



July 19, 2013

Mr. Jacob Evans  
Senior Environmental Specialist  
Noble Energy, Inc.  
1625 Broadway, Suite 2200  
Denver, Colorado 80202

**RE: Site Characterization Report  
Pappenheim USX AB 13-99 HZ  
Weld County, Colorado**

Dear Mr. Evans:

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted assessment activities at the Pappenheim USX AB 13-99 HZ (Site). LTE personnel were onsite July 9, 2013, to investigate and address landowner concerns regarding reduced vegetative growth at the Site. The Site is located approximately 3.75 miles north of the intersection of Weld County Road (WCR) 74 and WCR 59 in Weld County, Colorado. A site location map is provided as Figure 1.

**Site Summary**

The Pappenheim USX AB 13-99 HZ site is located in an agricultural field. Noble was contacted by the property owner concerning land, surrounding the well pad, where crop growth has been inhibited. After this notification, Noble immediately contacted LTE and requested a site assessment be conducted. The purpose of the Site investigation as presented in this report is to identify the existence of any petroleum hydrocarbon impact related to oil and gas activities.

**Field Investigation**

Five soil sample locations were selected to characterize the affected area. Two background sample locations were chosen in an unaffected area to the northwest and southeast of the affected area. Characterizations of affected versus non-affected areas were determined based on visual observations of vegetation coverage. Sample locations are displayed on Figure 2.

Per Noble's request, fourteen soil samples were collected at the Site on July 9, 2013. Two samples were collected at each sample location at depths of 0 inches to 6 inches below ground surface (bgs) and 18 inches bgs. Each soil sample was split between two laboratories in order to compare and verify laboratory analytical results. Soil samples were collected in 4-ounce glass containers, placed on ice, and delivered under chain-of-custody (COC) protocol to eAnalytics Laboratory (eAnalytics) located in Loveland, Colorado and Origins Laboratory (Originis) located in Denver, Colorado. Samples were analyzed for benzene, toluene, ethylbenzene and

total xylenes (BTEX) and naphthalene by Environmental Protection Agency (EPA) Method 8260C, total petroleum hydrocarbons (TPH) as diesel range organics (DRO) by EPA Method 8015C, TPH as gasoline range organics (GRO) by EPA Method 8260C, electrical conductivity (EC) by United States Department of Agriculture (USDA) Handbook 60 Method 3 or EPA Method 120.1, pH by EPA Method 9045D, and sodium adsorption ration (SAR) by USDA Handbook 60 Method 20B.

### Soil Analytical Results

The Colorado Oil and Gas Conservation Commission (COGCC) standards for BTEX in soil are 0.17 milligrams per kilogram (mg/kg), 85 mg/kg, 100 mg/kg, and 175 mg/kg, respectively, and 500 mg/kg for TPH. The COGCC standards for EC, pH, and SAR are 4 millimhos per centimeter, 7 to 9 standard unit, and 12, respectively.

Fourteen soil samples were collected during the July 9, 2013, sampling event. Soil analytical results from both laboratories indicated that BTEX, naphthalene, and TPH were in compliance with all applicable COGCC standards in all samples. All samples were in compliance with COGCC standards for EC, pH, and SAR. Table 1 summarizes soil analytical results from eAnalytics, and Table 2 summarizes soil analytical results from Origins. Laboratory analytical reports, laboratory quality assurance/quality control data, and COC documentation are attached.

### Summary

Soil sample results from both laboratories were non-detect for BTEX, naphthalene, and TPH indicating the absence of petroleum hydrocarbons from all sample locations. The analytical results for EC, pH, and SAR were in compliance with applicable standards.

LTE appreciates the opportunity to provide environmental services to Noble. Please call us at 303-433-9788 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC



Rob Rebel, P.E.  
Project Engineer



Steve Kahn, P.E.  
Principal

### Attachments

Figure 1 – Site Location Map

Figure 2 – Site Map

Table 1 – eAnalytics Laboratory Soil Analytical Results

Table 2 – Origins Laboratory, Inc. Soil Analytical Results

Attachment – Laboratory Analytical Reports

## FIGURES

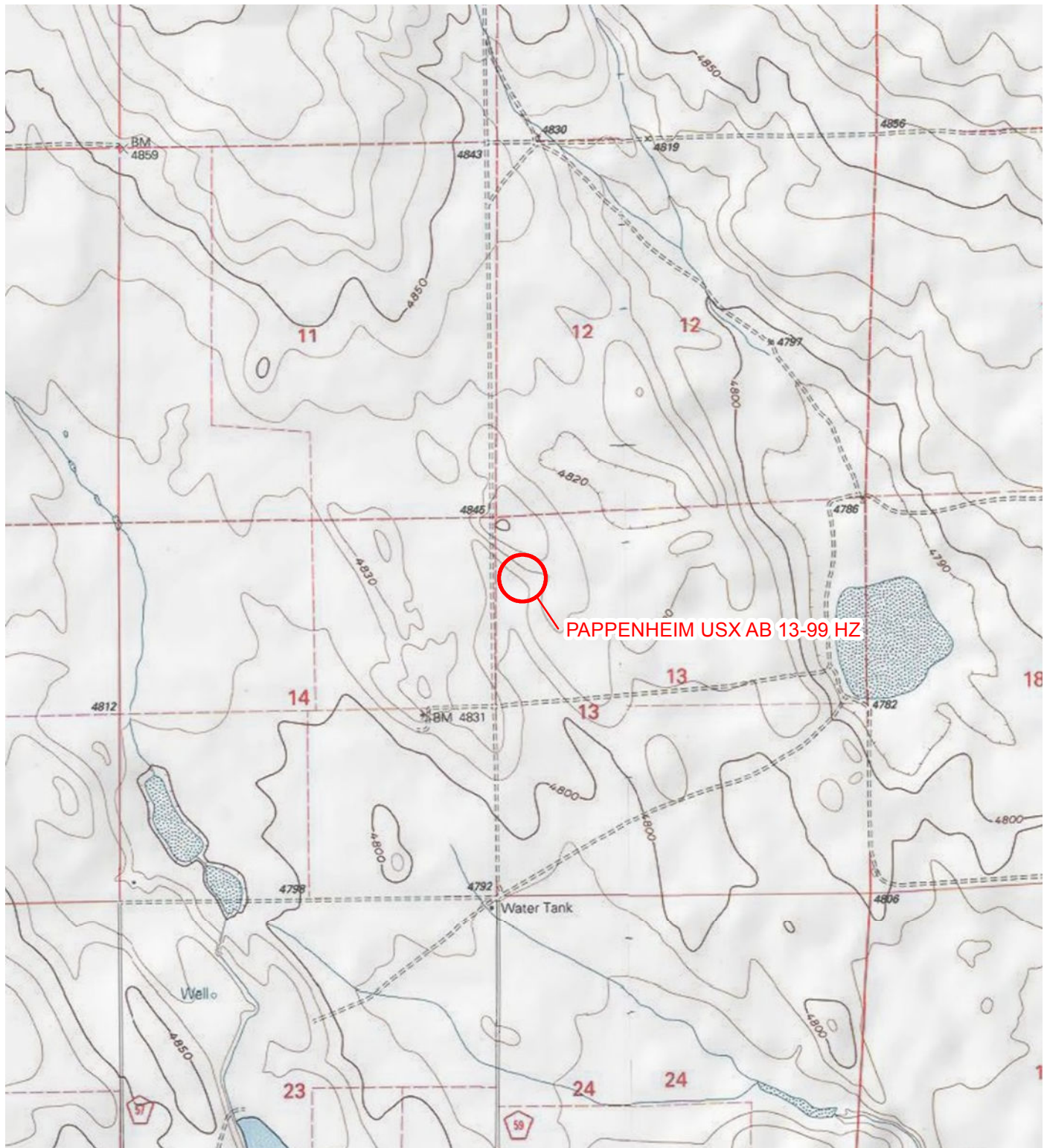


IMAGE COURTESY OF ESRI/USGS

# LEGEND

○ SITE LOCATION

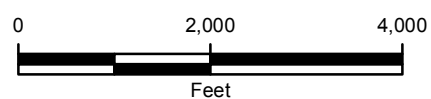


FIGURE 1  
SITE LOCATION MAP  
PAPPENHEIM USX AB 13-99 HZ  
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.







IMAGE COURTESY OF ESRI/BING MAPS

## LEGEND

- WELLHEAD
- SOIL BORING
- ▲ BACKGROUND SAMPLE
- WELL PAD
- (P & A): PLUGGED AND ABANDONED

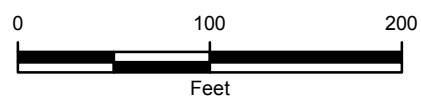


FIGURE 2  
SITE MAP  
PAPPENHEIM USX AB 13-99 HZ  
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



## **TABLES**

TABLE 1

**eANALYTICS LABORATORY SOIL ANALYTICAL RESULTS  
PAPPENHEIM USX AB 13-99 HZ  
WELD COUNTY, COLORADO  
NOBLE ENERGY, INC.**

Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)	EC (mmhos/cm)	pH (SU)	SAR
SB01@0-6"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.792	7.34	0.87
SB01@18"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.348	7.20	1.39
SB02@0-6"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.372	7.56	1.35
SB02@18"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.560	7.74	1.38
SB03@0-6"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.484	7.78	1.25
SB03@18"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.812	7.73	1.44
SB04@0-6"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.140	7.65	1.77
SB04@18"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.136	7.49	1.20
SB05@0-6"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.180	7.46	1.09
SB05@18"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.160	7.22	1.80
BG01@0-6"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.084	7.13	1.05
BG01@18"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.076	7.06	0.98
BG02@0-6"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.088	7.11	1.18
BG02@18"	7/9/2013	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50	<100	0.128	7.09	1.22
<b>COGCC Standard</b>		<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>--</b>	<b>--</b>	<b>500</b>	<b>4</b>	<b>7 to 9</b>	<b>12</b>

**NOTES:**

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SU - standard unit

GRO - gasoline range organics analyzed by EPA Method 8260C

DRO - diesel range organics analyzed by EPA Method 8015C

TPH - total petroleum hydrocarbons

TPH is the sum of GRO and DRO

&lt; - indicates result is less than the stated laboratory reporting limit

COGCC - Colorado Oil and Gas Conservation Commissior

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

EC - electrical conductivity

SAR - sodium adsorption ratio

TABLE 2

**ORIGINS LABORATORY, INC. SOIL ANALYTICAL RESULTS**  
**PAPPENHEIM USX AB 13-99 HZ**  
**WELD COUNTY, COLORADO**  
**NOBLE ENERGY, INC.**

Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)	EC (mmhos/cm)	pH (SU)	SAR
SB01@0-6"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0022	7.9	0.121
SB01@18"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0152	7.62	0.077
SB02@0-6"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0237	7.99	0.132
SB02@18"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.103	8.42	0.179
SB03@0-6"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0478	8.23	0.105
SB03@18"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.098	7.98	0.205
SB04@0-6"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0213	7.7	0.101
SB04@18"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0163	7.43	0.8
SB05@0-6"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0159	7.41	0.083
SB05@18"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0178	7.36	0.336
BG01@0-6"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0154	7.7	0.071
BG01@18"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0077	7.42	0.086
BG02@0-6"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0087	7.52	0.079
BG02@18"	7/9/2013	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.40	<50.0	<50.40	0.0187	7.56	0.094
<b>COGCC Standard</b>		<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>--</b>	<b>--</b>	<b>500</b>	<b>4</b>	<b>7 to 9</b>	<b>12</b>

**NOTES:**

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SU - standard unit

GRO - gasoline range organics analyzed by EPA Method 8260C

DRO - diesel range organics analyzed by EPA Method 8015C

TPH - total petroleum hydrocarbons

TPH is the sum of GRO and DRO

&lt; - indicates result is less than the stated laboratory reporting limit

COGCC - Colorado Oil and Gas Conservation Commission

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

EC - electrical conductivity

SAR - sodium adsorption ratio



**ATTACHMENT**  
**SOIL ANALYTICAL REPORTS**

# Certificate of Analysis



July 11, 2013

Client: LT Environmental  
4600 West 60th Avenue  
Arvada, Colorado 80003

Project: Pappenheim USX AB 13-99HZ

Lab ID: 070908

Date Received: 07/09/13

Number of Samples Received: 14

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Within acceptable range of 2-6° C, or as specified in EPA Method

Analysis	EPA Method	Lab ID on COC
BTEX / Nap	8260C	1 - 14
TPH - GRO/DRO	8260C/8015C	1 - 14
pH	9045D	1 - 14
Sodium Adsorption Ratio	U.S. Dept of Ag Handbook 60 Method 20B	1 - 14
Electrical Conductivity	U.S. Dept of Ag Handbook 60 Method 3	1 - 14

All quality control analyses associated with the requested analyses were satisfactorily passed before the samples were run. If you have any questions please give us a call, we are happy to help.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you, we truly appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken  
Quality Assurance Manager  
eAnalytics Laboratory



A2LA & Department of Defense (DoD) Certified

# Certificate of Analysis

Chain of Custody

**eANALYTICS**  
LABORATORY

July 11, 2013

Chain of Custody Form

eANALYTICS LABORATORY			ANALYSIS INFORMATION															
1767 Rocky Mountain Avenue Loveland CO 80538   Phone: (970) 667-6975   Fax: (970) 669-0941   www.eAnalyticsLab.com			(Select analysis by checking box on corresponding sample line)															
CLIENT INFORMATION			ANALYSIS INFORMATION															
Company: <b>LTE</b>			Other Analysis															
Project: <b>Pappenheim USX AB 13-99HZ</b>																		
Project Manager: <b>Brett Forkner</b>																		
Sampler: <b>Danny Burns</b>																		
Phone/Email: <b>bforkner@ltenv.com</b>																		
Address: <b>4600 W 60th Arrada CO 80003</b>																		
Lab ID	Sample Name	Sampling Date/Time	Number of Containers	Main (S) Soil (W) Water (V) Vapor (O) Other	BTEX (EPA 816)	MTBE / TPH (EPA 8260)	TEPH (EPA 816)	Vapor BTEX / TVPH (EPA TO-14)	Full VOC (EPA 8260)	Semi-Volatiles (Full List / PAH's)	TRPH / Oil & Grease	RCRA 8 Metals (Total / TCLP / Dissolved)	React / Ignit / Corrosivity / Paint Filter	pH / TSS / TDS	Metals (Specify)	PCBs / Pesticides / Herbicides	Anions (Specify)	Other Analysis
01	SB01@0-6"	7/9/13 1040 AM	1	S	X	X												Napthalene
02	SB01@18"	7/9/13 1045 AM	1	S	X	X												pH
03	SB02@0-6"	7/9/13 1120 AM	1	S	X	X												SAR
04	SB02@18"	7/9/13 1125 AM	1	S	X	X												EC
05	SB03@0-6"	7/9/13 1150 AM	1	S	X	X												
06	SB03@18"	7/9/13 1155 AM	1	S	X	X												
07	SB04@0-6"	7/9/13 1255 AM	1	S	X	X												
08	SB04@18"	7/9/13 1300 AM	1	S	X	X												
09	<del>SB04</del> SB05@0-6"	7/9/13 1340 AM	1	S	X	X												
10	SB05@18"	7/9/13 1345 AM	1	S	X	X												
11	Background 01@0-6"	7/9/13 1210 AM	1	S	X	X												
12	Background 01@18"	7/9/13 1215 AM	1	S	X	X												
13	Background 02@0-6"	7/9/13 1400 AM	1	S	X	X												
14	Background 02@18"	7/9/13 1405 AM	1	S	X	X												
Comments:																		
<b>Turnaround Time (Business Days)</b> TAT begins when sample is received by eANALYTICS <input checked="" type="radio"/> Normal (5-10 Days) <input type="radio"/> 3 Day (25%) <input type="radio"/> 2 Day (50%) <input type="radio"/> 1 Day (100%) <input type="radio"/> Same Day (300%) Rush analysis requires an extra charge. If possible please inform eANALYTICS in advance for rush analysis.			<b>Record of Custody</b> Relinquished by: <u>DJB</u> Date: <u>7/9/13</u> Company: <u>LTE</u> Time: <u>16:40</u> AM/PM Received by: _____ Date: _____ Company: _____ Time: _____ AM/PM Relinquished by: _____ Date: _____ Company: _____ Time: _____ AM/PM Received by: <u>Torrell Rhea</u> Date: <u>7-9-13</u> Company: <u>eANALYTICS</u> Time: <u>1640</u> AM/PM															
Colorado OPS Project: Yes / <u>No</u> For eANALYTICS Use Samples Received Intact: <u>Yes</u> / No Received Within Temperature Range (2-6°C): <u>Yes</u> / No Sample Preservative: Ice / <u>None</u>																		

WO # 070908

eANALYTICS: Environmental testing made Easy

Page 1 of 1





**e**ANALYTICS  
LABORATORY

**July 11, 2013**

EPA Method: 8260C

Todd Rhea

Page 5 of 6







July 18, 2013

LT Environmental, Inc.

Rob Rebel

4600 West 60th Avenue

Arvada

CO 80003

**Project Name - Noble - Pappenheim USX AB  
13-99HZ**

**Project Number - N/A**

Attached are your analytical results for Noble - Pappenheim USX AB 13-99HZ received by Origins Laboratory, Inc. July 11, 2013. This project is associated with Origins project number x307058-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



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

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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB01 @ 0-6"	x307058-01	Soil	July 9, 2013 10:40	07/11/2013 13:40
SB01 @ 18"	X307058-02	Soil	July 9, 2013 10:45	07/11/2013 13:40
SB02 @ 0-6"	X307058-03	Soil	July 9, 2013 11:20	07/11/2013 13:40
SB02 @ 18"	x307058-04	Soil	July 9, 2013 11:25	07/11/2013 13:40
SB03 @ 0-6"	x307058-05	Soil	July 9, 2013 11:50	07/11/2013 13:40
SB03 @ 18"	X307058-06	Soil	July 9, 2013 11:55	07/11/2013 13:40
SB04 @ 0-6"	X307058-07	Soil	July 9, 2013 12:55	07/11/2013 13:40
SB04 @ 18"	X307058-08	Soil	July 9, 2013 13:00	07/11/2013 13:40
SB05 @ 0-6"	X307058-09	Soil	July 9, 2013 13:40	07/11/2013 13:40
SB05 @ 18"	X307058-10	Soil	July 9, 2013 13:45	07/11/2013 13:40
Background 01 @ 0-6"	X307058-11	Soil	July 9, 2013 12:10	07/11/2013 13:40
Background 01 @ 18"	x307058-12	Soil	July 9, 2013 12:15	07/11/2013 13:40
Background 02 @ 0-6"	x307058-13	Soil	July 9, 2013 14:00	07/11/2013 13:40
Background 02 @ 18"	X307058-14	Soil	July 9, 2013 14:05	07/11/2013 13:40

Origins Laboratory, Inc.



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

Noelle E Doyle, President

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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Rob Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

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Origins Laboratory, Inc.



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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.*

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

[www.originslaboratory.com](http://www.originslaboratory.com)

page 1 of 2

X307058

**ORIGINS**  
LABORATORY, INC

**Client:**

Noble/LTE

Address:

**Project Manager:**

Rob Zobel

Project Name:

Badenheim USX AB 13-99HZ

Project Number:

1000

Samples Collected By:

Burns

Telephone Number:

Email Address:

Email Address:

Analysis

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis							Sample Instructions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #	Other	BTEX	TPH - G/pt	Naphthalene	PH	SAR	EC																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Data Results Needed

Naule G.





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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: X307058

Client: LTE

Client Project ID: Pappenheim USX

Checklist Completed by: Jesse Smith

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

Date/time completed: 7/11/13 14:32

Airbill #: NA

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

Cooler Number/Temperature: 1 15°C        °C        °C (Describe)        °C

Thermometer ID: T002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<u>X</u>			
Is there ice present (document if blue ice is used)	<u>X</u>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Were all samples received intact <sup>(1)</sup> ?	<u>X</u>			
Was adequate sample volume provided <sup>(1)</sup> ?	<u>X</u>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<u>X</u>	<u>/</u>		<u>pH - 24hr</u>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<u>X</u>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<u>X</u>			
For volatiles in water – is there headspace (> ¼ inch bottle) present? If yes, contact client and note in narrative.			<u>X</u>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (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 <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<u>X</u>	
Additional Comments (if any):				

<sup>(1)</sup>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)

07-16-13 1216  
Date/Time Reviewed

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 Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB01 @ 0-6"

7/9/2013 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-01 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	2.2	uS/cm	1	3G11009	07/11/2013	07/16/2013
---------------------------	-----	-------	---	---------	------------	------------

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/18/2013
------------------	----	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	106 %	59-131			"	"	"
------------------------	-------	--------	--	--	---	---	---

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
-----------------------------	----	------	-------	---	---------	------------	------------

Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
---------	----	--------	---	---	---	---	---

Ethylbenzene	ND	0.0040	"	"	"	"	"
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Xylenes, total	ND	0.0040	"	"	"	"	"
----------------	----	--------	---	---	---	---	---

Naphthalene	ND	0.0080	"	"	"	"	"
-------------	----	--------	---	---	---	---	---

Surrogate: 1,2-Dichloroethane-d4	85.0 %	70-130			"	"	"
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Surrogate: Toluene-d8	99.9 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	85.0 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	7.9	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB01 @ 0-6"

7/9/2013 10:40:00AM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-01 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.121	dry	1	1314388	07/12/2013	07/15/2013
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Origins Laboratory, Inc.



Noelle E Doyle, President

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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Rob Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB01 @ 18"

7/9/2013 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-02 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	15.2	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
------------------	----	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	102 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
-----------------------------	----	------	-------	---	---------	------------	------------

Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
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Xylenes, total	ND	0.0040	"	"	"	"	"
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Naphthalene	ND	0.0080	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"
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Surrogate: Toluene-d8	106 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	89.7 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	7.62	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB01 @ 18"

7/9/2013 10:45:00AM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-02 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.077	dry	1	1314388	07/12/2013	07/15/2013
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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 Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB02 @ 0-6"

7/9/2013 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-03 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	23.7	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
------------------	----	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	97.3 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
-----------------------------	----	------	-------	---	---------	------------	------------

Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
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Xylenes, total	ND	0.0040	"	"	"	"	"
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Naphthalene	ND	0.0080	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"
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Surrogate: Toluene-d8	106 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	95.1 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	7.99	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB02 @ 0-6"

7/9/2013 11:20:00AM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-03 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.132	dry	1	1314388	07/12/2013	07/15/2013
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Origins Laboratory, Inc.



Noelle E Doyle, President

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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Rob Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB02 @ 18"

7/9/2013 11:25:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-04 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	103	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
------------------	----	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	100 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
-----------------------------	----	------	-------	---	---------	------------	------------

Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
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Xylenes, total	ND	0.0040	"	"	"	"	"
----------------	----	--------	---	---	---	---	---

Naphthalene	ND	0.0080	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"
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Surrogate: Toluene-d8	103 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	92.1 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	8.42	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB02 @ 18"  
7/9/2013 11:25:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC  
x307058-04 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.179		dry	1	1314388	07/12/2013	07/15/2013	
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Origins Laboratory, Inc.



Noelle E Doyle, President

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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Rob Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB03 @ 0-6"

7/9/2013 11:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-05 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	47.8	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
------------------	----	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	95.3 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
-----------------------------	----	------	-------	---	---------	------------	------------

Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
--------------	----	--------	---	---	---	---	---

Xylenes, total	ND	0.0040	"	"	"	"	"
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Naphthalene	ND	0.0080	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	110 %	70-130			"	"	"
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Surrogate: Toluene-d8	104 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	93.3 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	8.23	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB03 @ 0-6"

7/9/2013 11:50:00AM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-05 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.105	dry	1	1314388	07/12/2013	07/15/2013
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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 Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB03 @ 18"

7/9/2013 11:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-06 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	98	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
------------------	----	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	93.5 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
-----------------------------	----	------	-------	---	---------	------------	------------

Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
--------------	----	--------	---	---	---	---	---

Xylenes, total	ND	0.0040	"	"	"	"	"
----------------	----	--------	---	---	---	---	---

Naphthalene	ND	0.0080	"	"	"	"	"
-------------	----	--------	---	---	---	---	---

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"
----------------------------------	-------	--------	--	--	---	---	---

Surrogate: Toluene-d8	107 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	93.2 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	7.98	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB03 @ 18"

7/9/2013 11:55:00AM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-06 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.205	dry	1	1314388	07/12/2013	07/15/2013
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Origins Laboratory, Inc.



Noelle E Doyle, President

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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Rob Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB04 @ 0-6"

7/9/2013 12:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-07 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	21.3	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
------------------	----	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	80.4 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
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Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
---------	----	--------	---	---	---	---	---

Ethylbenzene	ND	0.0040	"	"	"	"	"
--------------	----	--------	---	---	---	---	---

Xylenes, total	ND	0.0040	"	"	"	"	"
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Naphthalene	ND	0.0080	"	"	"	"	"
-------------	----	--------	---	---	---	---	---

Surrogate: 1,2-Dichloroethane-d4	104 %	70-130			"	"	"
----------------------------------	-------	--------	--	--	---	---	---

Surrogate: Toluene-d8	106 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	94.7 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	7.7	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB04 @ 0-6"

7/9/2013 12:55:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-07 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.101	dry	1	1314388	07/12/2013	07/15/2013
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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 Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB04 @ 18"

7/9/2013 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-08 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	16.3	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
------------------	----	------	-------	---	---------	------------	------------

Surrogate: <i>o</i> -Terphenyl	102 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
Benzene	ND	0.0040	"	"	"	"	"
Toluene	ND	0.0040	"	"	"	"	"
Ethylbenzene	ND	0.0040	"	"	"	"	"
Xylenes, total	ND	0.0040	"	"	"	"	"
Naphthalene	ND	0.0080	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130			"	"	"
Surrogate: Toluene-d8	104 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	93.3 %	70-130			"	"	"

## pH in Soil by EPA 9045D

pH	7.43	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB04 @ 18"

7/9/2013 1:00:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-08 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.8	dry	1	1314388	07/12/2013	07/15/2013
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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 Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB05 @ 0-6"

7/9/2013 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-09 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	15.9	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
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Surrogate: o-Terphenyl	115 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
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Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
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Xylenes, total	ND	0.0040	"	"	"	"	"
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Naphthalene	ND	0.0080	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	107 %	70-130			"	"	"
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Surrogate: Toluene-d8	106 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	90.0 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	7.41	pH Units	1	3G11008	07/11/2013	07/11/2013
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Noelle E Doyle, President

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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB05 @ 0-6"

7/9/2013 1:40:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-09 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.083	dry	1	1314388	07/12/2013	07/15/2013
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Origins Laboratory, Inc.



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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Rob Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

SB05 @ 18"

7/9/2013 1:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X307058-10 (Soil)

## Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	17.8	uS/cm	1	3G11009	07/11/2013	07/16/2013
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## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
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Surrogate: o-Terphenyl	104 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
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Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
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Xylenes, total	ND	0.0040	"	"	"	"	"
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Naphthalene	ND	0.0080	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"
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Surrogate: Toluene-d8	105 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	93.0 %	70-130			"	"	"
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## pH in Soil by EPA 9045D

pH	7.36	pH Units	1	3G11008	07/11/2013	07/11/2013
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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

SB05 @ 18"

7/9/2013 1:45:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-10 (Soil)

## Sodium Absorption Ration (SAR)

SAR	0.336	dry	1	1314388	07/12/2013	07/15/2013
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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Rob Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

## Background 01 @ 0-6"

7/9/2013 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. X307058-11 (Soil)

### Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	15.4	uS/cm	1	3G11009	07/11/2013	07/16/2013
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### Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
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Surrogate: o-Terphenyl	103 %	59-131			"	"	"
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### GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
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Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
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Xylenes, total	ND	0.0040	"	"	"	"	"
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Naphthalene	ND	0.0080	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"
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Surrogate: Toluene-d8	103 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	92.3 %	70-130			"	"	"
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### pH in Soil by EPA 9045D

pH	7.7	pH Units	1	3G11008	07/11/2013	07/11/2013
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Origins Laboratory, Inc.



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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

Background 01 @ 0-6"

7/9/2013 12:10:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-11 (Soil)

Sodium Absorption Ration (SAR)

SAR	0.071	dry	1	1314388	07/12/2013	07/15/2013
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Origins Laboratory, Inc.



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4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

## Background 01 @ 18"

7/9/2013 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. X307058-12 (Soil)

### Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	7.7	uS/cm	1	3G11009	07/11/2013	07/16/2013
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### Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
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Surrogate: o-Terphenyl	102 %	59-131			"	"	"
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### GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
Benzene	ND	0.0040	"	"	"	"	"
Toluene	ND	0.0040	"	"	"	"	"
Ethylbenzene	ND	0.0040	"	"	"	"	"
Xylenes, total	ND	0.0040	"	"	"	"	"
Naphthalene	ND	0.0080	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130			"	"	"
Surrogate: Toluene-d8	104 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	96.2 %	70-130			"	"	"

### pH in Soil by EPA 9045D

pH	7.42	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

Background 01 @ 18"

7/9/2013 12:15:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-12 (Soil)

Sodium Absorption Ration (SAR)

SAR	0.086	dry	1	1314388	07/12/2013	07/15/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

## Background 02 @ 0-6"

7/9/2013 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. X307058-13 (Soil)

### Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	8.7	uS/cm	1	3G11009	07/11/2013	07/16/2013
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### Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
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Surrogate: o-Terphenyl	95.2 %	59-131			"	"	"
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### GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/15/2013
Benzene	ND	0.0040	"	"	"	"	07/16/2013
Toluene	ND	0.0040	"	"	"	"	"
Ethylbenzene	ND	0.0040	"	"	"	"	"
Xylenes, total	ND	0.0040	"	"	"	"	"
Napthalene	ND	0.0080	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"
Surrogate: Toluene-d8	98.1 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	90.8 %	70-130			"	"	"

### pH in Soil by EPA 9045D

pH	7.52	pH Units	1	3G11008	07/11/2013	07/11/2013
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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 Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

Background 02 @ 0-6"

7/9/2013 2:00:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-13 (Soil)

Sodium Absorption Ration (SAR)

SAR	0.079	dry	1	1314388	07/12/2013	07/15/2013
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Origins Laboratory, Inc.



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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Rob Rebel

Project Number: N/A

Project: Noble - Pappenheim USX AB 13-99HZ

## Background 02 @ 18"

7/9/2013 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. X307058-14 (Soil)

### Conductance/Specific Conductance by EPA 120.1

Specific Conductance (EC)	18.7	uS/cm	1	3G11009	07/11/2013	07/16/2013
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### Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	3G12009	07/12/2013	07/16/2013
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Surrogate: o-Terphenyl	67.5 %	59-131			"	"	"
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### GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.40	mg/kg	1	3G11006	07/11/2013	07/16/2013
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Benzene	ND	0.0040	"	"	"	"	"
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Toluene	ND	0.0040	"	"	"	"	"
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Ethylbenzene	ND	0.0040	"	"	"	"	"
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Xylenes, total	ND	0.0040	"	"	"	"	"
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Naphthalene	ND	0.0080	"	"	"	"	"
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Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"
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Surrogate: Toluene-d8	101 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	91.7 %	70-130			"	"	"
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### pH in Soil by EPA 9045D

pH	7.56	pH Units	1	3G11008	07/11/2013	07/11/2013
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Origins Laboratory, Inc.



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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

Background 02 @ 18"

7/9/2013 2:05:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit						

GEL Laboratories, LLC  
x307058-14 (Soil)

Sodium Absorption Ration (SAR)

SAR	0.094	dry	1	1314388	07/12/2013	07/15/2013
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Origins Laboratory, Inc.



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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

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 3G11006 - EPA 5030 (soil)										
Blank (3G11006-BLK1)					Prepared: 07/11/2013 Analyzed: 07/12/2013					
Gasoline Range Hydrocarbons	ND	0.40	mg/kg							
Benzene	ND	0.0040	"							
Toluene	ND	0.0040	"							
Ethylbenzene	ND	0.0040	"							
Xylenes, total	ND	0.0040	"							
Naphthalene	ND	0.0080	"							
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		114	70-130			
Surrogate: Toluene-d8	62		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		95.0	70-130			

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Noelle E Doyle, President

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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

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 3G11006 - EPA 5030 (soil)

Blank (3G11006-BLK2)

Prepared: 07/11/2013 Analyzed: 07/12/2013

Gasoline Range Hydrocarbons	ND	0.40	mg/kg							
Benzene	ND	0.0040	"							
Toluene	ND	0.0040	"							
Ethylbenzene	ND	0.0040	"							
Xylenes, total	ND	0.0040	"							
Naphthalene	ND	0.0080	"							
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		113	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		93.6	70-130			

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

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 3G11006 - EPA 5030 (soil)										
LCS (3G11006-BS1)					Prepared: 07/11/2013 Analyzed: 07/12/2013					
Benzene	0.21	0.0040	mg/kg	0.200		103	70-130			
Toluene	0.21	0.0040	"	0.200		107	70-130			
Ethylbenzene	0.20	0.0040	"	0.200		99.3	70-130			
m,p-Xylene	0.39	0.0080	"	0.400		97.9	70-130			
o-Xylene	0.18	0.0040	"	0.200		91.5	70-130			
Naphthalene	0.19	0.0080	"	0.200		93.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		93.3	70-130			

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

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 3G11006 - EPA 5030 (soil)										
LCS (3G11006-BS2)					Prepared: 07/11/2013 Analyzed: 07/12/2013					
Benzene	0.18	0.0040	mg/kg	0.200		91.3	70-130			
Toluene	0.18	0.0040	"	0.200		92.2	70-130			
Ethylbenzene	0.17	0.0040	"	0.200		85.5	70-130			
m,p-Xylene	0.35	0.0080	"	0.400		86.4	70-130			
o-Xylene	0.16	0.0040	"	0.200		82.4	70-130			
Naphthalene	0.17	0.0080	"	0.200		86.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.6	70-130			

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Noelle E Doyle, President

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

Rob Rebel  
Project Number: N/A  
Project: Noble - Pappenheim USX AB 13-99HZ

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 3G11006 - EPA 5030 (soil)										
Matrix Spike (3G11006-MS1)		Source: X307046-01			Prepared: 07/11/2013 Analyzed: 07/12/2013					
Benzene	0.21	0.0040	mg/kg	0.200	ND	103	70-130			
Toluene	0.21	0.0040	"	0.200	ND	106	70-130			
Ethylbenzene	0.20	0.0040	"	0.200	ND	101	70-130			
m,p-Xylene	0.43	0.0080	"	0.400	ND	106	70-130			
o-Xylene	0.19	0.0040	"	0.200	ND	96.6	70-130			
Naphthalene	0.19	0.0080	"	0.200	0.081	56.6	70-130			QM-05
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	59		"	62.5		95.1	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.9	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
Batch 3G11006 - EPA 5030 (soil)										
Matrix Spike (3G11006-MS2)		Source: X307055-01			Prepared: 07/11/2013 Analyzed: 07/12/2013					
Benzene	0.21	0.0040	mg/kg	0.200	0.0025	105	70-130			
Toluene	0.24	0.0040	"	0.200	0.0081	115	70-130			
Ethylbenzene	1.0	0.0040	"	0.200	0.83	97.4	70-130			
m,p-Xylene	ND	0.0080	"	0.400	ND		70-130			QM-4X
o-Xylene	0.44	0.0040	"	0.200	0.29	72.6	70-130			
Naphthalene	0.71	0.0080	"	0.200	0.051	331	70-130			QM-05
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.1	70-130			
Surrogate: 4-Bromofluorobenzene	70		"	62.5		111	70-130			

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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
Batch 3G11006 - EPA 5030 (soil)										
Matrix Spike Dup (3G11006-MSD1)		Source: X307046-01			Prepared: 07/11/2013 Analyzed: 07/12/2013					
Benzene	0.20	0.0040	mg/kg	0.200	ND	98.4	70-130	4.96	20	
Toluene	0.21	0.0040	"	0.200	ND	105	70-130	1.02	20	
Ethylbenzene	0.20	0.0040	"	0.200	ND	98.6	70-130	2.78	20	
m,p-Xylene	0.41	0.0080	"	0.400	ND	103	70-130	3.34	20	
o-Xylene	0.18	0.0040	"	0.200	ND	92.2	70-130	4.66	20	
Naphthalene	0.22	0.0080	"	0.200	0.081	71.3	70-130	14.1	20	
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.7	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 3G11006 - EPA 5030 (soil)

Matrix Spike Dup (3G11006-MSD2)		Source: X307055-01			Prepared: 07/11/2013 Analyzed: 07/12/2013					
Benzene	0.19	0.0040	mg/kg	0.200	0.0025	95.6	70-130	9.32	20	
Toluene	0.21	0.0040	"	0.200	0.0081	99.2	70-130	14.5	20	
Ethylbenzene	0.86	0.0040	"	0.200	0.83	12.5	70-130	18.1	20	QM-05
m,p-Xylene	ND	0.0080	"	0.400	ND		70-130		20	QM-4X
o-Xylene	0.41	0.0040	"	0.200	0.29	57.3	70-130	7.23	20	QM-05
Naphthalene	0.066	0.0080	"	0.200	0.051	7.18	70-130	166	20	QM-05
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.2	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	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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**Extractable Petroleum Hydrocarbons by 8015M - 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 3G12009 - EPA 3580**

<b>Blank (3G12009-BLK1)</b>				Prepared: 07/12/2013 Analyzed: 07/12/2013						
Diesel (C10-C28)	ND	50.0	mg/kg							
Surrogate: o-Terphenyl	56		g	50.0		111	59-131			
<b>Blank (3G12009-BLK2)</b>				Prepared: 07/12/2013 Analyzed: 07/12/2013						
Diesel (C10-C28)	ND	50.0	mg/kg							
Surrogate: o-Terphenyl	53		g	50.0		106	59-131			
<b>LCS (3G12009-BS1)</b>				Prepared: 07/12/2013 Analyzed: 07/12/2013						
Diesel (C10-C28)	955	50.0	mg/kg	1000		95.5	64-121			
Surrogate: o-Terphenyl	54		g	50.0		107	59-131			
<b>LCS (3G12009-BS2)</b>				Prepared: 07/12/2013 Analyzed: 07/12/2013						
Diesel (C10-C28)	989	50.0	mg/kg	1000		98.9	64-121			
Surrogate: o-Terphenyl	65		g	50.0		130	59-131			
<b>Matrix Spike (3G12009-MS1)</b>				Source: X307058-01	Prepared: 07/12/2013 Analyzed: 07/12/2013					
Diesel (C10-C28)	1050	50.0	mg/kg	1000	31.9	102	53-125			
Surrogate: o-Terphenyl	56		g	50.0		111	59-131			
<b>Matrix Spike (3G12009-MS2)</b>				Source: X307059-01	Prepared: 07/12/2013 Analyzed: 07/12/2013					
Diesel (C10-C28)	984	50.0	mg/kg	1000	30.5	95.4	53-125			
Surrogate: o-Terphenyl	44		g	50.0		87.0	59-131			

Origins Laboratory, Inc.



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Arvada CO 80003

Rob Rebel  
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Project: Noble - Pappenheim USX AB 13-99HZ

## Extractable Petroleum Hydrocarbons by 8015M - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3G12009 - EPA 3580										
<b>Matrix Spike Dup (3G12009-MSD1)</b>		<b>Source: X307058-01</b>			Prepared: 07/12/2013 Analyzed: 07/12/2013					
Diesel (C10-C28)	1040	50.0	mg/kg	1000	31.9	101	53-125	0.469	20	
<i>Surrogate: o-Terphenyl</i>	<i>47</i>		<i>g</i>	<i>50.0</i>		<i>93.9</i>	<i>59-131</i>			
<b>Matrix Spike Dup (3G12009-MSD2)</b>		<b>Source: X307059-01</b>			Prepared: 07/12/2013 Analyzed: 07/12/2013					
Diesel (C10-C28)	1040	50.0	mg/kg	1000	30.5	101	53-125	5.70	20	
<i>Surrogate: o-Terphenyl</i>	<i>44</i>		<i>g</i>	<i>50.0</i>		<i>88.9</i>	<i>59-131</i>			

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Classical Chemistry Parameters - 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 3G11008 - NO PREP

Duplicate (3G11008-DUP1)		Source: X307058-01			Prepared: 07/11/2013 Analyzed: 07/11/2013					
pH	7.87		pH Units		7.90			0.457	200	

Batch 3G11009 - NO PREP

Duplicate (3G11009-DUP1)		Source: X307058-01			Prepared: 07/11/2013 Analyzed: 07/16/2013					
Specific Conductance (EC)	1.60		uS/cm		2.20			31.6	200	

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### Notes and Definitions

- U Result not detected above the detection limit
- QM-4X The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
- J Greater than the detection limit but less than the reporting limit
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

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