

804 Grand Ave.
Platteville, CO 80651

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www.nobleenergyinc.com



RECEIVED
12/20/2010

North America Division

December 17, 2010

Mr. John Axelson
Department Of Natural Resources
Oil & Gas Conservation Commission
1120 Lincoln St., Suite 801
Denver CO 80203-2136

RE: Form 27 and Site Assessment
Lorenz F22-1,2
API 05-123-15139
Sec. 22, T5N R65W
Weld County, Colorado

Dear Mr. Axelson:

Please find attached the Form 27 and Site Assessment for the Lorenz F22-1,2. Noble Energy Inc. would like to claim business confidentiality protection for the information submitted in this letter, the supporting materials attached and all previous and subsequent correspondence related to this matter. Please contact the Noble Energy Environmental Department at (970) 785-5000 if you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mike Cox'.

Mike Cox
Environmental Coordinator

A handwritten signature in blue ink, appearing to read 'Marty Faraguna'.

Marty Faraguna
Environmental Specialist

Attachments



01761156

#5465

FORM

27

Rev 6/99

State of Colorado

Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



RECEIVED

DEC 20 2010

COGCC

COGCC Employee

☒ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No: 2522902

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe):

OGCC Operator Number: 10120

Name of Operator: Noble Energy, Inc.

Address: 804 Grand Avenue

City: Platteville State: CO Zip: 80651

Contact Name and Telephone:

Marty Faraguna

No: 970-785-5000

Fax: 970-785-5099

API Number: 05-123-15139

County: Weld

Facility Name: Lorenz F22-1,2 Tank Battery

Facility Number:

Well Name: Lorenz F22

Well Number: 2

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NENE, 22, 5N, 65W, 6

Latitude: 40.389965

Longitude: -104.646478

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Crude oil

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☒ Y ☐ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): pasture

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Aquolls and aquents, gravelly substratum

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Ditch 30 ft., water well 750 ft.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):

☒ Soils☐ Vegetation☒ Groundwater☐ Surface Water

Extent of Impact:

unknown

unknown

How Determined:

REMEDATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Production was ceased to assess and remediate the impacted soils and groundwater. Cone of depression was excavated and water/oil totalling (107 bbls) was removed via vacuum truck and transported to Conquest Disposal facility.

Describe how source is to be removed:

Impacted soil and groundwater will be removed via excavation and a groundwater amendment will be applied. Tank battery will be reconstructed with new lines and equipment.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

During excavation activities a groundwater amendment will be applied to the base of the excavation to aid in groundwater remediation. Post-remediation well installation will be conducted to assess the potential for residual groundwater impacts.

Submit Page 2 with Page 1



REMEDIAL WORKPLAN (Cont.)

Tracking Number: 01761156
Name of Operator: Noble Energy
OGCC Operator No: 10120
Received Date: 12-20-10
Well Name & No: Lorenz F22 2
Facility Name & No: Lorenz F22-1,2 Tank Battery

Page 2

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Groundwater will be monitored until four consecutive quarters of results in compliance with COGCC standards are achieved.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

After excavating impacted soil, clean fill dirt will be brought in after groundwater amendment is applied. The fill dirt will be contoured to match existing topography.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe:

Groundwater monitoring wells will be installed to assess the potential for residual groundwater impacts. Please see attached Site Assessment for additional details.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Impacted groundwater (107 bbls.) was removed via vacuum truck and transported to Conquest Disposal, Weld County, CO. Impacted soils will be removed and transported to Buffalo Ridge Landfill, Weld County, CO.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 11/19/2010 Date Site Investigation Completed: 11/29/2010 Date Remediation Plan Submitted: 12/14/2010
Remediation Start Date: 12/14/2010 Anticipated Completion Date: 12/16/2010 Actual Completion Date: TBD

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Marty Faraguna Signed: Marty Faraguna
Title: Environmental Specialist Date: 12/17/10

OGCC Approved: [Signature] Title: EPS Date: 1/7/11



December 10, 2010

Mr. Mike Cox
Environmental Coordinator
Noble Energy, Inc.
804 Grand Avenue
Platteville, Colorado 80651

**RE: Environmental Assessment Results
Lorenz F22-1 Tank Battery
Weld County, Colorado**

Dear Mr. Cox,

Noble Energy, Inc. (Noble) retained LT Environmental, Inc. (LTE) to conduct an Environmental Site Assessment (ESA) at the Lorenz F22-1 Tank Battery (Site).

The legal site location is NENE, Section 22, Township 5 North, Range 65 West. The Site is located on the west side of Weld County Road (WCR) 45, approximately 0.1 miles south of the intersection of U.S. Highway 34 and WCR 45 in Weld County, Colorado (Figure 1). The purpose of the ESA was to define the horizontal and vertical extent of hydrocarbon impacted soil and groundwater.

Soil Potholing

To identify the extent of impact in the subsurface, LTE and BG Services completed a total of 9 potholes (SS01 through SS09) on November 29, 2010. The potholes were excavated using a back-hoe. Temporary monitoring wells were installed in 8 of the potholes to allow for groundwater collection. Pothole depths ranged from 4 to 6 feet below ground surface (bgs). Depth to groundwater observed in the potholes was 2.5 feet bgs. Estimated groundwater flow direction is to the southeast.

Soil identified at the Site was predominantly observed as black to gray organic sandy clay from 0 to 2.5 feet bgs and clayey, medium-grained aquifer sand and gravel from 2.5 feet to the total depth of each pothole. Field-identified soil impacts were observed in potholes SS06 and SS08. Field-identified soil impacts ranged in depth from 1.5 to 6 feet bgs.

Temporary Groundwater Monitoring Well Installation

Eight of the potholes were completed with a temporary groundwater monitoring well. The wells were constructed of 1-inch diameter polyvinyl chloride (PVC) casing and 0.010-inch factory slotted PVC well screen, extending from the surface stickups to depths ranging from 4.5 to 6 feet bgs. Monitoring well completion diagrams are included as Attachment 1.

Soil Sampling

Soil samples were collected to identify the vertical extent of soil impact. Soil samples were submitted for analysis based on the sample interval that exhibited visible soil staining or where the highest photo-ionization detector (PID) reading was observed. If field screening methods indicated minimal petroleum hydrocarbon impacts were present, then a soil sample was collected directly above the static water level.

Soil samples were submitted to Origins Laboratory, Inc. of Denver, Colorado (Origins) for analysis of total petroleum hydrocarbons (TPH) as total volatile hydrocarbons-gasoline range organics (GRO) and total extractable hydrocarbons-diesel range organics (DRO) by United States Environmental Protection Agency (EPA) Method 8015M and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260B.

Soil Analytical Results

The Colorado Oil and Gas Conservation Commission (COGCC) standard for TPH in soil is 500 milligrams per kilogram (mg/kg). The COGCC standards for BTEX in soil are 0.17 mg/kg, 85 mg/kg, 100 mg/kg, and 175 mg/kg, respectively.

Soil analytical results indicate that sample SS06 exceeded the COGCC standard for benzene with an observed concentration of 0.170 mg/kg. All other samples were in compliance with the COGCC standards. The soil analytical results are summarized in Table 1 and presented on Figure 3. Laboratory analytical reports are included as Attachment 2.

Groundwater Sampling

The anticipated flow direction of groundwater at the Site is to the southeast. The depth to static groundwater level at the Site is 2.5 feet bgs. Groundwater samples were collected on December 1, 2010. Prior to sampling, depth to groundwater was measured and well-specific purge volumes were calculated. Groundwater samples were then collected and submitted to Origins for analysis of BTEX by EPA Method 8260B.

Groundwater Analytical Results

The Colorado Department of Public Health and Environment-Water Quality Control Commission (CDPHE-WQCC) has established the Basic Standards for Groundwater in Colorado (WQCC Reg. 41) for benzene at 5 micrograms per liter ($\mu\text{g/L}$), toluene at 560 $\mu\text{g/L}$, ethylbenzene at 700 $\mu\text{g/L}$, and total xylenes at 1,400 $\mu\text{g/L}$.

Groundwater analytical results indicate that three samples exceeded the WQCC Reg. 41 standard for benzene and two samples exceeded the standard for total xylenes. Groundwater samples SS02, SS06, and SS08 exhibited benzene concentrations of 38.5 $\mu\text{g/L}$, 1,150 $\mu\text{g/L}$, and 1,770 $\mu\text{g/L}$, respectively. Groundwater samples SS06 and SS08 exhibited total xylene concentrations of 24,700 $\mu\text{g/L}$ and 8,860 $\mu\text{g/L}$, respectively. All other samples are in compliance with the WQCC Reg. 41 standards.

Groundwater analytical results are summarized in Table 2. Benzene concentrations are illustrated on Figure 4. Laboratory analytical reports are included as Attachment 2.

Summary and Conclusions

A total of 9 potholes (SS01 through SS09) and 8 temporary monitoring wells were completed at the Site. Soil analytical results indicate one soil sample, SS06, is not in compliance with the COGCC standard for benzene. Groundwater analytical results indicate that benzene was not in compliance with the WQCC Reg. 41 standards in groundwater samples SS02, SS06, and SS08, and total xylenes were not in compliance with the WQCC Reg. 41 standards in groundwater samples SS06 and SS08.


The horizontal and vertical extent of hydrocarbon impacted soil and groundwater presented in Figures 3 and 4 were estimated using the current analytical data and estimated groundwater flow direction.

Remediation activities will be presented in future reports.

Please call us at 303-433-9788 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.



Daniel Burns
Staff Geologist



Matthew Harrison
Project Manager

Figure 1 - Site Location Map

Figure 2 - Site Map

Figure 3 - Soil Analytical Map

Figure 4 - Groundwater Analytical Map

Table 1 - Soil Analytical Data

Table 2 - Groundwater Analytical Data

Attachment 1 – Borehole Lithologic Logs

Attachment 2 - Laboratory Analytical Reports

FIGURES

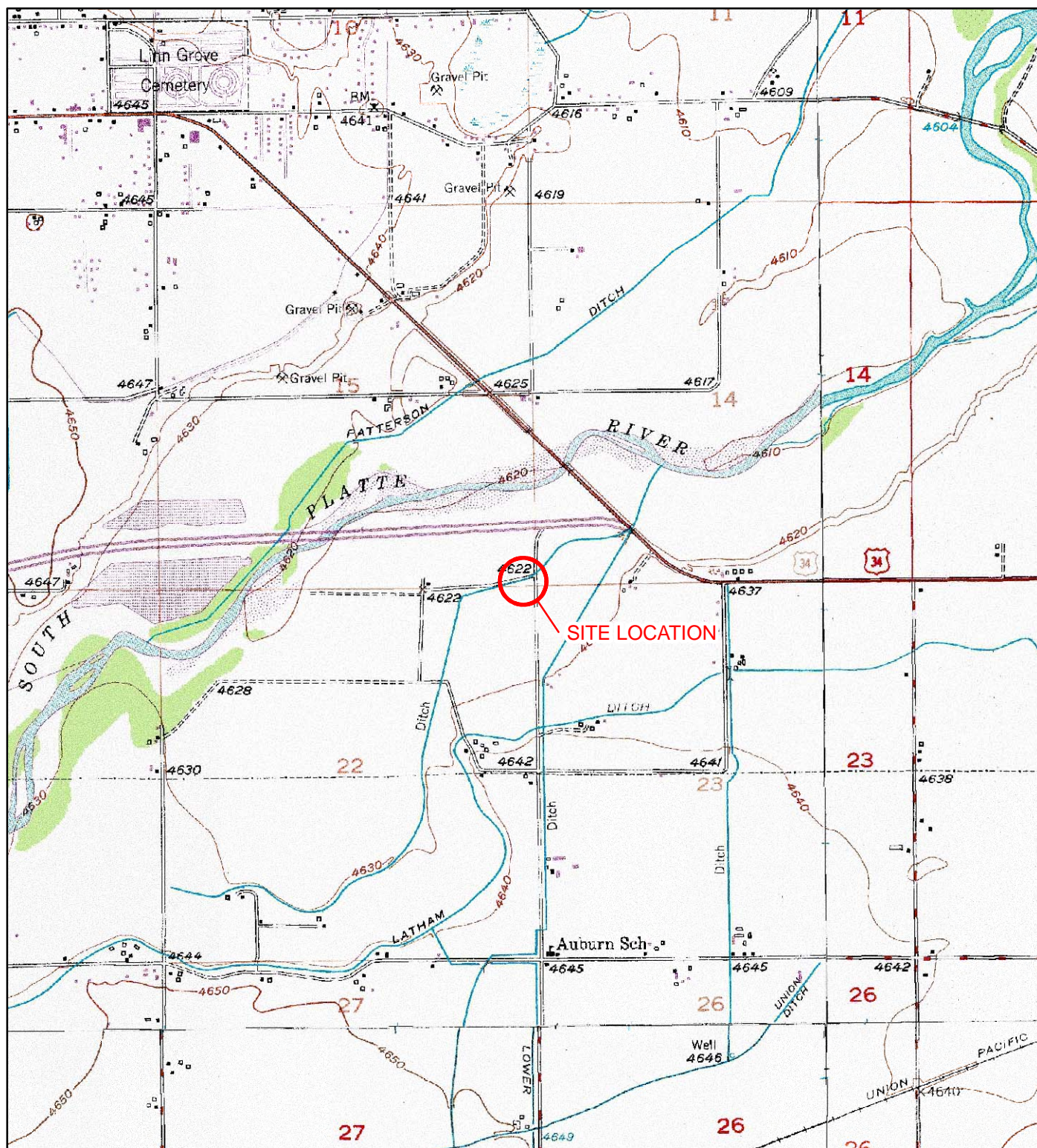


IMAGE COURTESY OF USDA/NRCS, VARIOUS DATES

LEGEND

○ SITE LOCATION

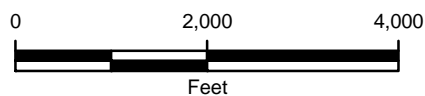
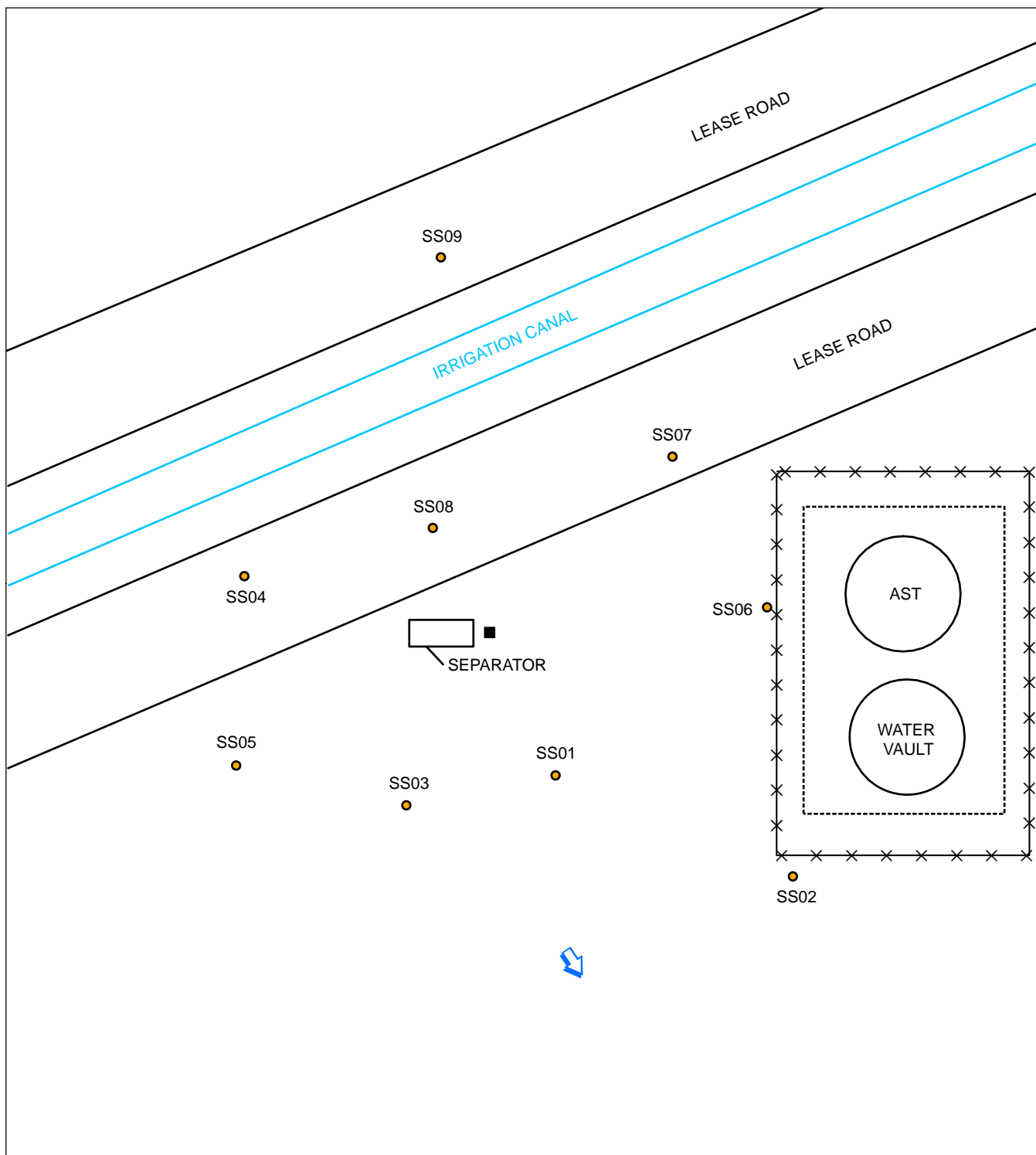


FIGURE 1
SITE LOCATION MAP
LORENZ F 22-1
NENE 22-T5N-R65W
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





LEGEND

- SOIL SAMPLE LOCATION
- CULVERT
- ↴ ESTIMATED GROUNDWATER FLOW DIRECTION
- ×—× FENCE
- IRRIGATION CANAL
- BERM

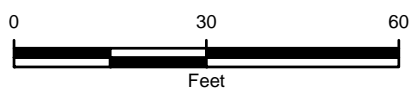
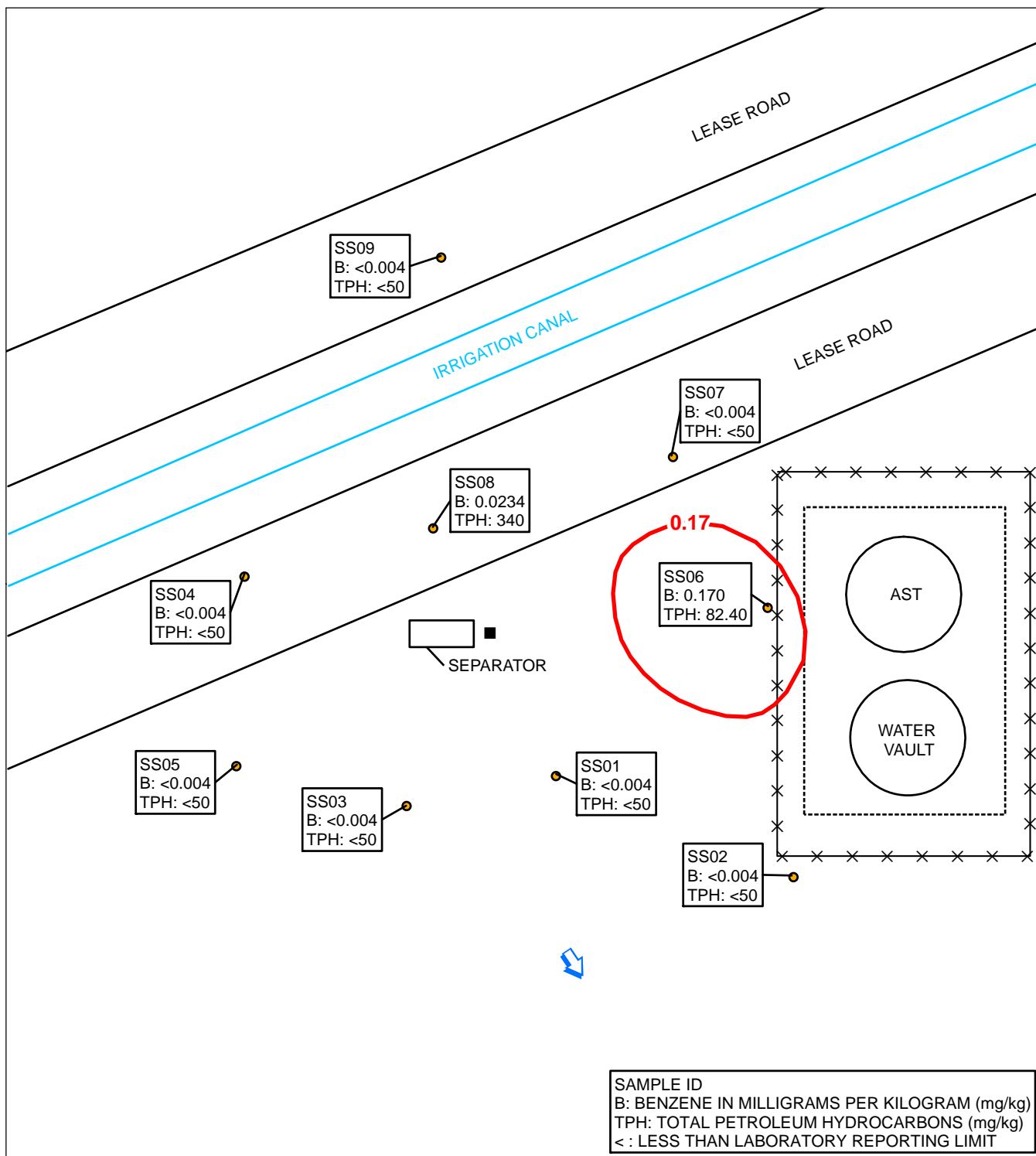


FIGURE 2
SITE MAP
 LORENZ F 22-1
 NENE 22-T5N-R65W
 WELD COUNTY, COLORADO
 NOBLE ENERGY, INC.





LEGEND

- SOIL SAMPLE LOCATION
- CULVERT
- ↑ ESTIMATED GROUNDWATER FLOW DIRECTION
- ESTIMATED BENZENE CONCENTRATION CONTOUR (0.17 mg/kg)
- ×—× FENCE
- IRRIGATION CANAL
- BERM

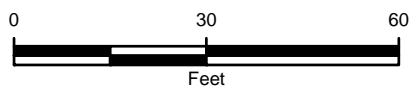
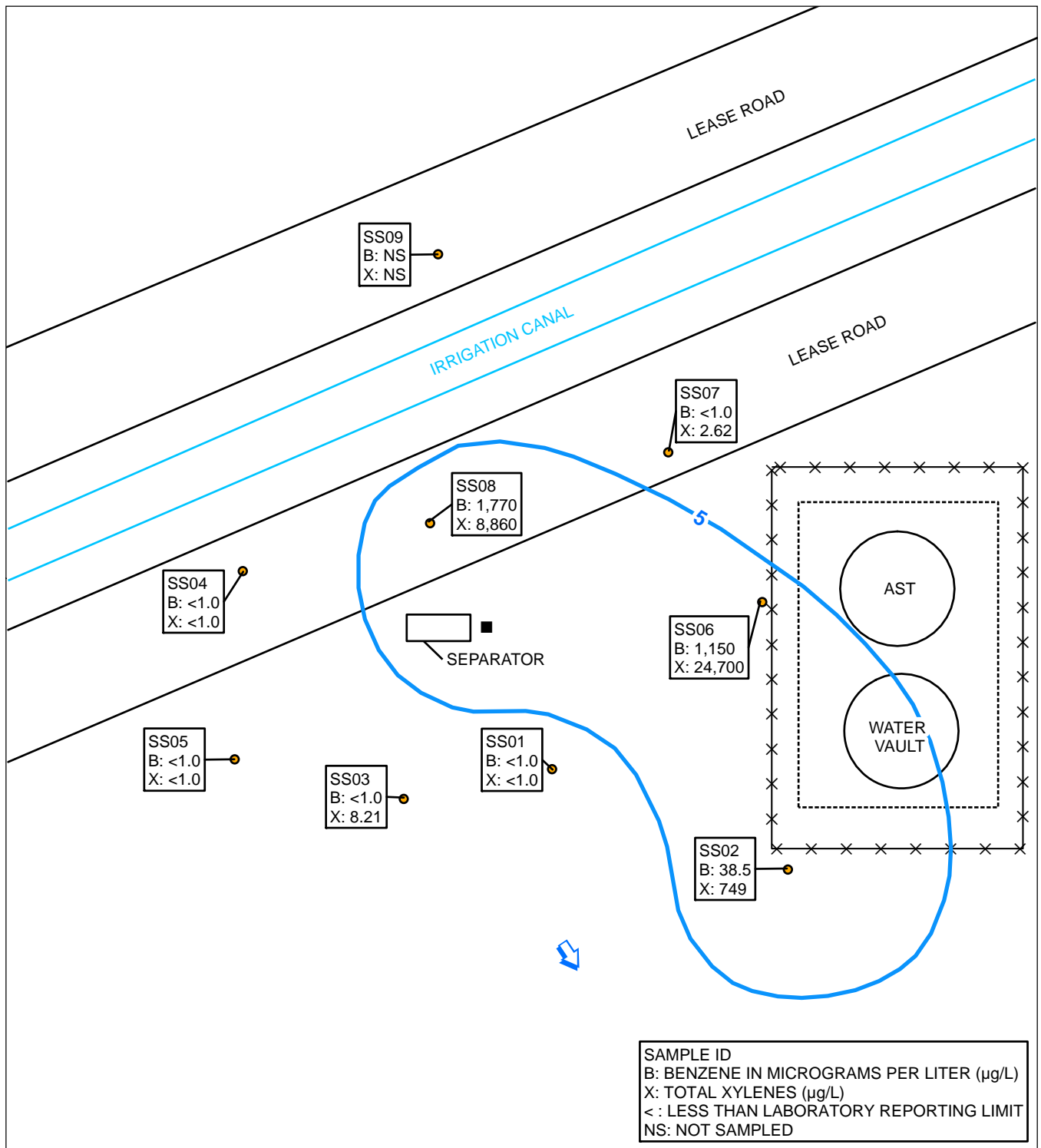


FIGURE 3
SOIL ANALYTICAL MAP
 LORENZ F 22-1
 NENE 22-T5N-R65W
 WELD COUNTY, COLORADO
 NOBLE ENERGY, INC.





LEGEND

- SOIL SAMPLE LOCATION
- CULVERT
- ↑ ESTIMATED GROUNDWATER FLOW DIRECTION
- ESTIMATED BENZENE CONCENTRATION CONTOUR (5 µg/L)
- ×× FENCE
- IRRIGATION CANAL
- ▭ BERM

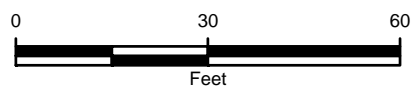


FIGURE 4
 GROUNDWATER ANALYTICAL MAP
 LORENZ F 22-1
 NENE 22-T5N-R65W
 WELD COUNTY, COLORADO
 NOBLE ENERGY, INC.



TABLES

TABLE 1

SOIL ANALYTICAL DATA

LORENZ F22-1

WELD COUNTY, COLORADO

NOBLE ENERGY, INC.

Soil Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)
SS01	11/29/2010	<0.00400	<0.00400	<0.00400	<0.00400	<50.0	<50.0	<100.0
SS02	11/29/2010	<0.00400	<0.00400	<0.00400	<0.00400	<50.0	<50.0	<100.0
SS03	11/29/2010	<0.00400	<0.00400	<0.00400	<0.00400	<50.0	<50.0	<100.0
SS04	11/29/2010	<0.00400	<0.00400	<0.00400	<0.00400	<50.0	<50.0	<100.0
SS05	11/29/2010	<0.00400	<0.00400	<0.00400	<0.00400	<50.0	<50.0	<100.0
SS06	11/29/2010	0.170	<0.0200	0.321	5.14	<50.0	82.4	82.4
SS07	11/29/2010	<0.00400	<0.00400	<0.00400	<0.00400	<50.0	<50.0	<100.0
SS08	11/29/2010	0.0234	<0.0200	0.234	2.89	103	237	340
SS09	11/29/2010	<0.00400	<0.00400	<0.00400	<0.00400	<50.0	<50.0	<100.0
COGCC Table 910-1		0.17	85	100	175	--	--	500

NOTES:

mg/kg - milligrams per kilogram

GRO - gasoline range organics analyzed by EPA Modified Method 8015

DRO - diesel range organics analyzed by EPA Modified Method 8015

TPH- total petroleum hydrocarbons

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

BOLD - indicates result exceeds the applicable standard

COGCC - Colorado Oil and Gas Conservation Commission

Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8260B

TABLE 2

GROUNDWATER ANALYTICAL DATA

LORENZ F22-1

WELD COUNTY, COLORADO

NOBLE ENERGY, INC.

Well ID	Date	Depth to Water (feet btoc)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
SS01	12/1/2010	2.72	<1.00	<1.00	<1.00	<1.00
SS02	12/1/2010	3.66	38.5	<1.00	<1.00	749
SS03	12/1/2010	3.14	<1.00	<1.00	<1.00	8.21
SS04	12/1/2010	4.71	<1.00	<1.00	<1.00	<1.00
SS05	12/1/2010	2.57	<1.00	<1.00	<1.00	<1.00
SS06	12/1/2010	3.71	1,150	<10.0	<10.0	24,700
SS07	12/1/2010	4.69	<1.00	<1.00	<1.00	2.62
SS08	12/1/2010	5.27	1,770	<1.00	<1.00	8,860
CDPHE WQCC Reg 41			5	560	700	1,400

NOTES:

btoc - below top of casing

ug/L - micrograms per liter

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

BOLD - indicates result is above the applicable standard

Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8260B

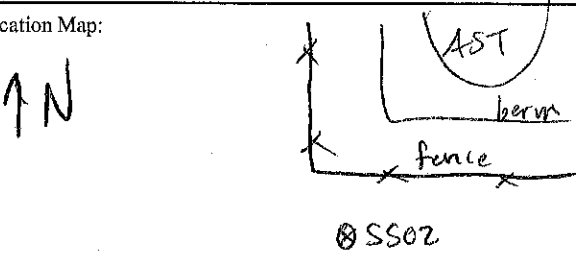

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environmental - Water Quality

Control Commission Regulation 41 covering Basic Standards for Groundwater

ATTACHMENT 1
BOREHOLE LITHOLOGIC LOGS

Location Map: <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> </div> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Sep </div> <div style="margin-left: 20px;"> <input type="checkbox"/> Culvert </div> </div> <div style="text-align: center; margin-top: 20px;"> @ SS01 </div>				<div style="display: flex; align-items: center;"> <div> Compliance « Engineering » Remediation LT Environmental, Inc. 4600 W. 60th Avenue Arvada, Colorado 80003 </div> </div>			
BORING LOG/MONITORING WELL COMPLETION DIAGRAM							
Boring/Well Number: SS01				Project: Lorenz F22-1			
Date: 11/29/2010				Project Number: NEP1047			
Logged By: D. Burns				Drilled By: LTE/BG Services			
Elevation:		Detector: PID		Drilling Method: Backhoe/hand auger		Sampling Method:	
Gravel Pack: NA		Seal: NA		Grout: NA			
Casing Type: Sch 40 PVC		Diameter: 1"		Length: 0'		Hole Diameter: —	Depth to Liquid: —
Screen Type: Sch 40 PVC		Slot: 0.010"		Diameter: 1"		Length: 5'	Total Depth: 4.5'
							Depth to Water: 2.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	Moist			X	0			Topsoil	
					1				
					2				
					3			Sandy clay, organic/staining organic odor black/grey	
					4				
	Wet				5				
					6			clayey sand/gravel	
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				

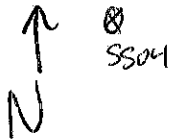
Location Map: 		 Compliance « Engineering » Remediation LT Environmental, Inc. 4600 W. 60th Avenue Arvada, Colorado 80003	
BORING LOG/MONITORING WELL COMPLETION DIAGRAM			
Boring/Well Number: SS02		Project: Lorenz F22-1	
Date: 11/29/2010		Project Number: NEP1047	
Logged By: D. Burns		Drilled By: LTE/BG Services	
Elevation:	Detector: PID	Drilling Method: Backhoe/hand auger	Sampling Method:
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: Sch 40 PVC	Diameter: 1"	Length: 0'	Hole Diameter: —
Screen Type: Sch 40 PVC	Slot: 0.010"	Diameter: 1"	Length: 5'
		Total Depth: 4.5'	Depth to Liquid: —
		Depth to Water: 2.5'	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	moist			X	0			Topsoil sandy clay, organics	0.5' stickup
					1				
		48.9		X	2			clayey sand/gravel	stickup
	wet				3				
					4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				

Location Map: <div style="text-align: center;"> </div>				Compliance • Engineering • Remediation LT Environmental, Inc. 4600 W. 60th Avenue Arvada, Colorado 80003			
BORING LOG/MONITORING WELL COMPLETION DIAGRAM							
Boring/Well Number: SS03				Project: Lorenz F22-1			
Date: 11/29/2010				Project Number: NEP1047			
Logged By: D. Burns				Drilled By: LTE/BG Services			
Elevation:		Detector: PID		Drilling Method: Backhoe/hand auger		Sampling Method:	
Gravel Pack: NA		Seal: NA		Grout: NA			
Casing Type: Sch 40 PVC		Diameter: 1"		Length:		Hole Diameter:	Depth to Liquid:
Screen Type: Sch 40 PVC		Slot: 0.010"		Diameter: 1"		Length: 5'	Total Depth: 4.5'
							Depth to Water: 2.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			Top soil	
	moist			<div style="border: 1px solid black; width: 20px; height: 20px; margin: 0 auto; transform: rotate(45deg); transform-origin: center;">X</div>	1			sandy clay / organic material	
		24.7			2				
	wet				3			clayey sand / gravel	
					4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				

Location Map:

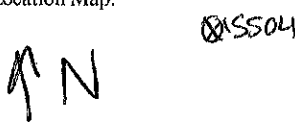




Compliance [™] Engineering [™] Remediation
 LT Environmental, Inc.
 4600 W. 60th Avenue
 Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SS04	Project: Lorenz F22-1
Date: 11/29/2010	Project Number: NEP1047
Logged By: D. Burns	Drilled By: LTE/BG Services
Elevation:	Drilling Method: Backhoe/hand auger
Detector: PID	Sampling Method:
Gravel Pack: NA	Seal: NA
Casing Type: Sch 40 PVC	Grout: NA
Screen Type: Sch 40 PVC	Diameter: 1" Length: 2'
Slot: 0.010"	Hole Diameter: 1" Depth to Liquid: 2.5'
Diameter: 1" Length: 5'	Total Depth: 6' Depth to Water: 2.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	dry				0			Road base	
	moist	0.9			1			Sandy clay, brown/organics	
					2			clayey sand/gravel	
	wet				3				
					4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				

Location Map: 				 Compliance « Engineering » Remediation LT Environmental, Inc. 4600 W. 60th Avenue Arvada, Colorado 80003					
BORING LOG/MONITORING WELL COMPLETION DIAGRAM									
Boring/Well Number: SS05 Date: 11/29/2010 Logged By: D. Burns				Project: Lorenz F22-1 Project Number: NEP1047 Drilled By: LTE/BG Services					
Elevation:		Detector: PID		Drilling Method: Backhoe/hand auger		Sampling Method:			
Gravel Pack: NA				Seal: NA		Grout: NA			
Casing Type: Sch 40 PVC				Diameter: 1" Length:		Hole Diameter: Depth to Liquid:			
Screen Type: Sch 40 PVC				Slot: 0.010" Diameter: 1" Length: 5'		Total Depth: 4.5' Depth to Water: 2.5'			
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	moist wet	9.7		X	0			Topsoil sandy clay, organics clayey sand/gravel	
					1				
					2				
					3				
					4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
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					14				
					15				

Location Map: <div style="text-align: center;"> </div>		<div style="text-align: center;"> Compliance • Engineering • Remediation LT Environmental, Inc. 4600 W. 60th Avenue Arvada, Colorado 80003 </div>	
BORING LOG/MONITORING WELL COMPLETION DIAGRAM			
Boring/Well Number: SS06		Project: Lorenz F22-1	
Date: 11/29/2010		Project Number: NEP1047	
Logged By: D. Burns		Drilled By: LTE/BG Services	
Elevation:	Detector: PID	Drilling Method: Backhoe/hand auger	Sampling Method:
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: Sch 40 PVC	Diameter: 1"	Length:	Hole Diameter:
Screen Type: Sch 40 PVC	Slot: 0.010"	Diameter: 1"	Length: 5'
		Total Depth: 4.5'	Depth to Liquid: 2.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			Topsoil sandy clay, grey to black staining, <u>not</u> organic odor clayey sand/gravel, staining & odor	
					1				
					2				
					3				
					4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				

Location Map:



Compliance • Engineering • Remediation
 LT Environmental, Inc.
 4600 W. 60th Avenue
 Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:	SS07	Project:	Lorenz F22-1
Date:	11/29/2010	Project Number:	NEP1047
Logged By:	D. Burns	Drilled By:	LTE/BG Services
Drilling Method:	Backhoe/hand auger	Sampling Method:	
Gravel Pack:	NA	Seal:	NA
Casing Type:	Sch 40 PVC	Diameter:	1"
Screen Type:	Sch 40 PVC	Length:	2'
Slot:	0.010"	Hole Diameter:	
		Depth to Liquid:	
		Total Depth:	6'
		Depth to Water:	2.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	dry				0			Road base	
	moist	52.7			1			sandy clay, organics	
					2				
	wet				3			clayey sand/gravel	
					4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				

Location Map: <div style="text-align: center; margin-top: 20px;"> </div>				Compliance • Engineering • Remediation LT Environmental, Inc. 4600 W. 60th Avenue Arvada, Colorado 80003			
BORING LOG/MONITORING WELL COMPLETION DIAGRAM							
Boring/Well Number: SS08				Project: Lorenz F22-1			
Date: 11/29/2010				Project Number: NEP1047			
Logged By: D. Burns				Drilled By: LTE/BG Services			
Elevation:		Detector: PID		Drilling Method: Backhoe/hand auger		Sampling Method:	
Gravel Pack: NA		Seal: NA		Grout: NA			
Casing Type: Sch 40 PVC		Diameter: 1"		Length: 2'		Hole Diameter:	
Screen Type: Sch 40 PVC		Slot: 0.010"		Diameter: 1"		Length: 5'	
				Total Depth: 6'		Depth to Liquid:	
						Depth to Water: 2.5'	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	dry				0			Road base sandy clay, staining/odor <u>not</u> organic clayey sand/gravel	
					1				
	moist	943	yes		2				
					3				
	wet				4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				

ATTACHMENT 2
LABORATORY ANALYTICAL REPORTS



December 02, 2010

LT Environmental, Inc.

Matthew Harrison

4600 West 60th Avenue

Arvada

CO

80003

Project Name- Noble - Lorenz F22-1

Project Number- NEP1047.01

Attached are your analytical results for Noble - Lorenz F22-1 received by Origins Laboratory, Inc. November 29, 2010 5:00 pm. This project is associated with Origins project number X011190-01 .

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



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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
SS01	X011190-01	Soil	11/29/2010 11:15:00AM	11/29/2010 17:00
SS02	X011190-02	Soil	11/29/2010 11:20:00AM	11/29/2010 17:00
SS03	X011190-03	Soil	11/29/2010 11:25:00AM	11/29/2010 17:00
SS04	X011190-04	Soil	11/29/2010 11:30:00AM	11/29/2010 17:00
SS05	X011190-05	Soil	11/29/2010 11:35:00AM	11/29/2010 17:00
SS06	X011190-06	Soil	11/29/2010 11:40:00AM	11/29/2010 17:00
SS07	X011190-07	Soil	11/29/2010 11:45:00AM	11/29/2010 17:00
SS08	X011190-08	Soil	11/29/2010 11:50:00AM	11/29/2010 17:00
SS09	X011190-09	Soil	11/29/2010 11:55:00AM	11/29/2010 17:00

Origins Laboratory, Inc.



Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

www.originslaboratory.com

X011190

page 1 of 1

ORIGINS
LABORATORY, INC

Client: LTE
Address:
Telephone Number:
Email Address: mharrison@ltenu.com
clayens@ltenu.com

Project Manager: Matt Harrison
Project Name: Lorenz F22-1
Project Number: NEP1047.01
Samples Collected By: Duany Burns

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa			Other
SS01	11/21/10	1115	1	X					X				1
SS02		1120	1	X					X				2
SS03		1125	1	X					X				3
SS04		1130	1	X					X				4
SS05		1135	1	X					X				5
SS06		1140	1	X					X				6
SS07		1145	1	X					X				7
SS08		1150	1	X					X				8
SS09		1155	1	X					X				9
													10

Analysis: TPH-DPC, TPH-GPC, BTEX-kaco, Other

Relinquished By: [Signature] Date: 11/21/10 Time: 1700

Relinquished By: [Signature] Date: 11/21/10 Time: 1700

Received By: [Signature] Date: 11/21/10 Time: 1700

Received By: [Signature] Date: 11/21/10 Time: 1700

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☒ 72 Hr ☐ Standard ☐

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

Origins Laboratory, Inc.

Noelle E Doyle

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS01

11/29/2010 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X011190-01 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
Xylenes, total	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	117 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	102 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.6 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	90.4 %	65-140			"	"	"	
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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,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS02

11/29/2010 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X011190-02 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
Xylenes, total	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	115 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	99.2 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.9 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	92.1 %	65-140			"	"	"	
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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,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS03

11/29/2010 11:25:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X011190-03 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
Xylenes, total	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	110 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	99.4 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.4 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	97.1 %	65-140			"	"	"	
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Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS04

11/29/2010 11:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X011190-04 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
Xylenes, total	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	119 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	99.0 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.5 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	83.0 %	65-140			"	"	"	
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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,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS05

11/29/2010 11:35:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X011190-05 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
Xylenes, total	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	112 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	97.0 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	92.5 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	88.2 %	65-140			"	"	"	
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Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS06

11/29/2010 11:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X011190-06 (Soil)

BTEX by EPA 8260B

Benzene	0.170	0.0500	mg/kg	12.5	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.0200	"	5	"	"	12/01/2010	
Ethylbenzene	0.321	0.0500	"	12.5	"	"	12/01/2010	
Xylenes, total	5.14	0.0500	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	110 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	110 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	115 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	82.4	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	87.0 %	65-140			"	"	"	
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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,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS07

11/29/2010 11:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X011190-07 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.0200	mg/kg	5	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.0200	"	"	"	"	"	
Ethylbenzene	ND	0.0200	"	"	"	"	"	
Xylenes, total	ND	0.0200	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	77.6-134			"	"	12/01/2010	
Surrogate: Toluene-d8	95.3 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.9 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	84.2 %	65-140			"	"	"	
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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,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS08

11/29/2010 11:50:00AM

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

Origins Laboratory, Inc.
X011190-08 (Soil)

BTEX by EPA 8260B

Benzene	0.0234	0.0200	mg/kg	5	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.0200	"	"	"	"	"	
Ethylbenzene	0.234	0.0200	"	"	"	"	"	
Xylenes, total	2.89	0.0200	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	111 %	77.6-134			"	"	12/01/2010	
Surrogate: Toluene-d8	101 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.3 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	103	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	237	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	96.9 %	65-140			"	"	"	
------------------------	--------	--------	--	--	---	---	---	--

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,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS09

11/29/2010 11:55:00AM

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

Origins Laboratory, Inc.
X011190-09 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OK30005	11/30/2010	12/01/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
Xylenes, total	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	110 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	96.6 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.8 %	74.7-123			"	"	"	

GRO (TVPH)/DRO (TEPH)by EPA 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	OK30004	11/30/2010	12/01/2010	
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	84.4 %	65-140			"	"	"	
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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,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

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 OK30004 - Default Prep GC-Semi										
Blank (OK30004-BLK1)					Prepared: 11/30/2010 Analyzed: 12/01/2010					
Gasoline (C6-C10)	ND	50.0	mg/kg							
Diesel (C10-C28)	ND	50.0	"							
TPH - Carbon Chain Total	ND	50.0	"							
<i>Surrogate: o-Terphenyl</i>	<i>42.0</i>		<i>g</i>	<i>50.0</i>		<i>84.1</i>	<i>65-140</i>			
LCS (OK30004-BS1)					Prepared: 11/30/2010 Analyzed: 12/01/2010					
Gasoline (C6-C10)	71.0	50.0	mg/kg				65-140			
Diesel (C10-C28)	393	50.0	"	500		78.6	60-140			
<i>Surrogate: o-Terphenyl</i>	<i>41.0</i>		<i>g</i>	<i>50.0</i>		<i>82.1</i>	<i>65-140</i>			
Matrix Spike (OK30004-MS1)					Source: X011195-01	Prepared: 11/30/2010 Analyzed: 12/01/2010				
Gasoline (C6-C10)	82.8	50.0	mg/kg		ND		65-130			
Diesel (C10-C28)	994	50.0	"	500	587	81.3	60-140			
<i>Surrogate: o-Terphenyl</i>	<i>44.6</i>		<i>g</i>	<i>50.0</i>		<i>89.2</i>	<i>65-140</i>			
Matrix Spike Dup (OK30004-MSD1)					Source: X011195-01	Prepared: 11/30/2010 Analyzed: 12/01/2010				
Gasoline (C6-C10)	77.6	50.0	mg/kg		ND		65-130	6.57	20	
Diesel (C10-C28)	815	50.0	"	500	587	45.6	60-140	19.8	25	QM-05
<i>Surrogate: o-Terphenyl</i>	<i>47.6</i>		<i>g</i>	<i>50.0</i>		<i>95.3</i>	<i>65-140</i>			

Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

Volatile Organic Compounds by EPA Method 8260B - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch OK30005 - EPA 5030B										
Blank (OK30005-BLK1)					Prepared: 11/30/2010 Analyzed: 12/01/2010					
Benzene	ND	0.004	mg/kg							
Toluene	ND	0.004	"							
Ethylbenzene	ND	0.004	"							
m,p-Xylene	ND	0.008	"							
o-Xylene	ND	0.004	"							
Surrogate: 1,2-Dichloroethane-d4	63.1		ug/L	62.5		101	77.6-134			
Surrogate: Toluene-d8	57.7		"	62.5		92.4	81.4-121			
Surrogate: 4-Bromofluorobenzene	64.8		"	62.5		104	74.7-123			
LCS (OK30005-BS1)					Prepared: 11/30/2010 Analyzed: 12/01/2010					
Benzene	0.22	0.004	mg/kg	0.200		112	75.2-128			
Toluene	0.20	0.004	"	0.200		99.8	76.3-130			
Surrogate: 1,2-Dichloroethane-d4	64.9		ug/L	62.5		104	77.6-134			
Surrogate: Toluene-d8	57.2		"	62.5		91.6	81.4-121			
Surrogate: 4-Bromofluorobenzene	61.9		"	62.5		99.1	74.7-123			
Matrix Spike (OK30005-MS1)					Source: X011195-01	Prepared: 11/30/2010 Analyzed: 12/01/2010				
Benzene	0.22	0.004	mg/kg	0.200	ND	107	77.6-132			
Toluene	0.19	0.004	"	0.200	ND	95.1	74-136			
Surrogate: 1,2-Dichloroethane-d4	65.1		ug/L	62.5		104	77.6-134			
Surrogate: Toluene-d8	56.3		"	62.5		90.1	81.4-121			
Surrogate: 4-Bromofluorobenzene	62.5		"	62.5		100	74.7-123			
Matrix Spike Dup (OK30005-MSD1)					Source: X011195-01	Prepared: 11/30/2010 Analyzed: 12/01/2010				
Benzene	0.22	0.004	mg/kg	0.200	ND	110	77.6-132	2.45	13.1	
Toluene	0.19	0.004	"	0.200	ND	94.6	74-136	0.569	20.9	
Surrogate: 1,2-Dichloroethane-d4	66.3		ug/L	62.5		106	77.6-134			
Surrogate: Toluene-d8	56.9		"	62.5		91.0	81.4-121			
Surrogate: 4-Bromofluorobenzene	60.9		"	62.5		97.5	74.7-123			

Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

Notes and Definitions

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

Origins Laboratory, Inc.



Noelle E Doyle,

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December 03, 2010

LT Environmental, Inc.

Matthew Harrison

4600 West 60th Avenue

Arvada

CO

80003

Project Name- Noble - Lorenz F22-1

Project Number- NEP1047.01

Attached are your analytical results for Noble - Lorenz F22-1 received by Origins Laboratory, Inc. December 1, 2010 4:45 pm. This project is associated with Origins project number X012015-01 .

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



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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
SS01	X012015-01	Water	12/1/2010 2:00:00PM	12/01/2010 16:45
SS02	X012015-02	Water	12/1/2010 2:15:00PM	12/01/2010 16:45
SS03	X012015-03	Water	12/1/2010 2:30:00PM	12/01/2010 16:45
SS04	X012015-04	Water	12/1/2010 2:45:00PM	12/01/2010 16:45
SS05	X012015-05	Water	12/1/2010 2:55:00PM	12/01/2010 16:45
SS06	X012015-06	Water	12/1/2010 3:05:00PM	12/01/2010 16:45
SS07	X012015-07	Water	12/1/2010 3:20:00PM	12/01/2010 16:45
SS08	X012015-08	Water	12/1/2010 3:30:00PM	12/01/2010 16:45

Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

www.originslaboratory.com

page 1 of 1
10/20/15

ORIGINS
LABORATORY, INC

Client: LTE
Address:
Telephone Number:
Email Address:
Project Manager: Matthew Harrison
Project Name: Lorenz F22-1
Project Number: NEP1047.01
Samples Collected By: Danny Burns

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #			Other
SS01	12/1/10	1400	2	X				X	X				1
SS02		1415		X				X	X				2
SS03		1430		X				X	X				3
SS04		1445		X				X	X				4
SS05		1455		X				X	X				5
SS06		1505		X				X	X				6
SS07		1520		X				X	X				7
SS08		1530		X				X	X				8
													9
													10

Relinquished By: [Signature] Date: 12/1/10 Time: 1145
Relinquished By: [Signature] Date: 12/1/10 Time: 1145

Turnaround Time: ☒ 24 Hr ☐ 48 Hr ☐ 72 Hr
Same Day ☐ Standard ☐

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

Origins Laboratory, Inc.

Noelle E Doyle

Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

SS01

12/1/2010 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012015-01 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OL01004	12/01/2010	12/02/2010
Toluene	ND	1.00	"	"	"	"	"
Ethylbenzene	ND	1.00	"	"	"	"	"
Xylenes, total	ND	1.00	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	73.5-130	"	"	"
Surrogate: Toluene-d8	100 %	79.3-113	"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	81.5-117	"	"	"

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,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

SS02

12/1/2010 2:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012015-02 (Water)

BTEX by EPA 8260B**FRE-P**

Benzene	38.5	1.00	ug/L	1	OL01004	12/01/2010	12/02/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	749	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	73.5-130			"	"	12/02/2010	
Surrogate: Toluene-d8	101 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



Noelle E Doyle,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS03

12/1/2010 2:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012015-03 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OL01004	12/01/2010	12/02/2010
Toluene	ND	1.00	"	"	"	"	"
Ethylbenzene	ND	1.00	"	"	"	"	"
Xylenes, total	8.21	1.00	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	73.5-130	"	"	"
Surrogate: Toluene-d8	101 %	79.3-113	"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	81.5-117	"	"	"

Origins Laboratory, Inc.



Noelle E Doyle,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS04

12/1/2010 2:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012015-04 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OL01004	12/01/2010	12/02/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	109 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	99.7 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS05

12/1/2010 2:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012015-05 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OL01004	12/01/2010	12/02/2010
Toluene	ND	1.00	"	"	"	"	"
Ethylbenzene	ND	1.00	"	"	"	"	"
Xylenes, total	ND	1.00	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	73.5-130	"	"	"
Surrogate: Toluene-d8	99.7 %	79.3-113	"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	81.5-117	"	"	"

Origins Laboratory, Inc.



Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

SS06

12/1/2010 3:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012015-06 (Water)

BTEX by EPA 8260B

FRE-P

Benzene	1150	200	ug/L	200	OL01004	12/01/2010	12/02/2010
Toluene	ND	10.0	"	10	"	"	12/02/2010
Ethylbenzene	ND	10.0	"	"	"	"	"
Xylenes, total	24700	200	"	200	"	"	12/02/2010

Surrogate: 1,2-Dichloroethane-d4	107 %	73.5-130	"	"	"
Surrogate: Toluene-d8	101 %	79.3-113	"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	81.5-117	"	"	"

Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

SS07

12/1/2010 3:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012015-07 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OL01004	12/01/2010	12/02/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	2.62	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	73.5-130	"	"	"	"	"	
Surrogate: Toluene-d8	99.6 %	79.3-113	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	108 %	81.5-117	"	"	"	"	"	

Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

SS08**12/1/2010 3:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012015-08 (Water)

BTEX by EPA 8260B**FRE-P**

Benzene	1770	200	ug/L	200	OL01004	12/01/2010	12/02/2010	
Toluene	ND	10.0	"	10	"	"	12/02/2010	
Ethylbenzene	ND	10.0	"	"	"	"	"	
Xylenes, total	8860	200	"	200	"	"	12/02/2010	

Surrogate: 1,2-Dichloroethane-d4	108 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	100 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

Volatile Organic Compounds by EPA Method 8260B - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch OLO1004 - EPA 5030B										
Blank (OLO1004-BLK1)					Prepared: 12/01/2010 Analyzed: 12/02/2010					
Benzene	ND	1.00	ug/L							
Toluene	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
m,p-Xylene	ND	2.00	"							
o-Xylene	ND	1.00	"							
Surrogate: 1,2-Dichloroethane-d4	67.7		"	62.5		108	73.5-130			
Surrogate: Toluene-d8	62.5		"	62.5		100	79.3-113			
Surrogate: 4-Bromofluorobenzene	64.8		"	62.5		104	81.5-117			
LCS (OLO1004-BSI)					Prepared: 12/01/2010 Analyzed: 12/01/2010					
Benzene	49.7	1.00	ug/L	50.0		99.5	77.3-128			
Toluene	55.0	1.00	"	50.0		110	81.7-118			
Surrogate: 1,2-Dichloroethane-d4	66.0		"	62.5		106	73.5-130			
Surrogate: Toluene-d8	63.0		"	62.5		101	79.3-113			
Surrogate: 4-Bromofluorobenzene	65.7		"	62.5		105	81.5-117			
Matrix Spike (OLO1004-MSI)					Source: X012007-01	Prepared: 12/01/2010 Analyzed: 12/01/2010				
Benzene	50.8	1.00	ug/L	50.0	ND	102	74.5-132			
Toluene	55.5	1.00	"	50.0	ND	111	74.2-116			
Surrogate: 1,2-Dichloroethane-d4	65.6		"	62.5		105	73.5-130			
Surrogate: Toluene-d8	62.4		"	62.5		99.9	79.3-113			
Surrogate: 4-Bromofluorobenzene	64.4		"	62.5		103	81.5-117			
Matrix Spike Dup (OLO1004-MSD1)					Source: X012007-01	Prepared: 12/01/2010 Analyzed: 12/01/2010				
Benzene	51.2	1.00	ug/L	50.0	ND	102	74.5-132	0.706	13.1	
Toluene	56.3	1.00	"	50.0	ND	113	74.2-116	1.45	21.2	
Surrogate: 1,2-Dichloroethane-d4	64.7		"	62.5		104	73.5-130			
Surrogate: Toluene-d8	63.2		"	62.5		101	79.3-113			
Surrogate: 4-Bromofluorobenzene	63.7		"	62.5		102	81.5-117			

Origins Laboratory, Inc.



Noelle E Doyle,

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

Matthew Harrison
Project Number: NEPI047.01
Project: Noble - Lorenz F22-1

Notes and Definitions

FRE-P Free product was observed in the sample container.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

Origins Laboratory, Inc.



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Noelle E Doyle,