



GROUNDWATER MONITORING REPORT JULY 2014

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). Site history and remediation activities were described in previous reports. The Site is located approximately 3.0 miles north of Interstate 76 along County Road 57 in Weld County, Colorado. The legal description of the Site 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 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.

Groundwater samples from monitoring wells MW01 through MW07, MW10, and MW11 in the North Excavation were collected on July 23, 2014. Two monitoring wells (MW08 and MW09) were filled with silt and could not be sampled. Groundwater samples from monitoring wells MW01 through MW12 in the South Excavation were collected on July 25, 2014. Prior to purging, depth to groundwater was measured and recorded for calculating well-specific target purge volumes and relative groundwater elevations. During the monitoring event, depth to groundwater at the North Excavation ranged from 3.86 feet below top of casing (btoc) in monitoring well MW01 to 4.98 feet btoc in monitoring well MW10. Depth to groundwater at the South Excavation ranged from 3.96 feet btoc in monitoring well MW02 to 4.79 feet btoc in monitoring well MW05. Groundwater in the North Excavation was calculated to flow north-northwest with an average hydraulic gradient of 0.005 feet per foot. Groundwater in the South Excavation was calculated to flow northeast with an average hydraulic gradient of 0.008 feet per foot. The relative groundwater elevations for the North Excavation and the South Excavation are presented on Figures 3 and 4, respectively. Following purging, groundwater samples were collected, placed on ice, then submitted with a complete 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 for the North Excavation indicated BTEX concentrations are in compliance with applicable WQCC Reg 41 standards. Laboratory groundwater analytical results for the South Excavation indicated that monitoring well MW04 exceeded WQCC Reg 41 for benzene at a concentration of 48.9 $\mu\text{g/L}$. All other analytes from

groundwater collected at monitoring well MW04 as well as all other laboratory groundwater analytical results from the South Excavation are in compliance with applicable WQCC Reg 41 standards. Groundwater analytical results for the North Excavation and South Excavation are presented on Figures 5 and 6 and summarized in Tables 1 and 2, respectively. The laboratory analytical reports are attached.

The July 2014 groundwater monitoring event constitutes the fourth consecutive quarterly monitoring event in which groundwater analytical results in the North Excavation have been in compliance with applicable WQCC Reg 41 standards. Due to soil and groundwater being remediated to achieve cleanup goals, the North Excavation is in compliance with applicable, relevant, and appropriate regulations. The historical soil analytical results for the North Excavation are presented on Figure 7 and summarized in Table 3. As a result, LTE, under the direction of Noble, requests closure of the North Excavation portion of the Site and proposes removal of those monitoring wells (MW01 through MW11) from the current monitoring program.

LTE, under the direction of Noble, will continue to conduct quarterly groundwater monitoring 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 October 2014.

FIGURES

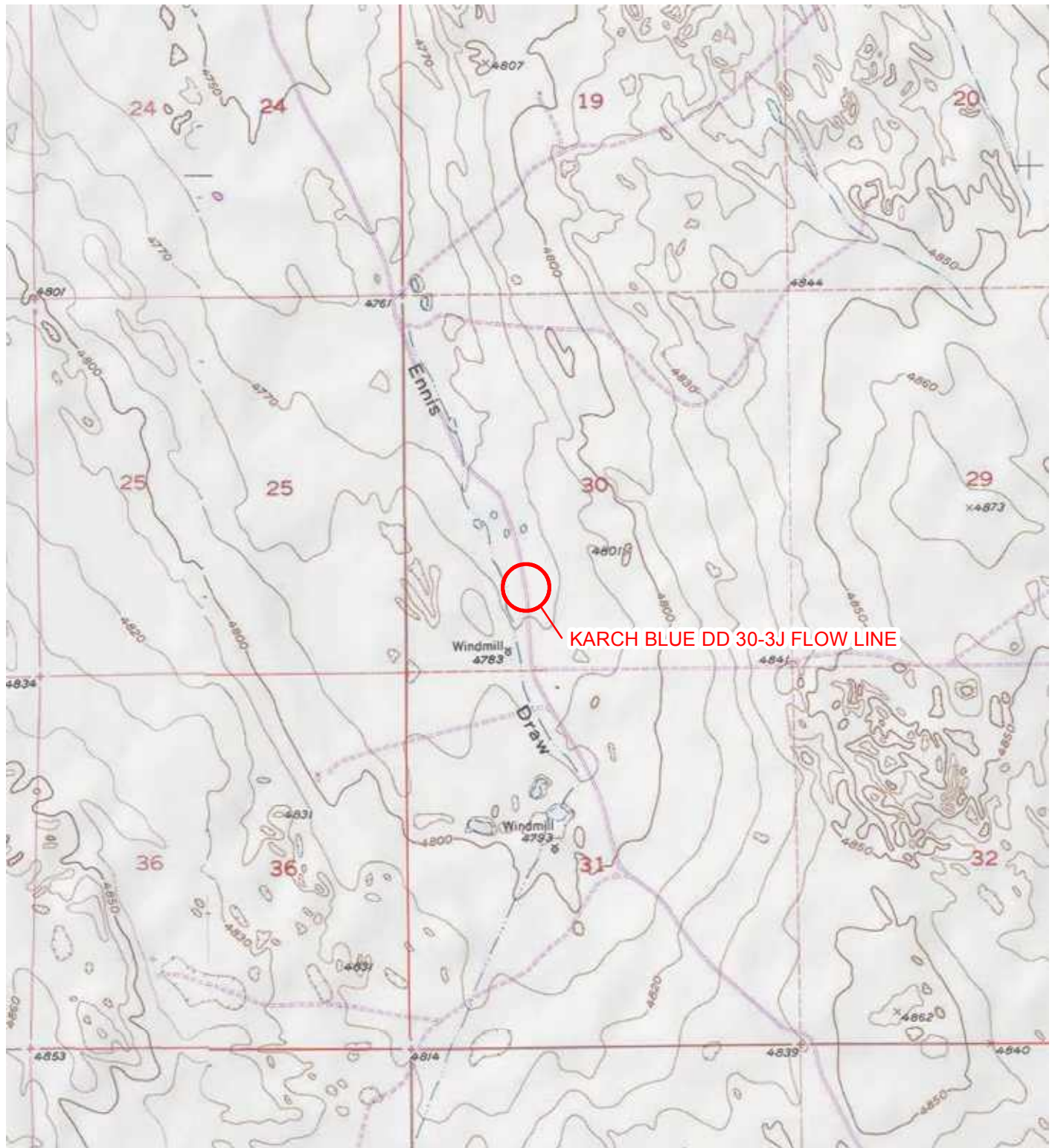


IMAGE COURTESY OF ESRI/USGS

LEGEND

 SITE LOCATION

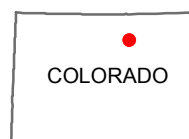
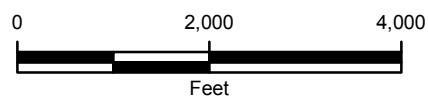


FIGURE 1
SITE LOCATION MAP
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





IMAGE COURTESY OF ESRI

LEGEND

○ SITE LOCATION

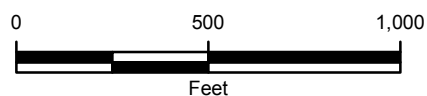


FIGURE 2
SITE MAP
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



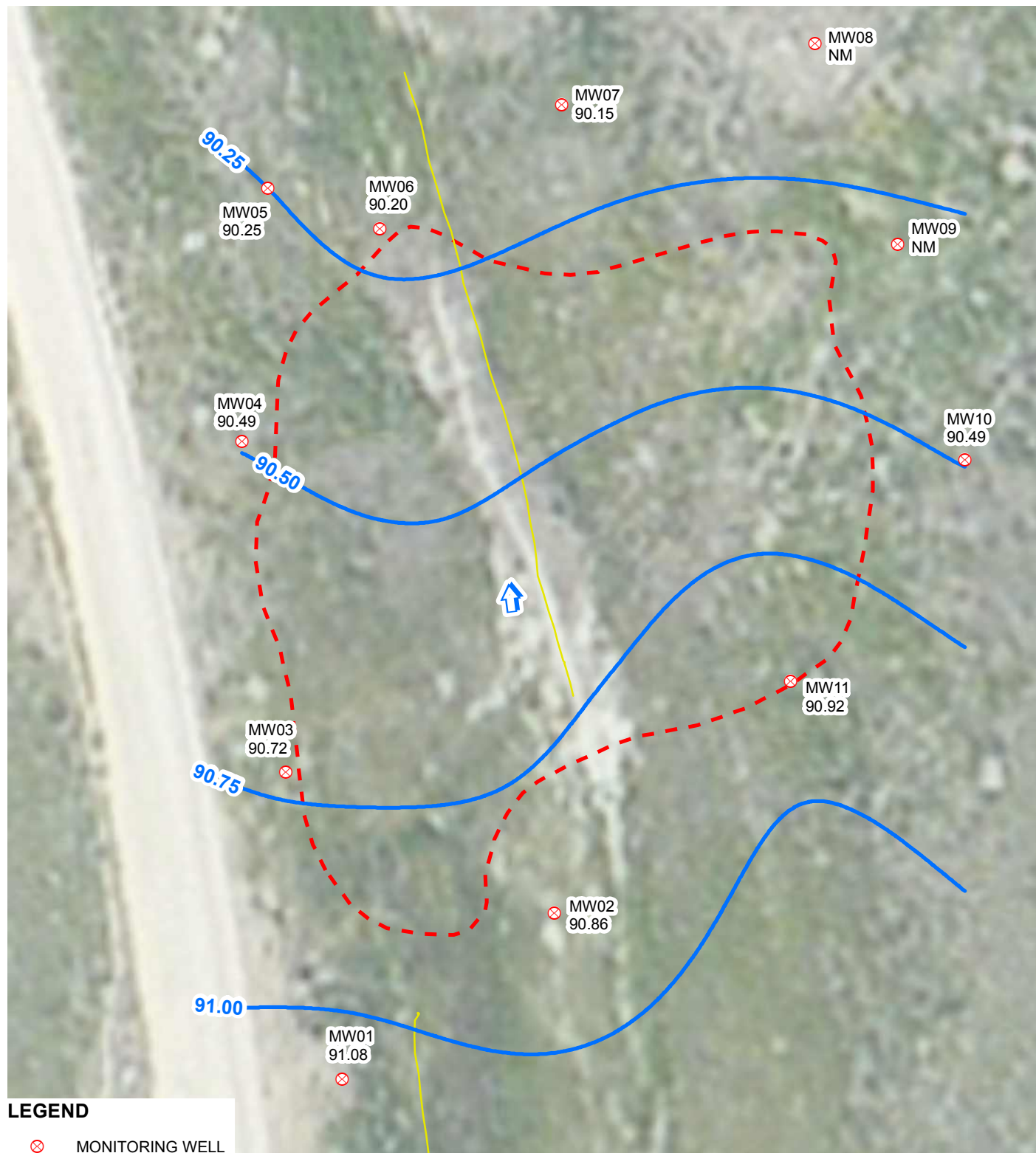


IMAGE COURTESY OF ESRI

LEGEND

- ⊗ MONITORING WELL
- ↑ CALCULATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
- CONTOUR INTERVAL = 0.25 FEET
- GRADIENT = 0.005 FEET/FOOT
- UNDERGROUND UTILITIES
- - - EXCAVATION EXTENT

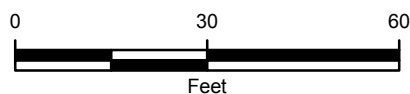


FIGURE 3
RELATIVE GROUNDWATER ELEVATION MAP - NORTH
KARCH BLUE DD 30-3J FLOW LINE
JULY 23, 2014
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



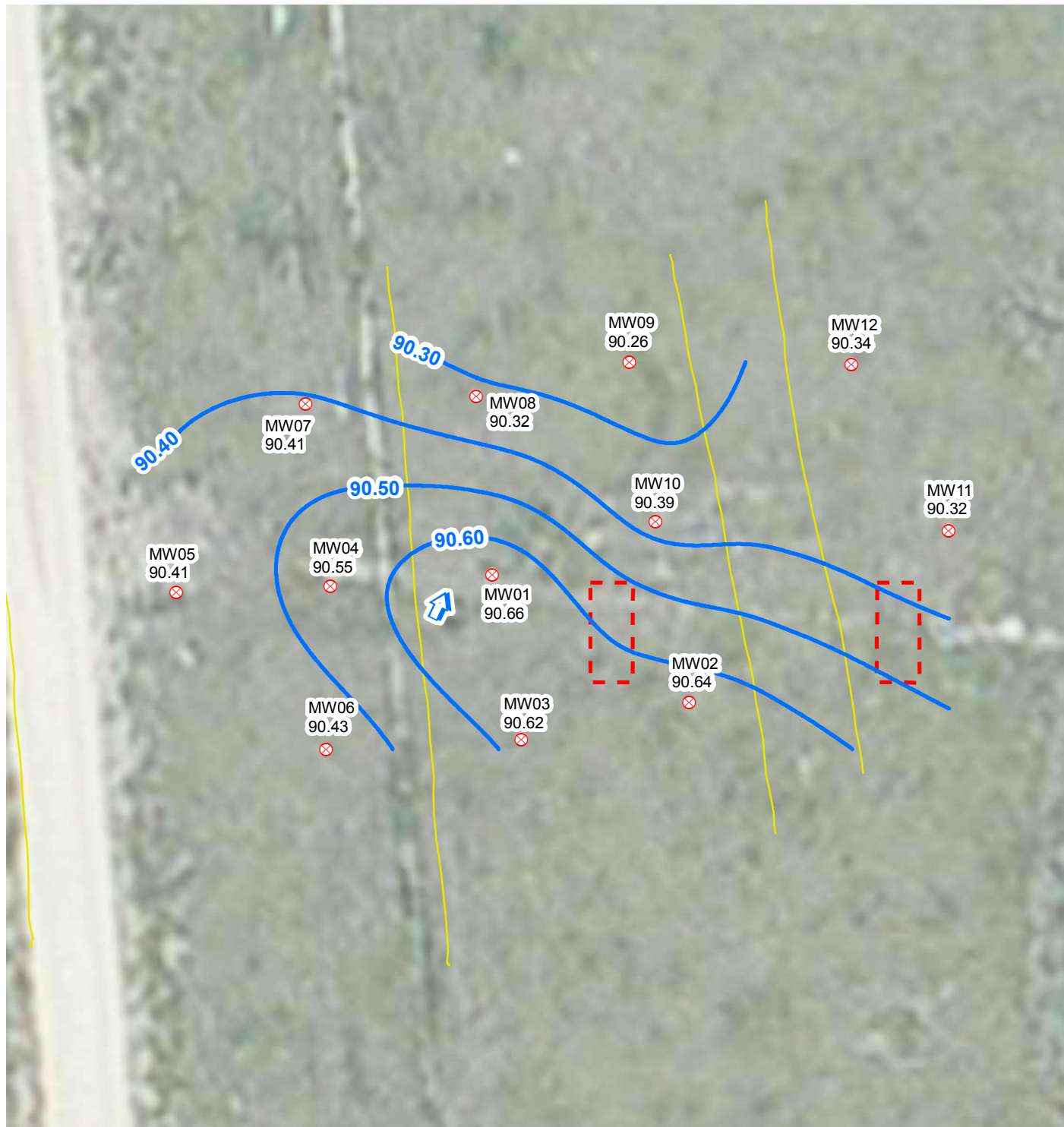







IMAGE COURTESY OF ESRI

LEGEND

-  MONITORING WELL
-  CALCULATED GROUNDWATER FLOW DIRECTION
-  RELATIVE GROUNDWATER ELEVATION CONTOUR
- CONTOUR INTERVAL = 0.10 FEET
- GRADIENT = 0.008 FEET/FOOT
-  UNDERGROUND UTILITIES
-  EXCAVATION EXTENT

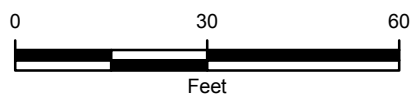


FIGURE 4
RELATIVE GROUNDWATER ELEVATION MAP - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
JULY 25, 2014
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



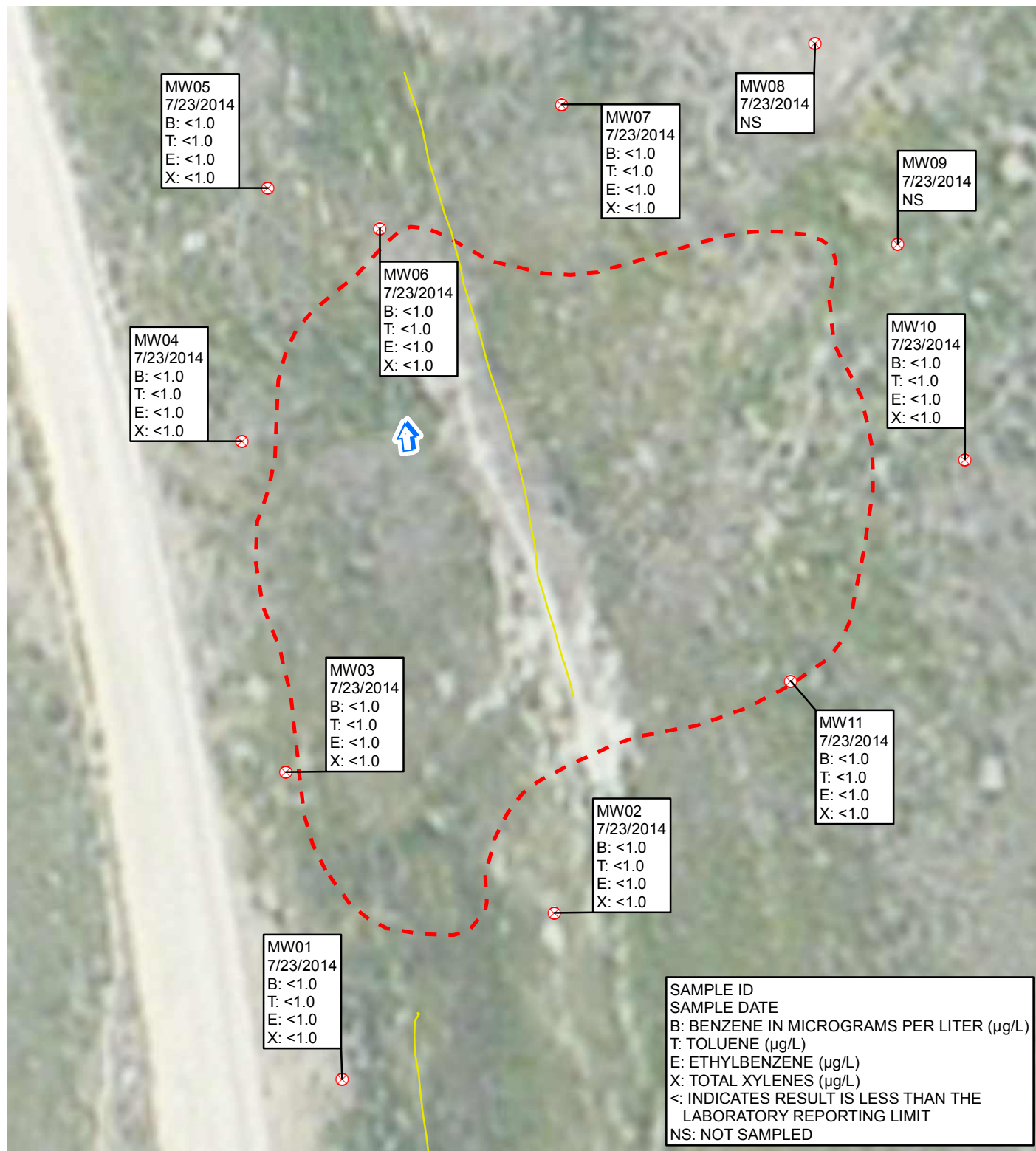


IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- UNDERGROUND UTILITIES
- EXCAVATION EXTENT

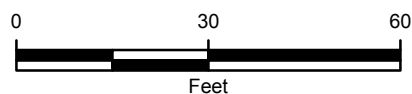
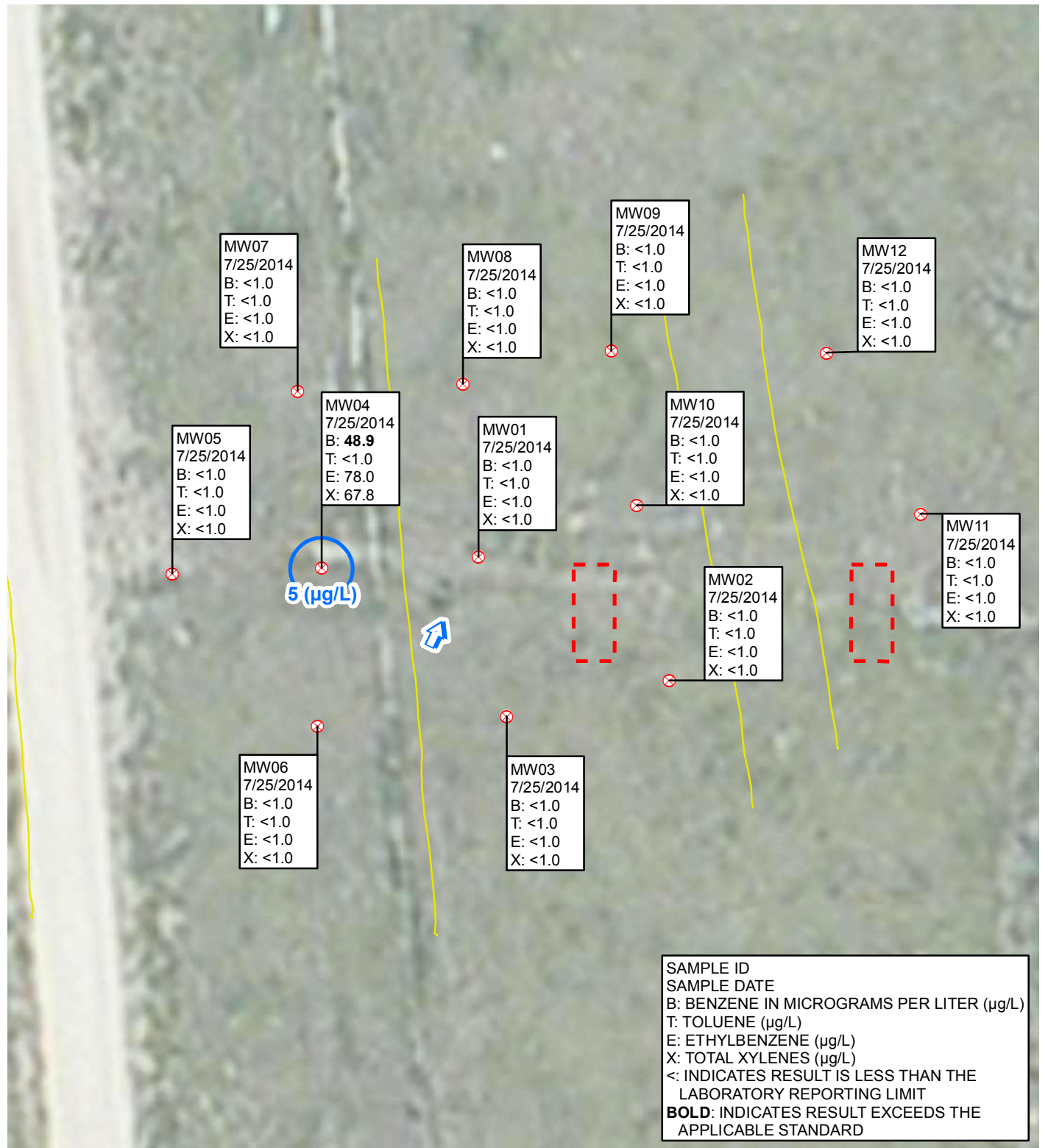


FIGURE 5
 GROUNDWATER ANALYTICAL RESULTS - NORTH
 KARCH BLUE DD 30-3J FLOW LINE
 WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





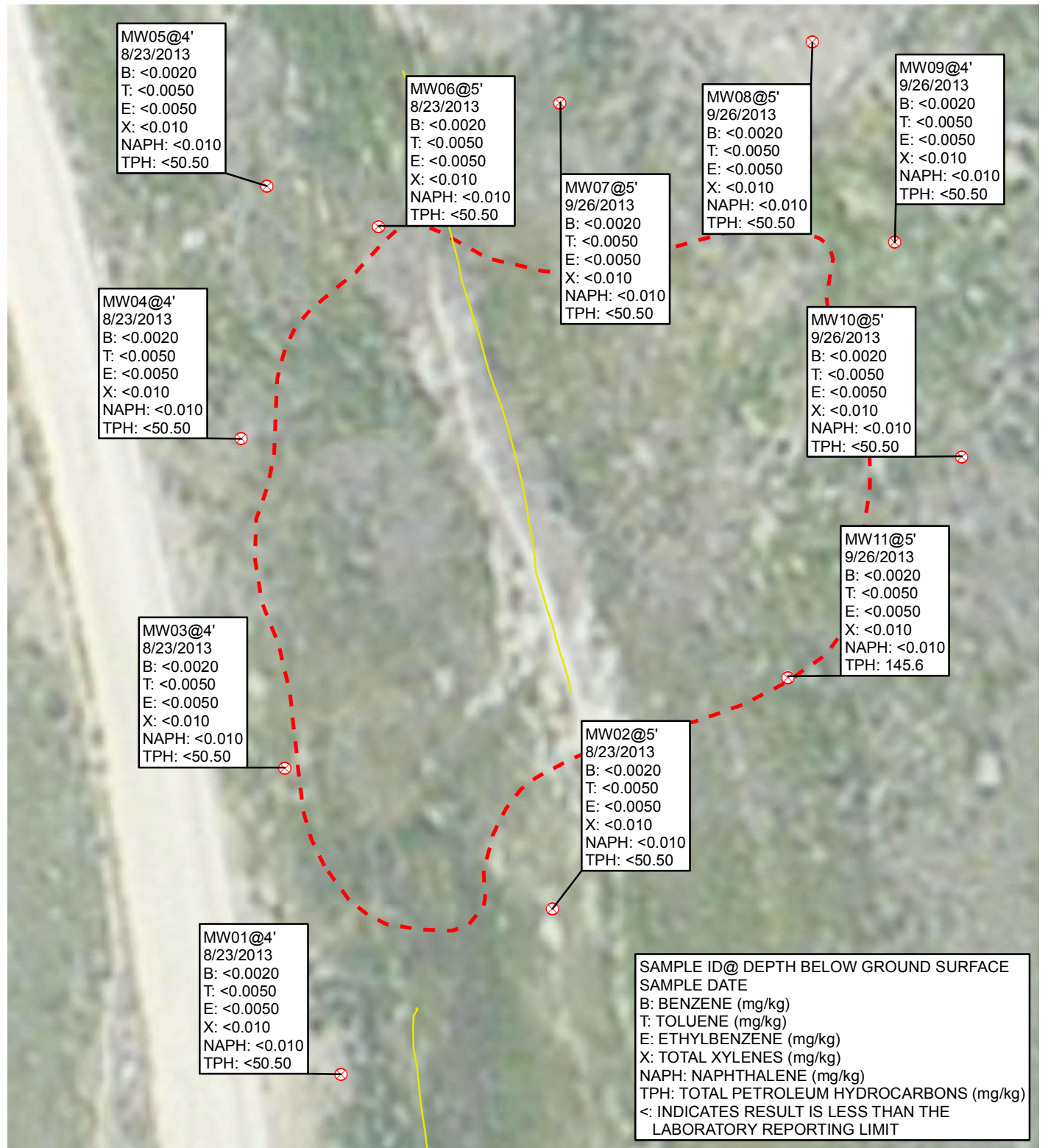


IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- UNDERGROUND UTILITIES
- EXCAVATION EXTENT

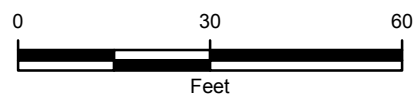


FIGURE 7
SOIL ANALYTICAL RESULTS - NORTH
KARCH BLUE DD 30-3J FLOWLINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



TABLES

TABLE 1

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - NORTH
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	4.10	90.84	<1.0	<1.0	<1.0	<1.0
	1/31/2014	4.56	90.38	<1.0	<1.0	<1.0	<1.0
	4/29/2014	3.60	91.34	<1.0	<1.0	<1.0	<1.0
	7/23/2014	3.86	91.08	<1.0	<1.0	<1.0	<1.0
MW02	10/15/2013	4.45	90.58	<1.0	<1.0	<1.0	<1.0
	1/31/2014	4.70	90.33	<1.0	<1.0	<1.0	<1.0
	4/29/2014	3.89	91.14	<1.0	<1.0	<1.0	<1.0
	7/23/2014	4.17	90.86	<1.0	<1.0	<1.0	<1.0
MW03	10/15/2013	4.45	90.49	<1.0	<1.0	<1.0	<1.0
	1/31/2014	4.85	90.09	<1.0	<1.0	<1.0	<1.0
	4/29/2014	3.96	90.98	<1.0	<1.0	<1.0	<1.0
	7/23/2014	4.22	90.72	<1.0	<1.0	<1.0	<1.0
MW04	10/15/2013	4.37	90.17	<1.0	<1.0	<1.0	<1.0
	1/31/2014	4.80	89.74	<1.0	<1.0	<1.0	<1.0
	4/29/2014	3.89	90.65	<1.0	<1.0	<1.0	<1.0
	7/23/2014	4.05	90.49	<1.0	<1.0	<1.0	<1.0
MW05	10/15/2013	5.00	89.90	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.40	89.50	<1.0	<1.0	<1.0	<1.0
	4/29/2014	4.47	90.43	<1.0	<1.0	<1.0	<1.0
	7/23/2014	4.65	90.25	<1.0	<1.0	<1.0	<1.0
MW06	10/15/2013	5.06	89.90	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.44	89.52	<1.0	<1.0	<1.0	<1.0
	4/29/2014	4.56	90.40	<1.0	<1.0	<1.0	<1.0
	7/23/2014	4.76	90.20	<1.0	<1.0	<1.0	<1.0
MW07	10/15/2013	5.15	89.81	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.50	89.46	<1.0	<1.0	<1.0	<1.0
	4/29/2014	4.62	90.34	<1.0	<1.0	<1.0	<1.0
	7/23/2014	4.81	90.15	<1.0	<1.0	<1.0	<1.0
MW08	10/15/2013	4.85	90.19	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.55	89.49	<1.0	<1.0	<1.0	<1.0
	4/29/2014	4.35	90.69		No Sample - Filled with silt		
	5/30/2014	4.80	90.24	<1.0	<1.0	<1.0	<1.0
	7/23/2014	NM	--		No Sample - Filled with silt		

TABLE 1 (Continued)

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - NORTH
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)
MW09	10/15/2013	5.00	90.20	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.55	89.65	<1.0	<1.0	<1.0	<1.0
	4/29/2014	4.49	90.71	<1.0	<1.0	<1.0	<1.0
	7/23/2014	NM	--	No Sample - Filled with silt			
MW10	10/15/2013	5.15	90.32	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.69	89.78	<1.0	<1.0	<1.0	<1.0
	4/29/2014	4.61	90.86	<1.0	<1.0	<1.0	<1.0
	7/23/2014	4.98	90.49	<1.0	<1.0	<1.0	<1.0
MW11	10/15/2013	4.76	90.50	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.29	89.97	<1.0	<1.0	<1.0	<1.0
	4/29/2014	4.21	91.05	<1.0	<1.0	<1.0	<1.0
	7/23/2014	4.34	90.92	<1.0	<1.0	<1.0	<1.0
CDPHE WQCC Reg 41				5.0	560	700	1,400

NOTES:

btoc - below top of casing

NM- not measured

µg/L - micrograms per liter

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

-- - not applicable

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

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

TABLE 2

**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
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
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
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
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
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
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
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

TABLE 2 (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)
MW09	10/15/2013	4.29	90.36	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.85	89.80	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.90	90.75	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.39	90.26	<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
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
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
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

TABLE 3

**SOIL ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - NORTH
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)
MW01@4'	8/23/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW02@5'	8/23/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW03@4'	8/23/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW04@4'	8/23/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW05@4'	8/23/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW06@5'	8/23/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW07@5'	9/26/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW08@5'	9/26/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW09@4'	9/26/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW10@5'	9/26/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<0.50	<50	<50.50
MW11@5'	9/26/2013	<0.0020	<0.0050	<0.0050	<0.010	<0.010	5.6	140	145.6
COGCC Table 910-1 Standards		0.17	85	100	175	23	--	--	500

NOTES:

COGCC - Colorado Oil and Gas Conservation Commission

DRO - diesel range organics analyzed by EPA Method 8015

GRO - gasoline range organics analyzed by EPA Method 8260B

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

ATTACHMENT
LABORATORY ANALYTICAL REPORTS



July 25, 2014

LT Environmental, Inc.

Charles Greeson

4600 West 60th Avenue

Arvada

CO 80003

Project Name - Noble - Karch Blue-N

Project Number - 008313054

Attached are your analytical results for Noble - Karch Blue-N received by Origins Laboratory, Inc. July 23, 2014. This project is associated with Origins project number X407189-01.

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-N

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X407189-01	Water	July 23, 2014 10:20	07/23/2014 13:40
MW02	X407189-02	Water	July 23, 2014 10:30	07/23/2014 13:40
MW03	X407189-03	Water	July 23, 2014 10:40	07/23/2014 13:40
MW04	X407189-04	Water	July 23, 2014 10:50	07/23/2014 13:40
MW05	X407189-05	Water	July 23, 2014 11:00	07/23/2014 13:40
MW06	X407189-06	Water	July 23, 2014 11:10	07/23/2014 13:40
MW07	X407189-07	Water	July 23, 2014 11:20	07/23/2014 13:40
MW10	X407189-08	Water	July 23, 2014 11:50	07/23/2014 13:40
MW11	X407189-09	Water	July 23, 2014 12:00	07/23/2014 13:40

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

www.originslaboratory.com

X407189

ORIGINS
LABORATORY, INC

page 1 of 1

Client: LTG
Address: 4600 W 60th Ave
Arvada, CO 80003
Telephone Number: 303-433-9788

Project Manager/Send Report To: Charles Greeson
Email Address: cgreeson@ltenv.com
Project Name/Number: Karch Blue-N 008313054
Samples Collected By: William Babin

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summnd Container #		
M001	7/23/14	1020	3	X				X			X BTEX	1
M002		1030										2
M003		1040										3
M004		1050										4
M005		1100										5
M006		1110										6
M007		1140										7
M010		1150										8
M011		1200										9
												10

Relinquished By: <u>William Babin</u>	Date: <u>7/23/2014</u>	Time: <u>1340</u>	Received By: <u>[Signature]</u>	Date: <u>7/23/24</u>	Time: <u>1340</u>
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

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"/>	

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

Origins Laboratory, Inc.

[Signature]

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X407189 Client: LT

Checklist Completed by: [Signature] Client Project ID: Karch Blue-N

Date/Time completed: 7/23/14 13:45 Shipped Via: A/D
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix(s) Received: (Check all that apply): X Soil/Solid X Water Other: NA

Cooler Number/Temperature: 218 °C / °C / °C (Describe) °C

Thermometer ID: 1002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾²		<u>X</u>		
Is there ice present (document if blue ice is used)	<u>X</u>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Were all samples received intact ⁽¹⁾²	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾²	<u>X</u>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾²		<u>X</u>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾²	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾²	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾²	<u>X</u>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾²	<u>X</u>			
For volatiles in water — is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		<u>X</u>		
Are samples preserved that require preservation and was it checked ⁽¹⁾² (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)		<u>X</u>		
Additional Comments (if any):				

⁽¹⁾² 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] Date/Time Reviewed 7/24/14 8:00

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-N

MW01

7/23/2014 10:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
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	99.2 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

MW02

7/23/2014 10:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

107 % 87.3-113
101 % 90.9-108
102 % 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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

MW03

7/23/2014 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
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	99.2 %	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

MW04

7/23/2014 10:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
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	100 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

MW05

7/23/2014 11:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
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	99.5 %	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.

Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Charles Greeson

Project Number: 008313054

Project: Noble - Karch Blue-N

MW06

7/23/2014 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
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

101 % 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.

Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Charles Greeson

Project Number: 008313054

Project: Noble - Karch Blue-N

MW07

7/23/2014 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
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

99.2 % 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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

MW10

7/23/2014 11:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
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	100 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

MW11

7/23/2014 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407189-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G23011	07/23/2014	07/23/2014
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	98.7 %	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

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 4G23011 - EPA 5030B (Water)

Blank (4G23011-BLK1)

Prepared: 07/23/2014 Analyzed: 07/23/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	97.6		87.3-113			
Surrogate: Toluene-d8	65		"	62.5	104		90.9-108			
Surrogate: 4-Bromofluorobenzene	59		"	62.5	94.4		88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Charles Greeson

Project Number: 008313054

Project: Noble - Karch Blue-N

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 4G23011 - EPA 5030B (Water)

LCS (4G23011-BS1)

Prepared: 07/23/2014 Analyzed: 07/23/2014

Benzene	49.4	1.0	ug/L	50.0		98.9	75-126			
Toluene	51.1	1.0	"	50.0		102	78.7-126			
Ethylbenzene	51.0	1.0	"	50.0		102	81-130			
m,p-Xylene	102	2.0	"	100		102	77.2-133			
o-Xylene	51.0	1.0	"	50.0		102	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		89.0	87.3-113			
Surrogate: Toluene-d8	66		"	62.5		106	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.1	88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Charles Greeson

Project Number: 008313054

Project: Noble - Karch Blue-N

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 4G23011 - EPA 5030B (Water)

Matrix Spike (4G23011-MS1)		Source: X407178-01			Prepared: 07/23/2014 Analyzed: 07/23/2014					
Benzene	49.2	1.0	ug/L	50.0	ND	98.3	74-130			
Toluene	51.2	1.0	"	50.0	ND	102	73-131			
Ethylbenzene	52.0	1.0	"	50.0	ND	104	76-132			
m,p-Xylene	103	2.0	"	100	ND	103	69-139			
o-Xylene	52.1	1.0	"	50.0	ND	104	74-131			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		90.0	87.3-113			
Surrogate: Toluene-d8	66		"	62.5		105	90.9-108			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.1	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

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 4G23011 - EPA 5030B (Water)

Matrix Spike Dup (4G23011-MSD1)		Source: X407178-01			Prepared: 07/23/2014 Analyzed: 07/23/2014					
Benzene	51.9	1.0	ug/L	50.0	ND	104	74-130	5.44	20	
Toluene	52.8	1.0	"	50.0	ND	106	73-131	3.21	20	
Ethylbenzene	53.6	1.0	"	50.0	ND	107	76-132	3.01	20	
m,p-Xylene	107	2.0	"	100	ND	107	69-139	4.62	20	
o-Xylene	52.6	1.0	"	50.0	ND	105	74-131	1.03	20	
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		89.7	87.3-113			
Surrogate: Toluene-d8	66		"	62.5		105	90.9-108			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.6	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue-N

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



August 19, 2014

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. July 28, 2014. This project is associated with Origins project number X407248-01.

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	X407248-01	Water	July 25, 2014 13:10	07/28/2014 17:00
MW02	X407248-02	Water	July 25, 2014 13:25	07/28/2014 17:00
MW03	X407248-03	Water	July 25, 2014 13:40	07/28/2014 17:00
MW04	X407248-04	Water	July 25, 2014 11:45	07/28/2014 17:00
MW05	X407248-05	Water	July 25, 2014 11:30	07/28/2014 17:00
MW06	X407248-06	Water	July 25, 2014 11:20	07/28/2014 17:00
MW07	X407248-07	Water	July 25, 2014 12:00	07/28/2014 17:00
MW08	X407248-08	Water	July 25, 2014 12:10	07/28/2014 17:00
MW09	X407248-09	Water	July 25, 2014 12:25	07/28/2014 17:00
MW10	X407248-10	Water	July 25, 2014 12:55	07/28/2014 17:00
MW11	X407248-11	Water	July 25, 2014 12:45	07/28/2014 17:00
MW12	X407248-12	Water	July 25, 2014 12:35	07/28/2014 17:00

Charles Greeson requested to remove the hyphen from all sample ID's.
via email, 8/19/2014.

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

www.originslaboratory.com

X 407248

page 1 of 2

Client: LTE
Address: 4600 W 60th Ave
Telephone Number: 303-433-9789

Project Manager/Send Report To: Charles Greeson
Email Address: cgreeson@ltenv.com
Project Name/Number: 008313054
Samples Collected By: William Baldwin

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa #		
NW-01	7/25/14	1310	3	X				X				1
NW-02		1325									BTEX	2
NW-03		1340										3
NW-04		1145										4
NW-05		1130										5
NW-06		1120										6
NW-07		1200										7
NW-08		1210										8
NW-09		1225										9
NW-10		1255										10
Relinquished By:	Date:	Time:	Time:	Received By:	Date:	Time:	Time:	Received By:	Date:	Time:	Turnaround Time:	
	7/28/14	1700	1700		7/28/14	1700	1700		7/28/14	1700	Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/>	
Relinquished By:	Date:	Time:	Time:	Received By:	Date:	Time:	Time:	Received By:	Date:	Time:	48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/>	
											Standard <input checked="" type="checkbox"/>	

Comments:

Paula Bassett-Mendoza

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

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)

www.originslaboratory.com

page 2 of 2

ORIGINS
LABORATORY, INC

Client: LT
Address: 4600 W. 60th Ave
Arvada, CO 80003
Telephone Number: 303-433-9788

Project Manager/Send Report To: Charles Greeson
Email Address: cgreeson@ltenv.com
Project Name/Number: 008313054
Samples Collected By: William Baldwin

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 #			Other
MW-11	7/25/14	1245	3	X				X					1
MW-12	7/25/14	1235	3	X				X					2
													3
													4
													5
													6
													7
													8
													9
													10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
<u>[Signature]</u>	7/28/14	1700	<u>[Signature]</u>	7/28/14	1700
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

Turnaround Time:
Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard

Print Results Mandatory

Comments:

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

Origins Laboratory, Inc.

[Signature]

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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)

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

Sample Receipt Checklist

Origins Work Order: **x407248**

Client: LTE

Client Project ID: 008313054

Checklist Completed by: Jeff Smith

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

Date/time completed: 7/29/14

Airbill #: NA

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

Cooler Number/Temperature: 13.7 °C / °C / °C (Describe)

Thermometer ID: 1002

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"/>		<u>Same Day</u>
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" 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 checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water — is there headspace (> 1/4 inch bubble) present? If yes, contact client and note in narrative.		<input checked="" 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 HNO3, HCL, H2SO4) / (pH > 10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)		<input checked="" type="checkbox"/>		<u>Samples will be analyzed within 7 days of collection</u>
Additional Comments (if any): <u>Project name was not on COC found project name on samples & used w/ 7/29/14</u>				

⁽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.

Christina Viny
Reviewed by (Project Manager)

7/29/14 11:55
Date/Time Reviewed

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)

MW01

7/25/2014 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	95.6 %	87.3-113			"	"	"
Surrogate: Toluene-d8	104 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	95.4 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

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

MW02

7/25/2014 1:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.9 %	87.3-113			"	"	"
Surrogate: Toluene-d8	104 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	95.1 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

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

MW03

7/25/2014 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.7 %	87.3-113			"	"	"
Surrogate: Toluene-d8	105 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	95.5 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

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

MW04

7/25/2014 11:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-04 (Water)

BTEX by EPA 8260C

Benzene	48.9	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	78.0	1.0	"	"	"	"	"
Xylenes, total	67.8	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	93.7 %	87.3-113			"	"	"
Surrogate: Toluene-d8	105 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	95.8 %	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: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

MW05

7/25/2014 11:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.7 %	87.3-113			"	"	"
Surrogate: Toluene-d8	104 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	94.4 %	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)

MW06

7/25/2014 11:20:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X407248-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	95.7 %	87.3-113	"	"	"
Surrogate: Toluene-d8	104 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	95.7 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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

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

MW07

7/25/2014 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.2 %	87.3-113			"	"	"
Surrogate: Toluene-d8	104 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	96.2 %	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

7/25/2014 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.6 %	87.3-113			"	"	"
Surrogate: Toluene-d8	104 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	94.3 %	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

7/25/2014 12:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.3 %	87.3-113			"	"	"
Surrogate: Toluene-d8	104 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	95.8 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

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

MW10

7/25/2014 12:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.5 %	87.3-113			"	"	"
Surrogate: Toluene-d8	104 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	96.2 %	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

7/25/2014 12:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X407248-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.4 %	87.3-113			"	"	"
Surrogate: Toluene-d8	105 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	95.4 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

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

MW12

7/25/2014 12:35:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X407248-12 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4G29016	07/29/2014	07/29/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.0 %	87.3-113	"	"	"
Surrogate: Toluene-d8	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	96.0 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 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 4G29016 - EPA 5030B (Water)

Blank (4G29016-BLK1)

Prepared: 07/29/2014 Analyzed: 07/29/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5	96.2	87.3-113				
Surrogate: Toluene-d8	65		"	62.5	104	90.9-108				
Surrogate: 4-Bromofluorobenzene	60		"	62.5	95.5	88.6-111				

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 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 4G29016 - EPA 5030B (Water)

LCS (4G29016-BS1)

Prepared: 07/29/2014 Analyzed: 07/29/2014

Benzene	44.4	1.0	ug/L	50.0		88.8	75-126			
Toluene	45.7	1.0	"	50.0		91.4	78.7-126			
Ethylbenzene	44.7	1.0	"	50.0		89.4	81-130			
m,p-Xylene	90.1	2.0	"	100		90.1	77.2-133			
o-Xylene	47.6	1.0	"	50.0		95.2	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	55		"	62.5		88.5	87.3-113			
Surrogate: Toluene-d8	66		"	62.5		105	90.9-108			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.9	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.

Ross S Hutto For Noelle Doyle Mathis, President

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 4G29016 - EPA 5030B (Water)

Matrix Spike (4G29016-MS1)		Source: X407247-02			Prepared: 07/29/2014 Analyzed: 07/29/2014					
Benzene	46.0	1.0	ug/L	50.0	ND	92.0	74-130			
Toluene	47.2	1.0	"	50.0	ND	94.5	73-131			
Ethylbenzene	47.0	1.0	"	50.0	ND	93.9	76-132			
m,p-Xylene	94.3	2.0	"	100	ND	94.3	69-139			
o-Xylene	47.6	1.0	"	50.0	ND	95.1	74-131			
Surrogate: 1,2-Dichloroethane-d4	55		"	62.5		88.3	87.3-113			
Surrogate: Toluene-d8	66		"	62.5		105	90.9-108			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.6	88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 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 4G29016 - EPA 5030B (Water)

Matrix Spike Dup (4G29016-MSD1)		Source: X407247-02			Prepared: 07/29/2014 Analyzed: 07/29/2014					
Benzene	51.7	1.0	ug/L	50.0	ND	103	74-130	11.7	20	
Toluene	54.8	1.0	"	50.0	ND	110	73-131	14.8	20	
Ethylbenzene	55.4	1.0	"	50.0	ND	111	76-132	16.4	20	
m,p-Xylene	110	2.0	"	100	ND	110	69-139	15.8	20	
o-Xylene	54.4	1.0	"	50.0	ND	109	74-131	13.3	20	
Surrogate: 1,2-Dichloroethane-d4	55		"	62.5		88.6	87.3-113			
Surrogate: Toluene-d8	66		"	62.5		106	90.9-108			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		95.0	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.

Ross S Hutto For Noelle Doyle Mathis, President

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

Origins Laboratory, Inc.



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Ross S Hutto For Noelle Doyle Mathis, President