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Project 4480
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Kerr-McGee Oil & Gas Onshore LP
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June 10, 2016

Mr. Peter Gintautas
Environmental Protection Specialist
Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, Colorado 80203

**Re: No Further Action Status Request
Karich Helen E Unit #2/ Herman 32-9K / Herman 32-10K
API # 05-123-10830
COGCC Remediation # 4480
SWSE Sec 32-T3N-R66W
Weld County, Colorado**

Dear Mr. Gintautas:

Kerr-McGee Oil and Gas Onshore LP (Kerr-McGee) is submitting this letter report as an update to the Form 27, submitted on June 22, 2009, for Karich Helen E Unit #2/ Herman 32-9K / Herman 32-10K dumphline release. We are requesting a No Further Action (NFA) status for this site.

Background

On January 19, 2009, produced water was discovered where it surfaced above a corroded dumpline. An unknown volume of oil and produced water were released. The petroleum hydrocarbon impacted soil was excavated. Kerr-McGee contracted LT Environmental, Inc. (LTE) to document excavation activities, collect confirmation soil and groundwater samples from the excavation, assess the groundwater impact, and implement a groundwater monitoring program. A topographic Site Location Map showing the geographical setting of the release is provided as Figure 1.

On January 21, 2009, confirmation soil samples were collected from the excavation sidewalls for total extractable petroleum hydrocarbons (TEPH) analysis by United States Environmental Protection Agency (USEPA) Method 8015. Laboratory analytical results indicated that the TEPH concentrations were less than the Colorado Oil and Gas Conservation Commission (COGCC) sensitive area allowable level of 1,000 milligrams per kilogram (mg/kg) at the extent of excavation. The soil samples were not analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) as they were collected prior to the COGCC rule changes that took effect on April 1, 2009. Approximately 160 cubic yards of impacted soil were removed from the excavation and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. The confirmation soil sample analytical results are summarized in Table 1.

Groundwater was encountered in the excavation at approximately 8 feet below ground surface. On January 21, 2009, one groundwater sample (GW01) was collected from the open excavation and submitted for laboratory analysis of BTEX by USEPA Method 8260B. Laboratory results for excavation groundwater sample GW01 indicated that the benzene concentration exceeded the Colorado Groundwater Quality Standard (CGWQS) of 5.0 microgram per liter ($\mu\text{g/L}$) at a concentration of 1,500 $\mu\text{g/L}$. Based on the excavation groundwater sample results, approximately 15 barrels of impacted groundwater were removed from the open excavation and transported to a licensed injection facility for disposal using a vacuum truck. Five gallons of MicroBlaze[®], a concentrated solution of facultative microbes, nutrients, and surfactants designed to bioremediate petroleum hydrocarbons, were applied to the excavation groundwater immediately prior to backfilling the excavation. An Excavation Site Map depicting the excavation extent and the excavation soil and groundwater sample locations is provided as Figure 2. The excavation groundwater sample analytical results are summarized in Table 2.

Groundwater Assessment and Monitoring

In order to assess the extent and magnitude of the residual dissolved-phase groundwater impacts, ten monitoring wells (MW01 through MW10) were installed at the site between February 2009 and November 2010. Analytical results for the groundwater monitoring events conducted between February 2009 and November 2010 indicated that the benzene concentrations in MW01 and MW05 through MW07 exceeded the CGWQS for benzene. BTEX concentrations in MW02 through MW04 and MW08 through MW10 were less than the CGWQS and the laboratory reporting limit of 1.0 $\mu\text{g/L}$. Based on the analytical results, MW02 through MW04 and MW08 through MW10 were designated as point of compliance wells. Groundwater monitoring continued on a quarterly basis. A Site Map depicting the monitoring well locations is provided as Figure 3. Soil boring logs with monitoring well completion diagrams are provided in Appendix A.

In a letter dated June 8, 2011, COGCC approved the removal of monitoring wells MW03 and MW04 from the monitoring program, based on four or more consecutive quarters of compliant groundwater analytical results. Monitoring well MW07 was destroyed as of the January 2013 monitoring event. Monitoring wells MW05, MW09, and MW10 were destroyed as of the October 2013 monitoring event.

On November 18, 2013, monitoring wells MW01, MW02, MW03, MW06, and MW08 were surveyed to obtain relative groundwater and well elevation data. The relative elevation data indicated the groundwater flow direction at the site is to the west. The relative groundwater elevation data are provided in Table 2.

On May 18, 2015, four replacement monitoring wells (MW05R, MW07R, MW09R, and MW10R) were installed. Soil boring logs with monitoring well completion diagrams for the replacement wells are provided in Appendix A.

On May 4, 2016, monitoring wells MW01, MW02, MW05R, MW06, MW07R, MW08, MW09R, and MW10R were surveyed to confirm relative groundwater and well elevation data. The relative groundwater elevation data indicated the groundwater flow direction at the site is to the northwest.

A groundwater Elevation Contour Map for each of the four compliant quarterly monitoring events (third quarter 2015 through second quarter 2016) is provided as Figure 4A through Figure 4D, respectively. The relative groundwater elevation data are provided in Table 2.

As of the April 2016 quarterly monitoring event, BTEX concentrations in monitoring wells MW01, MW02, and MW05R through MW10R have been compliant with the CGWQS for four or more consecutive quarterly groundwater monitoring events. The groundwater analytical results are summarized in Table 2. The laboratory analytical reports for the four compliant groundwater monitoring events are provided in Appendix B.

Conclusions

Remedial actions employed at the site have included excavation of the source area, removal of impacted groundwater from the excavation, and application of the MicroBlaze[®] groundwater amendment to the excavation groundwater. Based on these remedial actions and analytical data showing BTEX concentrations in site groundwater in compliance with the CGWQS for four consecutive quarterly monitoring events, Kerr-McGee is requesting an NFA status for this site.

Feel free to contact me at 970-929-6726 if you have any questions regarding this information.

Sincerely,

Kerr-McGee Oil & Gas Onshore LP



Paul D. Schneider, P.G.
HSE Manager

Attachments

FIGURES



LEGEND

- X RELEASE LOCATION
- SOIL SAMPLE
- ⊕ GROUNDWATER SAMPLE
- M METER HOUSE
- x — x FENCE
- EXCAVATION EXTENT
- BERM

GROUNDWATER SAMPLE ID
 SAMPLE DATE
 B: BENZENE CONCENTRATION
 RESULTS IN MICROGRAMS PER LITER
BOLD INDICATES RESULT EXCEEDS STANDARD

IMAGE COURTESY OF ESRI

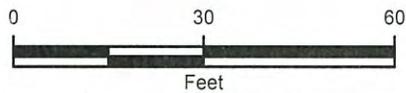
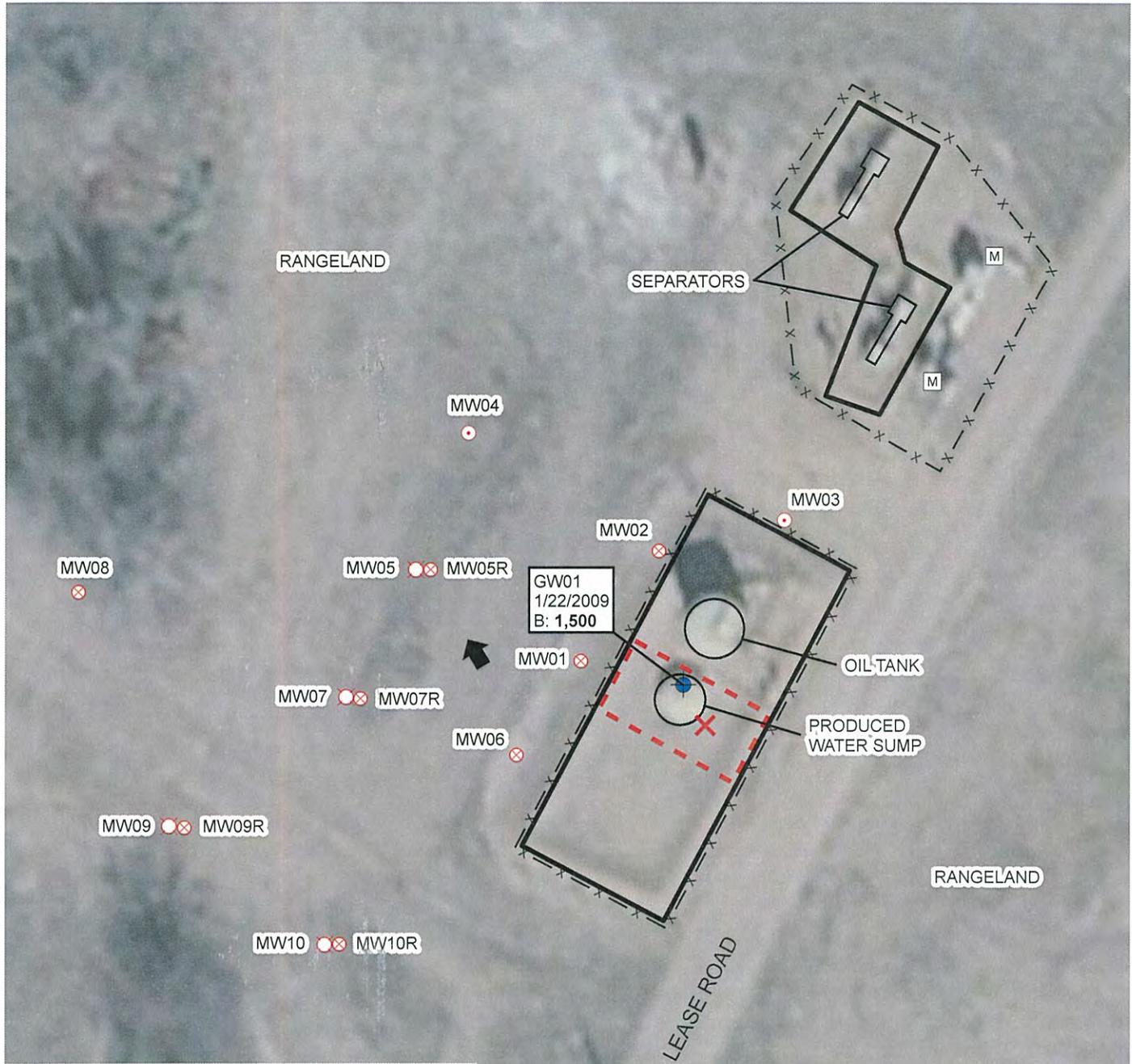


FIGURE 2
EXCAVATION SITE MAP
 KARICH HELEN E UNIT #2/
 HERMAN 32-9K / HERMAN 32-10K
 SWSE SEC 32-T3N-R66W
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL & GAS ONSHORE LP





LEGEND

- RELEASE LOCATION
- MONITORING WELL
- DESTROYED MONITORING WELL
- REMOVED FROM MONITORING PROGRAM
- GROUNDWATER SAMPLE
- METER HOUSE
- SURVEYED GROUNDWATER FLOW DIRECTION
- FENCE
- EXCAVATION EXTENT
- BERM

GROUNDWATER SAMPLE ID
 SAMPLE DATE
 B: BENZENE CONCENTRATION
 RESULTS IN MICROGRAMS PER LITER
BOLD INDICATES RESULT EXCEEDS STANDARD

IMAGE COURTESY OF ESRI

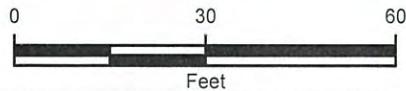


FIGURE 3
SITE MAP
 KARICH HELEN E UNIT #2/
 HERMAN 32-9K / HERMAN 32-10K
 SWSE SEC 32-T3N-R66W
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL & GAS ONSHORE LP



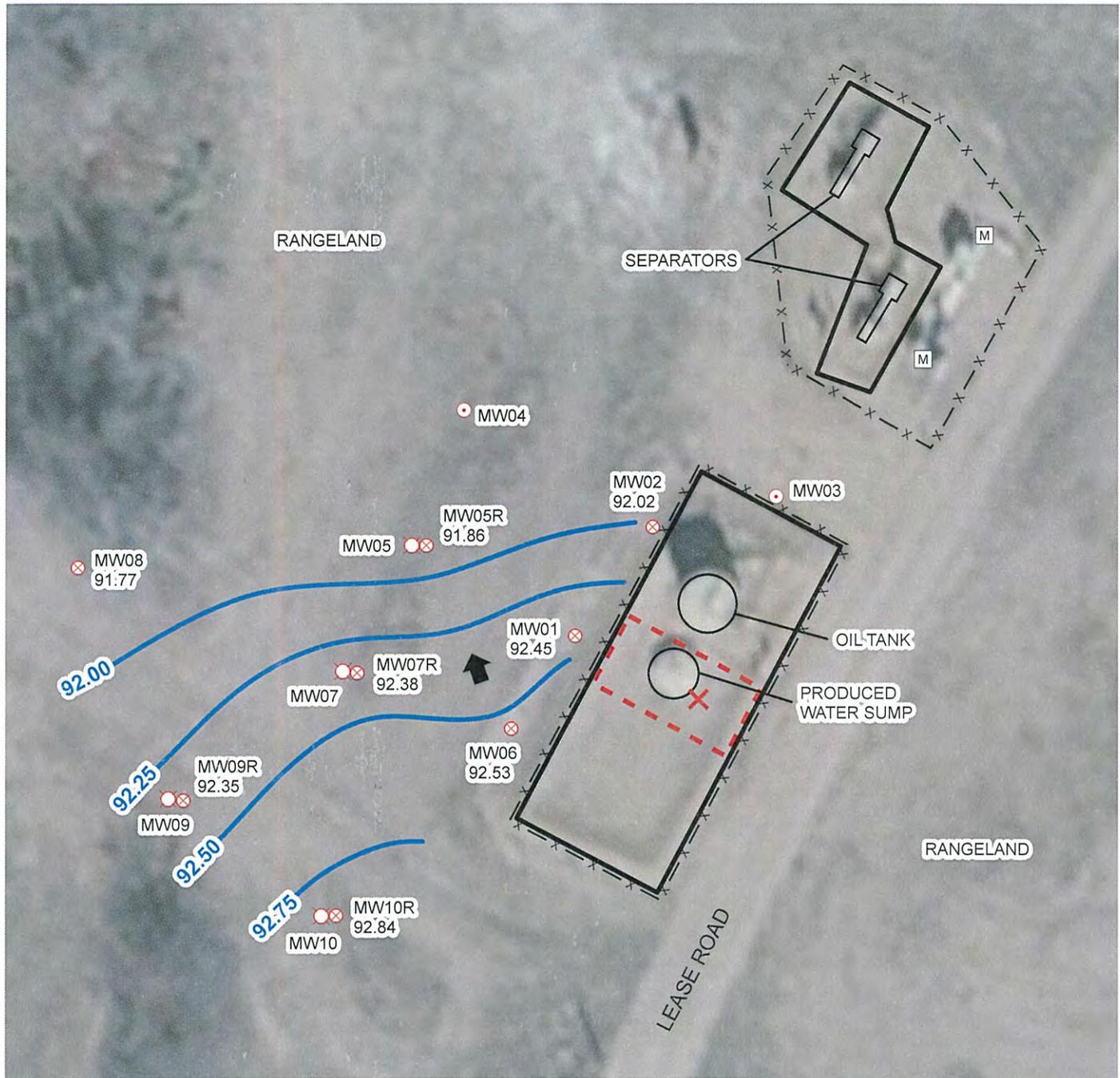
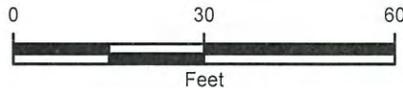


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE LOCATION
- MONITORING WELL
- DESTROYED MONITORING WELL
- REMOVED FROM MONITORING PROGRAM
- METER HOUSE
- SURVEYED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
CONTOUR INTERVAL = 0.25 FEET
GRADIENT = 0.01 FEET/FOOT

- FENCE
- EXCAVATION EXTENT
- BERM



GROUNDWATER ELEVATIONS WERE MEASURED ON JULY 15, 2015.

FIGURE 4A
GROUNDWATER ELEVATION CONTOUR MAP
 THIRD QUARTER 2015
 KARICH HELEN E UNIT #2/
 HERMAN 32-9K / HERMAN 32-10K
 SWSE SEC 32-T3N-R66W
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL & GAS ONSHORE LP



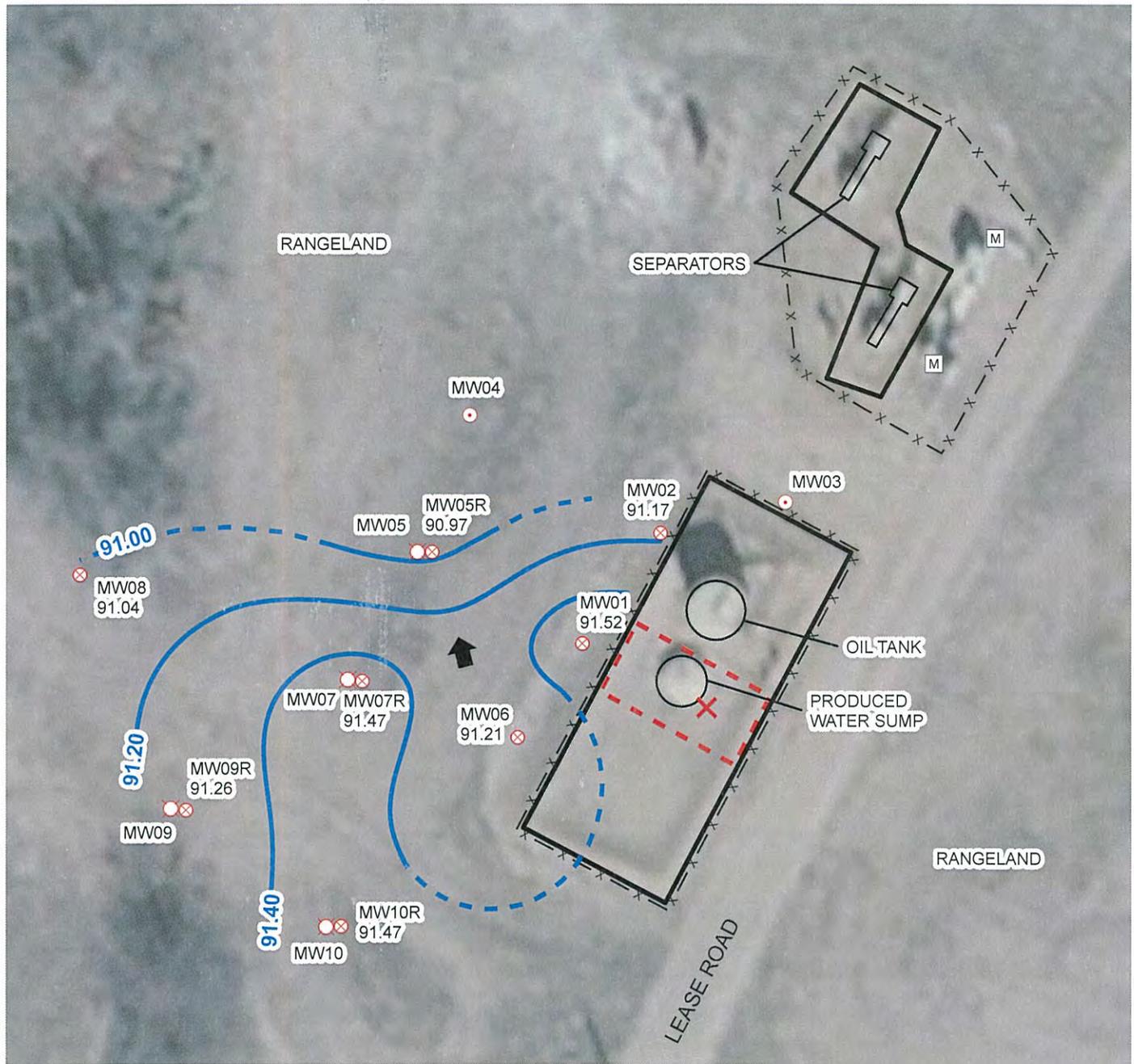
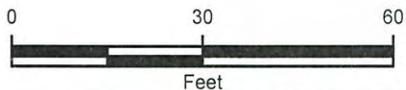


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE LOCATION
 - MONITORING WELL
 - DESTROYED MONITORING WELL
 - REMOVED FROM MONITORING PROGRAM
 - METER HOUSE
 - SURVEYED GROUNDWATER FLOW DIRECTION
 - RELATIVE GROUNDWATER ELEVATION CONTOUR
 - DASHED WHERE INFERRED
- CONTOUR INTERVAL = 0.20 FEET
GRADIENT = 0.01 FEET/FOOT

- FENCE
- EXCAVATION EXTENT
- BERM



GROUNDWATER ELEVATIONS WERE MEASURED ON OCTOBER 15, 2015.

FIGURE 4B
GROUNDWATER ELEVATION CONTOUR MAP
 FOURTH QUARTER 2015
 KARICH HELEN E UNIT #2/
 HERMAN 32-9K / HERMAN 32-10K
 SWSE SEC 32-T3N-R66W
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL & GAS ONSHORE LP



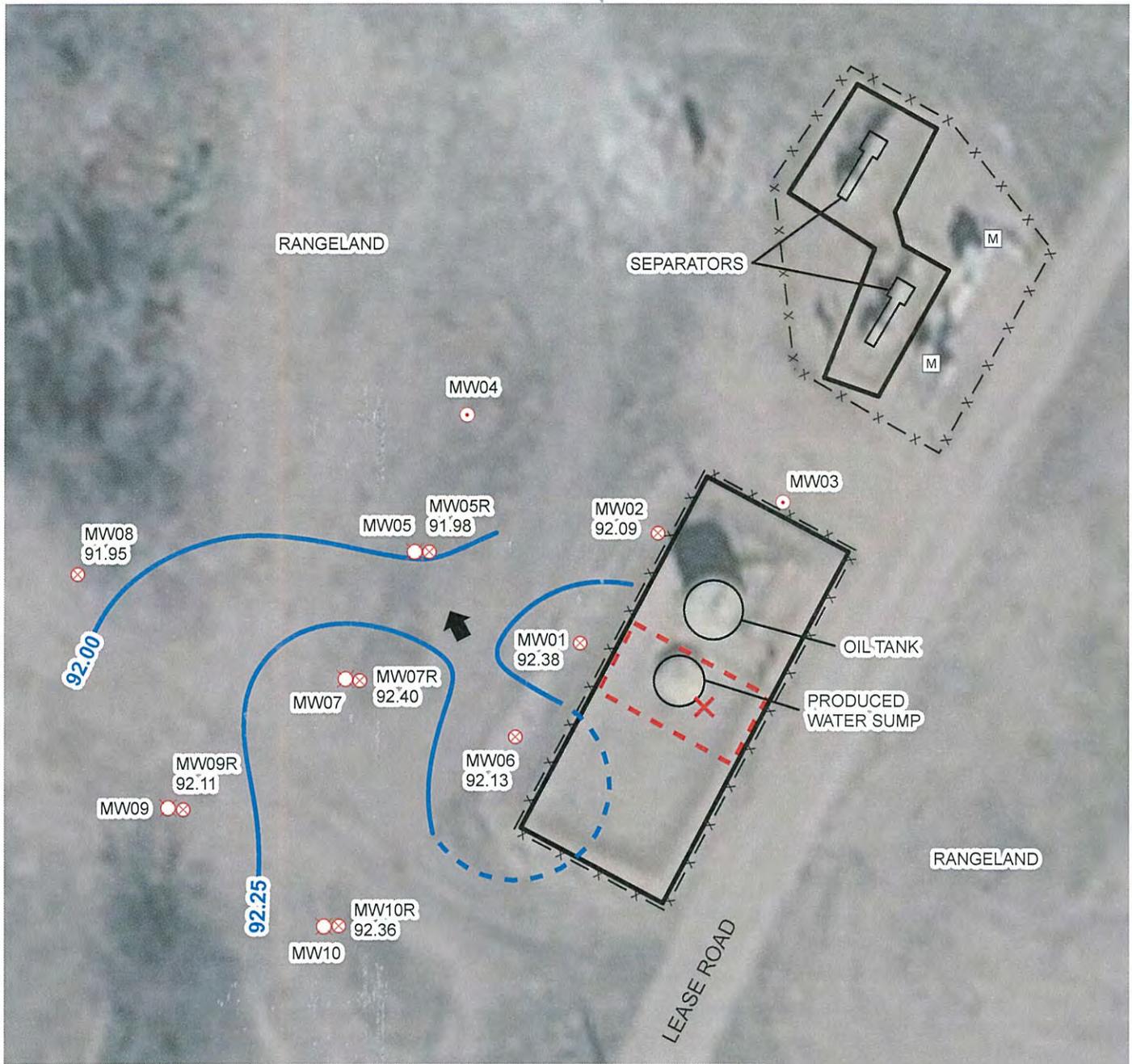
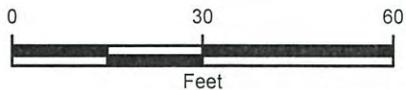


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE LOCATION
 - MONITORING WELL
 - DESTROYED MONITORING WELL
 - REMOVED FROM MONITORING PROGRAM
 - METER HOUSE
 - SURVEYED GROUNDWATER FLOW DIRECTION
 - RELATIVE GROUNDWATER ELEVATION CONTOUR
 - DASHED WHERE INFERRED
- CONTOUR INTERVAL = 0.25 FEET
GRADIENT = 0.01 FEET/FOOT

- FENCE
- EXCAVATION EXTENT
- BERM



GROUNDWATER ELEVATIONS WERE MEASURED ON JANUARY 5, 2016.

FIGURE 4C
GROUNDWATER ELEVATION CONTOUR MAP
 FIRST QUARTER 2016
 KARICH HELEN E UNIT #2/
 HERMAN 32-9K / HERMAN 32-10K
 SWSE SEC 32-T3N-R66W
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL & GAS ONSHORE LP



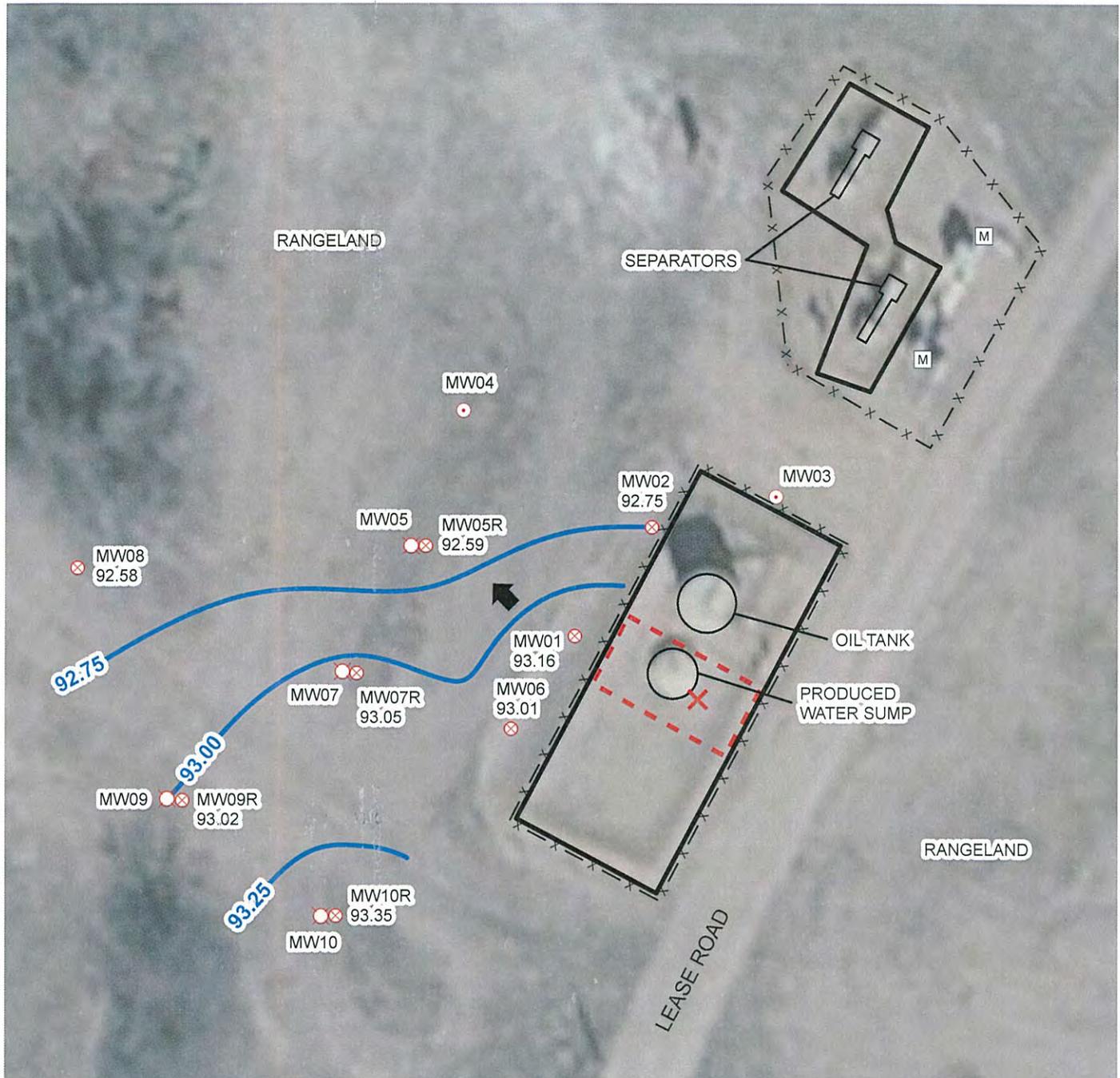
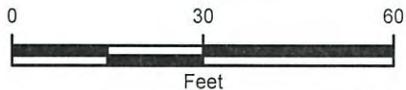


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE LOCATION
- MONITORING WELL
- DESTROYED MONITORING WELL
- REMOVED FROM MONITORING PROGRAM
- METER HOUSE
- SURVEYED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
CONTOUR INTERVAL = 0.25 FEET
GRADIENT = 0.01 FEET/FOOT

- FENCE
- EXCAVATION EXTENT
- BERM



GROUNDWATER ELEVATIONS WERE MEASURED ON APRIL 13, 2016.

FIGURE 4D
GROUNDWATER ELEVATION CONTOUR MAP
 SECOND QUARTER 2016
 KARICH HELEN E UNIT #2/
 HERMAN 32-9K / HERMAN 32-10K
 SWSE SEC 32-T3N-R66W
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL & GAS ONSHORE LP



TABLES

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
KARICH HELEN E UNIT #2/HERMAN 32-9K/HERMAN 32-10K
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Soil Sample ID	Depth (bgs)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	ORO (mg/kg)
E01@7'	7'	01/22/2009	NA	NA	NA	NA	<50	<50	<50
N01@7'	7'	01/22/2009	NA	NA	NA	NA	<50	<50	<50
S01@7'	7'	01/22/2009	NA	NA	NA	NA	<50	<50	<50
W01@7'	7'	01/22/2009	NA	NA	NA	NA	<50	<50	<50
COGCC Allowable Levels			0.17	85	100	175	500*	500*	500*

Notes: bgs - below ground surface
COGCC - Colorado Oil and Gas Conservation Commission
DRO - diesel range organics
GRO - gasoline range organics
mg/kg - milligrams per kilogram

NA - not analyzed/not available
ORO - oil range organics
* - Standard applies to combined DRO-GRO-ORO
< - less than laboratory reporting limit
Bold indicates result exceeds allowable level



TABLE 2
GROUNDWATER ANALYTICAL AND FIELD RESULTS
KARICH HELEN E UNIT #2/HERMAN 32-9K/HERMAN 32-10K
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)	
GW01	01/22/2009	1500	210	26	210	8.00	NA	
MW01	02/25/2009	10000	580	280	1200	5.60	91.50	
	04/24/2009	2300	3.3	94	300	4.21	92.89	
	07/13/2009	55	<1.0	1.9	<1.0	4.12	92.98	
	10/13/2009	<1.0	<1.0	<1.0	<1.0	6.22	90.88	
	01/22/2010	150	<1.0	<1.0	<1.0	5.57	91.53	
	04/01/2010	95	<1.0	<1.0	<1.0	4.82	92.28	
	07/22/2010	6.9	<1.0	1.5	6.9	3.98	93.12	
	10/07/2010	1.8	<1.0	<1.0	<1.0	5.32	91.78	
	01/20/2011	13	<1.0	<1.0	<1.0	5.66	91.44	
	04/07/2011	<1.0	<1.0	<1.0	<1.0	5.48	91.62	
	07/18/2011	21	<1.0	18	46	4.51	92.59	
	10/07/2011	<1.0	<1.0	<1.0	<1.0	6.58	90.52	
	01/18/2012	5.7	<1.0	<1.0	<1.0	5.67	91.43	
	04/13/2012	2.2	<1.0	8.7	32	5.35	91.75	
	07/12/2012	<1.0	<1.0	<1.0	<1.0	5.13	91.97	
	10/25/2012	<1.0	<1.0	<1.0	<1.0	6.65	90.45	
	01/08/2013	<1.0	<1.0	<1.0	<1.0	6.20	90.90	
	04/18/2013	26	<1.0	87	210	5.45	91.65	
	07/16/2013	<1.0	<1.0	<1.0	<1.0	6.37	90.73	
	10/03/2013	1.3	<1.0	<1.0	<1.0	5.70	91.40	
	11/18/2013	Surveyed - Not Sampled					5.71	91.29
	01/31/2014	<4.0	<4.0	<4.0	<4.0	5.57	91.53	
	04/01/2014	1.4	<1.0	<1.0	<1.0	5.31	91.69	
	07/24/2014	<1.0	<1.0	8.4	61.8	4.29	92.71	
	10/17/2014	<1.0	<1.0	<1.0	<1.0	5.07	91.93	
	01/09/2015	<1.0	<1.0	<1.0	<1.0	NM	NA	
	04/03/2015	<1.0	<1.0	1.0	6.1	4.82	92.18	
	07/15/2015	<1.0	<1.0	<1.0	<1.0	4.55	92.45	
	10/15/2015	<1.0	<1.0	<1.0	<1.0	5.48	91.52	
	01/05/2016	<1.0	<1.0	<1.0	<1.0	4.62	92.38	
	04/13/2016	<1.0	<1.0	<1.0	<1.0	3.84	93.16	
	05/04/2016	Surveyed - Not Sampled					2.83	94.11



TABLE 2 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
KARICH HELEN E UNIT #2/HERMAN 32-9K/HERMAN 32-10K
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW02	02/25/2009	<1.0	<1.0	<1.0	<1.0	5.25	91.66
	04/24/2009	<1.0	<1.0	<1.0	<1.0	3.71	93.20
	07/13/2009	<1.0	<1.0	<1.0	<1.0	3.85	93.06
	10/13/2009	<1.0	<1.0	<1.0	<1.0	5.88	91.03
	01/22/2010	<1.0	<1.0	<1.0	<1.0	5.19	91.72
	04/01/2010	<1.0	<1.0	<1.0	<1.0	4.30	92.61
	07/22/2010	<1.0	<1.0	<1.0	<1.0	3.56	93.35
	10/07/2010	<1.0	<1.0	<1.0	<1.0	4.92	91.99
	01/20/2011	<1.0	<1.0	<1.0	<1.0	5.30	91.61
	04/07/2011	<1.0	<1.0	<1.0	<1.0	5.20	91.71
	07/18/2011	<1.0	<1.0	<1.0	<1.0	4.17	92.74
	10/07/2011	<1.0	<1.0	<1.0	<1.0	6.27	90.64
	01/18/2012	<1.0	<1.0	<1.0	<1.0	5.42	91.39
	04/13/2012	<1.0	<1.0	<1.0	<1.0	5.07	91.84
	07/12/2012	<1.0	<1.0	<1.0	<1.0	4.58	92.33
	10/25/2012	<1.0	<1.0	<1.0	<1.0	6.30	90.61
	01/08/2013	<1.0	<1.0	<1.0	<1.0	5.88	91.03
	04/18/2013	<1.0	<1.0	<1.0	<1.0	5.03	91.88
	07/16/2013	<1.0	<1.0	<1.0	<1.0	6.20	90.71
	10/03/2013	<1.0	<1.0	<1.0	<1.0	5.45	91.46
	11/18/2013	Surveyed - Not Sampled				5.53	91.44
	01/31/2014	<4.0	<4.0	<4.0	<4.0	5.25	91.66
	04/01/2014	<1.0	<1.0	<1.0	<1.0	5.20	91.77
	07/24/2014	<1.0	<1.0	<1.0	<1.0	4.06	92.91
	10/17/2014	<1.0	<1.0	<1.0	<1.0	4.87	92.10
	01/09/2015	<1.0	<1.0	<1.0	<1.0	NM	NA
	04/03/2015	<1.0	<1.0	<1.0	<1.0	4.69	91.82
	07/15/2015	<1.0	<1.0	<1.0	<1.0	4.49	92.02
	10/15/2015	<1.0	<1.0	<1.0	<1.0	5.34	91.17
	01/05/2016	<1.0	<1.0	<1.0	<1.0	4.42	92.09
	04/13/2016	<1.0	<1.0	<1.0	<1.0	3.76	92.75
	05/04/2016	Surveyed - Not Sampled				2.74	93.78
<hr/>							
MW03	02/25/2009	<1.0	<1.0	<1.0	<1.0	5.55	91.86
	04/24/2009	<1.0	<1.0	<1.0	<1.0	3.84	93.57



TABLE 2 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
KARICH HELEN E UNIT #2/HERMAN 32-9K/HERMAN 32-10K
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)	
MW03	07/13/2009	<1.0	<1.0	<1.0	<1.0	4.10	93.31	
	10/13/2009	<1.0	<1.0	<1.0	<1.0	6.15	91.26	
	01/22/2010	<1.0	<1.0	<1.0	<1.0	5.51	94.60	
	04/01/2010	<1.0	<1.0	<1.0	<1.0	4.60	92.81	
	07/22/2010	<1.0	<1.0	<1.0	<1.0	3.75	93.66	
	10/07/2010	<1.0	<1.0	<1.0	<1.0	5.19	92.22	
	01/20/2011	<1.0	<1.0	<1.0	<1.0	5.54	91.87	
	04/07/2011	<1.0	<1.0	<1.0	<1.0	5.45	91.96	
	07/18/2011	Removed from Monitoring Program					NM	NA
	11/18/2013	Surveyed - Not Sampled					5.88	91.59
	05/04/2016	Surveyed - Not Sampled					3.02	94.39
MW04	04/24/2009	<1.0	<1.0	<1.0	<1.0	3.58	NA	
	07/13/2009	<1.0	<1.0	<1.0	<1.0	4.33	NA	
	10/13/2009	<1.0	<1.0	<1.0	<1.0	5.21	NA	
	01/22/2010	<1.0	<1.0	<1.0	<1.0	4.45	NA	
	04/01/2010	<1.0	<1.0	<1.0	<1.0	3.61	NA	
	07/22/2010	<1.0	<1.0	<1.0	<1.0	2.98	NA	
	10/07/2010	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA	
	01/20/2011	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA	
	04/07/2011	<1.0	<1.0	<1.0	<1.0	4.62	NA	
07/18/2011	Removed from Monitoring Program					NM	NA	
MW05	04/24/2009	<1.0	<1.0	<1.0	<1.0	5.29	NA	
	07/13/2009	<1.0	<1.0	<1.0	<1.0	3.73	NA	
	10/13/2009	1.4	<1.0	<1.0	<1.0	5.65	NA	
	01/22/2010	8.5	<1.0	<1.0	<1.0	5.03	NA	
	04/01/2010	1.8	<1.0	<1.0	<1.0	4.20	NA	
	07/22/2010	<1.0	<1.0	<1.0	<1.0	3.61	NA	
	10/07/2010	<1.0	<1.0	<1.0	<1.0	4.85	NA	
	01/20/2011	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA	
	04/07/2011	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA	
	07/18/2011	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA	
	10/07/2011	12	<1.0	<1.0	<1.0	6.11	NA	
	01/18/2012	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA	



TABLE 2 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
KARICH HELEN E UNIT #2/HERMAN 32-9K/HERMAN 32-10K
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)	
MW05	04/13/2012	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA	
	07/12/2012	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA	
	11/01/2012	<1.0	<1.0	<1.0	<1.0	6.65	NA	
	01/08/2013	<1.0	<1.0	<1.0	<1.0	5.44	NA	
	04/18/2013	<1.0	<1.0	<1.0	<1.0	4.66	NA	
	07/16/2013	Damaged - Not Sampled					Damaged	NA
MW05 destroyed as of 10/3/2013								
MW05R	04/03/2015	<1.0	<1.0	<1.0	<1.0	6.91	91.65	
	07/15/2015	<1.0	<1.0	<1.0	<1.0	6.70	91.86	
	10/15/2015	<1.0	<1.0	<1.0	<1.0	7.59	90.97	
	01/05/2016	<1.0	<1.0	<1.0	<1.0	6.58	91.98	
	04/13/2016	<1.0	<1.0	<1.0	<1.0	5.97	92.59	
	05/04/2016	Surveyed - Not Sampled					2.32	93.58
MW06	07/22/2010	190	<1.0	240	5.8	4.24	93.14	
	10/07/2010	170	<1.0	200	<1.0	5.37	91.92	
	01/20/2011	30	<1.0	90	<1.0	5.83	91.46	
	04/07/2011	56	<1.0	290	<1.0	5.77	91.52	
	07/18/2011	110	<1.0	140	<1.0	4.76	92.53	
	10/07/2011	19	<1.0	15	<1.0	6.12	91.17	
	01/18/2012	6.7	<1.0	9.8	<1.0	6.01	91.28	
	04/13/2012	3.0	<1.0	<1.0	<1.0	5.20	92.09	
	07/12/2012	29	<1.0	21	<1.0	5.59	91.70	
	10/25/2012	8.0	<1.0	<1.0	<1.0	6.83	90.46	
	01/08/2013	5.1	<1.0	<1.0	<1.0	6.42	90.87	
	04/18/2013	5.3	<1.0	1.0	<1.0	5.66	91.63	
	07/16/2013	9.6	<1.0	<1.0	<1.0	6.39	90.90	
	10/03/2013	1.2	<1.0	<1.0	<1.0	5.78	91.51	
	11/18/2013	Surveyed - Not Sampled					5.86	91.37
	01/31/2014	<4.0	<4.0	<4.0	<4.0	5.71	91.58	
	04/01/2014	4.9	<1.0	5.8	<1.0	5.42	91.81	
	07/24/2014	5.4	<1.0	<1.0	<1.0	4.57	92.66	
	10/17/2014	3.4	<1.0	1.4	<1.0	5.22	92.01	
	01/09/2015	2.4	<1.0	3.2	<1.0	NM	NA	
04/03/2015	5.4	<1.0	13.7	<1.0	4.95	92.07		



TABLE 2 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
KARICH HELEN E UNIT #2/HERMAN 32-9K/HERMAN 32-10K
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW06	07/15/2015	2.6	<1.0	2.8	<1.0	4.49	92.53
	10/15/2015	1.0	<1.0	<1.0	<1.0	5.81	91.21
	01/05/2016	3.0	<1.0	4.0	<1.0	4.89	92.13
	04/13/2016	4.0	<1.0	3.8	<1.0	4.01	93.01
	05/04/2016	Surveyed - Not Sampled				2.92	94.01
MW07	07/22/2010	46	<1.0	<1.0	<1.0	3.74	NA
	10/07/2010	5.3	<1.0	<1.0	<1.0	4.96	NA
	01/20/2011	<1.0	<1.0	1.2	<1.0	PVC Blocked	NA
	04/07/2011	3.4	<1.0	<1.0	<1.0	PVC Blocked	NA
	07/18/2011	2.0	<1.0	2.9	5.8	PVC Blocked	NA
	10/07/2011	<1.0	<1.0	<1.0	<1.0	4.71	NA
	01/18/2012	<1.0	<1.0	<1.0	<1.0	PVC Blocked	NA
	04/13/2012	18	<1.0	32	31	PVC Blocked	NA
	07/12/2012	<1.0	<1.0	<1.0	<1.0	3.50	NA
	10/25/2012	Damaged - Not Sampled				NM	NA
MW07 destroyed as of 1/7/2013							
MW07R	04/03/2015	<1.0	<1.0	<1.0	<1.0	7.11	92.07
	07/15/2015	<1.0	<1.0	<1.0	<1.0	6.80	92.38
	10/15/2015	<1.0	<1.0	<1.0	<1.0	7.71	91.47
	01/05/2016	<1.0	<1.0	<1.0	<1.0	6.78	92.40
	04/13/2016	<1.0	<1.0	<1.0	<1.0	6.13	93.05
05/04/2016	Surveyed - Not Sampled				2.73	94.01	
MW08	11/29/2010	<1.0	<1.0	<1.0	<1.0	5.11	91.09
	01/20/2011	<1.0	<1.0	<1.0	<1.0	5.30	90.90
	04/07/2011	<1.0	<1.0	<1.0	<1.0	5.28	90.92
	07/18/2011	<1.0	<1.0	<1.0	<1.0	4.24	91.96
	10/07/2011	<1.0	<1.0	<1.0	<1.0	6.32	89.88
	01/18/2012	<1.0	<1.0	<1.0	<1.0	5.37	90.83
	04/13/2012	<1.0	<1.0	<1.0	<1.0	4.81	91.39
	07/12/2012	<1.0	<1.0	<1.0	<1.0	5.09	91.11
	10/25/2012	<1.0	<1.0	<1.0	<1.0	6.32	89.88
	01/08/2013	<1.0	<1.0	<1.0	<1.0	5.89	90.31
	04/18/2013	<1.0	<1.0	<1.0	<1.0	5.15	91.05



TABLE 2 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
KARICH HELEN E UNIT #2/HERMAN 32-9K/HERMAN 32-10K
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW08	07/16/2013	<1.0	<1.0	<1.0	<1.0	6.20	90.00
	10/03/2013	<1.0	<1.0	<1.0	<1.0	6.25	89.95
	11/18/2013	Surveyed - Not Sampled				5.24	90.88
	01/31/2014	<4.0	<4.0	<4.0	<4.0	5.04	91.16
	04/01/2014	<1.0	<1.0	<1.0	<1.0	4.84	91.28
	07/24/2014	<1.0	<1.0	<1.0	<1.0	4.03	92.09
	10/17/2014	<1.0	<1.0	<1.0	<1.0	4.68	91.44
	01/09/2015	<1.0	<1.0	<1.0	<1.0	NM	NA
	04/03/2015	<1.0	<1.0	<1.0	<1.0	4.47	91.64
	07/15/2015	<1.0	<1.0	<1.0	<1.0	4.34	91.77
	10/15/2015	<1.0	<1.0	<1.0	<1.0	5.07	91.04
	01/05/2016	<1.0	<1.0	<1.0	<1.0	4.16	91.95
	04/13/2016	<1.0	<1.0	<1.0	<1.0	3.53	92.58
	05/04/2016	Surveyed - Not Sampled				2.69	93.57
MW09	11/29/2010	<1.0	<1.0	<1.0	<1.0	6.14	NA
	01/20/2011	<1.0	<1.0	<1.0	<1.0	6.50	NA
	04/07/2011	<1.0	<1.0	<1.0	<1.0	6.39	NA
	07/18/2011	<1.0	<1.0	<1.0	<1.0	5.36	NA
	10/07/2011	<1.0	<1.0	<1.0	<1.0	7.28	NA
	01/18/2012	<1.0	<1.0	<1.0	<1.0	6.67	NA
	04/13/2012	<1.0	<1.0	<1.0	<1.0	6.25	NA
	07/12/2012	<1.0	<1.0	<1.0	<1.0	6.37	NA
	10/25/2012	<1.0	<1.0	<1.0	<1.0	6.45	NA
	01/08/2013	<1.0	<1.0	<1.0	<1.0	6.64	NA
	04/18/2013	<1.0	<1.0	<1.0	<1.0	5.95	NA
	07/16/2013	Damaged - Not Sampled				Damaged	NA
MW09 destroyed as of 10/3/2013							
MW09R	04/03/2015	<1.0	<1.0	<1.0	<1.0	8.01	91.97
	07/15/2015	<1.0	<1.0	<1.0	<1.0	7.63	92.35
	10/15/2015	<1.0	<1.0	<1.0	<1.0	8.72	91.26
	01/05/2016	<1.0	<1.0	<1.0	<1.0	7.87	92.11
	04/13/2016	<1.0	<1.0	<1.0	<1.0	6.96	93.02
	05/04/2016	Surveyed - Not Sampled				3.49	93.88



TABLE 2 (Continued)
GROUNDWATER ANALYTICAL AND FIELD RESULTS
KARICH HELEN E UNIT #2/HERMAN 32-9K/HERMAN 32-10K
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

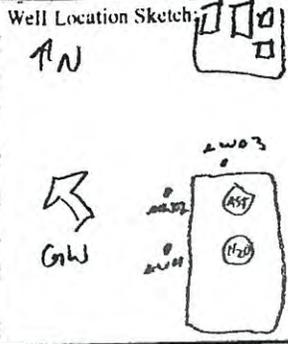
Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth Water/ (Product Thickness) (ft bgs)	Relative GW Elev. (ft)
MW10	11/29/2010	<1.0	<1.0	<1.0	<1.0	6.75	NA
	01/20/2011	<1.0	<1.0	<1.0	<1.0	7.00	NA
	04/07/2011	<1.0	<1.0	<1.0	<1.0	6.98	NA
	07/18/2011	<1.0	<1.0	<1.0	<1.0	6.04	NA
	10/07/2011	<1.0	<1.0	<1.0	<1.0	7.50	NA
	01/18/2012	<1.0	<1.0	<1.0	<1.0	7.10	NA
	04/13/2012	<1.0	<1.0	<1.0	<1.0	6.15	NA
	07/12/2012	<1.0	<1.0	<1.0	<1.0	6.80	NA
	10/25/2012	<1.0	<1.0	<1.0	<1.0	7.01	NA
	01/08/2013	<1.0	<1.0	<1.0	<1.0	7.16	NA
	04/18/2013	<1.0	<1.0	<1.0	<1.0	6.56	NA
	07/16/2013	Damaged - Not Sampled					Damaged
MW10 destroyed as of 10/3/2013							
MW10R	04/03/2015	<1.0	<1.0	<1.0	<1.0	8.50	92.25
	07/15/2015	<1.0	<1.0	<1.0	<1.0	7.91	92.84
	10/15/2015	1.4	1.5	<1.0	<1.0	9.28	91.47
	01/05/2016	<1.0	<1.0	<1.0	<1.0	8.39	92.36
	04/13/2016	<1.0	<1.0	<1.0	<1.0	7.40	93.35
	05/04/2016	Surveyed - Not Sampled					3.96
CGWQS		5	1000	700	1400		

Notes: CGWQS - Colorado Groundwater Quality Standards
Elev. - elevation
ft bgs - feet below ground surface
GW - groundwater
NA - not analyzed/not available

NM - not measured
µg/L - micrograms per liter
< - less than laboratory reporting limit
Bold indicates result exceeds allowable level
Excavation groundwater depth is approximate



APPENDIX A
SOIL BORING LOGS



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 Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <i>MW 07</i>	Project: <i>Karich Helen E unit #2</i>
Date: <i>2-20-09</i>	Project Number: <i>EMG09460</i>
Logged By: <i>NO</i>	Drilled By: <i>Prilla</i>

Elevation:	Detector:	Drilling Method: Direct push	Sampling Method: Continuous
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Gravel Pack: 10-20 Silica sand	Seal: Bentonite chips	Grout: <i>N/A</i>
--	---------------------------------	----------------------

Casing Type: PVC	Diameter: 1"	Length: <i>2'</i>	Hole Diameter: 2.5"	Depth to Liquid:
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Screen Type: PVC	Slot: 0.010	Diameter: 1"	Length: <i>16'</i>	Total Depth: <i>12'</i>	Depth to Water: <i>6'</i>
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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
<i>Low</i>	<i>dry</i>		<i>No</i>		2				<i>0-2 sand, f-m brown, dry, no odor</i>	
	<i>moist</i>	<i>0.5</i>			4				<i>2-6 AA, moist</i>	
		<i>2.5</i>			6				<i>6-7 AA, wet</i>	
<i>MED</i>	<i>wet</i>		<i>Yes</i>		8				<i>7-9 AA, black staining odor</i>	
					10				<i>9-10 clay, some sand wet, black staining odor</i>	
	<i>moist</i>		<i>NO</i>		12				<i>10-12 AA, no odor, no stain</i>	
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

See MW01



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Borina/Well Number: KW302	Project: Karich Helen E Unit #2
Date: 12-20-09	Project Number: 09460
Logged By: MO	Drilled By: Drill PCO

Elevation: _____	Detector: _____	Drilling Method: Direct push	Sampling Method: Continuous
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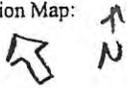
Gravel Pack: 10-20 Silica sand	1-12' bgs	Seal: Bentonite chips	0'-1' bgs	Grout: N/A
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Casing Type: PVC	Diameter: 1"	Length: 21	Hole Diameter: 2.5"	Depth to Liquid:
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Screen Type: PVC	Slot: 0.010	Diameter: 1"	Length: 10	Total Depth: 12'	Depth to Water: 5.5'
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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				0-1.5 Sand F-A, dry, no odor, brown	
LOW	dry				2		3'		1.5-3' AA, some clay	
	moist	2.9	NO		4				3-5.5 Sand F-m, moist no odor, brown	
		3.9			6		3'		5.5-8' sand m-c, wet, no odor, brown	
	wet				8				8'-10' clay, wet, no odor, gray-brown	
MED					10		3'		10-12 AA, moist	
	moist	4.5			12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Location Map:



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW04	Project: KARICH HELEN UNIT #2
Date: 3/19/09	Project Number: KME09460
Logged By: J. SOLOMON	Drilled By: DRILL PRO

Elevation:	Detector: MINIRAE 2000 PIP	Drilling Method: DIRECT PUSH	Sampling Method: CONTINUOUS
Gravel Pack: 10-20 SILICA SAND	Seal: BENTONITE CHIP	Grout: NA	
Casing Type: SCH 40 PVC	Diameter: 1" Length: 2'	Hole Diameter: 2"	Depth to Liquid: -
Screen Type: SCH 40 PVC Slot: 0.01	Diameter: 1" Length: 10'	Total Depth: 12'	Depth to Water: 2.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0				
LOW	MOIST		NO STAIN		2	2.5'		SAND, FINE TO MED, BRWN, MOIST NO STAIN / ODR	
LOW	SAT	0.3			4			SAND, FINE, LITTLE TO NO FINES, SAT @ 4.5-5'; NO STAIN / ODR	
		0.0			8	2.5'			
MED	MOIST				10	4'		SILTS - CLAY, MED PLAST, MOIST, FAT CLAY, NO STAIN / ODR	
					12				
					14			TD = 12'	
					16				
					18				
					20				
					22				
					24				
					26				
					28				
					30				

Location Map:

SEE MW84 MAP



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW05	Project: KARICH HELEN UNIT #2		
Date: 3/15/09	Project Number: KM609460		
Logged By: J. SOLOMON	Drilled By: DRILL PRO		
Elevation:	Detector: MINI RAE 2000 PID	Drilling Method: DIRECT PUSH	Sampling Method: CONTINUOUS
Gravel Pack:	Seal: BENTONITE CHIP	Grout: NA	
Casing Type:	Diameter: 1" Length: 2'	Hole Diameter: 2"	Depth to Liquid:
Screen Type: SCH 40 PVC Slot: 0.01	Diameter: 1" Length: 10'	Total Depth: 12'	Depth to Water: ~5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0				
LOW	MOIST				2	2'		CLAYS - SAND, MOIST, BROWN, NO STAIN / ODOR, SLIGHT PLAST	
LOW	WET	0.6			4				
		0.0			6	2.5'		POORLY GRADED SAND, MED GRAIN, SAT @ 4.5-5.0', SLIGHT STAIN W/ MILD HC ODOR 7.5-8.0'	
					8				
MED	VERY MOIST				10	4'		SILTS - CLAY, VERY MOIST, MED. HIGH PLAST, FAT CLAY, NO STAIN / ODOR	
					12				
					14				
					16				
					18				
					20				
					22				
					24				
					26				
					28				
					30				

Well Location Sketch:



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: **MW06** Project: **Karich Helen E Unit #2**

Date: **5/5/2010** Project # **KMG09460**

Logged By: **John Brown - LTE** Drilled By: **Terrence Apodaca (DP)**

Elevation: **NM** Detector: **MiniRAE-2000 (10.6)** Drilling Method: **Direct Push** Sampling Method: **4' MacroCore**

Gravel Pack: **10-20 Sand / 1-11.7' BGS** Seal: **Not Applicable** Grout: **Bentonite / 0-1' BGS**

Casing Type: **Schedule 40 PVC** Diameter: **1"** Length: **5'** Hole Diameter: **2"** Depth to Water: **4.08' BGS**

Screen Type: **Sch. 40 PVC** Slot: **0.010"** Diameter: **1"** Length: **10'** Total Depth: **11.7'**

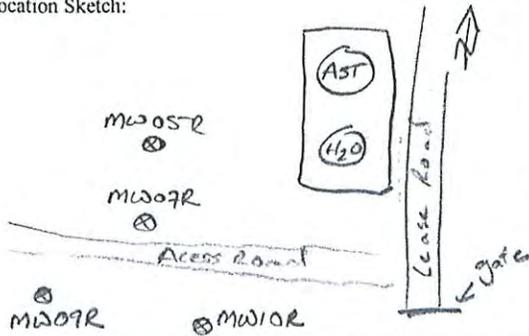
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample Interval	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram	
					0						
	Moist	ND ND ND ND ND ND -- -- --	NONE		1 2 3	36"		SM CL	0-0.5' Brown Fine Silty-Sand, Moist, Loose, No Staining, No Odor 0.5-2' Brown Silty-Clay, Moist, Stiff, No Staining, No Odor	<p>TD = 11.7' BGS</p>	
	Wet	ND ND ND 119 526 864 -- --	BLACK		4 5 6 7	33"		SP	2-3' Brown Fine Sand, Trace Silt, Moist, Medium-Dense, No Staining, No Odor 4-5.2' Same As Above, <u>Wet</u> , No Staining, No Odor 5.2-6.9' Black-Stained Fine Sand, Wet, Loose, Moderate Odor		
	Moist	70 18 14 40 3.2 5.1 1.2 5.3	NONE		8 9 10 11	48"		CL	8-8.5' Same As Above 8.5-12' Brown Silty-Clay, Stiff, Moist, No Staining, Slight Odor from 8.5-9' Only, Then No Odor		
Bottom of Boring at 12' BGS											
					12						
					13						
					14						
					15						
					16						
					17						
					18						
					19						
					20						

Not Applicable - Direct Push

None Collected

- = Well Screen
- = Sodium Bentonite Grout
- = 10-20 Silica Sand Pack
- BGS** = Below Ground Surface

Well Location Sketch:



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

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW05R	Project: Karich Helen E Unit #2
Date: 1/22/2015	Project Number: KMG09460
Logged By: Kris Shepherd	Drilled By: Drill Pro

Elevation:	Detector: PID	Drilling Method: Direct Push	Sampling Method: Continuous
------------	------------------	---------------------------------	--------------------------------

Gravel Pack: Silica Sand	Seal: Bentonite	Grout: -
-----------------------------	--------------------	-------------

Casing Type: PVC	Diameter: 1"	Length: 5'	Hole Diameter: 3"	Depth to Liquid: -
---------------------	-----------------	---------------	----------------------	-----------------------

Screen Type: PVC	Slot: 0.01	Diameter: 1"	Length: 10'	Total Depth: 12'	Depth to Water: 6'
---------------------	---------------	-----------------	----------------	---------------------	-----------------------

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
					2				Hydrovac, Not Logged	
					4					
					6					
	wet ↓ moist ↓	0.0 0.0 0.0	none ↓		8	2	2	SM	6' → 10.5' Silty fine grain to medium grain sand, brown no odor, no stain, wet	
					10	4	4	CH		
					12				10.5' → 12' clay, brown, high cohesion, high plasticity, no stain, no odor, moist	
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

✳ Completed As PVC Stick up

Well Location Sketch:



Compliance · Engineering · Remediation

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <i>MW09R</i>	Project: Karich Helen E Unit #2
Date: <i>1/22/2015</i>	Project Number: KMG09460
Logged By: <i>Kris Shepherd</i>	Drilled By: Drill Pro

see MW05R Log

Elevation:	Detector: PID	Drilling Method: Direct Push	Sampling Method: Continuous
------------	------------------	---------------------------------	--------------------------------

Gravel Pack: Silica Sand	Seal: Bentonite	Grout: -
-----------------------------	--------------------	-------------

Casing Type: PVC	Diameter: 1"	Length: 5'	Hole Diameter: 3"	Depth to Liquid: -
---------------------	-----------------	---------------	----------------------	-----------------------

Screen Type: PVC	Slot: 0.01	Diameter: 1"	Length: 10'	Total Depth: 12'	Depth to Water: 6'
---------------------	---------------	-----------------	----------------	---------------------	-----------------------

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
					2				Hydrovac, Not Logged	
					4					
					6					
	<i>wet</i>	<i>43.1</i>	<i>Black</i>		<i>8.2</i>	<i>2</i>	<i>2</i>	<i>SM</i>	<i>6' -> 10' Silty fine grained to medium grain sand, black stain, odor, wet</i>	
	<i>moist</i>	<i>9.7</i>	<i>none</i>		<i>10</i>	<i>4</i>	<i>4</i>	<i>CH</i>		
		<i>0.2</i>			<i>12</i>				<i>10' -> 12' Clay, brown, High plasticity, high cohesion, no odor, no stain</i>	
					<i>14</i>				<i>- Some gray mottling from 10.5' -> 12'</i>	
					<i>16</i>					
					<i>18</i>					
					<i>20</i>					
					<i>22</i>					
					<i>24</i>				<i>Completed as PVC stick up.</i>	
					<i>26</i>					
					<i>28</i>					
					<i>30</i>					
					<i>32</i>					
					<i>34</i>					
					<i>36</i>					
					<i>38</i>					
					<i>40</i>					

Well Location Sketch:



Compliance · Engineering · Remediation

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <i>MW092</i>	Project: Karich Helen E Unit #2
Date: <i>1/22/2015</i>	Project Number: KMG09460
Logged By: <i>Kris Shepherd</i>	Drilled By: Drill Pro

See MW05R Log

Elevation:	Detector: PID	Drilling Method: Direct Push	Sampling Method: Continuous
------------	------------------	---------------------------------	--------------------------------

Gravel Pack: Silica Sand	Seal: Bentonite	Grout: -
-----------------------------	--------------------	-------------

Casing Type: PVC	Diameter: 1"	Length: 5'	Hole Diameter: 3"	Depth to Liquid: -
---------------------	-----------------	---------------	----------------------	-----------------------

Screen Type: PVC	Slot: 0.01	Diameter: 1"	Length: 10'	Total Depth: 12'	Depth to Water: 6'
---------------------	---------------	-----------------	----------------	---------------------	-----------------------

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
					2				Hydrovac, Not Logged	
					4					
					6					
	wet ↓ moist	0.0 0.0 0.0	none ↓ gray		8	2	2	SM	6' → 10' Silty fine grained to medium grain sand, brown, wet, no odor, no stain	
					10	4	3	CH	10' → 12' clay, gray, high plasticity, high cohesion, no odor, moist.	
					12					
					14					
					16					
					18					
					20					
					22				★ Completed as A PVC Stick up	
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



Compliance • Engineering • Remediation

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <i>MW10R</i>	Project: Karich Helen E Unit #2
Date: <i>1/22/2015</i>	Project Number: KMG09460
Logged By: <i>Kris Shepherd</i>	Drilled By: Drill Pro

Elevation:	Detector: PID	Drilling Method: Direct Push	Sampling Method: Continuous
------------	------------------	---------------------------------	--------------------------------

Gravel Pack: Silica Sand	Seal: Bentonite	Grout: -
-----------------------------	--------------------	-------------

Casing Type: PVC	Diameter: 1"	Length: <i>5'</i>	Hole Diameter: 3"	Depth to Liquid: -
---------------------	-----------------	----------------------	----------------------	-----------------------

Screen Type: PVC	Slot: 0.01	Diameter: 1"	Length: <i>10'</i>	Total Depth: <i>12'</i>	Depth to Water: <i>~6'</i>
---------------------	---------------	-----------------	-----------------------	----------------------------	-------------------------------

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
					2				Hydrovac, Not Logged	
					4					
					6					
	<i>wet</i>	<i>0.0</i>	<i>none</i>		8	<i>2</i>		<i>SW</i>	<i>6' → 9' v. fine grain to medium grain sand, brown, no odor, no stain, wet.</i>	
	<i>moist</i>	<i>0.3</i>	<i>gray</i>		10	<i>4</i>		<i>CH</i>		
	<i>↓</i>	<i>0.0</i>	<i>↓</i>		12				<i>9' → 12' Clay, gray, mod. cohesion, high plasticity, no odor, moist.</i>	
					14					
					16					
					18					
					20					
					22				<i>* Completed as PVC</i>	
					24				<i>stick up.</i>	
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

APPENDIX B
LABORATORY ANALYTICAL REPORTS

July 20, 2015

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada CO 80003

**Project Name - KMG - Helen Karich UT #2, Herman Project Number - KMG09460
32-10K**

Attached are your analytical results for KMG - Helen Karich UT #2, Herman 32-10K received by Origins Laboratory, Inc. July 15, 2015. This project is associated with Origins project number X507206-01.

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



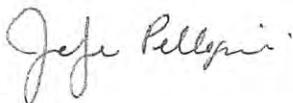
LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG09460
Project: KMG - Helen Karich UT #2, Herman
32-10K

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X507206-01	Water	July 15, 2015 16:00	07/15/2015 17:42
MW02	X507206-02	Water	July 15, 2015 16:05	07/15/2015 17:42
MW05R	X507206-03	Water	July 15, 2015 16:10	07/15/2015 17:42
MW06	X507206-04	Water	July 15, 2015 16:15	07/15/2015 17:42
MW07R	X507206-05	Water	July 15, 2015 16:20	07/15/2015 17:42
MW08	X507206-06	Water	July 15, 2015 16:25	07/15/2015 17:42
MW09R	X507206-07	Water	July 15, 2015 16:30	07/15/2015 17:42
MW10R	X507206-08	Water	July 15, 2015 16:35	07/15/2015 17:42

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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

ORIGINS
 LABORATORY, INC

X507206

1725 Elk Place, Denver, CO 80211
 Laboratory # - 303.433.1322

Client:	Project:	Project Manager:	Project Number:					
LT Environmental, Inc.	KMG - Helen Karich UT #2, Herman 32-10K	John Cocroft	KMG09460					
Number	Sample Identification	Matrix	Sample Date	Sample Time	Sampled By	Container	Qty	Analyses
01-001	MW01	Water	7/15/15	16:00	JE	01_40mL Amber VOA Vol - HCL	3	BTEX by EPA 8260C
02-001	MW02	Water		16:05		01_40mL Amber VOA Vol - HCL	3	BTEX by EPA 8260C
03-001	MW05R	Water		16:10		01_40mL Amber VOA Vol - HCL	3	BTEX by EPA 8260C
04-001	MW06	Water		16:15		01_40mL Amber VOA Vol - HCL	3	BTEX by EPA 8260C
05-001	MW07R	Water		16:20		01_40mL Amber VOA Vol - HCL	3	BTEX by EPA 8260C
06-001	MW08	Water		16:25		01_40mL Amber VOA Vol - HCL	3	BTEX by EPA 8260C
07-001	MW09R	Water		16:30		01_40mL Amber VOA Vol - HCL	3	BTEX by EPA 8260C
08-001	MW10R	Water		16:35		01_40mL Amber VOA Vol - HCL	3	BTEX by EPA 8260C

Temperature on Receipt: 5.6
 Ice present? Yes No
 Turn Around Time: Same Day: 24-hr: 48-hr: Standard:
 Relinquished By: [Signature] Date / Time: 7/15/15 17:42
 Received By: [Signature] Date / Time: 7/15/15 17:42

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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS07206 Client: LTE
 Client Project ID: KMG - Helen Karich
 Checklist Completed by: Jen Pellegrini Shipped Via: HIP
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Date/time completed: 7/16/15 Airbill #: 214
 Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 Cooler Number/Temperature: 1 15.6 °C / _____ °C / _____ °C / _____ °C (Describe)
 Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
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 (> ¼ 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"/>			HCL
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.

Jen Pellegrini Reviewed by (Project Manager) 7/16/15 Date/Time Reviewed

Origins Laboratory, Inc.

Jen 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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW01
 7/15/2015 4:00:00PM

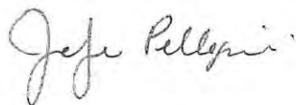
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
 X507206-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5G16018	07/16/2015	07/17/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	98.9 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.3 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.7 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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

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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW02

7/15/2015 4:05:00PM

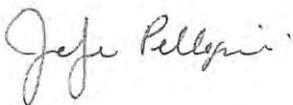
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X507206-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5G16018	07/16/2015	07/17/2015	
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	98.2 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW05R
 7/15/2015 4:10:00PM

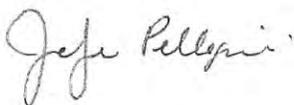
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X507206-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5G16018	07/16/2015	07/17/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.6 %	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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW06

7/15/2015 4:15:00PM

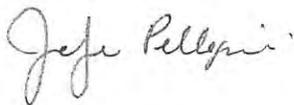
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X507206-04 (Water)

BTEX by EPA 8260C

Benzene	2.6	1.0	ug/L	1	5G16018	07/16/2015	07/17/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	2.8	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.0 %	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.

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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW07R

7/15/2015 4:20:00PM

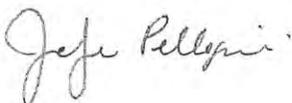
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X507206-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5G16018	07/16/2015	07/17/2015	
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	97.6 %	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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW08
 7/15/2015 4:25:00PM

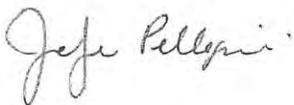
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X507206-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5G16018	07/16/2015	07/17/2015	
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	98.3 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW09R
7/15/2015 4:30:00PM

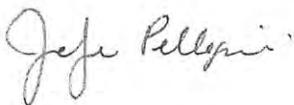
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X507206-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5G16018	07/16/2015	07/17/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	98.3 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.3 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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

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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW10R
 7/15/2015 4:35:00PM

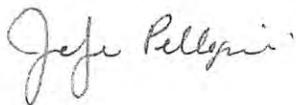
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X507206-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5G16018	07/16/2015	07/17/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	98.5 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.4 %	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.

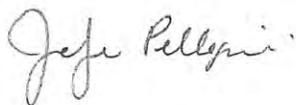
LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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 5G16018 - EPA 5030B (Water)										
Blank (5G16018-BLK1)										
Prepared: 07/16/2015 Analyzed: 07/17/2015										
Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		105	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		98.5	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.6	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.

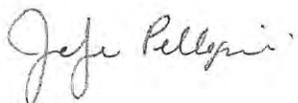
LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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 5G16018 - EPA 5030B (Water)										
LCS (5G16018-BS1)					Prepared: 07/16/2015 Analyzed: 07/17/2015					
Benzene	46.6	1.0	ug/L	50.0		93.2	75-126			
Toluene	41.9	1.0	"	50.0		83.7	78.7-126			
Ethylbenzene	46.7	1.0	"	50.0		93.4	80-130			
m,p-Xylene	89.1	2.0	"	100		89.1	77.2-133			
o-Xylene	43.2	1.0	"	50.0		86.4	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	87.3-113			
Surrogate: Toluene-d8	56		"	62.5		90.2	90.9-108			
Surrogate: 4-Bromofluorobenzene	56		"	62.5		89.5	88.6-111			

Origins Laboratory, Inc.



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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

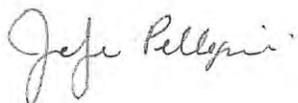
Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5G16018 - EPA 5030B (Water)

Matrix Spike (5G16018-MS1)	Source: X507206-01			Prepared: 07/16/2015 Analyzed: 07/17/2015						
Benzene	46.4	1.0	ug/L	50.0	ND	92.7	74-130			
Toluene	46.1	1.0	"	50.0	ND	92.1	73-131			
Ethylbenzene	48.2	1.0	"	50.0	ND	96.5	76-132			
m,p-Xylene	96.4	2.0	"	100	ND	96.4	69-139			
o-Xylene	49.7	1.0	"	50.0	ND	99.3	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.5	87.3-113			
Surrogate: Toluene-d8	64		"	62.5		102	90.9-108			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	88.6-111			

Origins Laboratory, Inc.



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

John Cocroft
 Project Number: KMG09460
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

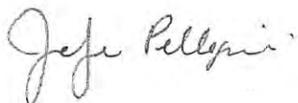
Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5G16018 - EPA 5030B (Water)

Matrix Spike Dup (5G16018-MSD1)	Source: X507206-01	Prepared: 07/16/2015	Analyzed: 07/17/2015						
Benzene	51.8	1.0	ug/L	50.0	ND	104	74-130	11.2	20
Toluene	52.0	1.0	"	50.0	ND	104	73-131	12.2	20
Ethylbenzene	54.1	1.0	"	50.0	ND	108	76-132	11.4	20
m,p-Xylene	108	2.0	"	100	ND	108	69-139	11.3	20
o-Xylene	51.8	1.0	"	50.0	ND	104	74-131	4.24	20
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.0	87.3-113		
Surrogate: Toluene-d8	61		"	62.5		96.8	90.9-108		
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.3	88.6-111		

Origins Laboratory, Inc.



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

John Cocroft
Project Number: KMG09460
Project: KMG - Helen Karich UT #2, Herman
32-10K

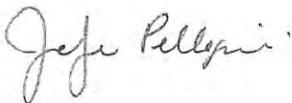
Notes and Definitions

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.

Jen Pellegrini For Noelle Doyle Mathis, President

October 21, 2015

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada CO 80003

**Project Name - KMG - Helen Karich UT #2, Herman Project Number - KMG09460/WO#880198
32-10K**

Attached are your analytical results for KMG - Helen Karich UT #2, Herman 32-10K received by Origins Laboratory, Inc. October 15, 2015. This project is associated with Origins project number X510183-01.

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



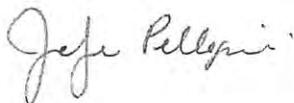
LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG09460/WO#88019814
Project: KMG - Helen Karich UT #2, Herman
32-10K

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X510183-01	Water	October 15, 2015 14:15	10/15/2015 16:40
MW02	X510183-02	Water	October 15, 2015 14:20	10/15/2015 16:40
MW05R	X510183-03	Water	October 15, 2015 14:25	10/15/2015 16:40
MW06	X510183-04	Water	October 15, 2015 14:50	10/15/2015 16:40
MW07R	X510183-05	Water	October 15, 2015 14:35	10/15/2015 16:40
MW08	X510183-06	Water	October 15, 2015 14:40	10/15/2015 16:40
MW09R	X510183-07	Water	October 15, 2015 14:45	10/15/2015 16:40
MW10R	X510183-08	Water	October 15, 2015 14:50	10/15/2015 16:40

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.

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

ORIGINS
 LABORATORY, INC

X51083

1725 Elk Place, Denver, CO 80211
 Laboratory # - 303.433.1322

Client:	Project:	Sample Identification	Matrix	Sample Date	Sample Time	Sampled By	Container	Qty	Analysis
LT Environmental, Inc.	KMG - Helen Karich UT #2, Herman 32-10K	MM01	Water	1/15/15	1415	CT/em	01_40mL Amber VOA Vol-HCL	3	BTEX by EPA 8266C
		MM02	Water		1420		01_40mL Amber VOA Vol-HCL	3	BTEX by EPA 8266C
		MM05R	Water		1425		01_40mL Amber VOA Vol-HCL	3	BTEX by EPA 8266C
		MM06	Water		1430		01_40mL Amber VOA Vol-HCL	3	BTEX by EPA 8266C
		MM07R	Water		1435		01_40mL Amber VOA Vol-HCL	3	BTEX by EPA 8266C
		MM08	Water		1440		01_40mL Amber VOA Vol-HCL	3	BTEX by EPA 8266C
		MM09R	Water		1445		01_40mL Amber VOA Vol-HCL	3	BTEX by EPA 8266C
		MM10R	Water		1450		01_40mL Amber VOA Vol-HCL	3	BTEX by EPA 8266C

Temperature on Receipt: 5.3
 Ice present? (Yes) No
 Turn Around Time:
 Same Day 24-hr 48-hr Standard

Relinquished By: Jeff Anke Date / Time: 1/15/15 16:40
 Received By: Date / Time:

Relinquished By: Date / Time: 1/15/15 10:50
 Received By: Date / Time:

Origins Laboratory, Inc.

Jeff Pellegrini

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

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS10183

Client: LTE

Client Project ID: Helen Karich UT #2

Checklist Completed by: Jeff Smith

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

Date/time completed: 10/16/15

Airbill #: NA

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

Cooler Number/Temperature: 1 / 5.3 °c 1 °c 1 °c (Describe) °c

Thermometer ID: T203

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		X		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		✓		
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 Na ₂ O ₂ +NaOH, ZnAc+NaOH)	X			HCL
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 10/19/15

Origins Laboratory, Inc.

Jeff Pellegrini

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

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW01

10/15/2015 2:15:00PM

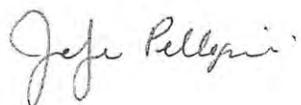
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X510183-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5J19006	10/19/2015	10/19/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.9 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.7 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW02

10/15/2015 2:20:00PM

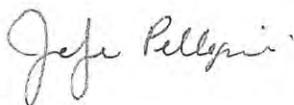
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X510183-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5J19006	10/19/2015	10/19/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	105 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.7 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW05R

10/15/2015 2:25:00PM

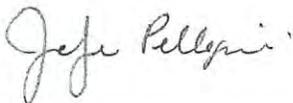
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X510183-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5J19006	10/19/2015	10/19/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.5 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW06

10/15/2015 2:50:00PM

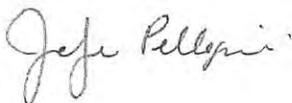
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X510183-04 (Water)

BTEX by EPA 8260C

Benzene	1.0	1.0	ug/L	1	5J19006	10/19/2015	10/19/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW07R

10/15/2015 2:35:00PM

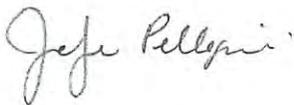
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X510183-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5J19006	10/19/2015	10/19/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW08

10/15/2015 2:40:00PM

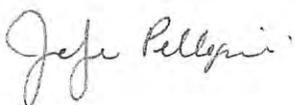
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X510183-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5J19006	10/19/2015	10/19/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.8 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW09R

10/15/2015 2:45:00PM

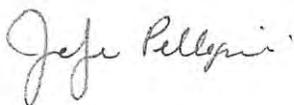
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X510183-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5J19006	10/19/2015	10/19/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	107 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.0 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW10R

10/15/2015 2:50:00PM

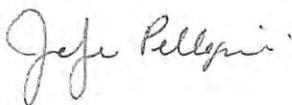
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X510183-08 (Water)

BTEX by EPA 8260C

Benzene	1.4	1.0	ug/L	1	5J19006	10/19/2015	10/19/2015	
Toluene	1.5	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	107 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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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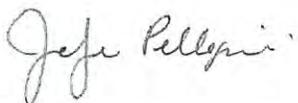
Batch 5J19006 - EPA 5030B (Water)

Blank (5J19006-BLK1)

Prepared: 10/19/2015 Analyzed: 10/19/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		103	84-121			
Surrogate: Toluene-d8	61		"	62.5		98.3	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.4	84-114			

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.

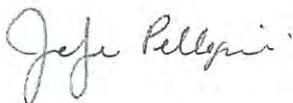
LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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 5J19006 - EPA 5030B (Water)										
LCS (5J19006-BS1)										
					Prepared: 10/19/2015 Analyzed: 10/19/2015					
Benzene	46.9	1.0	ug/L	50.0		93.8	75-126			
Toluene	46.9	1.0	"	50.0		93.8	78.7-126			
Ethylbenzene	52.0	1.0	"	50.0		104	80-130			
m,p-Xylene	107	2.0	"	100		107	77.2-133			
o-Xylene	44.3	1.0	"	50.0		88.7	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		102	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		102	84-114			

Origins Laboratory, Inc.



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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

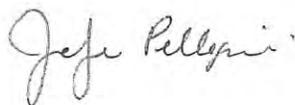
Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5J19006 - EPA 5030B (Water)

Matrix Spike (5J19006-MS1)	Source: X510183-01			Prepared: 10/19/2015 Analyzed: 10/19/2015						
Benzene	49.7	1.0	ug/L	50.0	ND	99.4	74-130			
Toluene	50.0	1.0	"	50.0	ND	100	73-131			
Ethylbenzene	56.2	1.0	"	50.0	ND	112	76-132			
m,p-Xylene	117	2.0	"	100	ND	117	69-139			
o-Xylene	48.3	1.0	"	50.0	ND	96.6	74-131			
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		105	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	84-114			

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

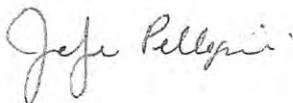
Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 5J19006 - EPA 5030B (Water)

Matrix Spike Dup (5J19006-MSD1)	Source: X510183-01			Prepared: 10/19/2015 Analyzed: 10/19/2015						
Benzene	51.3	1.0	ug/L	50.0	ND	103	74-130	3.11	20	
Toluene	51.2	1.0	"	50.0	ND	102	73-131	2.37	20	
Ethylbenzene	58.3	1.0	"	50.0	ND	117	76-132	3.65	20	
m,p-Xylene	120	2.0	"	100	ND	120	69-139	2.33	20	
o-Xylene	51.1	1.0	"	50.0	ND	102	74-131	5.75	20	
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.8	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

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

John Cocroft
Project Number: KMG09460/WO#88019814
Project: KMG - Helen Karich UT #2, Herman
32-10K

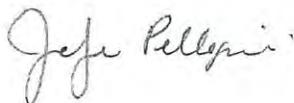
Notes and Definitions

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.

Jen Pellegrini For Noelle Doyle Mathis, President

January 11, 2016

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada CO 80003

**Project Name - KMG - Helen Karich UT #2, Herman Project Number - KMG09460/WO#880198
32-10K**

Attached are your analytical results for KMG - Helen Karich UT #2, Herman 32-10K received by Origins Laboratory, Inc. January 05, 2016. This project is associated with Origins project number X601030-01.

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



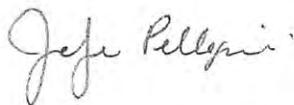
LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG09460/WO#88019814
Project: KMG - Helen Karich UT #2, Herman
32-10K

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X601030-01	Water	January 5, 2016 11:30	01/05/2016 16:10
MW02	X601030-02	Water	January 5, 2016 11:40	01/05/2016 16:10
MW05R	X601030-03	Water	January 5, 2016 11:50	01/05/2016 16:10
MW06	X601030-04	Water	January 5, 2016 12:00	01/05/2016 16:10
MW07R	X601030-05	Water	January 5, 2016 12:10	01/05/2016 16:10
MW08	X601030-06	Water	January 5, 2016 12:20	01/05/2016 16:10
MW09R	X601030-07	Water	January 5, 2016 12:30	01/05/2016 16:10
MW10R	X601030-08	Water	January 5, 2016 12:40	01/05/2016 16:10

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman 32-10K

ORIGINS
 LABORATORY, INC

X601030

1725 Elk Place, Denver, CO 80211
 Laboratory # - 303.433.1322

AVE PAUL MURKIN

Client:	Project:	Project Manager:	Project Number:	Analysis				
LT Environmental, Inc.	KMG - Helen Karich UT #2, Herman 32-10K	John Cocroft	KMG09460/WO#88019814					
Number	Sample Identification	Matrix	Sample Date	Sample Time	Sampled By	Container	Qty	Analysis
01-001	MW01	Water	11/27/16	11:30	JC	02, 40ml Amber VOA Vol - HCL	3	BTEX by EPA 8266C
02-001	MW02	Water		11:40		02, 40ml Amber VOA Vol - HCL	3	BTEX by EPA 8266C
03-001	MW05R	Water		11:50		02, 40ml Amber VOA Vol - HCL	3	BTEX by EPA 8266C
04-001	MW06	Water		12:00		02, 40ml Amber VOA Vol - HCL	3	BTEX by EPA 8266C
05-001	MW07R	Water		12:10		02, 40ml Amber VOA Vol - HCL	3	BTEX by EPA 8266C
06-001	MW08	Water		12:20		02, 40ml Amber VOA Vol - HCL	3	BTEX by EPA 8266C
07-001	MW09R	Water		12:30		02, 40ml Amber VOA Vol - HCL	3	BTEX by EPA 8266C
08-001	MW10R	Water		12:40		02, 40ml Amber VOA Vol - HCL	3	BTEX by EPA 8266C

Temperature on Receipt: 4.2
 Ice present? Yes No
 Turn Around Time:
 Same Day: 24-hr 72-hr Standard
 48-hr

Relinquished By: *[Signature]* Date / Time: 11/16/16
 Relinquished By: *[Signature]* Date / Time: 11/16/16
 Received By: *[Signature]* Date / Time: 11/16/16
 Received By: *[Signature]* Date / Time: 11/16/16

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X601030

Client: LTE

Client Project ID: Helen Karich UT #2

Checklist Completed by: Jef Smith

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

Date/time completed: 1/5/16

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 4.2 °C 1 / °C 1 / °C (Describe)

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾² ?	<input checked="" type="checkbox"/>			
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⁾² ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾² ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾² ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾² ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾² ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾² ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾² ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ 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⁾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 HNO3, HCL, H2SO4) / (pH > 10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>			
Additional Comments (if any):				

⁽¹⁾²If 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: [Signature] (Project Manager)

Date/Time Reviewed: 01/06/16

Origins Laboratory, Inc.

Jef 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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW01
 1/5/2016 11:30:00AM

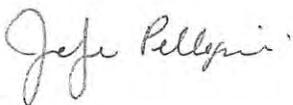
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X601030-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6A0603	01/06/2016	01/07/2016	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	93.8 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW02
 1/5/2016 11:40:00AM

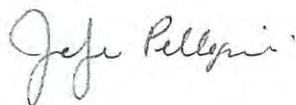
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X601030-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6A0603	01/06/2016	01/07/2016	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	105 %	84-121			"	"	"	
Surrogate: Toluene-d8	93.0 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	108 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW05R
 1/5/2016 11:50:00AM

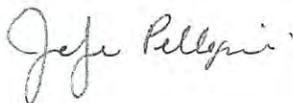
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X601030-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6A0603	01/06/2016	01/07/2016	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	91.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW06
1/5/2016 12:00:00PM

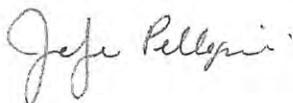
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X601030-04 (Water)

BTEX by EPA 8260C

Benzene	3.0	1.0	ug/L	1	B6A0603	01/06/2016	01/07/2016	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	4.0	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	106 %	84-121			"	"	"	
Surrogate: Toluene-d8	93.6 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW07R
 1/5/2016 12:10:00PM

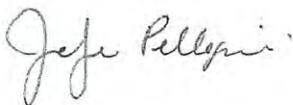
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X601030-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6A0603	01/06/2016	01/07/2016	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	95.3 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW08
 1/5/2016 12:20:00PM

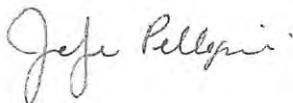
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X601030-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6A0603	01/06/2016	01/07/2016	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	95.4 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW09R
 1/5/2016 12:30:00PM

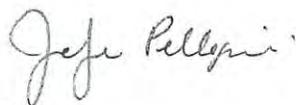
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X601030-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6A0603	01/06/2016	01/07/2016	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	94.7 %	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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW10R
 1/5/2016 12:40:00PM

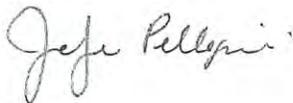
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X601030-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6A0603	01/06/2016	01/07/2016	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	93.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	84-114			"	"	"	

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.

Jen Pellegrini For Noelle Doyle Mathis, President

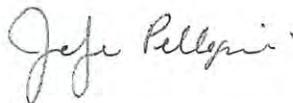
LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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 B6A0603 - EPA 5030B (Water)										
Blank (B6A0603-BLK1)										
Prepared: 01/06/2016 Analyzed: 01/07/2016										
Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		106	84-121			
Surrogate: Toluene-d8	58		"	62.5		93.4	85-115			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	84-114			

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.

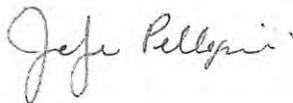
LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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 B6A0603 - EPA 5030B (Water)										
LCS (B6A0603-BS1)										
					Prepared: 01/06/2016 Analyzed: 01/07/2016					
Benzene	48.1	1.0	ug/L	50.0		96.2	73.3-129			
Toluene	46.7	1.0	"	50.0		93.3	76.2-123			
Ethylbenzene	47.8	1.0	"	50.0		95.5	73.6-130			
m,p-Xylene	95.0	2.0	"	100		95.0	76.1-126			
o-Xylene	46.7	1.0	"	50.0		93.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		101	84-121			
Surrogate: Toluene-d8	59		"	62.5		93.9	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	84-114			

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

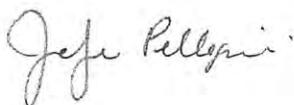
Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6A0603 - EPA 5030B (Water)

Matrix Spike (B6A0603-MS1)	Source: X601030-02			Prepared: 01/06/2016 Analyzed: 01/07/2016						
Benzene	43.8	1.0	ug/L	50.0	ND	87.6	74-130			
Toluene	42.6	1.0	"	50.0	ND	85.1	73-131			
Ethylbenzene	43.0	1.0	"	50.0	ND	86.0	76-132			
m,p-Xylene	86.5	2.0	"	100	ND	86.5	69-139			
o-Xylene	44.0	1.0	"	50.0	ND	87.9	74-131			
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		100	84-121			
Surrogate: Toluene-d8	59		"	62.5		94.3	85-115			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	84-114			

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.

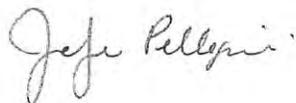
LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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 B6A0603 - EPA 5030B (Water)										
Matrix Spike Dup (B6A0603-MSD1)			Source: X601030-02			Prepared: 01/06/2016 Analyzed: 01/07/2016				
Benzene	44.7	1.0	ug/L	50.0	ND	89.3	74-130	1.94	20	
Toluene	42.4	1.0	"	50.0	ND	84.7	73-131	0.448	20	
Ethylbenzene	43.6	1.0	"	50.0	ND	87.2	76-132	1.48	20	
m,p-Xylene	87.4	2.0	"	100	ND	87.4	69-139	1.00	20	
o-Xylene	44.6	1.0	"	50.0	ND	89.2	74-131	1.40	20	
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		101	84-121			
Surrogate: Toluene-d8	58		"	62.5		93.5	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

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

John Cocroft
Project Number: KMG09460/WO#88019814
Project: KMG - Helen Karich UT #2, Herman
32-10K

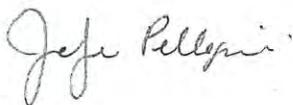
Notes and Definitions

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.

Jen Pellegrini For Noelle Doyle Mathis, President

April 20, 2016

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada CO 80003

**Project Name - KMG - Helen Karich UT #2, Herman Project Number - KMG09460/WO#880198
32-10K**

Attached are your analytical results for KMG - Helen Karich UT #2, Herman 32-10K received by Origins Laboratory, Inc. April 13, 2016. This project is associated with Origins project number X604153-01.

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



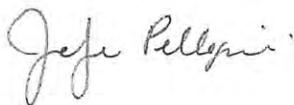
LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

John Cocroft
Project Number: KMG09460/WO#88019814
Project: KMG - Helen Karich UT #2, Herman
32-10K

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X604153-01	Water	April 13, 2016 13:00	04/13/2016 16:14
MW02	X604153-02	Water	April 13, 2016 13:05	04/13/2016 16:14
MW05R	X604153-03	Water	April 13, 2016 13:10	04/13/2016 16:14
MW06	X604153-04	Water	April 13, 2016 13:15	04/13/2016 16:14
MW07R	X604153-05	Water	April 13, 2016 13:20	04/13/2016 16:14
MW08	X604153-06	Water	April 13, 2016 13:25	04/13/2016 16:14
MW09R	X604153-07	Water	April 13, 2016 13:30	04/13/2016 16:14
MW10R	X604153-08	Water	April 13, 2016 13:35	04/13/2016 16:14

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman 32-10K

ORIGINS
 LABORATORY, INC
 X1004153

1725 Elk Place, Denver, CO 80211
 Laboratory # - 303.433.1322

Client:	Project:	Project Manager:	Project Number:
LT Environmental, Inc.	KMG - Helen Karich UT #2, Herman 32-10K	John Cocroft	KMG09460/WO#88019814

Number	Sample Identification	Matrix	Sample Date	Sample Time	Container	Qty	Analysis
01-001	MW001	Water	4/13/16	1300	02_40ml Amber VOA Vol - HCL	3	BTEX by EPA 8260C
02-001	MW002	Water		1305	02_40ml Amber VOA Vol - HCL	3	BTEX by EPA 8260C
03-001	MW003R	Water		1310	02_40ml Amber VOA Vol - HCL	3	BTEX by EPA 8260C
04-001	MW004	Water		1315	02_40ml Amber VOA Vol - HCL	3	BTEX by EPA 8260C
05-001	MW005R	Water		1320	02_40ml Amber VOA Vol - HCL	3	BTEX by EPA 8260C
06-001	MW006	Water		1325	02_40ml Amber VOA Vol - HCL	3	BTEX by EPA 8260C
07-001	MW007R	Water		1330	02_40ml Amber VOA Vol - HCL	3	BTEX by EPA 8260C
08-001	MW008	Water		1335	02_40ml Amber VOA Vol - HCL	3	BTEX by EPA 8260C

Relinquished By: *[Signature]* Date / Time: 4/13/16 16:14

Received By: *[Signature]* Date / Time: 4/13/16 16:14

Temperature on Receipt: 8.9

Ice present? Yes No

Turn Around Time: Same Day 24-hr 48-hr Standard

Origins Laboratory, Inc.

Jefe Pellegrini

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

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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

Sample Receipt Checklist

Origins Work Order: X604153 Client: LTE
 Client Project ID: KMG-Helen Karich

Checklist Completed by: Jeff Smith Shipped Via: 141D
 Date/time completed: 4/18/16 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: N/A

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

Cooler Number/Temperature: 1 / 8.9 °C _____ °C _____ °C

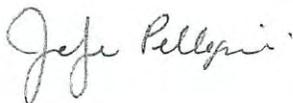
Thermometer ID: TOCB

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ¹¹² ?		X		Sampled Same Day
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact ¹¹² ?	X			
Was adequate sample volume provided ¹¹² ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present ¹¹² ?		X		
Is a chain-of-custody (COC) present and filled out completely ¹¹² ?	X			
Does the COC agree with the number and type of sample bottles received ¹¹² ?	X			
Do the sample IDs on the bottle labels match the COC ¹¹² ?	X			
Is the COC properly relinquished by the client with date and time recorded ¹¹² ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation and was it checked ¹¹² (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)	X			Full
Additional Comments (if any):				

¹¹²If 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.

John Cocroft Reviewed by (Project Manager) 4/18/16 Date/Time Reviewed

Origins Laboratory, Inc.



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

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW01
 4/13/2016 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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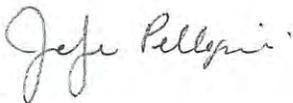
Origins Laboratory, Inc.
 X604153-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6D1808	04/18/2016	04/19/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	109 %	84-121			"	"	"	
Surrogate: Toluene-d8	98.9 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.0 %	84-114			"	"	"	

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW02
 4/13/2016 1:05:00PM

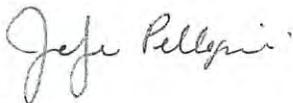
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X604153-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6D1808	04/18/2016	04/19/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.6 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.7 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW05R
 4/13/2016 1:10:00PM

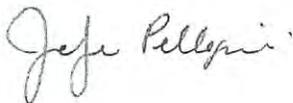
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X604153-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6D1808	04/18/2016	04/19/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	105 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.3 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.2 %	84-114			"	"	"	

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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW06
 4/13/2016 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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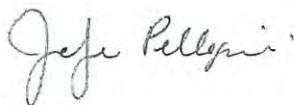
Origins Laboratory, Inc.
 X604153-04 (Water)

BTEX by EPA 8260C

Benzene	4.0	1.0	ug/L	1	B6D1808	04/18/2016	04/19/2016	
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	3.8	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.5 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW07R
 4/13/2016 1:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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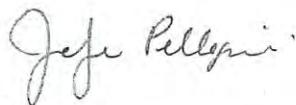
Origins Laboratory, Inc.
 X604153-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6D1808	04/18/2016	04/19/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.2 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.8 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW08
 4/13/2016 1:25:00PM

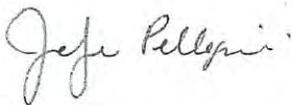
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X604153-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6D1808	04/18/2016	04/19/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	103 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.6 %	84-114			"	"	"	

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 Arvada CO 80003

John Cocroft
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 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW09R
 4/13/2016 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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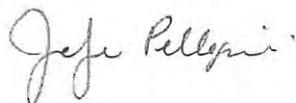
Origins Laboratory, Inc.
 X604153-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6D1808	04/18/2016	04/19/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	105 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.9 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.8 %	84-114			"	"	"	

Origins Laboratory, Inc.



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John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

MW10R
 4/13/2016 1:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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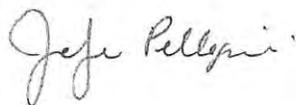
Origins Laboratory, Inc.
 X604153-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6D1808	04/18/2016	04/19/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	109 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.5 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.5 %	84-114			"	"	"	

Origins Laboratory, Inc.



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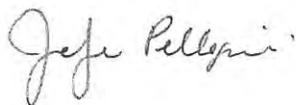
LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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 B6D1808 - EPA 5030B (Water)										
Blank (B6D1808-BLK1)										
					Prepared: 04/18/2016 Analyzed: 04/19/2016					
Benzene	ND	1.0	ug/L							U
Toluene	ND	1.0	"							U
Ethylbenzene	ND	1.0	"							U
Xylenes, total	ND	1.0	"							U
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	84-121			
Surrogate: Toluene-d8	62		"	62.5		98.7	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.3	84-114			

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LT Environmental, Inc.
 4600 West 60th Avenue
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John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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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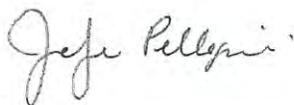
Batch B6D1808 - EPA 5030B (Water)

LCS (B6D1808-BS1)

Prepared: 04/18/2016 Analyzed: 04/19/2016

Benzene	53.3	1.0	ug/L	50.0		107	73.3-129			
Toluene	52.8	1.0	"	50.0		106	76.2-123			
Ethylbenzene	49.4	1.0	"	50.0		98.8	73.6-130			
m,p-Xylene	98.4	2.0	"	100		98.4	76.1-126			
o-Xylene	49.1	1.0	"	50.0		98.2	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.9	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

Origins Laboratory, Inc.



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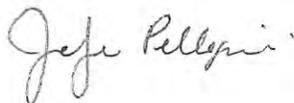
LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

John Cocroft
 Project Number: KMG09460/WO#88019814
 Project: KMG - Helen Karich UT #2, Herman
 32-10K

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 B6D1808 - EPA 5030B (Water)										
Matrix Spike (B6D1808-MS1)			Source: X604153-01			Prepared: 04/18/2016 Analyzed: 04/19/2016				
Benzene	52.8	1.0	ug/L	50.0	ND	106	74-130			
Toluene	52.3	1.0	"	50.0	ND	105	73-131			
Ethylbenzene	51.1	1.0	"	50.0	ND	102	76-132			
m,p-Xylene	102	2.0	"	100	ND	102	69-139			
o-Xylene	50.2	1.0	"	50.0	ND	100	74-131			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.7	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		102	84-114			

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 Project: KMG - Helen Karich UT #2, Herman
 32-10K

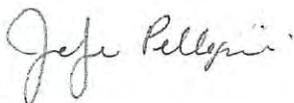
Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6D1808 - EPA 5030B (Water)

Matrix Spike Dup (B6D1808-MSD1)	Source: X604153-01			Prepared: 04/18/2016 Analyzed: 04/19/2016						
Benzene	55.8	1.0	ug/L	50.0	ND	112	74-130	5.43	20	
Toluene	54.7	1.0	"	50.0	ND	109	73-131	4.52	20	
Ethylbenzene	53.0	1.0	"	50.0	ND	106	76-132	3.58	20	
m,p-Xylene	105	2.0	"	100	ND	105	69-139	2.68	20	
o-Xylene	51.2	1.0	"	50.0	ND	102	74-131	1.99	20	
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.2	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

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Arvada CO 80003

John Cocroft
Project Number: KMG09460/WO#88019814
Project: KMG - Helen Karich UT #2, Herman
32-10K

Notes and Definitions

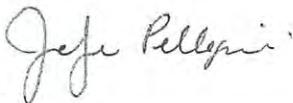
U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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