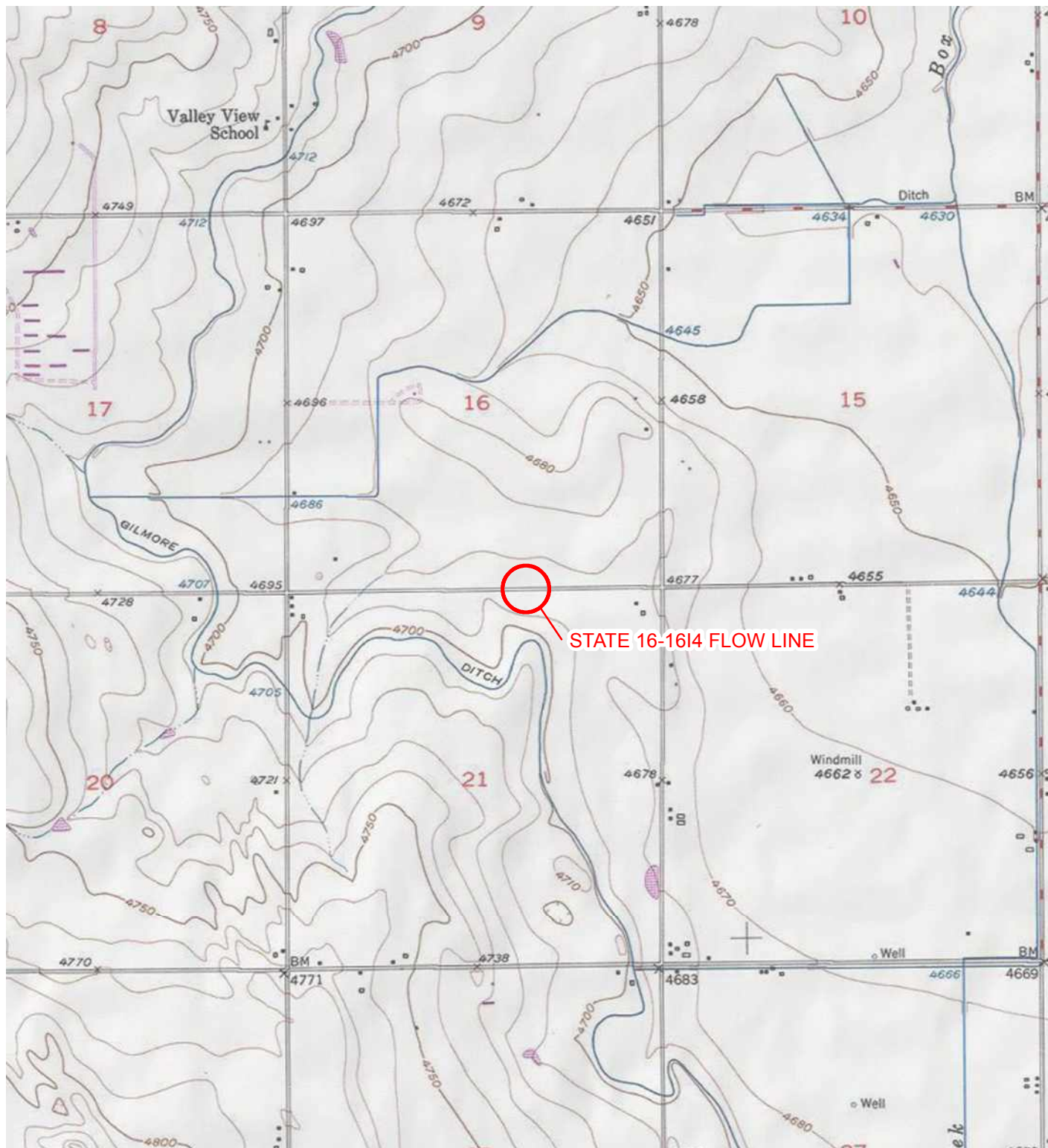


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

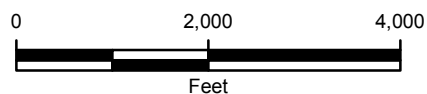


FIGURE 1
SITE LOCATION MAP
STATE 16-1614 FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



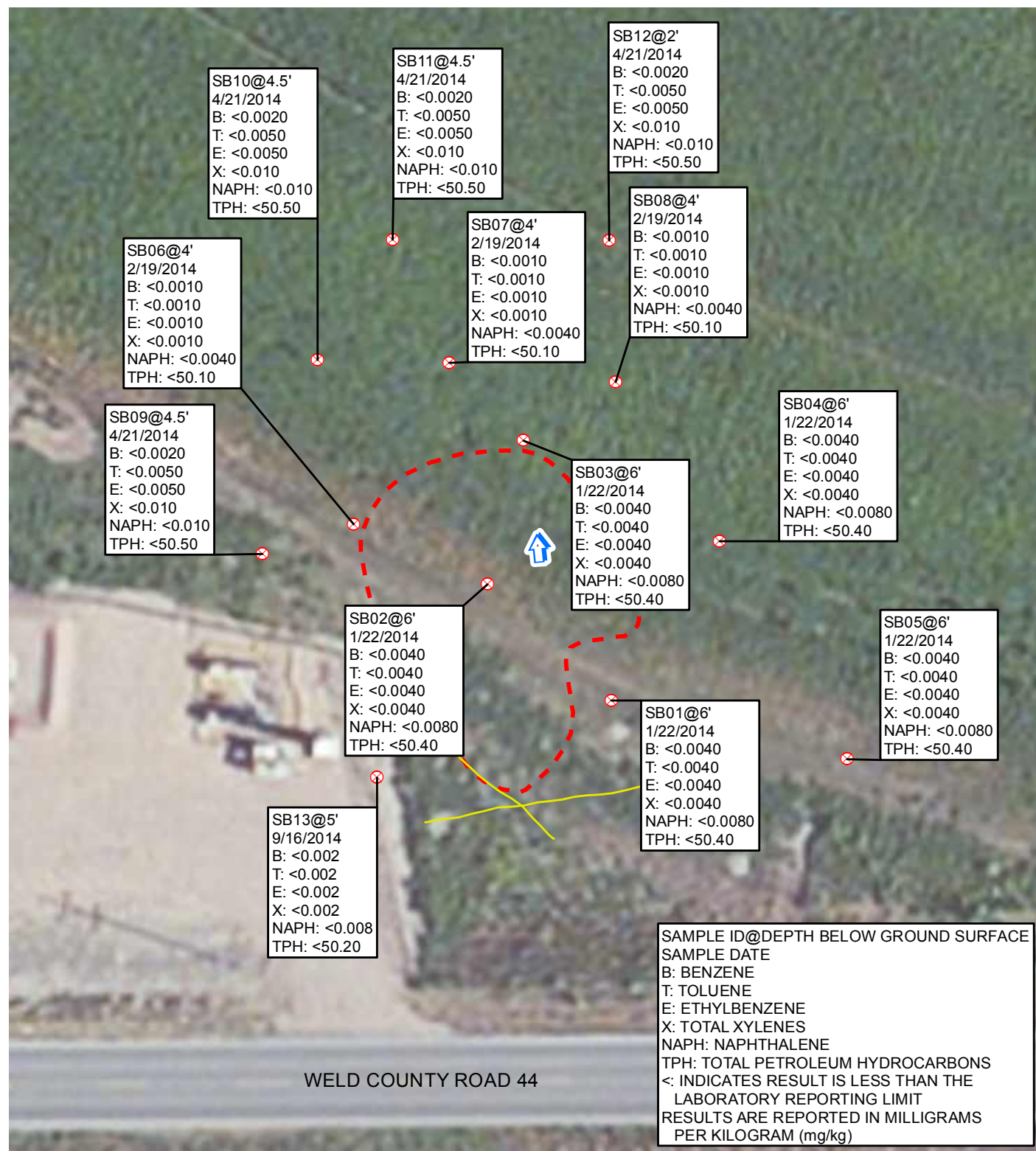


IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- FLOW LINE
- EXCAVATION EXTENT

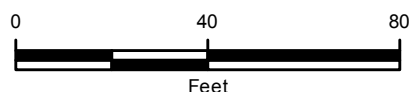


FIGURE 2
SOIL ANALYTICAL RESULTS
STATE 16-1614 FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

- ⊗ MONITORING WELL
- ↑ CALCULATED GROUNDWATER FLOW DIRECTION
- FLOW LINE
- EXCAVATION EXTENT
- GROUNDWATER ELEVATION CONTOUR
CONTOUR INTERVAL = 0.25 FEET
GRADIENT = 0.012 FEET/FOOT

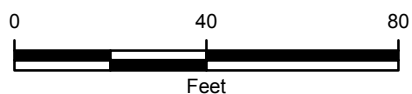
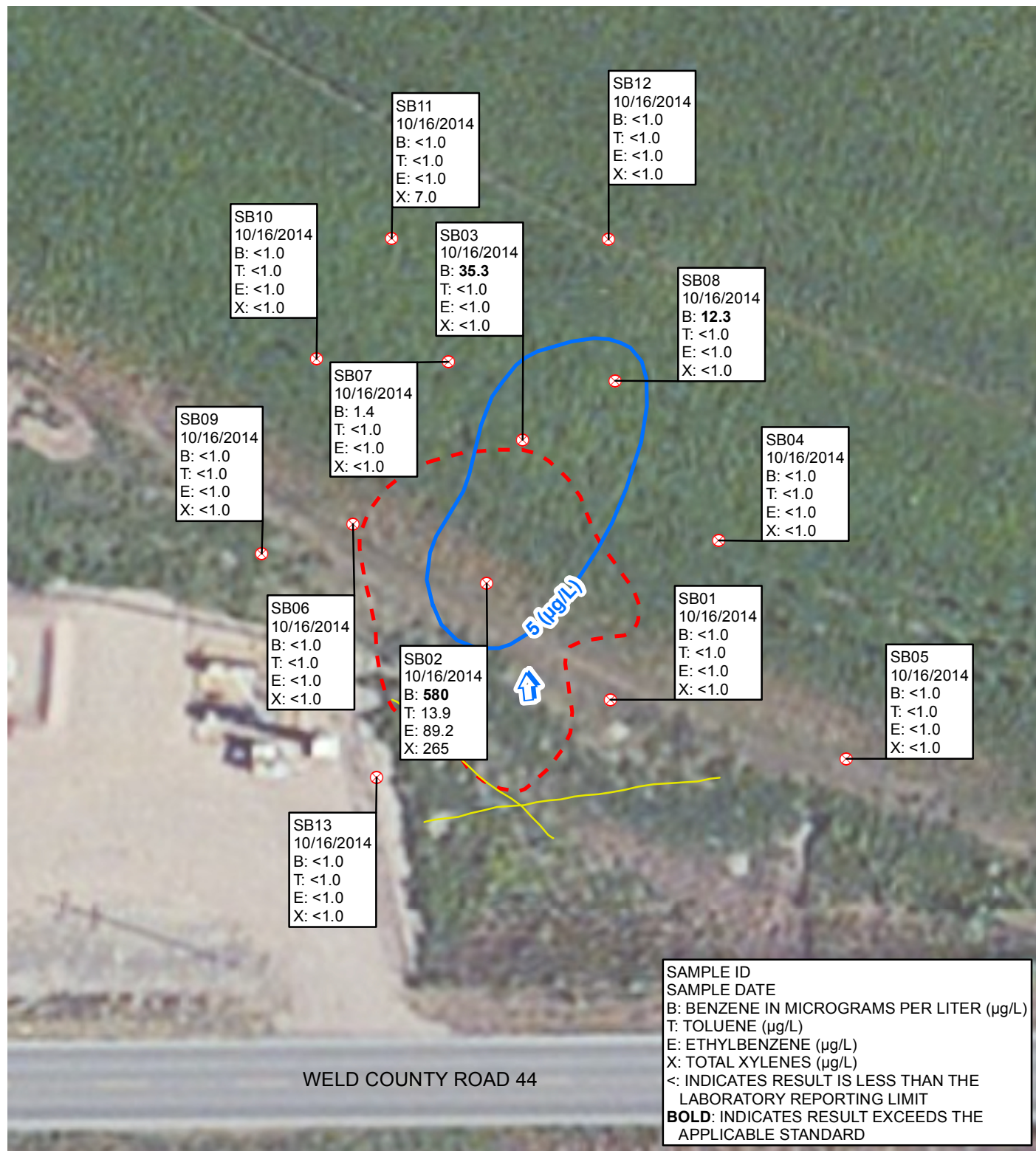


IMAGE COURTESY OF ESRI



FIGURE 3
GROUNDWATER ELEVATION MAP
STATE 16-1614 FLOW LINE
OCTOBER 16, 2014
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





TABLES

TABLE 1

**SOIL ANALYTICAL RESULTS
STATE 16-1614 FLOW LINE
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Soil Sample	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)
SB01@6'	1/22/2014	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40
SB02@6'	1/22/2014	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40
SB03@6'	1/22/2014	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40
SB04@6'	1/22/2014	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40
SB05@6'	1/22/2014	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40
SB06@4'	2/19/2014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0040	<0.10	<50.0	<50.10
SB07@4'	2/19/2014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0040	<0.10	<50.0	<50.10
SB08@4'	2/19/2014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0040	<0.10	<50.0	<50.10
SB09@4.5'	4/21/2014	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
SB10@4.5'	4/21/2014	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
SB11@4.5'	4/21/2014	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
SB12@2'	4/21/2014	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
SB13@5'	9/16/2014	<0.002	<0.002	<0.002	<0.002	<0.008	<0.20	<50.0	<50.20
COGCC Table 910-1 Standard		0.17	85	100	175	23	--	--	500

NOTES:

COGCC - Colorado Oil and Gas Conservation Commission

DRO - diesel range organics analyzed by EPA Method 8015 or 8015C

GRO - gasoline range organics analyzed by EPA Method 8260B or 8260C

mg/kg - milligrams per kilogram

TPH - total petroleum hydrocarbons is the sum of GRO and DRO

< - indicates result is less than the stated laboratory reporting limit

-- - not applicable

Benzene, toluene, ethylbenzene, total xylenes, and naphthalene analyzed by EPA Method 8260B or 8260C

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
STATE 16-1614 FLOW LINE
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Monitoring Well	Date	Depth to Water (feet btoc)	Groundwater Elevation * (feet AMSL)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB01	1/29/2014	6.05	4,677.58	<4.0	<4.0	<4.0	<4.0
	4/24/2014	6.23	4,677.40	<1.0	<1.0	<1.0	<1.0
	7/21/2014	5.75	4,677.88	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.10	4,677.53	<1.0	<1.0	<1.0	<1.0
SB02	1/29/2014	5.75	4,677.47	109	172	14.6	155
	4/24/2014	5.85	4,677.37	444	6.7	43.1	352
	7/21/2014	5.80	4,677.42	500	<4.0	76.0	230
	10/16/2014	6.00	4,677.22	580	13.9	89.2	265
SB03	1/29/2014	5.45	4,677.72	262	<4.0	<4.0	9.4
	4/24/2014	6.18	4,676.99	53.7	<2.0	<2.0	<2.0
	7/21/2014	6.00	4,677.17	194	<1.0	5.7	<1.0
	10/16/2014	6.25	4,676.92	35.3	<1.0	<1.0	<1.0
SB04	1/29/2014	6.06	4,677.19	<4.0	<4.0	<4.0	<4.0
	4/24/2014	6.00	4,677.25	<1.0	<1.0	<1.0	<1.0
	7/28/2014	5.91	4,677.34	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.33	4,676.92	<1.0	<1.0	<1.0	<1.0
SB05	1/29/2014	5.68	4,677.91	<4.0	<4.0	<4.0	<4.0
	4/24/2014	5.92	4,677.67	<1.0	<1.0	<1.0	<1.0
	7/28/2014	5.66	4,677.93	<1.0	<1.0	<1.0	<1.0
	10/16/2014	5.96	4,677.63	<1.0	<1.0	<1.0	<1.0
SB06	3/19/2014	5.19	4,678.08	33.6	<4.0	<4.0	<4.0
	4/24/2014	6.21	4,677.06	180	<1.0	<1.0	6.4
	7/21/2014	5.92	4,677.35	159	<1.0	6.8	<1.0
	10/16/2014	6.30	4,676.97	<1.0	<1.0	<1.0	<1.0
SB07	3/19/2014	5.20	4,677.90	245	<4.0	41.8	<4.0
	4/24/2014	6.40	4,676.70	228	<2.0	62.7	409
	7/28/2014	6.00	4,677.10	1.5	<1.0	36.6	<1.0
	10/16/2014	6.48	4,676.62	1.4	<1.0	<1.0	<1.0
SB08	3/19/2014	5.39	4,677.94	<4.0	<4.0	<4.0	<4.0
	4/24/2014	6.60	4,676.73	<1.0	<1.0	<1.0	<1.0
	7/28/2014	6.21	4,677.12	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.68	4,676.65	12.3	<1.0	<1.0	<1.0

TABLE 2 (Continued)

GROUNDWATER ANALYTICAL RESULTS
STATE 16-1614 FLOW LINE
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Monitoring Well	Date	Depth to Water (feet btoc)	Groundwater Elevation * (feet AMSL)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB09	4/24/2014	6.15	4,677.15	<1.0	<1.0	<1.0	<1.0
	7/21/2014	5.85	4,677.45	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.48	4,676.82	<1.0	<1.0	<1.0	<1.0
SB10	4/24/2014	6.43	4,676.63	<1.0	<1.0	<1.0	<1.0
	7/21/2014	5.94	4,677.12	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.60	4,676.46	<1.0	<1.0	<1.0	<1.0
SB11	4/24/2014	6.61	4,676.27	6.0	<1.0	<1.0	6.0
	7/21/2014	5.96	4,676.92	<1.0	<1.0	<1.0	47.2
	10/16/2014	6.85	4,676.03	<1.0	<1.0	<1.0	7.0
SB12	4/24/2014	6.40	4,682.72	<1.0	<1.0	<1.0	<1.0
	7/21/2014	6.02	4,676.32	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.80	4,676.70	<1.0	<1.0	<1.0	<1.0
SB13	10/16/2014	8.18	4,677.89	<1.0	<1.0	<1.0	<1.0
CDPHE WQCC Reg 41				5.0	560	700	1,400

NOTES:

AMSL - above mean sea level

btoc - below top of casing

µg/L - micrograms per liter

< - indicates result is less than the stated laboratory reporting limit

NM - not measured

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260C

BOLD indicates result exceeds the applicable standard

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

* - groundwater elevations prior to the July 2014 monitoring event were relative to a 100-foot benchmark

ATTACHMENT 1

WELL COMPLETION DIAGRAM



Compliance • Engineering • Remediation

LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: SB13
DATE: 9/16/2014
LOGGED BY: Daniel Hosler
DRILL MTHD: Direct Push

PROJECT: State 16-1614
PROJECT NO.: 008313110
DRILLED BY: Elite Drilling
SAMPLE MTHD: Continuous

DETECTOR: MiniRae2000

GRAVEL PACK: 10-20 Silica Sand

CASING TYPE: SCH. 40 PVC

SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 2.25"

SEAL: Bent. Chips

CASING DIA.: 1"

SCREEN SLOT: 0.010"

TD: 11' **DTW:** 6'

GROUT: NA

CASING LENGTH: 1'

SCREEN LENGTH: 10'

Vapor (ppm)		Staining	Moisture Content	Sample	Sample Run	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.0	1000.0									
			Dry			0	SP		SP: Sand - 0'-4' - fine grained, little clay at 3', medium brown, dry, poorly graded, no odor	
0.0					4/4					
0.0										
				SB13 @ 5'		5			SP: Sand - 4'-11' - fine grained, medium brown, wet at 6', poorly graded, no odor	
			Wet							
0.0					4/4					
0.0						10				
					3/3				Refusal at 11' Stickup: 2.1'	

ATTACHMENT 2
LABORATORY ANALYTICAL REPORTS



September 18, 2014

LT Environmental, Inc.

Chris Roy

4600 West 60th Avenue

Arvada CO 80003

Project Name - Noble - State 16-1614

Project Number - 008313110

Attached are your analytical results for Noble - State 16-1614 received by Origins Laboratory, Inc. September 16, 2014. This project is associated with Origins project number X409148-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Chris Roy

Project Number: 008313110

Project: Noble - State 16-1614

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB13 @ 5'	X409148-01	Soil	September 16, 2014 9:30	09/16/2014 12:50

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313110
Project: Noble - State 16-1614

www.originslaboratory.com

page 1 of 1

ORIGINS LABORATORY, INC X4609148

Client: LTE Project Manager/Send Report To: CRoy

Address: COXOLTA, CO Email Address: COXOLTA@COXOLTA.COM

Telephone Number: 303-433-9788 Project Name/Number: 008313110 State 16-1614

Samples Collected By: DHSLC

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions
				HCl	HNO ₃	Other	Groundwater	Soil	Air Sampling	Container #		
S137051	9/16/14	0730	1					X			137051 008313110 008313110	1
											X X X X	2
												3
												4
												5
												6
												7
												8
												9
												10
Relinquished By: <u>[Signature]</u>	Date: <u>9/16/14</u>	Time: <u>1350</u>		Received By: <u>[Signature]</u>				Date: <u>9/16/14</u>	Time: <u>12:50</u>	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 5.2		
Relinquished By: <u>[Signature]</u>	Date: <u>9/16/14</u>	Time: <u>12:50</u>		Received By: <u>[Signature]</u>				Date: <u>9/16/14</u>	Time: <u>12:50</u>	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 5.2		

Date Results Needed:

Comments:

Origins Laboratory, Inc.

[Signature]

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Chris Roy
Project Number: 008313110
Project: Noble - State 16-1614

Origins Laboratory

F-012237-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: X409143

Client: LTE

Client Project ID: Noble State 16-1614

Checklist Completed by: Ten Pellegrini

Shipped Via: 4-112
(UPS, FedEx, Hand Delivered, Pick up, etc.)

Date/time completed: 9-16-14 1340

Airbill #: N/A

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: 1 5-2 °C 1 °C 1 °C (Describe) _____ °C

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 5°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) <input checked="" type="checkbox"/> (preservation is not confirmed for subcontracted analyses in order to insure sample integrity/pH < 2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄ ; / pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to be in the additional comments (above) and the case narrative.

Chris Roy
Reviewed by (Project Manager)

9/16/14
Date/Time Reviewed

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Chris Roy

Project Number: 008313110

Project: Noble - State 16-1614

SB13 @ 5'

9/16/2014 9:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409148-01 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	4116010	09/16/2014	09/17/2014
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Surrogate: o-Terphenyl	96.4 %	59-131			"	"	"
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.20	mg/kg	1	4116009	09/16/2014	09/16/2014
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Benzene	ND	0.002	"	"	"	"	"
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Toluene	ND	0.002	"	"	"	"	"
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Ethylbenzene	ND	0.002	"	"	"	"	"
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Xylenes, total	ND	0.002	"	"	"	"	"
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Naphthalene	ND	0.008	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	122 %	70-130			"	"	"
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Surrogate: Toluene-d8	107 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	108 %	70-130			"	"	"
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Chris Roy

Project Number: 008313110

Project: Noble - State 16-1614

Volatile Organic Compounds by GC/MS SW846 8260C - 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 4116009 - EPA 5030 (soil)

Blank (4116009-BLK1)

Prepared: 09/16/2014 Analyzed: 09/16/2014

Gasoline Range Hydrocarbons	ND	0.20	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Naphthalene	ND	0.008	"							
Surrogate: 1,2-Dichloroethane-d4	77		ug/kg	62.5		123	70-130			
Surrogate: Toluene-d8	68		"	62.5		108	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Chris Roy

Project Number: 008313110

Project: Noble - State 16-1614

Volatile Organic Compounds by GC/MS SW846 8260C - 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 4116009 - EPA 5030 (soil)

LCS (4116009-BS1)

Prepared: 09/16/2014 Analyzed: 09/16/2014

Benzene	0.11	0.002	mg/kg	0.100		106	70-130			
Toluene	0.11	0.002	"	0.100		106	70-130			
Ethylbenzene	0.09	0.002	"	0.100		93.1	70-130			
m,p-Xylene	0.19	0.004	"	0.200		93.4	70-130			
o-Xylene	0.09	0.002	"	0.100		93.4	70-130			
Naphthalene	0.10	0.008	"	0.100		98.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		114	70-130			
Surrogate: Toluene-d8	67		"	62.5		107	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	70-130			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313110
Project: Noble - State 16-1614

Volatile Organic Compounds by GC/MS SW846 8260C - 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 4116009 - EPA 5030 (soil)

LCS Dup (4116009-BSD1)

Prepared: 09/16/2014 Analyzed: 09/16/2014

Benzene	0.09	0.002	mg/kg	0.100		91.0	70-130	15.1	20	
Toluene	0.09	0.002	"	0.100		91.7	70-130	14.8	20	
Ethylbenzene	0.08	0.002	"	0.100		78.2	70-130	17.5	20	
m,p-Xylene	0.16	0.004	"	0.200		78.5	70-130	17.3	20	
o-Xylene	0.08	0.002	"	0.100		79.6	70-130	15.9	20	
Naphthalene	0.08	0.008	"	0.100		84.2	70-130	16.0	20	
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		114	70-130			
Surrogate: Toluene-d8	65		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		106	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313110
Project: Noble - State 16-1614

Volatile Organic Compounds by GC/MS SW846 8260C - 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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Extractable Petroleum Hydrocarbons by 8015M - 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 4I16010 - EPA 3580

Blank (4I16010-BLK1)

Prepared: 09/16/2014 Analyzed: 09/16/2014

Diesel (C10-C28)	ND	50.0	mg/kg							
Surrogate: o-Terphenyl	30		g	50.0		59.2	59-131			

LCS (4I16010-BS1)

Prepared: 09/16/2014 Analyzed: 09/16/2014

Diesel (C10-C28)	818	50.0	mg/kg	1000		81.8	64-121			
Surrogate: o-Terphenyl	42		g	50.0		83.1	59-131			

LCS Dup (4I16010-BSD1)

Prepared: 09/16/2014 Analyzed: 09/16/2014

Diesel (C10-C28)	810	50.0	mg/kg	1000		81.0	64-121	1.07	20	
Surrogate: o-Terphenyl	41		g	50.0		82.4	59-131			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Chris Roy

Project Number: 008313110

Project: Noble - State 16-1614

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle Doyle Mathis, President



October 21, 2014

LT Environmental, Inc.

Charles Greeson

4600 West 60th Avenue

Arvada

CO 80003

Project Name - Noble - State 16-1614

Project Number - 008313110

Attached are your analytical results for Noble - State 16-1614 received by Origins Laboratory, Inc. October 16, 2014. This project is associated with Origins project number X410173-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB01	X410173-01	Water	October 16, 2014 13:30	10/16/2014 17:00
SB04	X410173-02	Water	October 16, 2014 13:35	10/16/2014 17:00
SB05	X410173-03	Water	October 16, 2014 13:40	10/16/2014 17:00
SB07	X410173-04	Water	October 16, 2014 13:45	10/16/2014 17:00
SB08	X410173-05	Water	October 16, 2014 13:50	10/16/2014 17:00
SB09	X410173-06	Water	October 16, 2014 13:55	10/16/2014 17:00
SB10	X410173-07	Water	October 16, 2014 14:00	10/16/2014 17:00
SB11	X410173-08	Water	October 16, 2014 14:05	10/16/2014 17:00
SB12	X410173-09	Water	October 16, 2014 14:10	10/16/2014 17:00
SB13	X410173-10	Water	October 16, 2014 14:15	10/16/2014 17:00

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB06	X410173-11	Water	October 16, 2014 14:20	10/16/2014 17:00
SB03	X410173-12	Water	October 16, 2014 14:25	10/16/2014 17:00
SB02	X410173-13	Water	October 16, 2014 14:30	10/16/2014 17:00

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

www.originslaboratory.com

X110173

ORIGINS
LABORATORY, INC

page 1 of 2

Client: CTE
Address: _____
Telephone Number: _____
Project Manager/Send Report To: Charles Greeson
Email Address: Greeson@ltenv.com
Project Name/Number: State 16-1614 008313110
Samples Collected By: Jayson Evangelista

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa		
SB01	10/16/14	1330	3	X				X			STE X	Lab Filter
SB04		1335	1									
SB05		1340	1									
SB07		1345	1									
SB08		1350	1									
SB09		1355	1									
SB10		1400	1									
SB11		1405	1									
SB12		1410	1									
SB13		1415	1									
Relinquished By: <u>all CTE</u>	Date: <u>10/16/14</u>	Time: <u>17:00</u>	Received By: <u>Kesner</u>	Date: <u>10/16/14</u>	Time: <u>17:00</u>	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5.8						

Comments:

Data Results Standard

Origins Laboratory, Inc.

Jefe Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

www.originslaboratory.com

X410173

page 2 of 2

ORIGINS
LABORATORY, INC

Client: LTE
Address: _____
Telephone Number: _____
Project Manager/Send Report To: Charles Greeson
Email Address: Cgreeson@ltenv.com
Project Name/Number: State 16-161400831410
Samples Collected By: Kyran Evangelista

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #		
SB06	10/16/14	1420	3	X				X			BTEX	Lab filter 1
SB03	10/16/14	1425	1	X				X				2
SB02	10/16/14	1430	1	X				X				3
												4
												5
												6
												7
												8
												9
												10
Relinquished By: <u>CLC</u>	Date: 10/16/14	Time: 17:00		Received By: <u>Kess</u>				Date: 10/16/14	Time: 17:00	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 5.8		
Relinquished By:	Date:	Time:		Received By:				Date:	Time:			

Comments:

Date Results Needed:

Origins Laboratory, Inc.

Jefe Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: X410173

Client: LTE

Client Project ID: State 16-1614

Checklist Completed by: Jeff Smith

Shipped Via: Pick Up
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 10/17/14

Airbill #: NA

Matrix(s) Received: (Check all that apply): Soil/Solid ☒ Water ☐ Other: ☐

Cooler Number/Temperature: 1 / 5.8 °C 1 / 5.8 °C 1 / 5.8 °C (Describe)

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to be taken in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JAP

10-20-14
Date/Time Reviewed

Origins Laboratory, Inc.

Jeff Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB01

10/16/2014 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.0 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.5 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB04

10/16/2014 1:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.3 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	97.3 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB05

10/16/2014 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.8 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB07

10/16/2014 1:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-04 (Water)

BTEX by EPA 8260C

Benzene	1.4	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.3 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB08

10/16/2014 1:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-05 (Water)

BTEX by EPA 8260C

Benzene	12.3	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.7 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.7 %	88.6-111			"	"	"

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB09

10/16/2014 1:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.9 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	99.7 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB10

10/16/2014 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"
Surrogate: Toluene-d8	98.8 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.4 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB11

10/16/2014 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	7.0	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"
Surrogate: Toluene-d8	98.1 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.9 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB12

10/16/2014 2:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.4 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	96.6 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB13

10/16/2014 2:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.3 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.5 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB06

10/16/2014 2:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.6 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	99.0 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB03

10/16/2014 2:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-12 (Water)

BTEX by EPA 8260C

Benzene	35.3	1.0	ug/L	1	4J17010	10/17/2014	10/17/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	87.3-113			"	"	"
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	97.1 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB02

10/16/2014 2:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410173-13 (Water)

BTEX by EPA 8260C

Benzene	580	10.0	ug/L	10	4J17010	10/17/2014	10/20/2014
Toluene	13.9	1.0	"	1	"	"	10/17/2014
Ethylbenzene	89.2	1.0	"	"	"	"	"
Xylenes, total	265	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.9 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	96.8 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

Volatile Organic Compounds by GC/MS SW846 8260C - 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 4J17010 - EPA 5030B (Water)

Blank (4J17010-BLK1)

Prepared: 10/17/2014 Analyzed: 10/17/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5	101	87.3-113				
Surrogate: Toluene-d8	62		"	62.5	98.4	90.9-108				
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.1	88.6-111				

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

Volatile Organic Compounds by GC/MS SW846 8260C - 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 4J17010 - EPA 5030B (Water)

LCS (4J17010-BS1)

Prepared: 10/17/2014 Analyzed: 10/17/2014

Benzene	46.2	1.0	ug/L	50.0		92.4	75-126			
Toluene	48.2	1.0	"	50.0		96.3	78.7-126			
Ethylbenzene	49.6	1.0	"	50.0		99.1	81-130			
m,p-Xylene	98.2	2.0	"	100		98.2	77.2-133			
o-Xylene	47.6	1.0	"	50.0		95.3	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.5	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.9	88.6-111			

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LT Environmental, Inc.
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Arvada CO 80003

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

Volatile Organic Compounds by GC/MS SW846 8260C - 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 4J17010 - EPA 5030B (Water)

Matrix Spike (4J17010-MS1)		Source: X410173-01			Prepared: 10/17/2014 Analyzed: 10/17/2014					
Benzene	49.1	1.0	ug/L	50.0	ND	98.2	74-130			
Toluene	50.8	1.0	"	50.0	ND	102	73-131			
Ethylbenzene	53.0	1.0	"	50.0	ND	106	76-132			
m,p-Xylene	105	2.0	"	100	ND	105	69-139			
o-Xylene	50.9	1.0	"	50.0	ND	102	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.1	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.5	88.6-111			

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Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

Volatile Organic Compounds by GC/MS SW846 8260C - 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 4J17010 - EPA 5030B (Water)

Matrix Spike Dup (4J17010-MSD1)		Source: X410173-01			Prepared: 10/17/2014 Analyzed: 10/17/2014					
Benzene	48.0	1.0	ug/L	50.0	ND	96.0	74-130	2.18	20	
Toluene	50.4	1.0	"	50.0	ND	101	73-131	0.830	20	
Ethylbenzene	51.5	1.0	"	50.0	ND	103	76-132	2.87	20	
m,p-Xylene	102	2.0	"	100	ND	102	69-139	2.26	20	
o-Xylene	50.0	1.0	"	50.0	ND	100	74-131	1.67	20	
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.6	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.1	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.7	88.6-111			

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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Charles Greeson

Project Number: 008313110

Project: Noble - State 16-1614

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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