



November 9, 2011

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

**RE: Third Quarter 2011 Monitoring Report
WT Durham #4 Flowline Release
Moffat County, Colorado**

Dear Mr. Barnes:

LT Environmental, Inc. (LTE) was retained by Shell Exploration and Production Company (Shell E&P) to conduct quarterly monitoring activities at the WT Durham #4 Flowline Release (Site). LTE collected depth to groundwater measurements and groundwater quality parameters prior to sampling. Additionally, LTE evaluated geochemical indicators to estimate natural attenuation rates.

Site history and remediation activities were described in the Form 27 Site Investigation and Remediation Workplan submitted to the Colorado Oil and Gas Conservation Commission (COGCC) (Remediation #4990) on June 17, 2010. This groundwater monitoring event constitutes the third post remediation performance monitoring event. The Site Location Map and Site Map are provided as Figures 1 and 2.

Depth to Groundwater Measurements

LTE surveyed the top of casing elevations for each monitoring well on September 6, 2010. Calculating the difference in the top of casing and depth to groundwater, LTE determined the groundwater elevation in each monitoring well and created a groundwater elevation map (Figure 3). Based on the groundwater elevation map, groundwater flow on August 24, 2011 was northeast toward Waddle Creek, at an average gradient of 0.011 feet per foot.

The depth to groundwater was measured in monitoring wells MW01 through MW11 on August 24, 2011, and recorded to calculate potentiometric surfaces and purge volumes. During the August 2011 sampling event, the depths to static groundwater level ranged from 4.09 feet below top of casing (BTOC) in MW05 to 5.54 feet BTOC in MW03 (Table 1).

Prior to sampling, LTE conducted field screening of pH, temperature, conductivity, dissolved oxygen (DO), total dissolved solids (TDS), and oxygen reduction potential (ORP). General water quality parameters are summarized in Table 2.



Groundwater Sampling Procedures

Each monitoring well was purged of three well casing volumes 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 40-milliliter 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 8260B.

Prior to sampling during purging activities, LTE conducted field screening of pH, temperature, conductivity, dissolved oxygen (DO), total dissolved solids (TDS), and oxygen reduction potential (ORP). General water quality parameters are summarized in Table 2.

In addition to BTEX, monitoring wells MW02, MW06, and MW11 were analyzed for geochemical indicators of natural attenuation of petroleum hydrocarbons. Samples were analyzed for dissolved manganese and total iron by EPA Method 6010B and sulfate and nitrate by EPA Method 300. Each sample (except for total iron) was collected from the monitoring wells utilizing 1.6-inch diameter polyethylene bailer.

Groundwater samples were collected for total iron analysis by advancing disposable 3/16-inch diameter polyethylene tubing below the groundwater table inside the 2-inch diameter polyvinyl chloride well casing. A peristaltic pump was utilized to collect the groundwater samples. There is no specific laboratory analysis for dissolved ferrous iron; therefore, total iron measures dissolved ferrous and ferric iron rather than ferrous iron, with the assumption that soluble ferric iron is negligible in the groundwater. At neutral pH and with exposure to air, most soluble ferrous iron will precipitate out of solution within one minute or less. Therefore, LTE filtered the iron samples with a 0.45 micron cartridge-style filter prior to placement into the laboratory-prepared sample bottles. As a result of this testing procedure, the total iron analysis is representative of the reduced iron species potentially produced via hydrocarbon oxidation.

Groundwater Analytical Results

Eleven groundwater samples were collected and submitted to Origins for BTEX analysis during the August 2011 monitoring event. Groundwater analytical results indicated that benzene was detected exceeding the CDPHE-WQCC Regulation 41 standard in monitoring wells MW05 and MW06 at concentrations of 26.1 µg/L and 475 µg/L, respectively. BTEX compounds were not detected above the laboratory method detection limits or were in compliance with CDPHE-WQCC Regulation 41 in the remaining samples.

The Colorado Department of Public Health and Environmental (CDPHE) Water Quality Control Commission (WQCC) has established Regulation 41. - Basic Standards for Ground Water for BTEX of 5.0 micrograms per liter (µg/L) 560 µg/L, 700 µg/L, and 1,400 µg/L, respectively. Table 1 summarizes the historical groundwater analytical results for samples collected. 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 the petroleum hydrocarbon impact to groundwater is occurring, whether monitored natural attenuation (MNA) remains an effective remedial method to achieve site cleanup goals, and what subsurface biological processes are occurring.

Groundwater Quality Parameter Results

LTE personnel collected general water quality parameters during sampling activities to establish whether the appropriate site conditions existed for biodegradation. Initial field screening results indicated pH readings are within a range for optimal biodegradation. Temperature readings for each of the monitoring wells decreased from the May 2011 event (Table 2). The difference in temperature is likely attributed to seasonal groundwater fluctuation and ambient conditions.

DO concentrations within the plume are greater than those outside of the plume, indicating the mass flux of DO to the groundwater continues to exceed biological oxygen demand as the aerobic microbes are likely being stimulated. Additionally, all of the DO concentrations were greater than 1 milligram per liter (mg/L) which indicates that oxygen is available, and being utilized within the plume to promote biodegradation and natural attenuation. Aerobic microbes currently dominate the plume due to the increased availability of DO. The ORP values within the plume indicate the groundwater is oxidizing, which are to be expected considering the elevated DO concentrations. LTE believes general water quality parameters have established that biodegradation is occurring, and will continue to occur at the Site. General water quality data is summarized in Table 3.

Inorganics that include TDS are regulated by the COGCC in groundwater. Initial field screening results indicated the TDS concentration in MW06 was 3.073 grams per liter (g/L). The TDS concentrations for monitoring wells MW02 through MW05 and MW07 through MW11 ranged from 0.805 g/L to 3.339 g/L. LTE believes the TDS concentrations observed at the Site are representative of background conditions.

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), sulfate, and nitrate. In the absence or near absence of DO, microorganisms metabolize petroleum impacts through the use of these alternate electron acceptors. Geochemical data is summarized in Table 3.



As indicated on Table 4, monitoring wells MW11, MW06, and MW02 were sampled for these electron acceptors as upgradient, in-plume, and downgradient locations, respectively. The data indicate that sulfate reduction may be occurring in the subsurface, as downgradient concentrations are reduced relative to those measured in the plume. Nitrate data indicate the upgradient well (MW11) exhibited greater concentrations than both the in-plume and downgradient wells, showing that microbes are utilizing the available nitrate to biodegrade hydrocarbons. Data collected from the site indicate reduced metals (iron and manganese) were observed in lower concentrations upgradient, as they are being produced inside the plume, and are not reoxidized. The total iron analysis (representative of ferrous iron) in particular is the strongest indicator of biodegradation. In summary, subsurface anaerobic processes are more robust since the May 2011 monitoring event as electron donor sites have become more available.

Summary and Conclusions

As indicated on Table 1, the benzene concentration in monitoring wells MW05 and MW06 exceed the CDPHE-WQCC Regulation 41 standards. Since the May 2011 monitoring event, the benzene concentration in well MW05 has increased from below the laboratory reporting limit of less than 1 µg/L to 26.1 µg/L. The benzene concentration in well MW06 has decreased from 651 µg/L to 475 µg/L.

LTE surveyed the top of casing elevations for each monitoring well in September 2011 and used recent depth to water measurements to create a groundwater elevation map (Figure 3). Since the last monitoring event in May 2011, sampling depths to groundwater have decreased between 0.85 feet and 2.90 feet BTOC. Based on the groundwater elevation map and surrounding areas, groundwater continues to flow northeast toward Waddle Creek.

LTE utilized groundwater quality parameters and geochemical indicators to determine if biodegradation of groundwater 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 has decreased and MNA appears to be an appropriate remedial method to achieve site cleanup goals. However, during the previous monitoring event in May 2011 benzene concentrations and depths to water increased significantly. The mass flux of hydrocarbons to the groundwater appears to correlate with hydrogeologic conditions at the Site and seasonal groundwater fluctuations. LTE will continue the quarterly monitoring program for this Site as planned with the next sampling event scheduled for November 2011.



LTE appreciates the opportunity to provide environmental services to Shell E&P. Please call us at (970) 285-9985 if you have any questions regarding this quarterly groundwater monitoring report or require additional information.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink, appearing to read 'Asher Weinberg'.

Asher Weinberg
Staff Environmental Scientist

A handwritten signature in black ink, appearing to read 'Patrick J. Garland'.

Patrick J. Garland, P.G., REA
Principal / Client Manager

Attachments:

Figure 1 - Site Location Map
Figure 2 - Site Map
Figure 3 - Groundwater Elevation Map
Table 1 - Groundwater Analytical Results
Table 2 - General Water Quality Results
Table 3 - Geochemical Results
Attachment - Laboratory Analytical Report

FIGURES



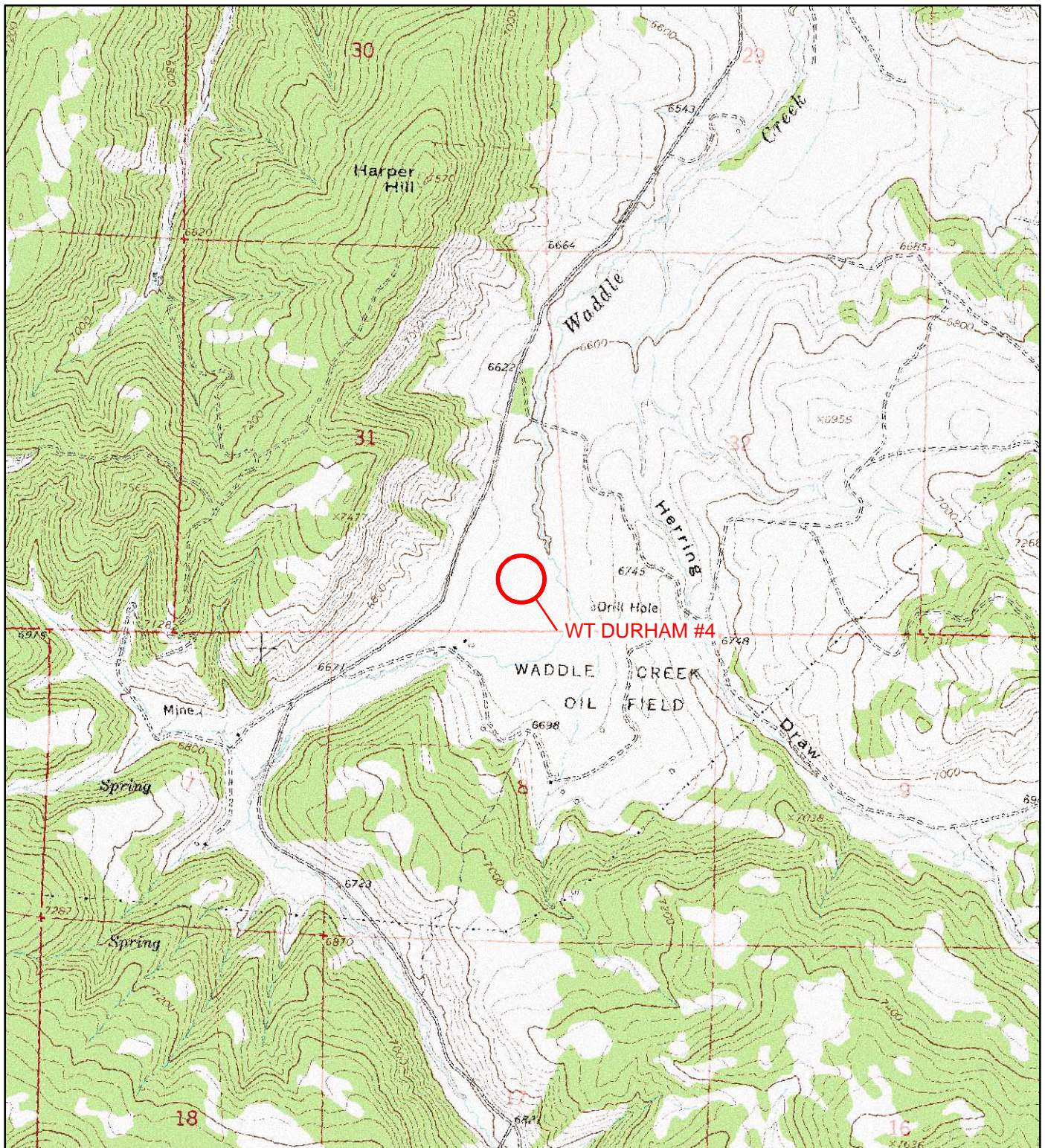



IMAGE COURTESY OF USDA/NRCS, VARIOUS DATES

LEGEND

 SITE LOCATION

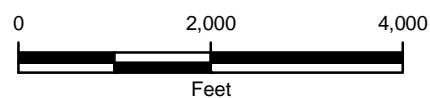
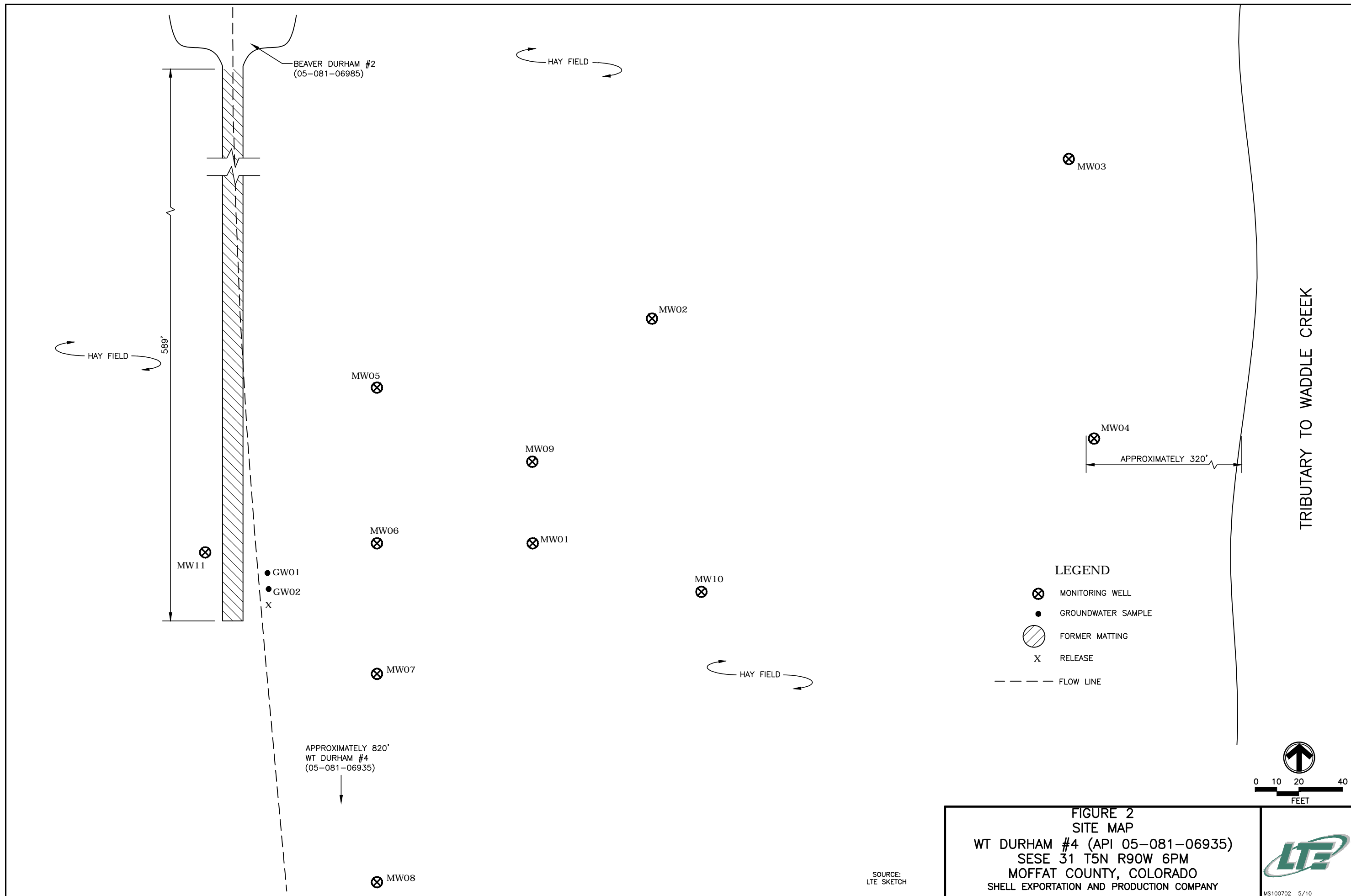
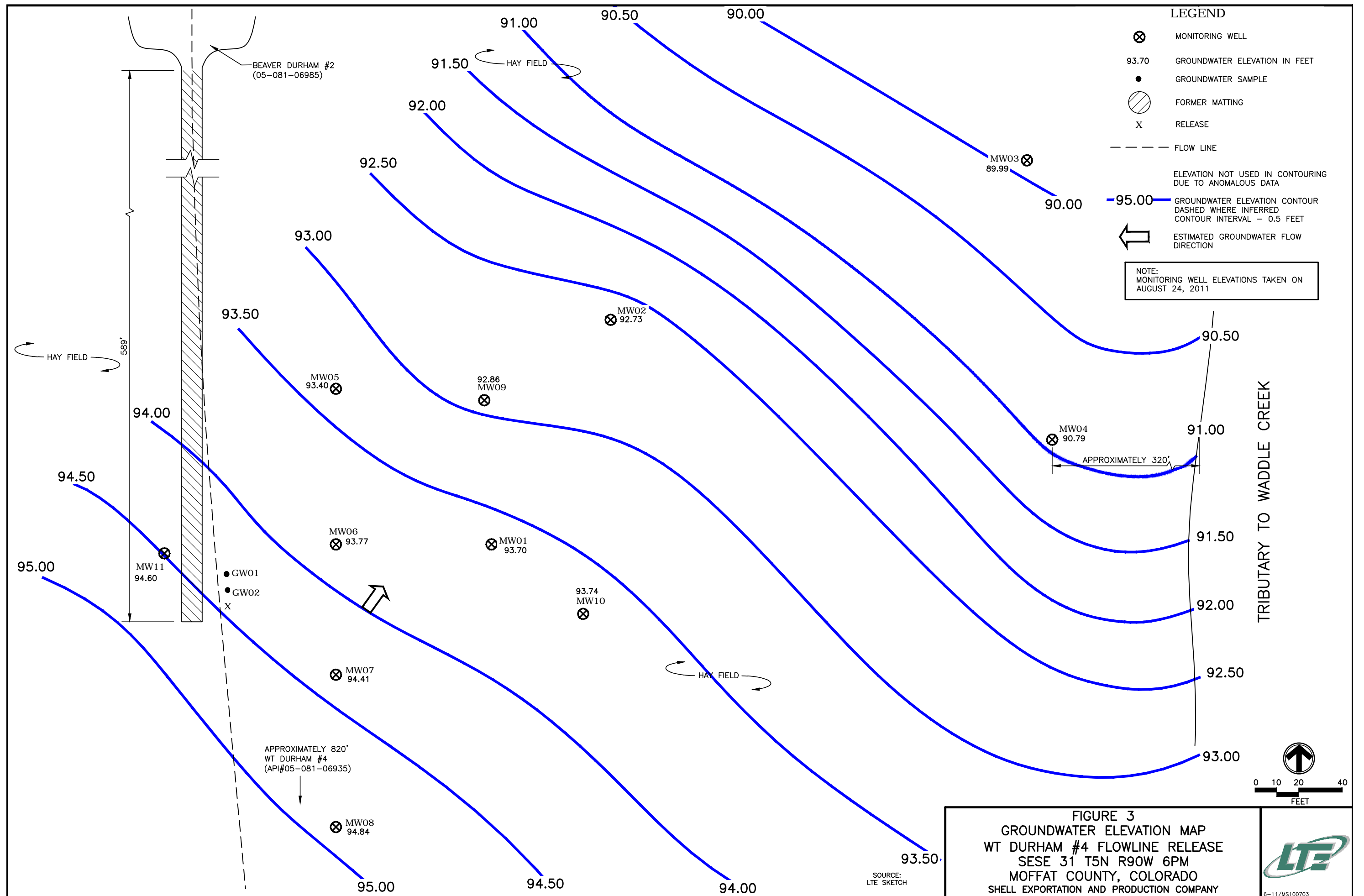


FIGURE 1
SITE LOCATION MAP
 WT DURHAM #4 FLOWLINE RELEASE
 SESE SEC 31 T5N R90W 6PM
 MOFFAT COUNTY, COLORADO
 SHELL EXPLORATION AND PRODUCTION COMPANY







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
	5/3/11	2.25	<1	<1	<1	<3
	8/24/11	5.15	<1	<1	<1	<3
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
	5/3/11	3.00	<1	<1	<1	<3
	8/24/11	4.82	<1	<1	<1	<3
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
	5/3/11	3.05	<1	<1	<1	<3
	8/24/11	5.54	<1	<1	<1	<3
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
	5/3/11	2.97	<1	<1	<1	<3
	8/24/11	4.32	<1	1	<1	<3
MW05	7/14/10	2.70	<1	<1	<1	<3
	9/16/10	10.01	<1	<1	<1	<3
	5/3/11	3.24	<1	<1	<1	<3
	8/24/11	4.09	26.1	<1	<1	<3
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
	5/3/11	2.88	651	<1	10.7	12.2
	8/24/11	4.71	475	1.5	1.6	3
MW07	7/14/10	3.99	58.7	<1	1.52	8.16
	9/16/10	9.73	<1	<1	<1	<3
	5/3/11	2.97	280	<1	4.4	11.6
	8/24/11	4.89	<1	<1	<1	<3
MW08	9/16/10	10.13	<1	<1	<1	<3
	5/2/11	2.84	<1	<1	<1	<3
	8/24/11	5.00	<1	<1	<1	<3
MW09	9/16/10	10.30	<1	<1	<1	<3
	5/3/11	3.10	<1	<1	<1	<3
	8/24/11	4.43	<1	<1	<1	<3
MW10	9/16/10	9.93	<1	<1	<1	<3
	5/3/11	3.22	<1	<1	<1	<3
	8/24/11	5.10	<1	<1	<1	<3



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)
MW11	9/16/10	10.05	<1	<1	<1	<3
	5/3/11	3.07	<1	<1	<1	<3
	8/24/11	5.41	<1	<1	<1	<3
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 8260B

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

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



TABLE 2
GENERAL WATER QUALITY RESULTS
WT DURHAM #4
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
	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
MW02	9/16/10	7.17	12.48	2,126	2.04	-89.4	2.4
	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
MW03	9/16/10	6.42	13.88	3,341	2.41	-84.8	2.171
	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
MW04	9/16/10	6.55	12.75	2,058	2.17	-75.5	1.338
	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
MW05	9/16/10	6.56	15.70	2,581	1.56	-107.5	1.677
	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
MW06	9/16/10	7.15	16.79	2,711	1.38	-102.3	2.4
	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
MW07	9/16/10	6.42	13.22	2,456	1.34	-53.5	1.596
	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
MW08	9/16/10	6.53	13.28	1,916	2.40	6.9	1.246
	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
MW09	9/16/10	6.50	14.55	2,566	3.26	-49.0	1.668
	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
MW10	9/16/10	6.56	12.85	2,017	1.90	38.6	1.311
	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
MW11	9/16/10	6.99	13.29	2,488	2.2	7.3	1.618
	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
CDPHE WQCC Reg 41		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 Basic Standards for Ground Water



TABLE 3
GEOCHEMICAL RESULTS
WT DURHAM #4
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
	5/3/11	360	2,190	<0.05	316
	8/24/11	409	1,070	<0.05	347
MW06	9/16/10	829	3,560	<0.05	465
	5/3/11	942	644	<0.05	384
	8/24/11	926	1,590	0.185	411
MW11	9/16/10	317	<200	0.119	376
	5/3/11	171	<200	<0.05	259
	8/24/11	277	<200	0.193	292

NOTES:

µg/L - micrograms per liter

mg/L - milligrams per liter

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



ATTACHMENT
LABORATORY ANALYTICAL REPORT





September 02, 2011

LT Environmental, Inc.

Asher Weinberg

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. August 26, 2011. This project is associated with Origins project number X108147-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody.

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



4640 North Pecos Street | Unit C | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: MS1007

Project Name: WT Durham #4

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X108147-01	Water	August 24, 2011 18:52	08/26/2011 09:55
MW02	X108147-02	Water	August 25, 2011 11:05	08/26/2011 09:55
MW03	X108147-03	Water	August 24, 2011 18:33	08/26/2011 09:55
MW04	X108147-04	Water	August 24, 2011 18:41	08/26/2011 09:55
MW05	X108147-05	Water	August 24, 2011 18:44	08/26/2011 09:55
MW06	X108147-06	Water	August 25, 2011 11:15	08/26/2011 09:55
MW07	X108147-07	Water	August 24, 2011 19:07	08/26/2011 09:55
MW08	X108147-08	Water	August 24, 2011 19:01	08/26/2011 09:55
MW09	X108147-09	Water	August 24, 2011 18:12	08/26/2011 09:55
MW10	X108147-10	Water	August 24, 2011 18:49	08/26/2011 09:55
MW11	X108147-11	Water	August 25, 2011 11:30	08/26/2011 09:55

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

Project Number: MS1007
Project Name: WT Durham #4

Origins Laboratory

F-012207-01
Effective Date: 01/22/07

Sample Receipt Checklist

Origins Work Order: X108147

Client: LTE Client Project ID: WT Durham #4

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

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

Cooler ID					
Temp (°C)	<u>4.4 °C</u>				

Thermometer ID: T001

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ? NOTE: If samples are delivered within 5 hours of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽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 present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservation in the Comments column (e.g., HCl).	<input checked="" type="checkbox"/>			<u>HCL</u> <u>HNO₃</u>
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in the case narrative.				

Jeff Smith
Custodian Printed Name

Jeff Smith
Signature or Initials of Custodian

10:05
Date/Time

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

Project Number: MS1007
Project Name: WT Durham #4

MW01

8/24/2011 6:52:00PM

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

Origins Laboratory, Inc.
X108147-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.8 %	70-130	"	"	"
Surrogate: Toluene-d8	99.1 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	70-130	"	"	"

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

Project Number: MS1007
Project Name: WT Durham #4

MW02

8/25/2011 11:05:00AM

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

Origins Laboratory, Inc.
X108147-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	92.6 %	70-130	"	"	"
Surrogate: Toluene-d8	99.7 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	107 %	70-130	"	"	"

Metals by SW6010B

Iron	1070	200	ug/L	1	869107	08/29/2011	09/02/2011
Manganese	409	20	"	"	"	"	"

Nitrate by E300.0

Nitrate as N	ND	0.05	mg/L	1	868521	08/27/2011	08/27/2011
--------------	----	------	------	---	--------	------------	------------

Sulfate by E300.0

Sulfate	347	0.2	mg/L	1	868521	"	08/27/2011
---------	-----	-----	------	---	--------	---	------------

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

Project Number: MS1007

Project Name: WT Durham #4

MW03

8/24/2011 6:33:00PM

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

Origins Laboratory, Inc.

X108147-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	92.3 %	70-130	"	"	"
Surrogate: Toluene-d8	99.1 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	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

Project Number: MS1007
Project Name: WT Durham #4

MW04

8/24/2011 6:41:00PM

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

Origins Laboratory, Inc.
X108147-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	1.2	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	93.2 %	70-130	"	"	"
Surrogate: Toluene-d8	101 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	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

Project Number: MS1007
Project Name: WT Durham #4

MW05

8/24/2011 6:44:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X108147-05 (Water)

BTEX by EPA 8260C

Benzene	26.1	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.8 %	70-130	"	"	"
Surrogate: Toluene-d8	99.0 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	97.9 %	70-130	"	"	"

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

Project Number: MS1007
Project Name: WT Durham #4

MW06

8/25/2011 11:15:00AM

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

Origins Laboratory, Inc.
X108147-06 (Water)

BTEX by EPA 8260C

Benzene	475	10.0	ug/L	10	1H29002	08/29/2011	08/30/2011
Toluene	1.5	1.0	"	1	"	"	08/29/2011
Ethylbenzene	1.6	1.0	"	"	"	"	"
Xylenes, total	3.0	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	92.6 %	70-130	"	"	"
Surrogate: Toluene-d8	98.8 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	99.2 %	70-130	"	"	"

Metals by SW6010B

Iron	1590	200	ug/L	1	869107	08/29/2011	09/02/2011
Manganese	926	20	"	"	"	"	"

Nitrate by E300.0

Nitrate as N	0.185	0.05	mg/L	1	868521	08/27/2011	08/27/2011
--------------	-------	------	------	---	--------	------------	------------

Sulfate by E300.0

Sulfate	411	0.2	mg/L	1	868521	"	08/27/2011
---------	-----	-----	------	---	--------	---	------------

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

Project Number: MS1007
Project Name: WT Durham #4

MW07

8/24/2011 7:07:00PM

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

Origins Laboratory, Inc.
X108147-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	96.0 %	70-130	"	"	"
Surrogate: Toluene-d8	99.0 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	70-130	"	"	"

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

Project Number: MS1007
Project Name: WT Durham #4

MW08

8/24/2011 7:01:00PM

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

Origins Laboratory, Inc.
X108147-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	95.4 %	70-130	"	"	"
Surrogate: Toluene-d8	96.4 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	98.6 %	70-130	"	"	"

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

Project Number: MS1007
Project Name: WT Durham #4

MW09

8/24/2011 6:12:00PM

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

Origins Laboratory, Inc.
X108147-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	98.2 %	70-130	"	"	"
Surrogate: Toluene-d8	99.0 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	98.0 %	70-130	"	"	"

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

Project Number: MS1007
Project Name: WT Durham #4

MW10

8/24/2011 6:49:00PM

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

Origins Laboratory, Inc.
X108147-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	95.6 %	70-130	"	"	"
Surrogate: Toluene-d8	99.7 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	105 %	70-130	"	"	"

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

Project Number: MS1007
Project Name: WT Durham #4

MW11**8/25/2011 11:30:00AM**

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

Origins Laboratory, Inc.
X108147-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1H29002	08/29/2011	08/29/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.9 %	70-130	"	"	"
Surrogate: Toluene-d8	99.3 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	107 %	70-130	"	"	"

Metals by SW6010B

Iron	ND	200	ug/L	1	869107	08/29/2011	09/02/2011
Manganese	277	20	"	"	"	"	"

Nitrate by E300.0

Nitrate as N	0.193	0.05	mg/L	1	868521	08/27/2011	08/27/2011
--------------	-------	------	------	---	--------	------------	------------

Sulfate by E300.0

Sulfate	292	0.2	mg/L	1	868521	"	08/27/2011
---------	-----	-----	------	---	--------	---	------------

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

Project Number: MS1007

Project Name: 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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1H29002 - EPA 5030B

Blank (1H29002-BLK1)

Prepared: 08/29/2011 Analyzed: 08/29/2011

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.5	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		105	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

Project Number: MS1007

Project Name: 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
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch 1H29002 - EPA 5030B

LCS (1H29002-BS1)

Prepared: 08/29/2011 Analyzed: 08/29/2011

Benzene	50.1	1.0	ug/L	50.0		100	70-130			
Toluene	48.6	1.0	"	50.0		97.2	70-130			
Ethylbenzene	49.7	1.0	"	50.0		99.4	70-130			
m,p-Xylene	103	2.0	"	100		103	70-130			
o-Xylene	48.8	1.0	"	50.0		97.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		90.4	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		91.1	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

Project Number: MS1007

Project Name: 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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1H29002 - EPA 5030B

Matrix Spike (1H29002-MS1)		Source: X108147-02			Prepared: 08/29/2011 Analyzed: 08/29/2011					
Benzene	53.6	1.0	ug/L	50.0	ND	107	70-130			
Toluene	51.1	1.0	"	50.0	0.1	102	70-130			
Ethylbenzene	52.7	1.0	"	50.0	0.1	105	70-130			
m,p-Xylene	109	2.0	"	100	ND	109	70-130			
o-Xylene	50.8	1.0	"	50.0	ND	102	70-130			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		90.2	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.8	70-130			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		91.4	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

Project Number: MS1007

Project Name: 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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1H29002 - EPA 5030B

Matrix Spike Dup (1H29002-MSD1)		Source: X108147-02			Prepared: 08/29/2011 Analyzed: 08/29/2011					
Benzene	54.2	1.0	ug/L	50.0	ND	108	70-130	1.04	20	
Toluene	52.4	1.0	"	50.0	0.1	105	70-130	2.59	20	
Ethylbenzene	53.7	1.0	"	50.0	0.1	107	70-130	1.99	20	
m,p-Xylene	111	2.0	"	100	ND	111	70-130	1.97	20	
o-Xylene	52.4	1.0	"	50.0	ND	105	70-130	3.16	20	
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		91.3	70-130			
Surrogate: Toluene-d8	61		"	62.5		96.8	70-130			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		91.6	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

Project Number: MS1007

Project Name: 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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Metals by SW6010B - Quality Control
XENCO

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

Batch 869107 - SW3010A

MS (426626-001 S)		Source: 426626-001 S			Prepared: 08/29/2011 Analyzed: 09/02/2011					
Iron	6130	200	ug/L	5000	1070	101	75-125		20	
Manganese	1390	20	"	1000	409	98	75-125		20	
MSD (426626-001 SD)		Source: 426626-001 SD			Prepared: 08/29/2011 Analyzed: 09/02/2011					
Manganese	1400	20	ug/L	1000	409	99	75-125	1	20	
Iron	6080	200	"	5000	1070	100	75-125	1	20	
LCS (610605-1-BKS)		Source: 610605-1-BKS			Prepared: 08/29/2011 Analyzed: 09/02/2011					
Iron	4980	200	ug/L	5	<18.8	100	75-125		20	
Manganese	1020	20	"	1	14.1	102	75-125		20	
BLANK (610605-1-BLK)		Source: 610605-1-BLK			Prepared: 08/29/2011 Analyzed: 09/02/2011					
Iron	ND	200	ug/L	5			-		20	
Manganese	14.1	20	"	1			-		20	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

Project Number: MS1007
Project Name: WT Durham #4

Nitrate by E300.0 - Quality Control
XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 868521 - E300P										
MS (426627-003 S)		Source: 426627-003 S			Prepared: 08/27/2011 Analyzed: 08/27/2011					
Nitrate as N	2.29	0.05	mg/L	2.26	<0.00400	101	80-120		20	
MSD (426627-003 SD)		Source: 426627-003 SD			Prepared: 08/27/2011 Analyzed: 08/27/2011					
Nitrate as N	2.14	0.05	mg/L	2.26	<0.00400	95	80-120	7	20	
LCS (610544-1-BKS)		Source: 610544-1-BKS			Prepared: 08/27/2011 Analyzed: 08/27/2011					
Nitrate as N	2.37	0.05	mg/L	2.26	<0.00400	105	80-120		20	
BLANK (610544-1-BLK)		Source: 610544-1-BLK			Prepared: 08/27/2011 Analyzed: 08/27/2011					
Nitrate as N	ND	0.05	mg/L	2.26			-		20	

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

Project Number: MS1007
Project Name: WT Durham #4

Sulfate by E300.0 - Quality Control
XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 868521 - E300P										
MS (426627-003 S)		Source: 426627-003 S			Prepared: 08/27/2011 Analyzed: 08/27/2011					
Sulfate	2200	0.2	mg/L	50	2650		80-120		20	
MSD (426627-003 SD)		Source: 426627-003 SD			Prepared: 08/27/2011 Analyzed: 08/27/2011					
Sulfate	2220	0.2	mg/L	50	2650		80-120	1	20	
LCS (610544-1-BKS)		Source: 610544-1-BKS			Prepared: 08/27/2011 Analyzed: 08/27/2011					
Sulfate	50.2	0.2	mg/L	50	<0.0460	100	80-120		20	
BLANK (610544-1-BLK)		Source: 610544-1-BLK			Prepared: 08/27/2011 Analyzed: 08/27/2011					
Sulfate	ND	0.2	mg/L	50			-		20	

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

Project Number: MS1007

Project Name: WT Durham #4

Notes and Definitions

- I Sample result was found between MDL and RL
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

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.