

TABLE 1
GROUNDWATER ANALYTICAL RESULTS

KARCH BLUE DD 30-3J FLOW LINE - SOUTH
COGCC REMEDIATION #8110
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
	4/13/2015	3.82	91.02	<1.0	<1.0	1.2	<1.0
	7/29/2015	3.63	91.21	<1.0	<1.0	<1.0	<1.0
	10/26/2015	3.50	91.34	<1.0	<1.0	1.2	<1.0
	1/25/2016	2.81	92.03	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.28	93.56	<1.0	<1.0	<1.0	<1.0
	8/25/2016	3.42	91.42	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.10	91.74	<1.00	<1.00	<1.00	<1.00
	1/27/2017	2.61	92.23	<1.00	<1.00	<1.00	<1.00
	4/28/2017	2.50	92.34	<1.00	<1.00	<1.00	<1.00
	8/15/2017	2.80	92.04	<1.00	<1.00	<1.00	<1.00
	10/30/2017	2.60	92.24	<1.00	<1.00	<1.00	<1.00
	1/31/2018	2.45	92.39	<1.00	<1.00	<1.00	<1.00
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
	4/13/2015	3.52	91.08	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
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
	4/13/2015	3.89	91.05	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			

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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)
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
	4/13/2015	4.04	91.02	54.6	<1.0	35.3	44.3
	7/29/2015	3.87	91.19	33.3	<1.0	47.7	5.0
	10/26/2015	3.80	91.26	6.6	<1.0	7.9	<1.0
	1/25/2016	3.05	92.01	25.7	<1.0	33.6	2.2
	4/29/2016	1.52	93.54	24.6	<1.0	58.5	11.8
	8/25/2016	3.67	91.39	31.0	<1.00	35.3	11.1
	10/27/2016	3.38	91.68	15.8	<1.00	30.3	5.08
	1/27/2017	2.92	92.14	25.0	<1.00	37.3	8.61
	4/28/2017	2.70	92.36	36.1	<1.00	45.6	13.2
	8/15/2017	3.00	92.06	20.7	<1.00	31.2	7.8
	10/30/2017	2.82	92.24	17.0	<1.00	34.6	<1.00
	1/31/2018	2.63	92.43	17.6	<1.00	41.5	2.33
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
	4/13/2015	4.31	90.89	<1.0	<1.0	<1.0	<1.0
	7/29/2015	4.13	91.07	<1.0	<1.0	<1.0	<1.0
	10/26/2015	4.01	91.19	<1.0	<1.0	<1.0	<1.0
	1/25/2016	3.28	91.92	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.82	93.38	<1.0	<1.0	<1.0	<1.0
	8/25/2016	3.90	91.30	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.60	91.60	<1.00	<1.00	<1.00	<1.00
	1/27/2017	3.20	92.00	<1.00	<1.00	<1.00	<1.00
	4/28/2017	2.95	92.25	<1.00	<1.00	<1.00	<1.00
	8/15/2017	3.20	92.00	<1.00	<1.00	<1.00	<1.00
	10/30/2017	3.07	92.13	<1.00	<1.00	<1.00	<1.00
	1/31/2018	3.05	92.15	<1.00	<1.00	<1.00	<1.00
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

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COGCC REMEDIATION #8110
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	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
	4/13/2015	4.35	90.86	<1.0	<1.0	<1.0	<1.0
	7/29/2015	4.18	91.03	<1.0	<1.0	<1.0	<1.0
	10/26/2015	4.04	91.17	<1.0	<1.0	<1.0	<1.0
	1/25/2016	3.30	91.91	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.78	93.43	<1.0	<1.0	<1.0	<1.0
	8/25/2016	3.92	91.29	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.63	91.58	<1.00	<1.00	<1.00	<1.00
	1/27/2017	3.25	91.96	<1.00	<1.00	<1.00	<1.00
	4/28/2017	2.95	92.26	<1.00	<1.00	<1.00	<1.00
	8/15/2017	3.22	91.99	<1.00	<1.00	<1.00	<1.00
	10/30/2017	3.08	92.13	<1.00	<1.00	<1.00	<1.00
	1/31/2018	2.90	92.31	<1.00	<1.00	<1.00	<1.00
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
	4/13/2015	4.49	90.59	<1.0	<1.0	<1.0	<1.0
	7/29/2015	4.30	90.78	<1.0	<1.0	<1.0	<1.0
	10/26/2015	4.22	90.86	<1.0	<1.0	<1.0	<1.0
	1/25/2016	3.47	91.61	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.97	93.11	29.3	<1.0	1.4	<1.0
	8/25/2016	4.10	90.98	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.82	91.26	<1.00	<1.00	<1.00	<1.00
	1/27/2017	3.40	91.68	<1.00	<1.00	<1.00	<1.00
	4/28/2017	3.17	91.91	<1.00	<1.00	<1.00	<1.00
	8/15/2017	3.45	91.63	<1.00	<1.00	<1.00	<1.00
	10/30/2017	3.28	91.80	<1.00	<1.00	<1.00	<1.00
	1/31/2018	3.07	92.01	<1.00	<1.00	<1.00	<1.00
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

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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)
MW08	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
	4/13/2015	4.13	90.85	<1.0	<1.0	<1.0	<1.0
	7/29/2015	3.96	91.02	<1.0	<1.0	<1.0	<1.0
	10/26/2015	3.88	91.10	<1.0	<1.0	<1.0	<1.0
	1/25/2016	3.15	91.83	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.62	93.36	<1.0	<1.0	<1.0	<1.0
	8/25/2016	3.70	91.28	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.55	91.43	<1.00	<1.00	<1.00	<1.00
	1/27/2017	3.05	91.93	<1.00	<1.00	<1.00	<1.00
	4/28/2017	2.80	92.18	<1.00	<1.00	<1.00	<1.00
	8/15/2017	3.10	91.88	<1.00	<1.00	<1.00	<1.00
	10/30/2017	2.93	92.05	<1.00	<1.00	<1.00	<1.00
	1/31/2018	2.72	92.26	<1.00	<1.00	<1.00	<1.00
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
	4/13/2015	3.76	90.86	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
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
	4/13/2015	3.78	90.84	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
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

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COGCC REMEDIATION #8110
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	4/13/2015	4.02	90.81	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
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
	4/13/2015	4.11	90.95	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
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

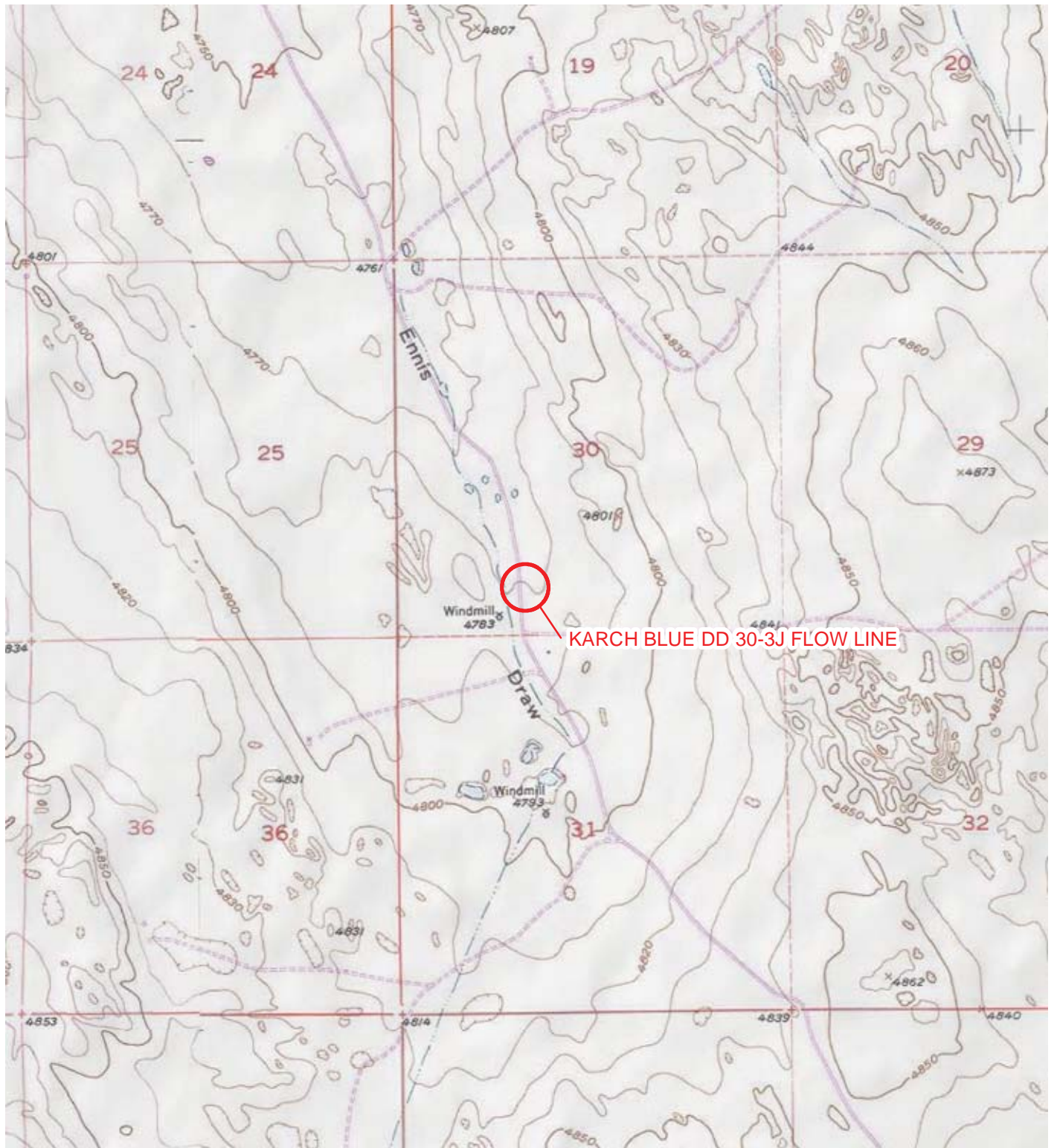


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

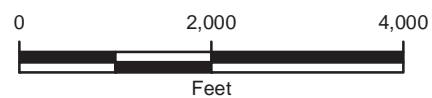


FIGURE 1
SITE LOCATION MAP
KARCH BLUE DD 30-3J FLOW LINE
E 1/2 SW 1/4 SEC 30-T3N-R63W
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





LEGEND

- ⊗ MONITORING WELL
- ⊗ MONITORING WELL REMOVED FROM MONITORING PROGRAM
- ↑ CALCULATED GROUNDWATER FLOW DIRECTION

— RELATIVE GROUNDWATER ELEVATION CONTOUR

CONTOUR INTERVAL = 0.10 FEET

GRADIENT = 0.011 FEET/FOOT

— UNDERGROUND UTILITIES

- - - EXCAVATION EXTENT

GROUNDWATER ELEVATIONS WERE MEASURED
JANUARY 31, 2018

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

IMAGE COURTESY OF GOOGLE EARTH 2016

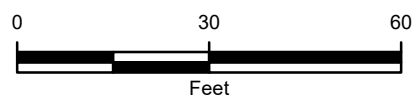
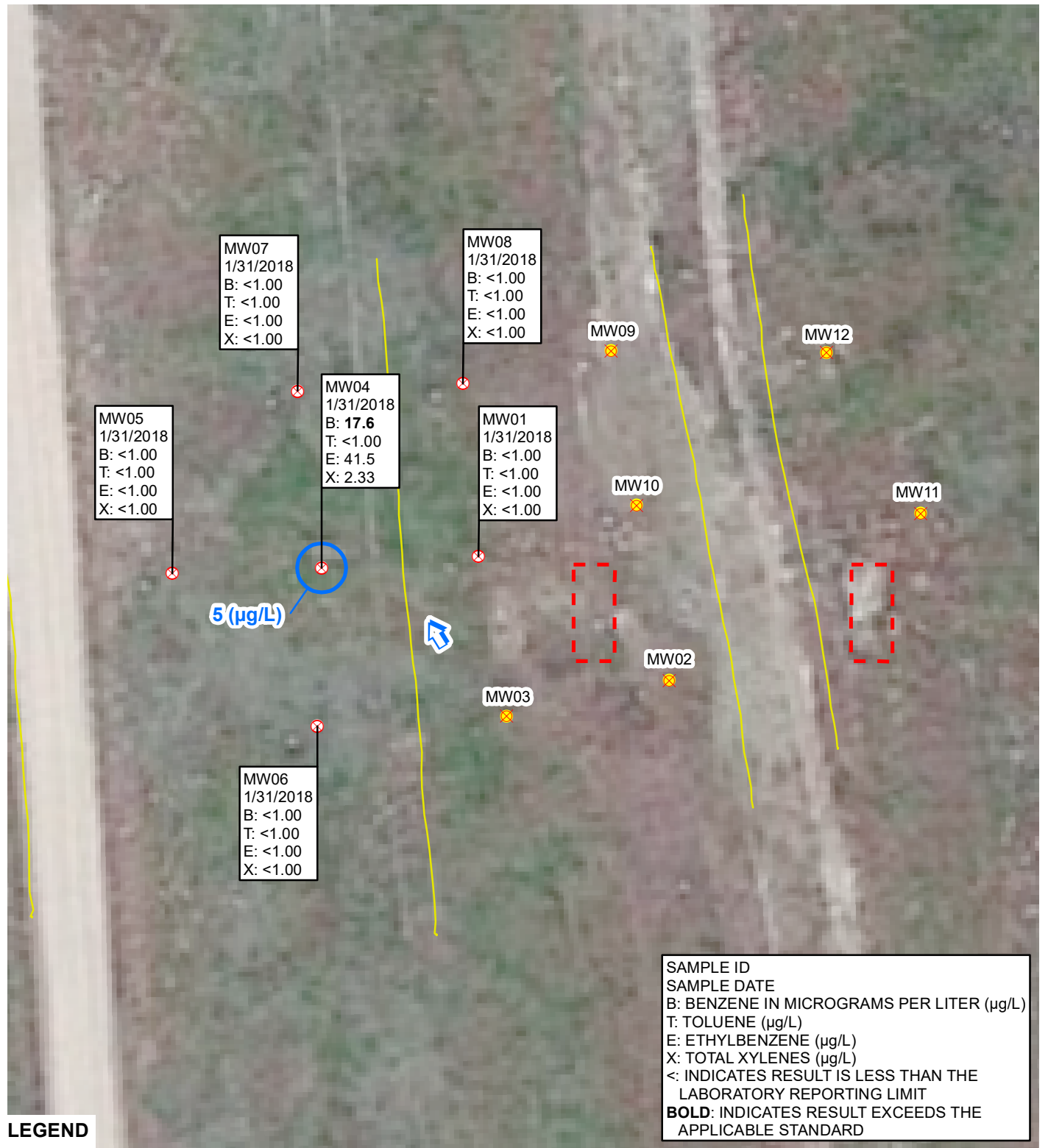


FIGURE 2
RELATIVE GROUNDWATER ELEVATION MAP - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
E 1/2 SW 1/4 SEC 30-T3N-R63W
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.







February 06, 2018

LT Environmental, Inc.

Jeremy Pike

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 31, 2018. This project is associated with Origins project number Y802006-01.

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

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

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	Y802006-01	Water	January 31, 2018 12:30	01/31/2018 14:30
MW05	Y802006-02	Water	January 31, 2018 13:11	01/31/2018 14:30
MW06	Y802006-03	Water	January 31, 2018 12:43	01/31/2018 14:30
MW07	Y802006-04	Water	January 31, 2018 12:54	01/31/2018 14:30
MW08	Y802006-05	Water	January 31, 2018 12:15	01/31/2018 14:30
MW04	Y802006-06	Water	January 31, 2018 13:24	01/31/2018 14:30

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

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

www.originslaboratory.com

1602006




page of

ORIGINS LABORATORY, INC

Client: LT Environmental, Inc.
Address: 4600 West 60th Ave, Arvada, CO
Telephone Number: 303-433-9788
Email Address: Noble Remediation Team

Project Manager: Jeremy Pike
Project Name: Karch Blue DD 30-3J (South)
Project Number: 008313054
Samples Collected By: *Glenn Thompson*

Invoice Jacob Evans

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	1/31/18	1230	3	X								BTEX	1	↑
MW05	1/31/18	1311	3	X									2	
MW06	1/31/18	1243	3	X									3	
MW07	1/31/18	1254	3	X									4	
MW08	1/31/18	1215	3	X									5	
MW09	1/31/18	1324	3	X									6	
													7	
													8	
													9	
													10	
Relinquished By: 	Date: 1/31/18	Time: 1430	Time: 1430	Received By: 				Date: 1/31/19	Time: 1430	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"/>				
Relinquished By: 	Date:	Time:	Time:	Received By:				Date:	Time:					

Date Results Needed

50

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

Jeremy Pike
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: 460206

Client: LTC

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

Checklist Completed by: Dan Lee

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

Date/time completed: 2-1-12

Airbill #: NA

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

Cooler Number/Temperature: 13.7 °C 1 °C 1 °C (Describe)

Thermometer ID: 6003

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]

Date/Time Reviewed 2/2/12

Origins Laboratory, Inc.

[Signature]

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

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

MW01

1/31/2018 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y802006-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B8B0104	02/01/2018	02/02/2018	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %	84-121	"	"	"
Surrogate: Toluene-d8	99.3 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	84-114	"	"	"

Origins Laboratory, Inc.



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

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

MW05

1/31/2018 1:11:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y802006-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B8B0104	02/01/2018	02/02/2018	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	101 %	84-121	"	"	"
Surrogate: Toluene-d8	99.4 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	84-114	"	"	"

Origins Laboratory, Inc.



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

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

MW06

1/31/2018 12:43:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y802006-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B8B0104	02/01/2018	02/02/2018	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	101 %	84-121	"	"	"
Surrogate: Toluene-d8	96.0 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	84-114	"	"	"

Origins Laboratory, Inc.



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

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

MW07

1/31/2018 12:54:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y802006-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B8B0104	02/01/2018	02/02/2018	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

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

106 % 84-121
97.3 % 85-115
108 % 84-114

" " "
" " "
" " "

Origins Laboratory, Inc.



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

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

MW08

1/31/2018 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y802006-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B8B0104	02/01/2018	02/02/2018	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	104 %	84-121	"	"	"
Surrogate: Toluene-d8	97.0 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	84-114	"	"	"

Origins Laboratory, Inc.



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

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

MW04

1/31/2018 1:24:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y802006-06 (Water)

BTEX by EPA 8260C

Benzene	17.6	1.00	ug/L	1	B8B0104	02/01/2018	02/02/2018	
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	41.5	1.00	"	"	"	"	"	
Xylenes, total	2.33	1.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	105 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.4 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

Jeremy Pike
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 B8B0104 - EPA 5030B (Water)

Blank (B8B0104-BLK1)

Prepared: 02/01/2018 Analyzed: 02/01/2018

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5	102		84-121			
Surrogate: Toluene-d8	62		"	62.5	99.8		85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.1		84-114			

Origins Laboratory, Inc.



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

Jeremy Pike
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
Batch B8B0104 - EPA 5030B (Water)										
Blank (B8B0104-BLK2)					Prepared: 02/01/2018 Analyzed: 02/01/2018					
Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.0	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

Origins Laboratory, Inc.



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

Jeremy Pike
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 B8B0104 - EPA 5030B (Water)

LCS (B8B0104-BS1)

Prepared: 02/01/2018 Analyzed: 02/01/2018

Benzene	49.6	1.00	ug/L	50.0		99.2	73.3-129
Toluene	48.7	1.00	"	50.0		97.4	76.2-123
Ethylbenzene	51.2	1.00	"	50.0		102	73.6-130
m,p-Xylene	104	2.00	"	100		104	76.1-126
o-Xylene	53.6	1.00	"	50.0		107	76.6-124
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		93.7	84-121
Surrogate: Toluene-d8	63		"	62.5		100	85-115
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114

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LT Environmental, Inc.
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Arvada CO 80003

Jeremy Pike
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
Batch B8B0104 - EPA 5030B (Water)										
LCS (B8B0104-BS2)					Prepared: 02/01/2018 Analyzed: 02/01/2018					
Benzene	49.6	1.00	ug/L	50.0		99.2	73.3-129			
Toluene	48.9	1.00	"	50.0		97.8	76.2-123			
Ethylbenzene	52.6	1.00	"	50.0		105	73.6-130			
m,p-Xylene	105	2.00	"	100		105	76.1-126			
o-Xylene	52.8	1.00	"	50.0		106	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.3	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

Origins Laboratory, Inc.



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

Jeremy Pike
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 B8B0104 - EPA 5030B (Water)

Matrix Spike (B8B0104-MS1)		Source: Y801407-01			Prepared: 02/01/2018 Analyzed: 02/01/2018					
Benzene	42.9	1.00	ug/L	50.0	ND	85.9	74-130			
Toluene	42.8	1.00	"	50.0	0.120	85.3	73-131			
Ethylbenzene	45.7	1.00	"	50.0	ND	91.4	76-132			
m,p-Xylene	94.8	2.00	"	100	0.480	94.3	69-139			
o-Xylene	49.1	1.00	"	50.0	ND	98.3	74-131			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.1	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

Origins Laboratory, Inc.



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

Jeremy Pike
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 B8B0104 - EPA 5030B (Water)

Matrix Spike (B8B0104-MS2)		Source: Y801407-07			Prepared: 02/01/2018 Analyzed: 02/01/2018					
Benzene	53.4	1.00	ug/L	50.0	ND	107	74-130			
Toluene	53.4	1.00	"	50.0	ND	107	73-131			
Ethylbenzene	57.2	1.00	"	50.0	ND	114	76-132			
m,p-Xylene	117	2.00	"	100	ND	117	69-139			
o-Xylene	59.5	1.00	"	50.0	ND	119	74-131			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.6	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

Origins Laboratory, Inc.



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

Jeremy Pike
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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B8B0104 - EPA 5030B (Water)

Matrix Spike Dup (B8B0104-MSD1)		Source: Y801407-01			Prepared: 02/01/2018 Analyzed: 02/01/2018					
Benzene	51.7	1.00	ug/L	50.0	ND	103	74-130	18.6	20	
Toluene	51.3	1.00	"	50.0	0.120	102	73-131	18.2	20	
Ethylbenzene	55.1	1.00	"	50.0	ND	110	76-132	18.6	20	
m,p-Xylene	113	2.00	"	100	0.480	113	69-139	17.8	20	
o-Xylene	58.1	1.00	"	50.0	ND	116	74-131	16.8	20	
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.5	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

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LT Environmental, Inc.
4600 West 60th Avenue
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Jeremy Pike
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
Batch B8B0104 - EPA 5030B (Water)										
Matrix Spike Dup (B8B0104-MSD2)	Source: Y801407-07				Prepared: 02/01/2018 Analyzed: 02/01/2018					
Benzene	41.3	1.00	ug/L	50.0	ND	82.5	74-130	25.5	20	QR-02
Toluene	40.7	1.00	"	50.0	ND	81.3	73-131	27.1	20	QR-02
Ethylbenzene	43.3	1.00	"	50.0	ND	86.6	76-132	27.7	20	QR-02
m,p-Xylene	89.8	2.00	"	100	ND	89.8	69-139	26.5	20	QR-02
o-Xylene	46.5	1.00	"	50.0	ND	93.1	74-131	24.5	20	QR-02
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.4	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.5	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		103	84-114			

Origins Laboratory, Inc.



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

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

Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

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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