



GROUNDWATER MONITORING REPORT JANUARY 2015

KARCH BLUE DD 30-3J FLOW LINE COGCC REMEDIATION #8110

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted groundwater monitoring activities at the Karch Blue DD 30-3J Flow Line (Site). The Site is located along the east side of County Road 57 approximately 3.0 miles north-northwest of Interstate 76 in Weld County, Colorado. The legal site description is the east half of the southwest quarter of Section 30, Township 3 North, Range 63 West, 6th Principal Meridian. The Site Location Map is included as Figure 1. The Site is divided into two distinct areas referred to as the North Excavation and the South Excavation. The Site Map depicting both the north and south excavations is provided as Figure 2.

LTE, under the direction of Noble, advanced a total of 23 soil borings on August 23 and September 25 and 26, 2013. Soil borings MW01 through MW11 (located in the North Excavation) and MW01 through MW12 (located in the South Excavation) were completed as temporary groundwater monitoring wells. Per the Colorado Oil and Gas Conservation Commission document number 2142108, groundwater monitoring in the North Excavation has been discontinued.

On January 30, 2015, under the direction of Noble, LTE personnel conducted groundwater monitoring activities in 12 monitoring wells (MW01 through MW12) in the South Excavation. Prior to purging, depth to groundwater was measured and recorded for calculating well-specific target purge volumes and relative groundwater elevations. Depth to groundwater ranged from 4.32 feet below top of casing (btoc) in monitoring well MW02 to 5.97 feet btoc in monitoring well MW06. During the January 2015 monitoring event, groundwater in the South Excavation was calculated to flow north with an average hydraulic gradient of 0.002 feet per foot. Relative groundwater elevations are presented on Figure 3 and summarized in Table 1. Following purging, groundwater samples were collected, placed on ice, then submitted with a completed chain of custody form to Origins Laboratory, Inc. of Denver, Colorado, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8260C.

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 that monitoring well MW04 exceeded the WQCC Reg 41 standard for benzene at a concentration of 44.5 $\mu\text{g/L}$. All other analytical results were in compliance with applicable WQCC Reg 41 standards. Groundwater analytical results are presented on Figure 4 and summarized in Table 1. The laboratory analytical report is attached.

LTE, under the direction of Noble, will continue to conduct quarterly groundwater monitoring in the South Excavation with the goal of obtaining four consecutive quarters with analytical results in compliance with applicable WQCC Reg 41 standards. The next quarterly groundwater monitoring event is scheduled for April 2015.

FIGURES

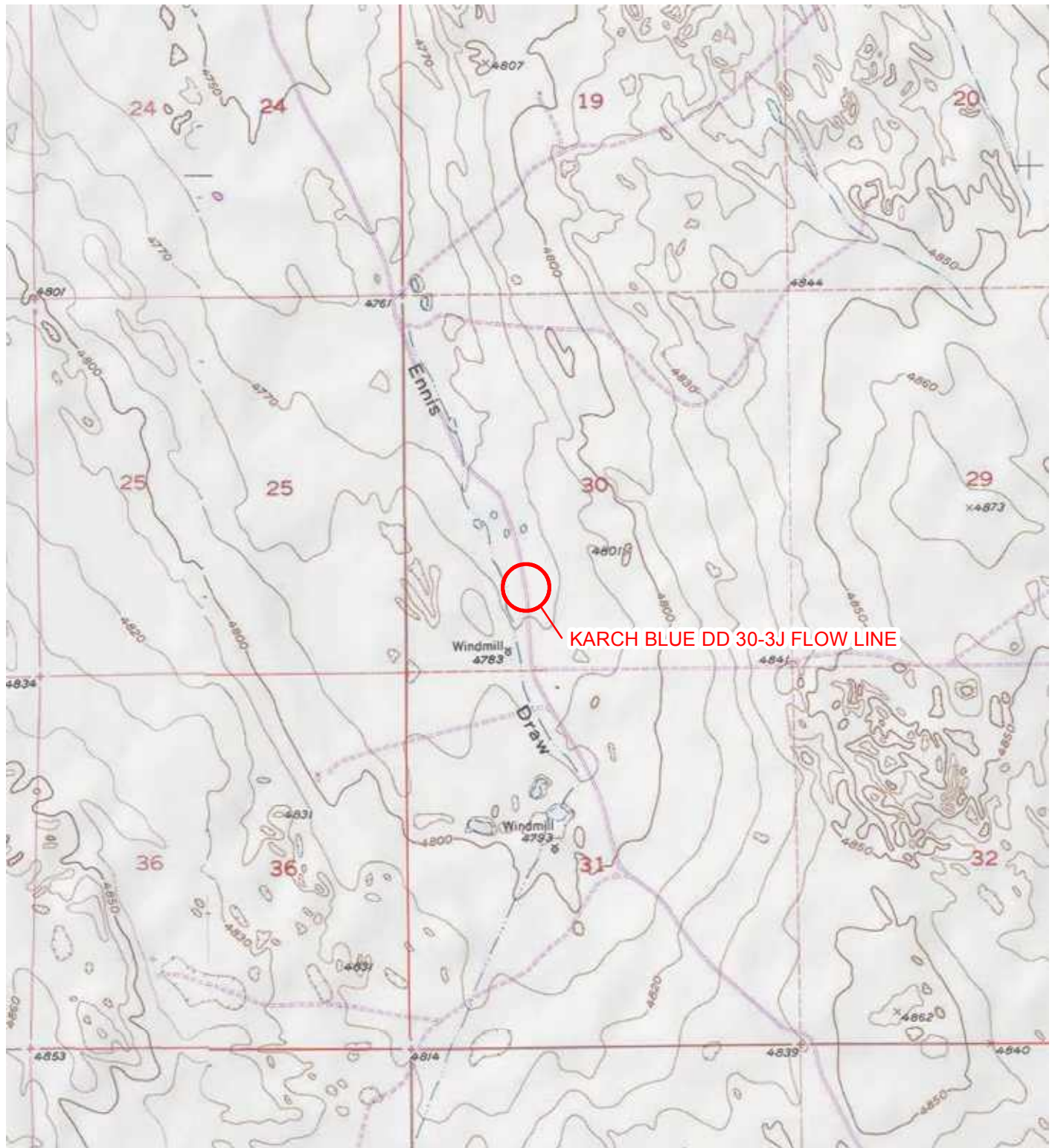


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

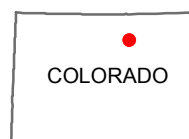
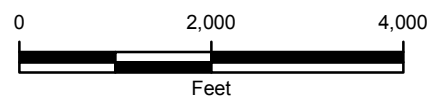


FIGURE 1
SITE LOCATION MAP
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





IMAGE COURTESY OF ESRI

LEGEND

 SITE LOCATION

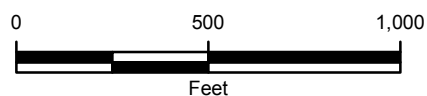
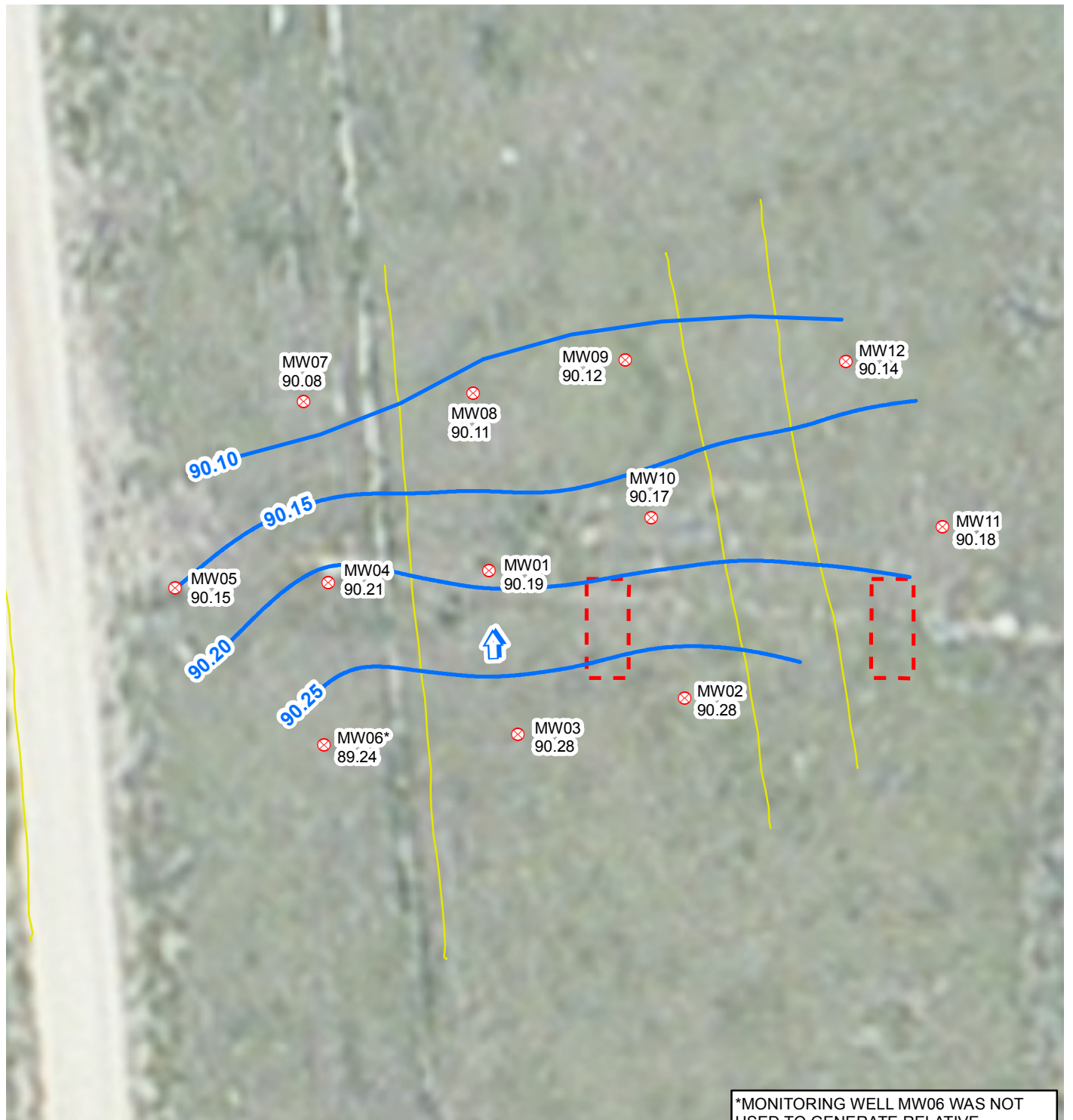


FIGURE 2
SITE MAP
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
- CONTOUR INTERVAL = 0.05 FEET
- GRADIENT = 0.002 FEET/FOOT
- UNDERGROUND UTILITIES
- EXCAVATION EXTENT

*MONITORING WELL MW06 WAS NOT USED TO GENERATE RELATIVE GROUNDWATER ELEVATION CONTOURS FOR THIS SAMPLING EVENT.

IMAGE COURTESY OF ESRI

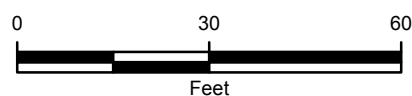


FIGURE 3
RELATIVE GROUNDWATER ELEVATION MAP - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
JANUARY 30, 2015
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





TABLES

TABLE 1

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - SOUTH
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Monitoring Well	Date	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW01	10/15/2013	4.30	90.54	1.08	1.21	43.8	60.9
	1/30/2014	4.95	89.89	<1.0	<1.0	9.22	<1.0
	4/30/2014	3.90	90.94	<1.0	<1.0	6.4	<1.0
	7/25/2014	4.18	90.66	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.75	90.09	<1.0	<1.0	1.1	<1.0
	1/30/2015	4.65	90.19	<1.0	<1.0	2.4	<1.0
MW02	10/15/2013	4.05	90.55	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.62	89.98	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.65	90.95	<1.0	<1.0	<1.0	<1.0
	7/25/2014	3.96	90.64	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.50	90.10	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.32	90.28	<1.0	<1.0	<1.0	<1.0
MW03	10/15/2013	4.45	90.49	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.00	89.94	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.02	90.92	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.32	90.62	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.90	90.04	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.66	90.28	<1.0	<1.0	<1.0	<1.0
MW04	10/15/2013	4.56	90.50	177	1.53	159	240
	1/30/2014	5.12	89.94	101	<1.0	81.2	44.7
	4/30/2014	4.18	90.88	102	<1.0	64.6	108
	7/25/2014	4.51	90.55	48.9	<1.0	78.0	67.8
	10/22/2014	4.97	90.09	39.8	<1.0	34.4	39.7
	1/30/2015	4.85	90.21	44.5	<1.0	20.4	41.1
MW05	10/15/2013	4.83	90.37	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.40	89.80	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.43	90.77	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.79	90.41	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.15	90.05	<1.0	<1.0	<1.0	<1.0
	1/30/2015	5.05	90.15	<1.0	<1.0	<1.0	<1.0

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - SOUTH
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Monitoring Well	Date	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW06	10/15/2013	4.91	90.30	<1.0	1.02	<1.0	<1.0
	1/30/2014	5.26	89.95	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.45	90.76	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.78	90.43	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.95	90.26	<1.0	<1.0	<1.0	<1.0
	1/30/2015	5.97	89.24	<1.0	<1.0	<1.0	<1.0
MW07	10/15/2013	5.02	90.06	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.35	89.73	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.61	90.47	2.6	<1.0	2.0	<1.0
	7/25/2014	4.67	90.41	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.15	89.93	<1.0	<1.0	<1.0	<1.0
	1/30/2015	5.00	90.08	<1.0	<1.0	<1.0	<1.0
MW08	10/15/2013	4.66	90.32	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.20	89.78	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.25	90.73	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.66	90.32	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.91	90.07	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.87	90.11	<1.0	<1.0	<1.0	<1.0
MW09	10/15/2013	4.29	90.33	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.85	89.77	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.90	90.72	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.39	90.23	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.65	89.97	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.50	90.12	<1.0	<1.0	<1.0	<1.0
MW10	10/15/2013	4.30	90.32	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.75	89.87	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.85	90.77	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.23	90.39	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.60	89.02	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.45	90.17	<1.0	<1.0	<1.0	<1.0

TABLE 1 (Continued)

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - SOUTH
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Monitoring Well	Date	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW11	10/15/2013	4.57	90.26	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.95	89.88	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.15	90.68	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.51	90.32	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.91	89.92	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.65	90.18	<1.0	<1.0	<1.0	<1.0
MW12	10/15/2013	4.60	90.46	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.15	89.91	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.20	90.86	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.72	90.34	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.07	89.99	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.92	90.14	<1.0	<1.0	<1.0	<1.0
CDPHE WQCC Reg 41				5.0	560	700	1,400

NOTES:

btoc - below top of casing

µg/L - micrograms per liter

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

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

ATTACHMENT
LABORATORY ANALYTICAL REPORT



February 04, 2015

LT Environmental, Inc.

Charles Greeson

4600 West 60th Avenue

Arvada

CO 80003

**Project Name - Noble - Karch Blue DD 30-3J
(South)**

Project Number - 008313054

Attached are your analytical results for Noble - Karch Blue DD 30-3J (South) received by Origins Laboratory, Inc. January 30, 2015. This project is associated with Origins project number X502012-01.

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: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X502012-01	Water	January 30, 2015 14:30	01/30/2015 17:30
MW02	X502012-02	Water	January 30, 2015 14:35	01/30/2015 17:30
MW03	X502012-03	Water	January 30, 2015 14:40	01/30/2015 17:30
MW04	X502012-04	Water	January 30, 2015 15:25	01/30/2015 17:30
MW05	X502012-05	Water	January 30, 2015 14:45	01/30/2015 17:30
MW06	X502012-06	Water	January 30, 2015 14:50	01/30/2015 17:30
MW07	X502012-07	Water	January 30, 2015 14:55	01/30/2015 17:30
MW08	X502012-08	Water	January 30, 2015 15:00	01/30/2015 17:30
MW09	X502012-09	Water	January 30, 2015 15:05	01/30/2015 17:30
MW10	X502012-10	Water	January 30, 2015 15:10	01/30/2015 17:30

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: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW11	X502012-11	Water	January 30, 2015 15:15	01/30/2015 17:30
MW12	X502012-12	Water	January 30, 2015 15:20	01/30/2015 17:30

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: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

ORIGINS
LABORATORY, INC

Client: LTE

Address: _____

Telephone Number: _____

Email Address: CGreeson@ltenv

Project Manager: Charles Greeson

Project Name: Karch Blue DD 30-3J (South)

Project Number: 008313054

Samples Collected By: Jayson Evangelista

www.originslaboratory.com

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X502012

Sample ID Description	Date Sampled	Time Sampled	# of Containers				Preservative				Matrix			Analysis		Sample Instructions	
			Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa #	Other							
MW01	1/30/15	1436	3	X				X									
MW02		1435															
MW03		1440															
MW04		1525															
MW05		1445															
MW06		1456															
MW07		1455															
MW08		1500															
MW09		1505															
MW10		1510															
Relinquished By:	Date:	Time:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:									
	1/30/15	1730						Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/>									
Relinquished By:	Date:	Time:	Date:	Time:	Received By:	Date:	Time:	48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/>									
						1/30/15	1730	Standard <input checked="" type="checkbox"/>									

Temp Received: 5.5

Date Results Needed

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

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X502012

ORIGINS LABORATORY, INC

Client: LTE

Project Manager: Charles Greeson

Project Name: Karch Blue DD 30-3J (South)

Project Number: 008313054

Samples Collected By: Jayson E. Lange

Telephone Number: _____

Email Address: Cgreeson@ltenu.com

Address: _____

Sample ID Description

Date Sampled

Time Sampled

of Containers

Preservative

Matrix

Analysis

Sample Instructions

Relinquished By:

Date:

Time:

Received By:

Date:

Time:

Turnaround Time:

Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☒ Standard

Temp Received: 5.5

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: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X502012

Client: LTE

Client Project ID: Karch Blue DD 30-3J (South)

Checklist Completed by: Jeff Smith

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

Date/time completed: 2/2/15

Airbill #: 222

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

Cooler Number/Temperature: 1 / 5.5 °C 1 / 5.5 °C 1 / 5.5 °C (Describe)

Thermometer ID: T053

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 in the additional comments (above) and the case narrative.

Reviewed by (Project Manager): [Signature]

02-03-15
Date/Time Reviewed

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW01
1/30/2015 2:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/02/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	2.4	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	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: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW02
1/30/2015 2:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	99.7 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW03
1/30/2015 2:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW04
1/30/2015 3:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-04 (Water)

BTEX by EPA 8260C

Benzene	44.5	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	20.4	1.0	"	"	"	"	"
Xylenes, total	41.1	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW05
1/30/2015 2:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.8 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW06
1/30/2015 2:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW07

1/30/2015 2:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X502012-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

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

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW08
1/30/2015 3:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	100 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW09

1/30/2015 3:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	99.4 %	87.3-113	"	"	"
Surrogate: Toluene-d8	100 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW10
1/30/2015 3:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW11
1/30/2015 3:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	99.5 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW12
1/30/2015 3:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X502012-12 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5B02007	02/02/2015	02/03/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.7 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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LT Environmental, Inc.
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Arvada CO 80003

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

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 5B02007 - EPA 5030B (Water)

Blank (5B02007-BLK1)

Prepared: 02/02/2015 Analyzed: 02/02/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5	102		87.3-113			
Surrogate: Toluene-d8	63		"	62.5	101		90.9-108			
Surrogate: 4-Bromofluorobenzene	64		"	62.5	102		88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

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 5B02007 - EPA 5030B (Water)

LCS (5B02007-BS1)

Prepared: 02/02/2015 Analyzed: 02/02/2015

Benzene	50.9	1.0	ug/L	50.0		102	75-126			
Toluene	48.4	1.0	"	50.0		96.8	78.7-126			
Ethylbenzene	48.2	1.0	"	50.0		96.3	80-130			
m,p-Xylene	97.8	2.0	"	100		97.8	77.2-133			
o-Xylene	49.7	1.0	"	50.0		99.5	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.6	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.9	88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

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 5B02007 - EPA 5030B (Water)

Matrix Spike (5B02007-MS1)		Source: X502012-01			Prepared: 02/02/2015 Analyzed: 02/02/2015					
Benzene	42.0	1.0	ug/L	50.0	ND	83.9	74-130			
Toluene	40.5	1.0	"	50.0	ND	81.1	73-131			
Ethylbenzene	42.6	1.0	"	50.0	2.4	80.3	76-132			
m,p-Xylene	81.2	2.0	"	100	ND	81.2	69-139			
o-Xylene	41.9	1.0	"	50.0	ND	83.9	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.4	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.7	88.6-111			

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LT Environmental, Inc.
4600 West 60th Avenue
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Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

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 5B02007 - EPA 5030B (Water)

Matrix Spike Dup (5B02007-MSD1)		Source: X502012-01			Prepared: 02/02/2015 Analyzed: 02/02/2015					
Benzene	43.7	1.0	ug/L	50.0	ND	87.5	74-130	4.15	20	
Toluene	43.4	1.0	"	50.0	ND	86.7	73-131	6.75	20	
Ethylbenzene	45.1	1.0	"	50.0	2.4	85.3	76-132	5.72	20	
m,p-Xylene	86.7	2.0	"	100	ND	86.7	69-139	6.57	20	
o-Xylene	45.0	1.0	"	50.0	ND	89.9	74-131	6.95	20	
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.9	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

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.



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Jen Pellegrini For Noelle Doyle Mathis, President