



November 16, 2012

Mr. Chuck Cornell
Shell Exploration and Production Company
4582 South Ulster Street Parkway, Suite 1400
Denver, Colorado 80237

**RE: Third Quarter 2012 Groundwater Monitoring Report
WT Durham #4 Flowline Release
Remediation #4990
Moffat County, Colorado**

Dear Mr. Cornell:

LT Environmental, Inc. (LTE) has been contracted by Shell Exploration and Production Company (SEPCO) to conduct quarterly groundwater monitoring activities and to evaluate geochemical indicators to assess the potential for monitored natural attenuation (MNA) at the WT Durham #4 Flowline Release (Site).

Site history and remediation activities were outlined in the Form 27 - Site Investigation and Remediation Workplan (Remediation #4990) submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on June 17, 2010. The Site Location Map is provided as Figure 1.

QUARTERLY GROUNDWATER MONITORING ACTIVITIES

Depth to Groundwater Measurements

Depth to groundwater was measured in monitoring wells MW01 through MW11 on September 19, 2012, and recorded to calculate potentiometric surfaces and purge volumes. During the third quarter 2012 sampling event, the depths to static groundwater level ranged from 6.01 feet below top of casing (BTOC) in MW05 to 8.70 feet BTOC in MW03 (Table 1).

Calculating the difference in the top of casing and depth to groundwater, LTE determined the groundwater elevation in each monitoring well and generated a groundwater elevation and contour map (Figure 2). Based on the groundwater elevation map, groundwater flow during this monitoring event was generally to the north-northeast, toward Waddle Creek.

Groundwater Sampling Procedures

Each monitoring well was purged of a minimum of three well casing volumes or until dry prior to collection of groundwater samples. Groundwater samples were collected from each monitoring well utilizing disposable 1.6-inch diameter polyethylene bailers. Groundwater samples were collected in laboratory-prepared sample bottles, placed on ice, and delivered under chain-of-custody (COC) protocol to Origins Laboratory (Origins) in Denver, Colorado. Samples



were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (EPA) Method 8260C.

Additionally, monitoring wells MW02, MW06, and MW11 were sampled for geochemical indicators and analyzed for dissolved manganese and total iron by EPA Method 6010B and nitrate and sulfate by EPA Method 300.

The groundwater samples submitted for dissolved manganese analysis were collected by advancing disposable 3/16-inch diameter polyethylene tubing into groundwater within the 2-inch diameter polyvinyl chloride (PVC) well casing. A peristaltic pump was utilized to collect the groundwater samples. LTE filtered the manganese samples with a 0.45 micron cartridge-style filter prior to placement into the laboratory-prepared sample bottles.

Groundwater Analytical Results

The COGCC and the Colorado Department of Public Health and Environmental (CDPHE) Water Quality Control Commission (WQCC) have both established groundwater standards for BTEX of 5.0 micrograms per liter ($\mu\text{g/L}$), 560 $\mu\text{g/L}$, 700 $\mu\text{g/L}$, and 1,400 $\mu\text{g/L}$, respectively.

Eleven groundwater samples were collected and submitted to Origins for BTEX analysis during the September 2012 groundwater monitoring event. Groundwater analytical results indicated benzene exceeded the COGCC standard in only one monitoring well (MW05) at a concentration of 14.5 $\mu\text{g/L}$. BTEX compounds were not detected above the laboratory method detection limits or were within compliance of COGCC standards in the ten remaining groundwater samples. Groundwater analytical results for the September 2012 monitoring event are depicted on Figure 3. Table 1 summarizes historical analytical data for all sampling events. The laboratory analytical report, laboratory quality assurance/quality control data, and COC documentation are attached.

MONITORED NATURAL ATTENUATION EVALUATION

LTE utilized groundwater quality parameters and geochemical indicators to determine if natural attenuation of petroleum hydrocarbon compounds is occurring at the Site and whether MNA remains an effective remedial method to achieve site cleanup goals.

Groundwater Quality Parameter Results

LTE personnel collected general water quality parameters during sampling activities to establish whether the appropriate site conditions existed for biodegradation of residual dissolved phase hydrocarbons. General water quality parameters included pH, temperature, conductivity, dissolved oxygen (DO), oxidation reduction potential (ORP), and total dissolved solids (TDS). General water quality parameters are summarized in Table 2.



Initial field screening results indicated pH readings are within a range for optimal biodegradation. Differences in temperature readings are attributable to seasonal groundwater fluctuations and ambient weather conditions.

The COGCC standard for TDS in groundwater should be less than 1.25 times the background concentration. The TDS concentrations observed in monitoring wells MW01 through MW11 ranged from 0.591 grams per liter (g/L) to 0.881 g/L. LTE believes the TDS concentrations observed at the Site are representative of background conditions.

Dissolved oxygen (DO) concentrations have historically been relatively high across the Site indicating aerobic groundwater conditions. However, current DO concentrations have decreased significantly in monitoring wells MW01, MW05, MW06, and MW07. These four monitoring wells are located in the interior of the original plume area and have historically registered the most significant concentrations of dissolved phase hydrocarbon impact. Dissolved oxygen concentrations in these monitoring wells are currently below 1.0 mg/L indicating that the available dissolved oxygen has been utilized and depleted in and around these four monitoring wells. Additionally, DO concentrations have generally remained significantly high in all other monitoring wells making it available for aerobic degradation around the perimeter of the plume. The data indicates that oxygen has been utilized by microbes to degrade dissolved phase hydrocarbons and that aerobic biodegradation is occurring at the edge of the plume.

Geochemical Indicators

In order to further evaluate secondary lines of evidence to detail subsurface biodegradation processes, LTE collected groundwater samples for geochemical indicators that included manganese, total iron (representative of ferrous iron), nitrate, and sulfate. In the absence or near absence of DO, microorganisms metabolize petroleum contaminants through the use of these alternate electron acceptors. General groundwater quality parameters indicate DO is available throughout the Site, establishing an aerobic environment. However, the secondary or anaerobic microbes have recently established themselves in the interior of the plume and are currently the primary means of biodegradation of dissolved phase hydrocarbons. Geochemical data is summarized in Table 3.

As indicated in Table 3, monitoring wells MW02, MW06, and MW11 were sampled for these secondary electron acceptors in downgradient, in-plume, and upgradient locations, respectively. The data indicate that iron, manganese, and sulfate are available as electron acceptors. The significant increase of ferrous iron in monitoring wells MW02, MW06, and MW11 indicates the microbial reduction of iron as a result of anaerobic conditions. Therefore, anaerobic biodegradation is occurring at the Site and currently appears to be the major means of MNA. Analytical results for nitrate indicate that there is no significant presence of nitrate upgradient, in-plume, or downgradient. Manganese and sulfate concentrations have remained constant throughout historical groundwater monitoring activities.



SUMMARY AND CONCLUSIONS

Groundwater elevations have decreased between 0.78 feet and 2.18 feet since the last monitoring event. Based on the groundwater elevation data, groundwater generally flows to the north-northeast toward Waddle Creek.

As indicated in Table 1, the benzene concentration in monitoring well MW05 exceeds the COGCC standard. Since the June 2012 monitoring event, the benzene concentration in monitoring well MW05 has decreased from 30 µg/L to 14.5 µg/L. Additionally, the benzene concentration in monitoring well MW06 has decreased from 109 µg/L to 1.83 µg/L.

LTE evaluated groundwater quality parameters and geochemical indicators to determine if biodegradation of dissolved phase hydrocarbon concentrations is occurring and whether MNA is an effective remedial method to achieve site cleanup goals. Based on general water quality data, the biodegradation of benzene in groundwater appears to be naturally occurring through both aerobic and anaerobic mechanisms; therefore MNA remains as the current remedial action occurring at the Site. LTE recommends continuing quarterly groundwater monitoring at the Site. The next sampling event is scheduled for December 2012.

Limitations

No investigation is infallible. Some uncertainty will always exist concerning the presence or absence of potential contaminants at a particular property, irrespective of the rigor of the investigation. Accordingly, LTE does not warrant that contaminants, other than those identified in this report, do not exist at the subject property or may not exist there in the future.

LTE believes that it has performed the services summarized in this report in a manner consistent with the level of care and skill ordinarily exercised by members of the environmental profession practicing at the same time and under similar conditions in the area of the project.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink, appearing to read 'Jake Janicek', written in a cursive style.

Jake Janicek
Staff Environmental Scientist

A handwritten signature in black ink, appearing to read 'Robert D. Fishburn', written in a cursive style.

Robert D. Fishburn, P.G.
Senior Hydrogeologist



Attachments:

Figure 1- Site Location Map

Figure 2 - Groundwater Elevation Map

Figure 3 – Groundwater Analytical Results

Table 1 - Groundwater Analytical Results

Table 2 - General Water Quality Results

Table 3 - Geochemical Results

Attachment 1 - Laboratory Analytical Report

FIGURES



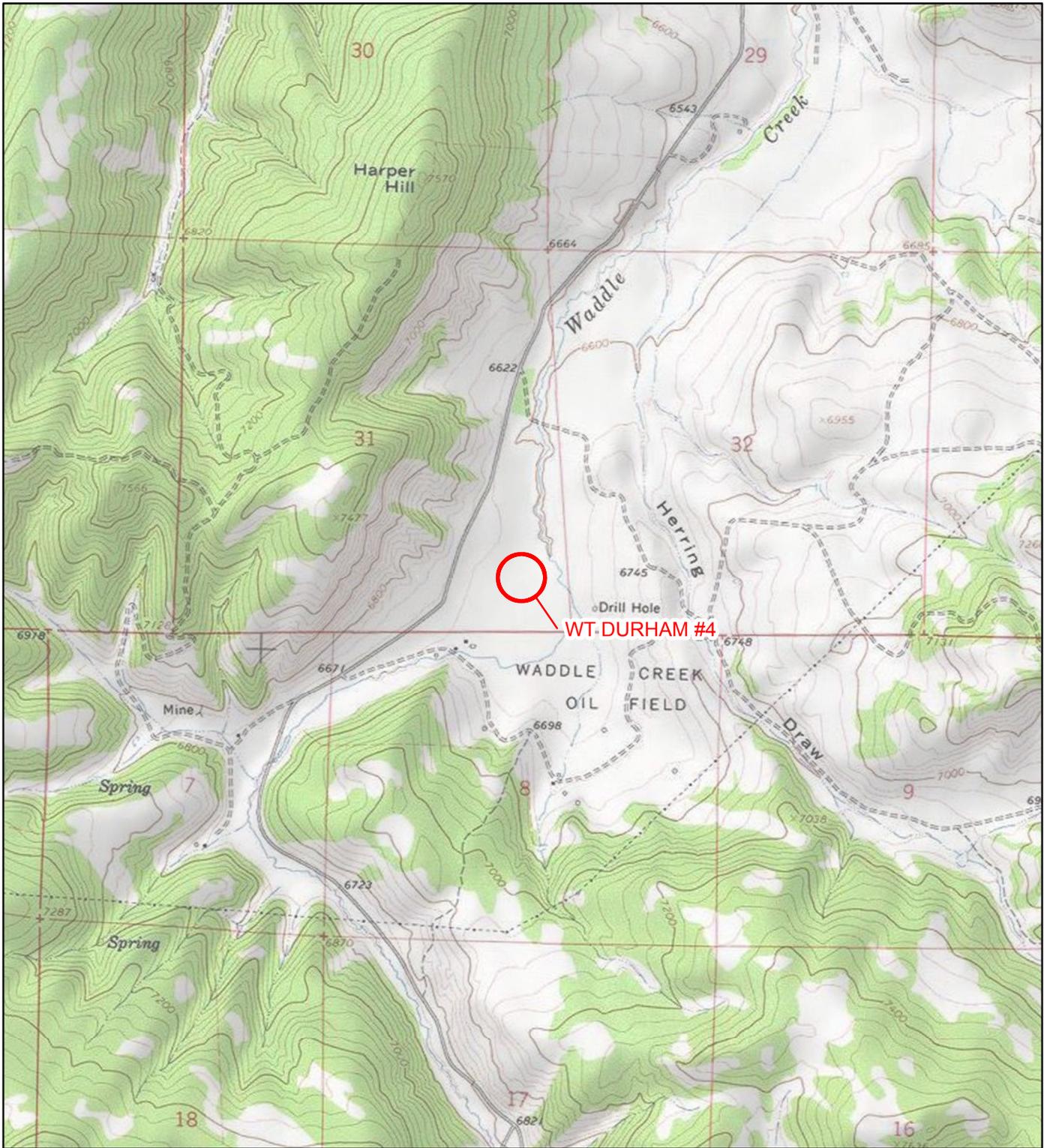


IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

 SITE LOCATION

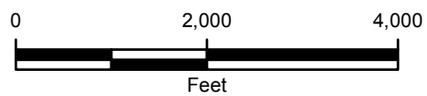


FIGURE 1
SITE LOCATION MAP
 WT DURHAM #4 FLOWLINE RELEASE
 SESE SEC 31 T5N R90W 6PM
 MOFFAT COUNTY, COLORADO
 SHELL EXPLORATION AND PRODUCTION COMPANY

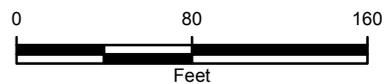




LEGEND

- ⊗ MONITORING WELL WITH RELATIVE GROUNDWATER ELEVATION IN FEET
- ✗ RELEASE
- SECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR

IMAGE COURTESY OF USDA/NRCS, VARIOUS DATES



CONTOUR INTERVAL = 0.5 FEET
GROUNDWATER ELEVATIONS
WERE MEASURED ON
SEPTEMBER 19, 2012

FIGURE 2
GROUNDWATER ELEVATION MAP
WT DURHAM #4 (API 05-081-06935)
SESE SEC 31 T5N R90W 6PM
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY



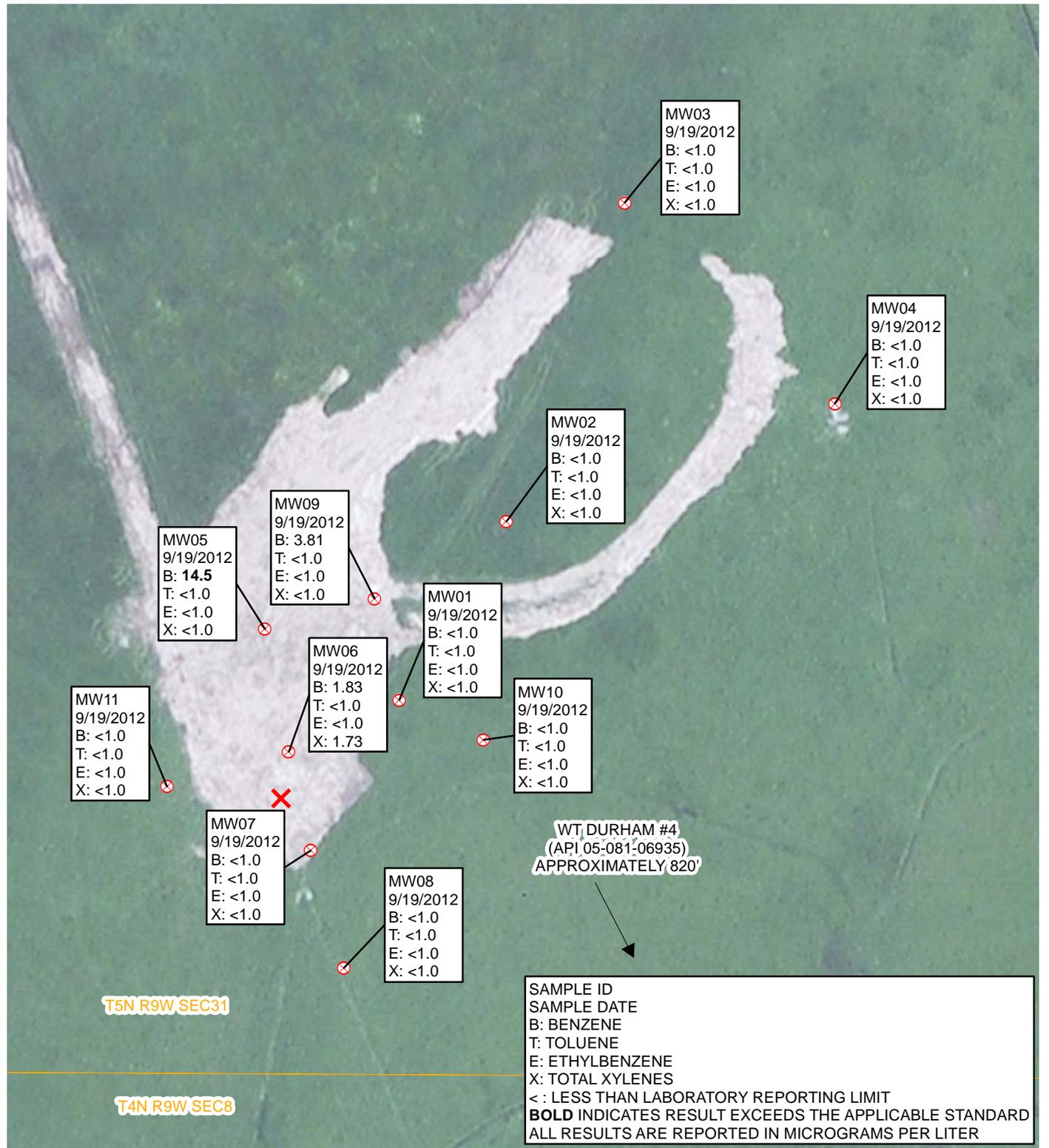


IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

-  MONITORING WELL
-  RELEASE
-  SECTION

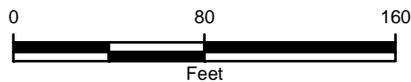


FIGURE 3
GROUNDWATER ANALYTICAL RESULTS
WT DURHAM #4 (API 05-081-06935)
SESE SEC 31 T5N R90W 6PM
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY



TABLES



TABLE 1
GROUNDWATER ANALYTICAL RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	Depth to Water (ft btoc)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW01	5/4/10	3.52	3.1	<2	<2	<2
	7/14/10	4.21	9	<1	<1	<3
	9/16/10	9.15	10.1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	2.25	<1	<1	<1	<3
	8/24/11	5.15	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.72	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.96	<1.0	<1.0	<1.0	<1.0
9/19/12	7.43	<1.0	<1.0	<1.0	<1.0	
MW02	5/4/10	2.86	<2	<2	<2	<2
	7/14/10	3.65	<1	<1	<1	<3
	9/16/10	9.81	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.00	<1	<1	<1	<3
	8/24/11	4.82	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	2.97	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.78	<1.0	<1.0	<1.0	<1.0
9/19/12	6.89	<1.0	<1.0	<1.0	<1.0	
MW03	5/4/10	3.30	<2	2	<2	3.3
	7/14/10	3.66	<1	<1	<1	<3
	9/16/10	9.81	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.05	<1	<1	<1	<3
	8/24/11	5.54	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.37	<1.0	<1.0	<1.0	<1.0
	6/27/12	6.52	<1.0	<1.0	<1.0	<1.0
9/19/12	8.70	<1.0	<1.0	<1.0	<1.0	
MW04	5/4/10	2.69	<2	2.4	<2	<2
	7/14/10	3.16	1.12	1.71	<1	<3
	9/16/10	9.83	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	2.97	<1	<1	<1	<3
	8/24/11	4.32	<1	1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	2.50	<1.0	<1.0	<1.0	<1.0
	6/27/12	4.59	<1.0	<1.0	<1.0	<1.0
9/19/12	6.19	<1.0	<1.0	<1.0	<1.0	
MW05	7/14/10	2.70	<1	<1	<1	<3
	9/16/10	10.01	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.24	<1	<1	<1	<3
	8/24/11	4.09	26.1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	2.54	22.2	<1.0	<1.0	<1.0
	6/27/12	5.23	30	<1.0	<1.0	<1.0
	9/19/12	6.01	14.5	<1.0	<1.0	<1.0
MW06	7/14/10	3.61	1,520	78.1	88.1	198.1
	9/16/10	9.96	354	<1	44.4	16.3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	2.88	651	<1	10.7	12.2
	8/24/11	4.71	475	1.5	1.6	3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.35	92.9	<1.0	<1.0	<1.0
	6/27/12	5.58	109	<1.0	7.49	12.4
	9/19/12	6.73	1.83	<1.0	<1.0	1.73



TABLE 1
GROUNDWATER ANALYTICAL RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	Depth to Water (ft btoc)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW07	7/14/10	3.99	58.7	<1	1.52	8.16
	9/16/10	9.73	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	2.97	280	<1	4.4	11.6
	8/24/11	4.89	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.66	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.71	<1.0	<1.0	<1.0	<1.0
9/19/12	6.97	<1.0	<1.0	<1.0	<1.0	
MW08	9/16/10	10.13	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/2/11	2.84	<1	<1	<1	<3
	8/24/11	5.00	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.86	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.70	<1.0	<1.0	<1.0	<1.0
	9/19/12	7.04	<1.0	<1.0	<1.0	<1.0
MW09	9/16/10	10.30	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.10	<1	<1	<1	<3
	8/24/11	4.43	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	2.90	2.03	<1.0	<1.0	<1.0
	6/27/12	5.60	1.88	<1.0	<1.0	<1.0
	9/19/12	6.68	3.81	<1.0	<1.0	<1.0
MW10	9/16/10	9.93	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.22	<1	<1	<1	<3
	8/24/11	5.10	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.70	<1.0	<1.0	<1.0	<1.0
	6/27/12	5.85	<1.0	<1.0	<1.0	<1.0
	9/19/12	7.55	<1.0	<1.0	<1.0	<1.0
MW11	9/16/10	10.05	<1	<1	<1	<3
	12/28/10	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM
	5/3/11	3.07	<1	<1	<1	<3
	8/24/11	5.41	<1	<1	<1	<3
	11/23/11	NM	NM	NM	NM	NM
	3/29/12	3.91	<1.0	<1.0	<1.0	<1.0
	6/27/12	6.53	<1.0	<1.0	<1.0	<1.0
	9/19/12	7.40	<1.0	<1.0	<1.0	<1.0
GW01	5/11/10	-	1,370	1,730	72.3	752
GW02	5/18/10	-	332	319	12.8	258
CDPHE WQCC Reg 41			5	560	700	1,400

NOTES:

ft btoc - feet below top of well casing

µg/L - micrograms per liter

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

BOLD - indicates result exceeds the applicable standard

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

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment-

Water Quality Control Commission Regulation 41 covering The Basic Standards
for Ground Water

NM - Not Monitored due to frozen groundwater



TABLE 2
GENERAL WATER QUALITY RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	pH	Temp (C°)	Conductivity (µ-S)	DO (mg/L)	ORP (mV)	TDS (g/L)
MW01	9/16/10	6.93	13.30	2,331	2.80	-49.6	1.515
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.43	4.65	1,100	2.23	199.5	1.169
	8/24/11	6.73	13.40	3,724	2.02	228	3.243
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.35	2.58	2,403	2.17	-64.9	1.559
	6/27/12	7.32	10.13	1,553	1.27	-39.4	1.010
	9/19/12	7.24	12.21	1,111	0.85	-295.1	0.722
MW02	9/16/10	7.17	12.48	2,126	2.04	-89.4	2.4
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/3/11	7.27	5.05	1,396	3.37	198.6	1.190
	8/24/11	6.76	12.64	3,500	1.85	226.8	2.971
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.19	2.93	2,333	3.42	-59.4	1.517
	6/27/12	7.23	9.36	1,476	3.01	-60.5	0.960
	9/19/12	7.10	11.39	1,052	2.21	-195.0	0.648
MW03	9/16/10	6.42	13.88	3,341	2.41	-84.8	2.171
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.35	4.80	1,251	3.01	199.3	1.324
	8/24/11	6.75	11.91	1,313	2.56	227.4	1.144
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.31	2.13	3,176	3.07	-54.1	2.067
	6/27/12	7.27	9.04	1,958	3.28	-78.9	1.274
	9/19/12	7.15	11.85	876	3.80	-72.1	0.881
MW04	9/16/10	6.55	12.75	2,058	2.17	-75.5	1.338
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.35	5.45	1,042	2.49	199.1	1.081
	8/24/11	6.86	12.11	932	6.86	227.2	0.805
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.36	3.76	1,886	2.48	-38.8	1.226
	6/27/12	7.40	9.67	1,311	3.36	-38.1	0.853
	9/19/12	7.30	12.57	958	3.29	-147.0	0.623
MW05	9/16/10	6.56	15.70	2,581	1.56	-107.5	1.677
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.17	5.25	1,371	2.64	199.1	1.430
	8/24/11	6.71	17.17	3,011	4.21	228.1	3.061
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.30	3.49	2,552	2.56	-81.9	1.659
	6/27/12	7.24	12.74	1,674	1.62	-96.4	1.088
	9/19/12	7.12	14.67	1,154	0.83	-241.9	0.750
MW06	9/16/10	7.15	16.79	2,711	1.38	-102.3	2.4
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/3/11	7.19	5.88	1,436	2.47	199.0	1.213
	8/24/11	6.72	16.94	3,071	4.03	228.0	3.073
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.33	3.49	2,340	2.53	-70.1	1.519
	6/27/12	7.27	14.21	1,618	2.03	-79.3	1.051
	9/19/12	7.19	15.92	1,155	0.30	-275.6	0.751
MW07	9/16/10	6.42	13.22	2,456	1.34	-53.5	1.596
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.30	4.81	1,134	2.72	199.4	1.210
	8/24/11	6.74	13.80	3,813	1.94	228.3	3.153
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.40	2.74	2,386	2.71	-26.8	1.551
	6/27/12	7.43	10.17	1,534	1.77	-5.8	0.998
	9/19/12	7.30	12.24	1,081	0.72	-259.1	0.702



TABLE 2
GENERAL WATER QUALITY RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	pH	Temp (C°)	Conductivity (µ-S)	DO (mg/L)	ORP (mV)	TDS (g/L)
MW08	9/16/10	6.53	13.28	1,916	2.40	6.9	1.246
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.22	5.16	977	3.15	198.5	1.022
	8/24/11	6.78	13.35	3,158	2.02	228.6	2.638
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.48	3.11	2,027	3.05	4.4	1.318
	6/27/12	7.45	10.14	1,226	1.73	27.0	0.797
	9/19/12	7.30	11.94	908	2.58	-196.2	0.591
MW09	9/16/10	6.50	14.55	2,566	3.26	-49.0	1.668
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.14	4.88	1,361	2.97	200.4	1.437
	8/24/11	6.68	14.79	4,140	2.32	227.6	3.339
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.13	2.77	2,543	2.92	-37.8	1.653
	6/27/12	7.13	11.23	1,683	2.45	-67.8	1.092
	9/19/12	7.14	13.16	1,199	2.55	-177.5	0.780
MW10	9/16/10	6.56	12.85	2,017	1.90	38.6	1.311
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/2/11	7.53	5.01	995	2.17	197.8	1.061
	8/24/11	6.73	13.48	3,485	2.92	228.1	2.908
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.43	2.71	2,176	2.51	-13.1	1.414
	6/27/12	7.38	10.06	1,337	2.32	-1.7	0.870
	9/19/12	7.13	11.93	970	1.40	-216	0.633
MW11	9/16/10	6.99	13.29	2,488	2.2	7.3	1.618
	12/28/10	NM	NM	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM	NM	NM
	5/3/11	7.46	4.84	1,382	2.74	198.4	1.169
	8/24/11	6.72	14.46	3,313	2.23	229	3.262
	11/23/11	NM	NM	NM	NM	NM	NM
	3/28/12	7.42	2.77	2,215	2.86	11.5	1.440
	6/27/12	7.38	10.84	1,605	1.60	-43.3	1.044
	9/19/12	7.20	11.87	1,116	1.83	-200.5	0.725
CDPHE WQCC Reg 41	NA	NA	NA	NA	NA	NA	<1.25 x background

NOTES:

C° - degrees celcius

µ-S - micro siemens

DO - dissolved oxygen

mg/L - milligrams per liter

ORP - oxygen reduction potential

mV - milli volts

TDS - total dissolved solids

g/L - grams per liter

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment - Water Quality

Control Commission Regulation 41 covering The Basic Standards for Ground Water

NA - Not Applicable

NM - Not Monitored due to frozen groundwater



TABLE 3
GEOCHEMICAL RESULTS
WT DURHAM #4 FLOWLINE RELEASE
MOFFAT COUNTY, COLORADO
SHELL EXPLORATION AND PRODUCTION COMPANY

Well ID	Date	Manganese (µg/l)	Total Iron (µg/l)	Nitrate (mg/L)	Sulfate (mg/L)
MW02	9/16/10	356	3,310	<0.05	292
	12/28/10	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM
	5/3/11	360	2,190	<0.05	316
	8/24/11	409	1,070	<0.05	347
	11/23/11	NM	NM	NM	NM
	3/29/12	390	1,600	<0.23	400
	6/27/12	370	13,000	<0.23	340
	9/19/12	490	96,300	0.174	332
MW06	9/16/10	829	3,560	<0.05	465
	12/28/10	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM
	5/3/11	942	644	<0.05	384
	8/24/11	926	1,590	0.185	411
	11/23/11	NM	NM	NM	NM
	3/29/12	840	2,500	<0.23	350
	6/27/12	840	2,100	<0.23	323
	9/19/12	786	175,000	0.18	349
MW11	9/16/10	317	<200	0.119	376
	12/28/10	NM	NM	NM	NM
	2/15/11	NM	NM	NM	NM
	5/3/11	171	<200	<0.05	259
	8/24/11	277	<200	0.193	292
	11/23/11	NM	NM	NM	NM
	3/29/12	120	650	<0.23	290
	6/27/12	440	130	<0.23	371
	9/19/12	760	82,700	0.189	365

NOTES:

µg/L - micrograms per liter

mg/L - milligrams per liter

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

NM - Not Monitored due to frozen groundwater



ATTACHMENT 1
LABORATORY ANALYTICAL REPORT



October 01, 2012

LT Environmental, Inc.

Rob Fishburn

4600 West 60th Avenue

Arvada CO 80003

Project Name - WT Durham #4

Project Number - MS1007

Attached are you analytical results for WT Durham #4 received by Origins Laboratory, Inc. September 20, 2012. This project is associated with Origins project number X209087-01.

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

Rob Fishburn
Project Number: MS1007
Project: WT Durham #4

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X209087-01	Water	September 19, 2012 13:40	09/20/2012 13:26
MW02	X209087-02	Water	September 19, 2012 13:30	09/20/2012 13:26
MW03	X209087-03	Water	September 19, 2012 13:20	09/20/2012 13:26
MW04	X209087-04	Water	September 19, 2012 13:10	09/20/2012 13:26
MW05	X209087-05	Water	September 19, 2012 13:00	09/20/2012 13:26
MW06	X209087-06	Water	September 19, 2012 12:50	09/20/2012 13:26
MW07	X209087-07	Water	September 19, 2012 12:40	09/20/2012 13:26
MW08	X209087-08	Water	September 19, 2012 12:30	09/20/2012 13:26
MW09	X209087-09	Water	September 19, 2012 12:20	09/20/2012 13:26
MW10	X209087-10	Water	September 19, 2012 12:10	09/20/2012 13:26
MW11	X209087-11	Water	September 19, 2012 12:00	09/20/2012 13:26

Origins Laboratory, Inc.



Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X209087

Client: LTE

Client Project ID: WT Durham #4

Checklist Completed by: Jeff Smith

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

Date/time completed: 9/20/12 13:39

Airbill #: NA

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

Cooler Number/Temperature: 1 12.3 °C 1 °C 1 °C 1 °C

Thermometer ID: J601

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"/>			<u>Nitrate</u>
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"/>	<u>9/20/12</u>		<u>MW06 (B,C), MW07 (B)</u>
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>	<u>✓</u>		<u>HCL, HNO₃</u>
Additional Comments (if any):	<u>No samples were run from vials with headspace</u> <u>9/20/12</u>			

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

[Signature]
 Reviewed by (Project Manager) 10-9-12 (3:17)
 Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW01
 9/19/2012 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X209087-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

<i>Surrogate: 1,2-Dichloroethane-d4</i>	107 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	112 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	98.6 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW02
 9/19/2012 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO
 X209087-02 (Water)

Anions by EPA 300

Nitrate as N	0.174	0.1	mg/L	2	897134	09/21/2012	09/21/2012	
Sulfate	332	1	"	"	"	"	"	

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130			"	"	"	
Surrogate: Toluene-d8	95.9 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

Dissolved Metals per ICP by SW846 6010B

Manganese	0.49	0.02	mg/L	1	897224	09/24/2012	09/25/2012	
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Total Metals by EPA 6010B

Iron	96.3	0.2	mg/L	1	897223	"	09/24/2012	
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Origins Laboratory, Inc.



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

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW03
 9/19/2012 1:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X209087-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.9 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW04
 9/19/2012 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X209087-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>110 %</i>	<i>70-130</i>			"	"	"	
<i>Surrogate: Toluene-d8</i>	<i>93.3 %</i>	<i>70-130</i>			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.2 %</i>	<i>70-130</i>			"	"	"	

Origins Laboratory, Inc.



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

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW05
 9/19/2012 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X209087-05 (Water)

BTEX by EPA 8260C

Benzene	14.5	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"	
Surrogate: Toluene-d8	97.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.3 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW06
 9/19/2012 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO
 X209087-06 (Water)

Anions by EPA 300

Nitrate as N	0.18	0.1	mg/L	2	897134	09/21/2012	09/21/2012	
Sulfate	349	1	"	"	"	"	"	

BTEX by EPA 8260C

Benzene	1.83	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	1.73	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"	
Surrogate: Toluene-d8	92.3 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.2 %	70-130			"	"	"	

Dissolved Metals per ICP by SW846 6010B

Manganese	0.786	0.02	mg/L	1	897224	09/24/2012	09/25/2012	
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Total Metals by EPA 6010B

Iron	175	0.2	mg/L	1	897223	"	09/24/2012	
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Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW07

9/19/2012 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X209087-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	111 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	94.7 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	97.5 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW08

9/19/2012 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X209087-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130			"	"	"	
Surrogate: Toluene-d8	93.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.6 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW09

9/19/2012 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X209087-09 (Water)

BTEX by EPA 8260C

Benzene	3.81	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

<i>Surrogate: 1,2-Dichloroethane-d4</i>	105 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	96.4 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW10
 9/19/2012 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X209087-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	94.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Noelle E Doyle, President

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

Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

MW11
 9/19/2012 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO
 X209087-11 (Water)

Anions by EPA 300

Nitrate as N	0.189	0.1	mg/L	2	897134	09/21/2012	09/21/2012	
Sulfate	365	1	"	"	"	"	"	

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2126004	09/26/2012	09/28/2012	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	97.1 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.4 %	70-130			"	"	"	

Dissolved Metals per ICP by SW846 6010B

Manganese	0.76	0.02	mg/L	1	897224	09/24/2012	09/25/2012	
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Total Metals by EPA 6010B

Iron	82.7	0.2	mg/L	1	897223	"	09/24/2012	
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Rob Fishburn
 Project Number: MS1007
 Project: WT Durham #4

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 2126004 - EPA 5030B (Water)

Blank (2126004-BLK1)

Prepared: 09/26/2012 Analyzed: 09/26/2012

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	62		"	62.5	99.4		70-130			
<i>Surrogate: Toluene-d8</i>	62		"	62.5	99.6		70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	62		"	62.5	99.3		70-130			

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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 2126004 - EPA 5030B (Water)

Blank (2126004-BLK2)

Prepared: 09/26/2012 Analyzed: 09/26/2012

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>63</i>		<i>"</i>	<i>62.5</i>	<i>100</i>		<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>61</i>		<i>"</i>	<i>62.5</i>	<i>98.3</i>		<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>63</i>		<i>"</i>	<i>62.5</i>	<i>101</i>		<i>70-130</i>			

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Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2126004 - EPA 5030B (Water)

LCS (2126004-BS1)

Prepared: 09/26/2012 Analyzed: 09/26/2012

Benzene	99.2	1.0	ug/L	100		99.2	70-130			
Toluene	114	1.0	"	100		114	70-130			
Ethylbenzene	113	1.0	"	100		113	70-130			
m,p-Xylene	246	2.0	"	200		123	70-130			
o-Xylene	123	1.0	"	100		123	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>63</i>		<i>"</i>	<i>62.5</i>		<i>101</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>63</i>		<i>"</i>	<i>62.5</i>		<i>100</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>65</i>		<i>"</i>	<i>62.5</i>		<i>105</i>	<i>70-130</i>			

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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 2126004 - EPA 5030B (Water)

LCS (2126004-BS2)

Prepared: 09/26/2012 Analyzed: 09/26/2012

Benzene	96.4	1.0	ug/L	100	96.4	70-130				
Toluene	111	1.0	"	100	111	70-130				
Ethylbenzene	113	1.0	"	100	113	70-130				
m,p-Xylene	244	2.0	"	200	122	70-130				
o-Xylene	122	1.0	"	100	122	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>63</i>		<i>"</i>	<i>62.5</i>	<i>101</i>	<i>70-130</i>				
<i>Surrogate: Toluene-d8</i>	<i>61</i>		<i>"</i>	<i>62.5</i>	<i>98.2</i>	<i>70-130</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>66</i>		<i>"</i>	<i>62.5</i>	<i>105</i>	<i>70-130</i>				

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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 2126004 - EPA 5030B (Water)

Matrix Spike (2126004-MS1)	Source: X209080-01			Prepared: 09/26/2012 Analyzed: 09/26/2012						
Benzene	98.6	1.0	ug/L	100	0.2	98.4	70-130			
Toluene	113	1.0	"	100	ND	113	70-130			
Ethylbenzene	113	1.0	"	100	0.8	112	70-130			
m,p-Xylene	240	2.0	"	200	1.2	120	70-130			
o-Xylene	122	1.0	"	100	ND	122	70-130			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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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 2126004 - EPA 5030B (Water)

Matrix Spike (2126004-MS2)	Source: X209084-01			Prepared: 09/26/2012 Analyzed: 09/26/2012						
Benzene	98.6	1.0	ug/L	100	0.2	98.4	70-130			
Toluene	113	1.0	"	100	ND	113	70-130			
Ethylbenzene	114	1.0	"	100	0.5	113	70-130			
m,p-Xylene	243	2.0	"	200	0.6	121	70-130			
o-Xylene	123	1.0	"	100	ND	123	70-130			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2126004 - EPA 5030B (Water)

Matrix Spike Dup (2126004-MSD1)	Source: X209080-01			Prepared: 09/26/2012 Analyzed: 09/26/2012						
Benzene	96.9	1.0	ug/L	100	0.2	96.7	70-130	1.74	20	
Toluene	112	1.0	"	100	ND	112	70-130	0.819	20	
Ethylbenzene	111	1.0	"	100	0.8	110	70-130	1.37	20	
m,p-Xylene	242	2.0	"	200	1.2	120	70-130	0.543	20	
o-Xylene	121	1.0	"	100	ND	121	70-130	0.850	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>63</i>		<i>"</i>	<i>62.5</i>		<i>100</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>61</i>		<i>"</i>	<i>62.5</i>		<i>98.1</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>65</i>		<i>"</i>	<i>62.5</i>		<i>104</i>	<i>70-130</i>			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2126004 - EPA 5030B (Water)

Matrix Spike Dup (2126004-MSD2)	Source: X209084-01			Prepared: 09/26/2012 Analyzed: 09/26/2012						
Benzene	96.1	1.0	ug/L	100	0.2	95.9	70-130	2.58	20	
Toluene	110	1.0	"	100	ND	110	70-130	2.48	20	
Ethylbenzene	110	1.0	"	100	0.5	109	70-130	3.70	20	
m,p-Xylene	233	2.0	"	200	0.6	116	70-130	4.19	20	
o-Xylene	118	1.0	"	100	ND	118	70-130	3.65	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>64</i>		<i>"</i>	<i>62.5</i>		<i>103</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>62</i>		<i>"</i>	<i>62.5</i>		<i>99.2</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>65</i>		<i>"</i>	<i>62.5</i>		<i>104</i>	<i>70-130</i>			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Anions by EPA 300 - Quality Control
XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 897134 - E300P

MS (449425-003 S)		Source: 449425-003 S			Prepared: 09/21/2012 Analyzed: 09/21/2012					
Nitrate as N	5.29	0.1	mg/L	4.52	0.189	113	80-120		20	
Sulfate	465	1	"	100	365	100	80-120		20	
LCS (627556-1-BKS)		Source: 627556-1-BKS			Prepared: 09/21/2012 Analyzed: 09/21/2012					
Sulfate	54.2	0.5	mg/L	50	<0.0460	108	80-120		20	
Nitrate as N	2.31	0.05	"	2.26	<0.00400	102	80-120		20	
BLANK (627556-1-BLK)		Source: 627556-1-BLK			Prepared: 09/21/2012 Analyzed: 09/21/2012					
Nitrate as N	ND	0.05	mg/L	2.26			-		20	
Sulfate	ND	0.5	"	50			-		20	
LCSD (627556-1-BSD)		Source: 627556-1-BSD			Prepared: 09/21/2012 Analyzed: 09/21/2012					
Nitrate as N	2.32	0.05	mg/L	2.26	<0.00400	103	80-120	0	20	
Sulfate	54	0.5	"	50	<0.0460	108	80-120	0	20	

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 Project: WT Durham #4

Dissolved Metals per ICP by SW846 6010B - Quality Control
 XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 897224 - SW3010A										
MS (449174-002 S)			Source: 449174-002 S			Prepared: 09/24/2012 Analyzed: 09/25/2012				
Manganese	0.87	0.02	mg/L	1	<0.00291	87	75-125		20	
LCS (627573-1-BKS)			Source: 627573-1-BKS			Prepared: 09/24/2012 Analyzed: 09/25/2012				
Manganese	0.92	0.02	mg/L	1	<0.00291	92	75-125		20	
BLANK (627573-1-BLK)			Source: 627573-1-BLK			Prepared: 09/24/2012 Analyzed: 09/25/2012				
Manganese	ND	0.02	mg/L	1			-		20	
LCSD (627573-1-BSD)			Source: 627573-1-BSD			Prepared: 09/24/2012 Analyzed: 09/25/2012				
Manganese	0.911	0.02	mg/L	1	<0.00291	91	75-125	1	20	

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Total Metals by EPA 6010B - Quality Control
XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 897223 - SW3010A										
MS (449335-001 S)			Source: 449335-001 S			Prepared: 09/24/2012 Analyzed: 09/24/2012				
Iron	23.3	1	mg/L	25	0.183	92	75-125		20	
LCS (627572-1-BKS)			Source: 627572-1-BKS			Prepared: 09/24/2012 Analyzed: 09/24/2012				
Iron	4.84	0.2	mg/L	5	<0.0188	97	75-125		20	
BLANK (627572-1-BLK)			Source: 627572-1-BLK			Prepared: 09/24/2012 Analyzed: 09/24/2012				
Iron	ND	0.2	mg/L	5			-		20	
LCSD (627572-1-BSD)			Source: 627572-1-BSD			Prepared: 09/24/2012 Analyzed: 09/24/2012				
Iron	4.87	0.2	mg/L	5	<0.0188	97	75-125	1	20	

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Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit
RPD Relative Percent Difference

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