



June 9, 2017

Mr. Jacob Evans
Noble Energy, Inc.
2115 117th Avenue
Greeley, Colorado 80621

**RE: Source Excavation Report – No Further Action Recommendation
 HSR Barbour #4-7 & HSR-Petrie #3-7
 Produced Water Release
 40.242836 / -104.597970
 NW¼ NW¼ SEC.7 T3N R64W 6PM
 Weld County, Colorado
 Spill ID 449995**

Dear Mr. Evans,

Eagle Environmental Consulting, Inc. (EAGLE) is pleased to present this Source Excavation Report – No Further Action Recommendation for the above referenced site.

1.0 SITE BACKGROUND

EAGLE was requested by Noble Energy, Inc. (Noble) to perform subsurface assessment activities at the site following removal of the water vault associated with the HSR Barbour #4-7 and HSR-Petrie #3-7 wells. On April 6, 2017, EAGLE collected soil samples SS-01 through SS-05 following removal of the water vault. Groundwater was not observed during assessment activities.

Soil samples SS-02@6' and SS-05@10', collected from the sidewalls and floor of the excavation, were submitted to Origins Laboratory, Inc. (Origins) for laboratory analysis, following standard chain of custody procedures.

Based on laboratory analytical results, additional remediation was required. The following narrative details source excavation activities that were completed at the site.

2.0 SITE DESCRIPTION

The HSR Barbour #4-7 and HSR-Petrie #3-7 site is located within the northwest quarter of the northwest quarter of Section 7, Township 3 North, Range 64 west, of the 6th Prime Meridian, in Weld County, Colorado. The removed water vault associated with the HSR Barbour #4-7 and HSR-Petrie #3-7 site was located at latitude: 40.242836 and longitude: -104.597970. A topographic site location map is presented as Figure 1. An aerial site location map is presented as Figure 2.

2.1 Site Hydrogeology

The soil lithology observed beneath the release location consists of loose, fine to medium grained sand from the ground surface to approximately 10 feet below ground surface (bgs). Groundwater was not observed during assessment or excavation activities.

3.0 INITIAL ASSESSMENT ACTIVITIES

Following the removal of the water vault associated with the HSR Barbour #4-7 and HSR-Petrie #3-7 wells on April 6, 2017, EAGLE collected soil samples, SS-01 through SS-05, to determine if adsorbed petroleum hydrocarbon impacts existed above Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 regulatory limits. A portion of each soil sample was placed in a sealable plastic bag for volatile organic compound (VOC) headspace analysis utilizing a field calibrated photoionization detector (PID). Another portion of the soil sample was placed in a 2-ounce glass jar and packed in an iced cooler for laboratory analysis. Based on location and PID readings, EAGLE submitted soil samples SS-02@6' and SS-05@10' to Origins for laboratory analysis, under standard chain of custody procedures.

The soil samples were analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, total petroleum hydrocarbons – gasoline range organics (TPH-GRO), and total petroleum hydrocarbons – diesel range organics (TPH-DRO) following modified Environmental Protection Agency (EPA) Methods 8260c and 8015. The soil samples were received within the required holding time for each laboratory analysis.

3.1 Soil Laboratory Analytical Results

Based on laboratory analytical results:

- Soil sample SS-02@6' contained a concentration of total petroleum hydrocarbons (TPH) (1,347 milligrams per kilogram (mg/kg)) exceeding the COGCC Table 910-1 regulatory limit of 500 mg/kg.
- Soil sample SS-05@10' did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits.

Per conversations with Noble, additional excavation activities would be scheduled to remove source material. Soil analytical results are summarized in Table 1 and presented in Figure 3. The laboratory analytical report is included in Attachment A.

4.0 SOIL EXCAVATION ACTIVITIES

On April 10, 2017, Noble and EAGLE supervised excavation activities to remove adsorbed petroleum hydrocarbon impacts beneath and adjacent to the produced water release area associated with the HSR Barbour #4-7 and HSR-Petrie #3-7 wells. Affirm Oilfield Services (Affirm) provided the necessary equipment and personnel to remove and transport petroleum hydrocarbon impacted soil from the site.

The soil lithology observed beneath the release location consists of loose, fine to medium grained sand from the ground surface to approximately 10 feet bgs. Groundwater was not observed during excavation activities.

Confirmation soil samples (SS-06 through SS-20) were collected at various locations within the excavation. A portion of each soil sample was placed in a sealable plastic bag, for VOC headspace analysis utilizing a field calibrated PID. Another portion of the soil sample was placed in a 2-ounce glass

jar and packed in an iced cooler for laboratory analysis. Based on location and PID analysis, selected jarred soil samples were submitted to Origins, under standard chain of custody procedures, for analysis of BTEX, naphthalene, TPH-GRO and TPH-DRO following modified EPA Methods 8260c and 8015. In addition, soil sample SS-16@3', collected adjacent the removed produced water vault, was analyzed for Sodium Adsorption Ratio (SAR) following United States Department of Agriculture (USDA) Method 20B, Specific Conductance (EC) following USDA method 3, and pH following EPA method 9045D. The soil samples were received within the required holding time for each laboratory analysis.

A total of 10 confirmation soil samples (SS-06@6', SS-07@6.5', SS-09@6', SS-10@10', SS-15@6.5', SS-16@3', SS-17@6.5', SS-18@6', SS-19@6.5', and SS-20@16') collected from the excavation were submitted for laboratory analysis. Spatial location of each soil sample was recorded using a Trimble GeoXT 6000 series instrument. A site map presenting the limits of the excavation, as well as soil sample locations, is included as Figure 3.

The final limits of the HSR Barbour #4-7 and HSR-Petrie #3-7 excavation extended approximately 30 feet north to south, and 28 feet east to west. The excavation was advanced to a depth of approximately 10 feet bgs. Approximately 100 cubic yards of soil were removed during assessment and source excavation activities and transported offsite for disposal at Buffalo Ridge Landfill, located in Keenesburg, Colorado.

4.1 Excavation Soil Laboratory Analytical Results

Based on soil laboratory analytical results:

- Confirmation soil samples, SS-06@6', SS-07@6.5', SS-09@6', SS-10@10', SS-15@6.5', SS-16@3', SS-17@6.5', SS-18@6', SS-19@6.5', and SS-20@16', collected from the HSR Barbour #4-7 and HSR-Petrie #3-7 excavation, did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- Sidewall soil sample's (SS-16@3') specific conductance, pH, and sodium adsorption ratio (SAR) were within COGCC Table 910-1 regulatory limits.

Soil analytical results are summarized in Table 1 and are presented in Figure 3. Laboratory analytical reports for soil samples collected during source removal activities at the HSR Barbour #4-7 and HSR-Petrie #3-7 site are included in Attachment A.

5.0 CONCLUSIONS

Based on the information presented in this report, EAGLE concludes the following:

- Soil sample SS-02@6', collected from the HSR Barbour #4-7 and HSR-Petrie #3-7 initial assessment excavation on April 6, 2017, contained a concentration of TPH exceeding the COGCC Table 910-1 regulatory limit.
- Approximately 100 cubic yards of soil were removed from the HSR Barbour #4-7 and HSR-Petrie #3-7 site on April 6, 2017 and April 10, 2017.
- Confirmation soil samples (SS-06@6', SS-07@6.5', SS-09@6', SS-10@10', SS-15@6.5', SS-16@3', SS-17@6.5', SS-18@6', SS-19@6.5', and SS-20@16') collected from the sidewalls and floor of the HSR Barbour #4-7 and HSR-Petrie #3-7 excavation did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits.

- Sidewall soil sample's (SS-16@3') specific conductance, pH, and sodium adsorption ratio (SAR) were within COGCC Table 910-1 regulatory limits.

6.0 RECOMMENDATIONS

Based on the information presented in this report, EAGLE recommends the following:

- No further assessment or remediation appears warranted for the HSR Barbour #4-7 and HSR-Petrie #3-7 produced water release (Spill ID 449995) at this time.

EAGLE sincerely appreciates the opportunity to provide our services. If you have any questions or require further information, please contact us at (303) 433-0479.

Sincerely,

EAGLE ENVIRONMENTAL CONSULTING, INC.



Andrew Newberry
Project Geologist



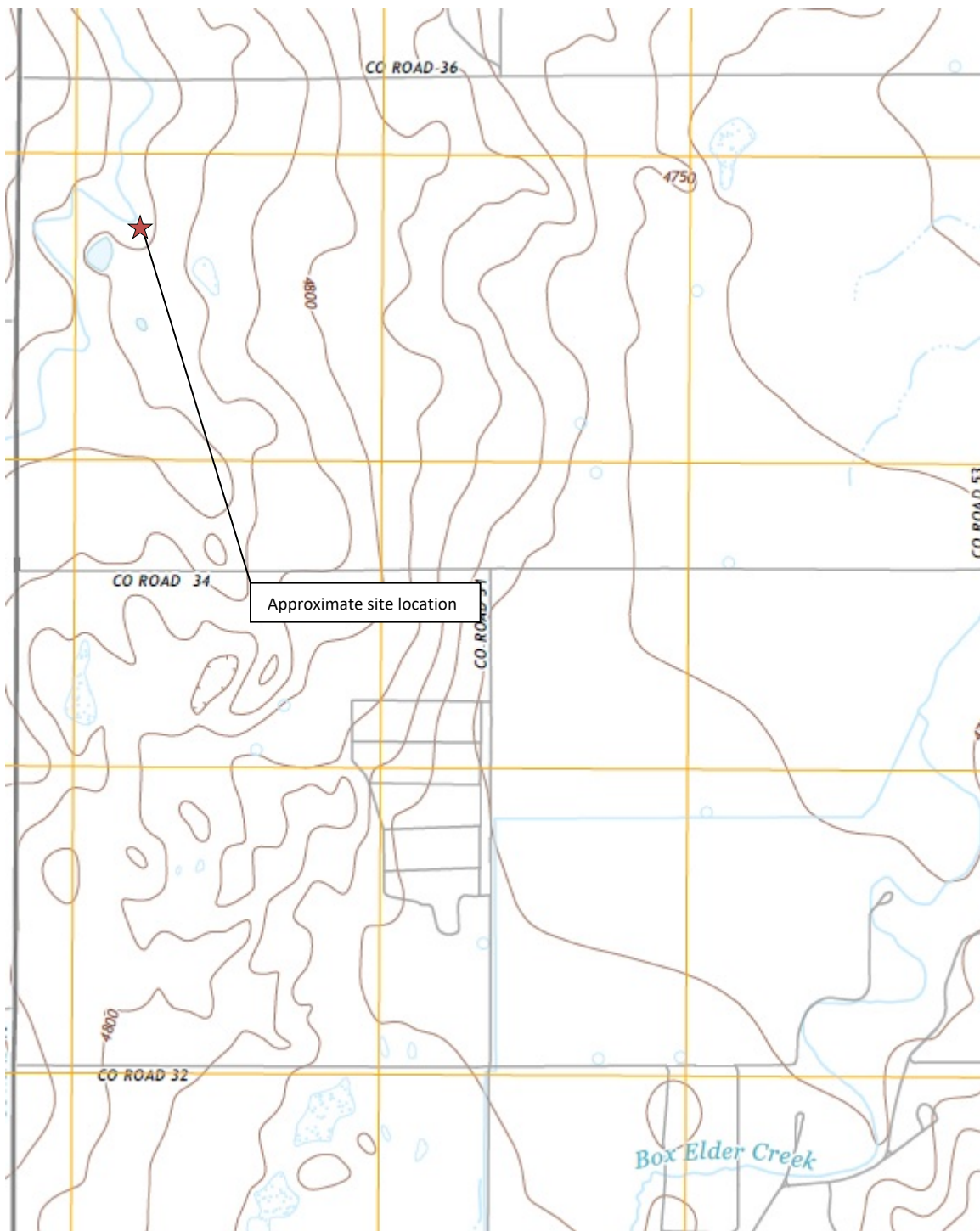
Robin Lockwood
Project Scientist

FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map



Topographic Site Location Map
 HSR Barbour #4-7 & HSR-Petrie #3-7
 Produced Water Release
 40.242836 / -104.597970
 NW¼ NW¼ SEC.7 T3N R64W 6PM
 Weld County, CO
 Spill ID 449995



EAGLE
 ENVIRONMENTAL
 CONSULTING, INC.

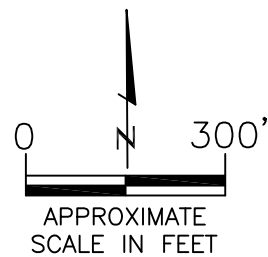
Source: USGS 7.5 Minute Topographic
 Map, Klug Ranch, CO Quadrangle 2013

Figure 1



LEGEND

- HSR BARBOUR #4-7 & HSR-PETRIE #3-7 TANK BATTERY
- HSR BARBOUR #4-7 WELL HEAD (40.24572 / -104.60031)
- HSR-PETRIE #3-7 WELL HEAD (40.24561 / -104.59641)
- APPROXIMATE LOCATION OF PRODUCED WATER RELEASE/EXCAVATION (40.242836 / -104.597970)



AERIAL SITE LOCATION MAP
 HSR BARBOUR #4-7 & HSR-PETRIE #3-7
 PRODUCED WATER RELEASE
 40.242836 / -104.597970
 NW1/4 NW1/4 SEC.7 T3N R64W 6PM
 WELD COUNTY, COLORADO
 SPILL ID 449995

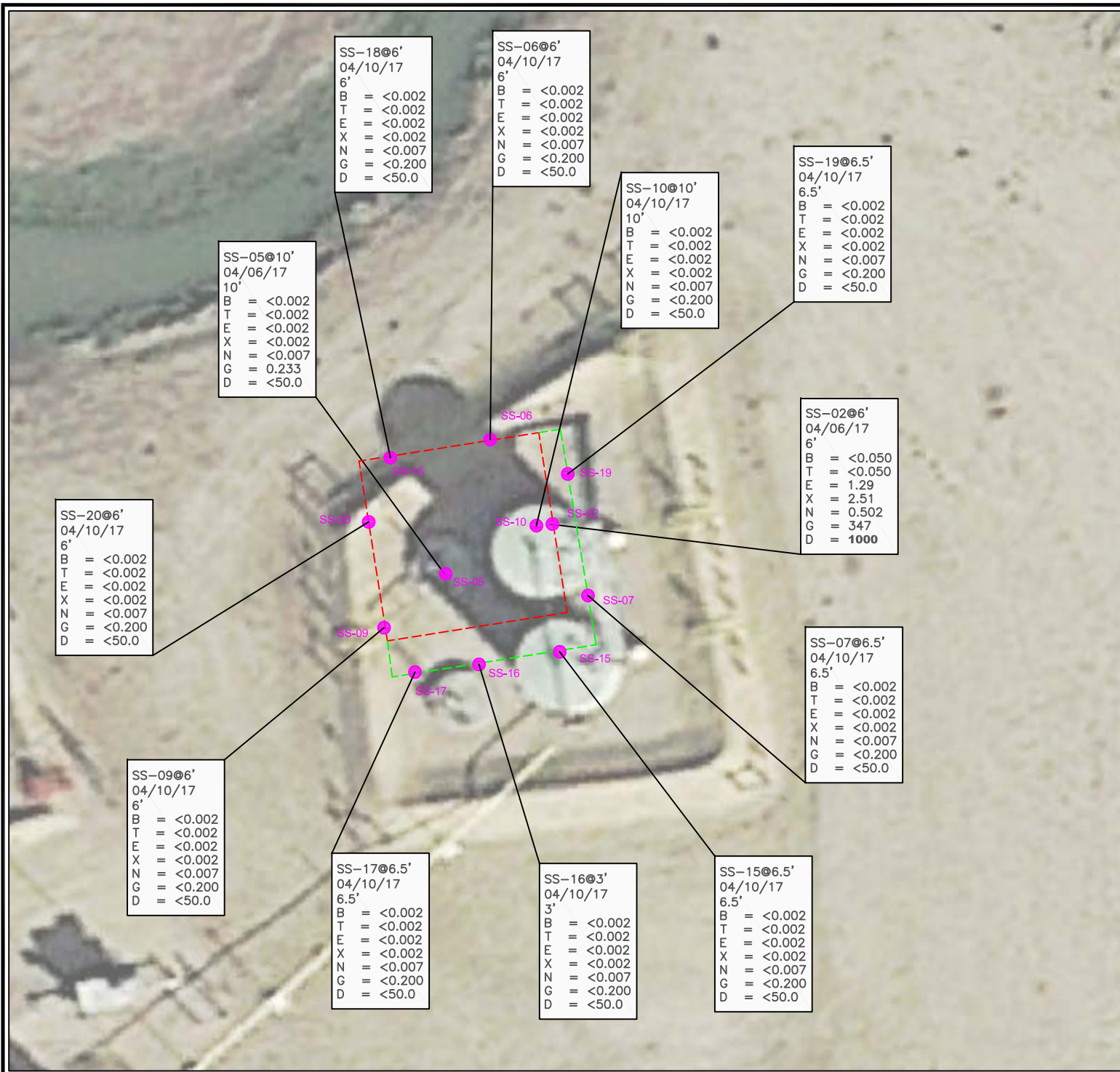
DATE: 04/07/17

FIG. NO.
2

DRAWN BY:
amn



EAGLE
 ENVIRONMENTAL
 CONSULTING, INC.
 4101 INCA STREET, DENVER, CO 80211
 Ph: 303-433-0479 • F: 303-325-5449



LEGEND

- APPROXIMATE ASSESSMENT EXCAVATION BOUNDARIES
- APPROXIMATE EXCAVATION BOUNDARIES (4/10/17)
- APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

PARAMETERS

SAMPLE LOCATION
DATE
DEPTH (FEET)
B = BENZENE (mg/kg)
T = TOLUENE (mg/kg)
E = ETHYLBENZENE (mg/kg)
X = TOTAL XYLENES (mg/kg)
N = NAPHTHALENE (mg/kg)
G = TPH-GRO (mg/kg)
D = TPH-DRO (mg/kg)

mg/kg = MILLIGRAMS PER KILOGRAM

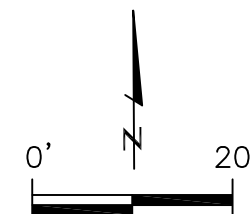
TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS

TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS

NOTE: VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT OR ABOVE LABORATORY DETECTION LIMITS

VALUES IN **BOLD** TYPEFACE CONTAIN CONCENTRATIONS EXCEEDING COGCC TABLE 910-1 REGULATORY LIMITS

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION



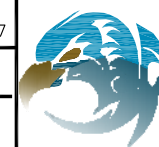
APPROXIMATE
SCALE IN FEET

SOIL ANALYTICAL MAP
HSR BARBOUR #4-7 & HSR-PETRIE #3-7
PRODUCED WATER RELEASE
40.242836/-104.597970
NW1/4 NW1/4 SEC.7 T3N R64W 6PM
WELD COUNTY, COLORADO
SPILL ID 449995

DATE:
05/11/17

DRAWN BY:
arm

FIG.
NO.
3



EAGLE
ENVIRONMENTAL
CONSULTING, INC.
4101 INCA STREET, DENVER, CO 80211
Ph: 303-433-0479 • F: 303-325-5449

TABLES

Table 1: Soil Analytical Results Summary

TABLE 1
SOIL ANALYTICAL RESULTS SUMMARY
HSR BARBOUR #4-7 & HSR-PETRIE #3-7
PRODUCED WATER RELEASE
40.242836 / -104.597970
NW¼ NW¼ SEC.7 T3N R64W 6PM
WELD COUNTY, COLORADO
SPILL ID 449995

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Specific Conductance (mmhos/cm)	pH (pH units)	SAR
COGCC Table 910-1 Regulatory Limits (mg/kg)			0.17	85	100	175	23	500		<4	6 to 9	<12
SS-02 @ 6' (40.242844 / -104.597917)	04/06/17	6	<0.050	<0.050	1.29	2.51	0.502	347	1000	NA	NA	NA
SS-05 @ 10' (40.242831 / -104.597969)	04/06/17	10	<0.002	<0.002	<0.002	<0.002	<0.002	0.233	<50.0	NA	NA	NA
SS-06 @ 6' (40.242878 / -104.597953)	04/10/17	6	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA
SS-07 @ 6.5' (40.242821 / -104.597914)	04/10/17	6.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA
SS-09 @ 6' (40.242810 / -104.597999)	04/10/17	6	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA
SS-10 @ 10' (40.242843 / -104.597923)	04/10/17	10	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA
SS-15 @ 6.5' (40.242801 / -104.597921)	04/10/17	6.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA
SS-16 @ 3' (40.242796 / -104.597961)	04/10/17	3	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	0.0442	8.64	0.97
SS-17 @ 6.5' (40.242792 / -104.597983)	04/10/17	6.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA
SS-18 @ 6' (40.242870 / -104.597997)	04/10/17	6	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA
SS-19 @ 6.5' (40.242868 / -104.597918)	04/10/17	6.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA
SS-20 @ 6' (40.242844 / -104.598007)	04/10/17	6	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA

COGCC = Colorado Oil and Gas Conservation Commission

mg/kg = milligrams per kilogram

mmhos/cm = millimhos per centimeter

NA = Not Analyzed

TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics

TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics

SAR = Sodium Adsorption Ratio

Note: Values presented with a less than symbol (<) did not contain concentrations at or above the laboratory reporting limit.

Values presented in bold typeface exceed COGCC Table 910-1 regulatory limits.



ATTACHMENT A

Laboratory Analytical Reports



April 07, 2017

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

**Project Name - Noble - HSR - Barbour 4-7 & HSR - Project Number - [none]
Petrie 3-7**

Attached are your analytical results for Noble - HSR - Barbour 4-7 & HSR - Petrie 3-7 received by Origins Laboratory, Inc. April 06, 2017. This project is associated with Origins project number Y704050-01.

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

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-02@6'	Y704050-01	Soil	April 6, 2017 9:39	04/06/2017 13:25
SS-05@10'	Y704050-02	Soil	April 6, 2017 10:10	04/06/2017 13:25

Origins Laboratory, Inc.



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

Jen Pellegrini For Noelle Doyle Mathis, President

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR - Petrie 3-7

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 710405

Client: Eagle Env.

Client Project ID: Noble-HSR-Barbour 4-7 & HSR-Petrie 3-7

Checklist Completed by: Da Lu

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

Date/time completed: 4-6-12 1333

Airbill #: NA

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

Cooler Number/Temperature: 1 153 °C 1 °C 1 °C (Describe)

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

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

Reviewed by: Da Lu (Project Manager)

Date/Time Reviewed: 4-6-12 1326

Origins Laboratory, Inc.

Jefe Pellegrini

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

Eagle Environmental Consulting, Inc.
4101 Inca Street
Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-02@6'
4/6/2017 9:39:00AM

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

Origins Laboratory, Inc.
Y704050-01 (Soil)

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

Diesel (C10-C28)	1000	50.0	mg/kg	1	B7D0604	04/06/2017	04/06/2017
------------------	------	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	85.6 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	347	5.00	mg/kg	25	B7D0603	04/06/2017	04/06/2017	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	1.29	0.050	"	"	"	"	"	
Xylenes, total	2.51	0.050	"	"	"	"	"	
Napthalene	0.502	0.175	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	97.5 %	70-130			"	"	"	
Surrogate: Toluene-d8	55.6 %	70-130			"	"	"	S-04
Surrogate: 4-Bromofluorobenzene	196 %	70-130			"	"	"	S-04

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.

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-05@10'

4/6/2017 10:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704050-02 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D0604	04/06/2017	04/06/2017	U
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Surrogate: o-Terphenyl	83.9 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	0.233	0.200	mg/kg	1	B7D0603	04/06/2017	04/06/2017	
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	104 %	70-130			"	"	"	
Surrogate: Toluene-d8	97.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

Blank (B7D0603-BLK1)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.007	"							U
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.6	70-130			

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Jen Pellegrini For Noelle Doyle Mathis, President

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

Blank (B7D0603-BLK2)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.007	"							U
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

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Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

Blank (B7D0603-BLK3)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.007	"							U
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.6	70-130			

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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

LCS (B7D0603-BS1)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Benzene	0.099	0.002	mg/kg	0.100		99.1	70-130			
Toluene	0.099	0.002	"	0.100		99.0	70-130			
Ethylbenzene	0.103	0.002	"	0.100		103	70-130			
m,p-Xylene	0.206	0.004	"	0.200		103	70-130			
o-Xylene	0.101	0.002	"	0.100		101	70-130			
Naphthalene	0.101	0.007	"	0.100		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	53		ug/kg	62.5		84.7	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

LCS (B7D0603-BS2)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Benzene	0.099	0.002	mg/kg	0.100		99.2	70-130			
Toluene	0.099	0.002	"	0.100		98.8	70-130			
Ethylbenzene	0.106	0.002	"	0.100		106	70-130			
m,p-Xylene	0.210	0.004	"	0.200		105	70-130			
o-Xylene	0.104	0.002	"	0.100		104	70-130			
Naphthalene	0.102	0.007	"	0.100		102	70-130			
Surrogate: 1,2-Dichloroethane-d4	70		ug/kg	62.5		112	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

LCS (B7D0603-BS3)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Benzene	0.101	0.002	mg/kg	0.100		101	70-130			
Toluene	0.103	0.002	"	0.100		103	70-130			
Ethylbenzene	0.106	0.002	"	0.100		106	70-130			
m,p-Xylene	0.214	0.004	"	0.200		107	70-130			
o-Xylene	0.106	0.002	"	0.100		106	70-130			
Naphthalene	0.099	0.007	"	0.100		99.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		110	70-130			
Surrogate: Toluene-d8	63		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)										
Matrix Spike (B7D0603-MS1)		Source: Y704050-01			Prepared: 04/06/2017 Analyzed: 04/06/2017					
Benzene	2.54	0.050	mg/kg	2.50	ND	101	70-130			
Toluene	1.59	0.050	"	2.50	ND	63.8	70-130			QM-07
Ethylbenzene	2.90	0.050	"	2.50	1.29	64.7	70-130			QM-07
m,p-Xylene	7.50	0.100	"	5.00	2.22	106	70-130			
o-Xylene	3.09	0.050	"	2.50	0.296	112	70-130			
Naphthalene	2.80	0.175	"	2.50	0.502	92.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	44		"	62.5		69.7	70-130			S-04
Surrogate: 4-Bromofluorobenzene	120		"	62.5		190	70-130			S-04

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Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

Matrix Spike (B7D0603-MS2)		Source: Y704050-02			Prepared: 04/06/2017 Analyzed: 04/06/2017					
Benzene	0.094	0.002	mg/kg	0.100	ND	94.1	70-130			
Toluene	0.096	0.002	"	0.100	ND	95.9	70-130			
Ethylbenzene	0.101	0.002	"	0.100	ND	101	70-130			
m,p-Xylene	0.197	0.004	"	0.200	ND	98.6	70-130			
o-Xylene	0.104	0.002	"	0.100	ND	104	70-130			
Naphthalene	0.104	0.007	"	0.100	ND	104	70-130			
Surrogate: 1,2-Dichloroethane-d4	51		ug/kg	62.5		81.9	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

Matrix Spike (B7D0603-MS3)		Source: Y704054-01			Prepared: 04/06/2017 Analyzed: 04/06/2017					
Benzene	0.104	0.002	mg/kg	0.100	ND	104	70-130			
Toluene	0.102	0.002	"	0.100	ND	102	70-130			
Ethylbenzene	0.102	0.002	"	0.100	ND	102	70-130			
m,p-Xylene	0.207	0.004	"	0.200	ND	104	70-130			
o-Xylene	0.103	0.002	"	0.100	ND	103	70-130			
Naphthalene	0.111	0.007	"	0.100	0.002	109	70-130			
Surrogate: 1,2-Dichloroethane-d4	73		ug/kg	62.5		117	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		100	70-130			

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Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

Matrix Spike Dup (B7D0603-MSD1)		Source: Y704050-01			Prepared: 04/06/2017 Analyzed: 04/06/2017					
Benzene	2.50	0.050	mg/kg	2.50	ND	100	70-130	1.33	20	
Toluene	1.62	0.050	"	2.50	ND	64.6	70-130	1.31	20	QM-07
Ethylbenzene	2.88	0.050	"	2.50	1.29	63.8	70-130	0.795	20	QM-07
m,p-Xylene	7.40	0.100	"	5.00	2.22	104	70-130	1.38	20	
o-Xylene	3.02	0.050	"	2.50	0.296	109	70-130	2.26	20	
Naphthalene	2.93	0.175	"	2.50	0.502	96.9	70-130	4.33	20	
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	44		"	62.5		71.1	70-130			
Surrogate: 4-Bromofluorobenzene	120		"	62.5		188	70-130			S-04

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Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

Matrix Spike Dup (B7D0603-MSD2)		Source: Y704050-02			Prepared: 04/06/2017 Analyzed: 04/06/2017					
Benzene	0.095	0.002	mg/kg	0.100	ND	95.5	70-130	1.43	20	
Toluene	0.097	0.002	"	0.100	ND	96.8	70-130	0.913	20	
Ethylbenzene	0.101	0.002	"	0.100	ND	101	70-130	0.575	20	
m,p-Xylene	0.197	0.004	"	0.200	ND	98.4	70-130	0.274	20	
o-Xylene	0.103	0.002	"	0.100	ND	103	70-130	0.733	20	
Naphthalene	0.099	0.007	"	0.100	ND	99.2	70-130	4.98	20	
Surrogate: 1,2-Dichloroethane-d4	52		ug/kg	62.5		83.8	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D0603 - EPA 5030 (soil)

Matrix Spike Dup (B7D0603-MSD3)		Source: Y704054-01			Prepared: 04/06/2017 Analyzed: 04/06/2017					
Benzene	0.093	0.002	mg/kg	0.100	ND	93.0	70-130	11.3	20	
Toluene	0.093	0.002	"	0.100	ND	92.7	70-130	9.87	20	
Ethylbenzene	0.094	0.002	"	0.100	ND	93.9	70-130	8.70	20	
m,p-Xylene	0.189	0.004	"	0.200	ND	94.5	70-130	9.24	20	
o-Xylene	0.095	0.002	"	0.100	ND	95.0	70-130	8.21	20	
Naphthalene	0.099	0.007	"	0.100	0.002	96.8	70-130	11.8	20	
Surrogate: 1,2-Dichloroethane-d4	73		ug/kg	62.5		117	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 8015C - 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 B7D0604 - EPA 3550B

Blank (B7D0604-BLK1)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
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Surrogate: o-Terphenyl

35

"

50.0

69.0

59-131

Blank (B7D0604-BLK2)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
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Surrogate: o-Terphenyl

48

"

50.0

95.6

59-131

LCS (B7D0604-BS1)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Diesel (C10-C28)	1030	50.0	mg/kg	1000		103	64-121			
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Surrogate: o-Terphenyl

50

"

50.0

100

59-131

LCS (B7D0604-BS2)

Prepared: 04/06/2017 Analyzed: 04/06/2017

Diesel (C10-C28)	992	50.0	mg/kg	1000		99.2	64-121			
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Surrogate: o-Terphenyl

48

"

50.0

96.0

59-131

Matrix Spike (B7D0604-MS1)

Source: Y704050-02

Prepared: 04/06/2017 Analyzed: 04/06/2017

Diesel (C10-C28)	1040	50.0	mg/kg	1000	30.4	101	53-125			
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Surrogate: o-Terphenyl

46

"

50.0

92.4

59-131

Matrix Spike (B7D0604-MS2)

Source: Y704055-01

Prepared: 04/06/2017 Analyzed: 04/06/2017

Diesel (C10-C28)	995	50.0	mg/kg	1000	21.3	97.4	53-125			
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Surrogate: o-Terphenyl

48

"

50.0

95.5

59-131

Origins Laboratory, Inc.



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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

Extractable Petroleum Hydrocarbons by 8015C - 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 B7D0604 - EPA 3550B

Matrix Spike Dup (B7D0604-MSD1)		Source: Y704050-02			Prepared: 04/06/2017 Analyzed: 04/06/2017					
Diesel (C10-C28)	827	50.0	mg/kg	1000	30.4	79.6	53-125	22.6	20	QR-02
Surrogate: o-Terphenyl	39		"	50.0		77.8	59-131			
Matrix Spike Dup (B7D0604-MSD2)		Source: Y704055-01			Prepared: 04/06/2017 Analyzed: 04/06/2017					
Diesel (C10-C28)	999	50.0	mg/kg	1000	21.3	97.7	53-125	0.373	20	
Surrogate: o-Terphenyl	48		"	50.0		96.2	59-131			

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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

Notes and Definitions

U Sample is Non-Detect.

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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April 14, 2017

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

**Project Name - Noble - HSR - Barbour 4-7 & HSR - Project Number - [none]
Petrie 3-7**

Attached are your analytical results for Noble - HSR - Barbour 4-7 & HSR - Petrie 3-7 received by Origins Laboratory, Inc. April 10, 2017. This project is associated with Origins project number Y704116-01.

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

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-06@6'	Y704116-01	Soil	April 10, 2017 13:55	04/10/2017 18:25
SS-07@6.5'	Y704116-02	Soil	April 10, 2017 14:00	04/10/2017 18:25
SS-09@6'	Y704116-03	Soil	April 10, 2017 14:06	04/10/2017 18:25
SS-10@10'	Y704116-04	Soil	April 10, 2017 13:51	04/10/2017 18:25
SS-15@6.5'	Y704116-05	Soil	April 10, 2017 15:10	04/10/2017 18:25
SS-16@3'	Y704116-06	Soil	April 10, 2017 15:07	04/10/2017 18:25
SS-17@6.5'	Y704116-07	Soil	April 10, 2017 15:16	04/10/2017 18:25
SS-18@6'	Y704116-08	Soil	April 10, 2017 15:13	04/10/2017 18:25
SS-19@6.5'	Y704116-09	Soil	April 10, 2017 15:19	04/10/2017 18:25
SS-20@6'	Y704116-10	Soil	April 10, 2017 15:23	04/10/2017 18:25

Origins Laboratory, Inc.



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4101 Inca Street
Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR - Petrie 3-7

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ORIGINS
LABORATORY, INC

page 1 of 1

Client: EAGLE ENV. CONSULTING
Address: 4101 INCA ST.
DENVER, CO 80211
Telephone Number: 303-433-0479
Email Address: MCE3@EAGLE-ENVIRO.COM

Project Manager: MARTIN ECKERT
Project Name: HSR - BARBOUR #4-7 & HSR - PETRIE #3-7
Project Number: -
Samples Collected By: SV

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa	Other	EC/PH	EC/PH	EC/PH	
SS-16@6'	4/10/17	1355	2	X					X				X	1	
SS-17@6.5'	4/10/17	1400	1											2	
SS-18@6'	4/10/17	1406	1											3	
SS-19@6'	4/10/17	1351	1											4	
SS-15@6.5'	4/10/17	1510	1											5	
SS-16@3'	4/10/17	1507	1											6	
SS-17@6.5'	4/10/17	1516	1											7	
SS-18@6'	4/10/17	1513	1											8	
SS-19@6.5'	4/10/17	1519	1											9	
SS-20@6'	4/10/17	1523	1											10	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Received By:	Date:	Time:	Received By:	Date:	Time:	Received By:	Date:	Time:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Received By:	Date:	Time:	Received By:	Date:	Time:	Received By:	Date:	Time:	

Date Results Needed: NOBLE

Temp Received: 2.3

Bill To: JACOB

Origins Laboratory, Inc.

Jefe Pellegrini

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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR - Petrie 3-7

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y04116

Client: Eagle Env.

Client Project ID: Noble - HSR - Barbour 4-7 & HSR - Petrie

Checklist Completed by: Duke

Shipped Via: HD

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

Date/time completed: 4-10-12 1858

Airbill #: NA

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

Cooler Number/Temperature: 1 / 2.3 °C 1 / _____ °C 1 / _____ °C 1 / _____ °C

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>PH, SAR</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄ / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

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

Reviewed by: Duke (Project Manager)

4-10-12 1858
Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

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Eagle Environmental Consulting, Inc.
4101 Inca Street
Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-06@6'
4/10/2017 1:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-01 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
Surrogate: o-Terphenyl	83.2 %	59-131			"	"	"	

GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/10/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Naphthalene	ND	0.007	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	103 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

Origins Laboratory, Inc.



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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-07@6.5'

4/10/2017 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-02 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
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Surrogate: o-Terphenyl	86.6 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/10/2017	U
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Benzene	ND	0.002	"	"	"	"	"	U
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Toluene	ND	0.002	"	"	"	"	"	U
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Ethylbenzene	ND	0.002	"	"	"	"	"	U
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Xylenes, total	ND	0.002	"	"	"	"	"	U
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Naphthalene	ND	0.007	"	"	"	"	"	U
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Surrogate: 1,2-Dichloroethane-d4	107 %	70-130			"	"	"	
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Surrogate: Toluene-d8	105 %	70-130			"	"	"	
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Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	
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Origins Laboratory, Inc.



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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-09@6'

4/10/2017 2:06:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-03 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
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Surrogate: o-Terphenyl	68.9 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/11/2017	U
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Benzene	ND	0.002	"	"	"	"	"	U
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Toluene	ND	0.002	"	"	"	"	"	U
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Ethylbenzene	ND	0.002	"	"	"	"	"	U
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Xylenes, total	ND	0.002	"	"	"	"	"	U
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Naphthalene	ND	0.007	"	"	"	"	"	U
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Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
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Surrogate: Toluene-d8	104 %	70-130			"	"	"	
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Surrogate: 4-Bromofluorobenzene	98.7 %	70-130			"	"	"	
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Origins Laboratory, Inc.



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Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-10@10'

4/10/2017 1:51:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-04 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
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Surrogate: o-Terphenyl	74.4 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/11/2017	U
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Benzene	ND	0.002	"	"	"	"	"	U
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Toluene	ND	0.002	"	"	"	"	"	U
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Ethylbenzene	ND	0.002	"	"	"	"	"	U
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Xylenes, total	ND	0.002	"	"	"	"	"	U
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Naphthalene	ND	0.007	"	"	"	"	"	U
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Surrogate: 1,2-Dichloroethane-d4	113 %	70-130			"	"	"	
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Surrogate: Toluene-d8	102 %	70-130			"	"	"	
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Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	
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Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-15@6.5'

4/10/2017 3:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-05 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
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Surrogate: o-Terphenyl	74.5 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/11/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.1 %	70-130			"	"	"	

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Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-16@3'
4/10/2017 3:07:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-06 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
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Surrogate: o-Terphenyl	89.3 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/11/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Naphthalene	ND	0.007	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"	
Surrogate: Toluene-d8	103 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

Metals (Saturated Paste Prep)

Calcium	1.96		me/L	1	'[none]'	04/12/2017	04/13/2017	
Magnesium	0.63		"	"	"	"	"	
Sodium	1.10		"	"	"	"	"	

pH in Soil by EPA 9045D

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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-16@3'

4/10/2017 3:07:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-06 (Soil)

pH in Soil by EPA 9045D

pH	8.64	pH Units	1	B7D1007	04/10/2017	04/10/2017
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SAR by 20B Saturated Paste

SAR	0.97		1	'[none]'	04/12/2017	04/13/2017
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0442	mmhos/cm	1	B7D1008	04/10/2017	04/10/2017
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Eagle Environmental Consulting, Inc.
4101 Inca Street
Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-17@6.5'

4/10/2017 3:16:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-07 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
Surrogate: o-Terphenyl	89.0 %	59-131			"	"	"	

GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/11/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Naphthalene	ND	0.007	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-18@6'

4/10/2017 3:13:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-08 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
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Surrogate: o-Terphenyl	85.3 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/11/2017	U
-----------------------------	----	-------	-------	---	---------	------------	------------	---

Benzene	ND	0.002	"	"	"	"	"	U
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Toluene	ND	0.002	"	"	"	"	"	U
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Ethylbenzene	ND	0.002	"	"	"	"	"	U
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Xylenes, total	ND	0.002	"	"	"	"	"	U
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Naphthalene	ND	0.007	"	"	"	"	"	U
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Surrogate: 1,2-Dichloroethane-d4	113 %	70-130			"	"	"	
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Surrogate: Toluene-d8	104 %	70-130			"	"	"	
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Surrogate: 4-Bromofluorobenzene	98.6 %	70-130			"	"	"	
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.
4101 Inca Street
Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-19@6.5'

4/10/2017 3:19:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-09 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
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Surrogate: o-Terphenyl	86.1 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/11/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Naphthalene	ND	0.007	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"	
Surrogate: Toluene-d8	103 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.2 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

SS-20@6'

4/10/2017 3:23:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y704116-10 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7D1005	04/10/2017	04/11/2017	U
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Surrogate: o-Terphenyl	92.2 %	59-131			"	"	"	
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GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7D1001	04/10/2017	04/11/2017	U
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Benzene	ND	0.002	"	"	"	"	"	U
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Toluene	ND	0.002	"	"	"	"	"	U
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Ethylbenzene	ND	0.002	"	"	"	"	"	U
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Xylenes, total	ND	0.002	"	"	"	"	"	U
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Naphthalene	ND	0.007	"	"	"	"	"	U
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Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
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Surrogate: Toluene-d8	105 %	70-130			"	"	"	
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Surrogate: 4-Bromofluorobenzene	99.8 %	70-130			"	"	"	
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D1001 - EPA 5030 (soil)										
Blank (B7D1001-BLK1)					Prepared: 04/10/2017 Analyzed: 04/10/2017					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.007	"							U
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		99.2	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.1	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D1001 - EPA 5030 (soil)										
Blank (B7D1001-BLK2)					Prepared: 04/10/2017 Analyzed: 04/10/2017					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.007	"							U
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		111	70-130			
Surrogate: Toluene-d8	66		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D1001 - EPA 5030 (soil)										
LCS (B7D1001-BS1)					Prepared: 04/10/2017 Analyzed: 04/10/2017					
Benzene	0.095	0.002	mg/kg	0.100		94.6	70-130			
Toluene	0.099	0.002	"	0.100		99.0	70-130			
Ethylbenzene	0.102	0.002	"	0.100		102	70-130			
m,p-Xylene	0.204	0.004	"	0.200		102	70-130			
o-Xylene	0.098	0.002	"	0.100		98.1	70-130			
Naphthalene	0.101	0.007	"	0.100		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		92.4	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		92.6	70-130			

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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D1001 - EPA 5030 (soil)

LCS (B7D1001-BS2)

Prepared: 04/10/2017 Analyzed: 04/10/2017

Benzene	0.084	0.002	mg/kg	0.100		84.4	70-130			
Toluene	0.095	0.002	"	0.100		95.0	70-130			
Ethylbenzene	0.101	0.002	"	0.100		101	70-130			
m,p-Xylene	0.206	0.004	"	0.200		103	70-130			
o-Xylene	0.100	0.002	"	0.100		100	70-130			
Naphthalene	0.089	0.007	"	0.100		89.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	54		ug/kg	62.5		86.7	70-130			
Surrogate: Toluene-d8	68		"	62.5		108	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.1	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D1001 - EPA 5030 (soil)

Matrix Spike (B7D1001-MS1)		Source: Y704090-01			Prepared: 04/10/2017 Analyzed: 04/10/2017					
Benzene	2.55	0.050	mg/kg	2.50	ND	102	70-130			
Toluene	2.71	0.050	"	2.50	ND	108	70-130			
Ethylbenzene	2.84	0.050	"	2.50	ND	114	70-130			
m,p-Xylene	5.69	0.100	"	5.00	ND	114	70-130			
o-Xylene	2.68	0.050	"	2.50	ND	107	70-130			
Naphthalene	2.62	0.175	"	2.50	ND	105	70-130			
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		92.1	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.2	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.6	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D1001 - EPA 5030 (soil)

Matrix Spike (B7D1001-MS2)		Source: Y704107-01			Prepared: 04/10/2017 Analyzed: 04/10/2017					
Benzene	0.082	0.002	mg/kg	0.100	ND	81.8	70-130			
Toluene	0.092	0.002	"	0.100	ND	91.6	70-130			
Ethylbenzene	0.094	0.002	"	0.100	ND	94.1	70-130			
m,p-Xylene	0.191	0.004	"	0.200	ND	95.6	70-130			
o-Xylene	0.094	0.002	"	0.100	ND	93.8	70-130			
Naphthalene	0.085	0.007	"	0.100	ND	84.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	53		ug/kg	62.5		85.4	70-130			
Surrogate: Toluene-d8	67		"	62.5		107	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	70-130			

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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D1001 - EPA 5030 (soil)

Matrix Spike Dup (B7D1001-MSD1)		Source: Y704090-01			Prepared: 04/10/2017 Analyzed: 04/10/2017					
Benzene	2.45	0.050	mg/kg	2.50	ND	97.8	70-130	4.05	20	
Toluene	2.57	0.050	"	2.50	ND	103	70-130	5.02	20	
Ethylbenzene	2.69	0.050	"	2.50	ND	108	70-130	5.51	20	
m,p-Xylene	5.37	0.100	"	5.00	ND	107	70-130	5.73	20	
o-Xylene	2.57	0.050	"	2.50	ND	103	70-130	4.36	20	
Naphthalene	2.55	0.175	"	2.50	ND	102	70-130	2.65	20	
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		92.9	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.0	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 B7D1001 - EPA 5030 (soil)

Matrix Spike Dup (B7D1001-MSD2)		Source: Y704107-01			Prepared: 04/10/2017 Analyzed: 04/10/2017					
Benzene	0.087	0.002	mg/kg	0.100	ND	86.9	70-130	6.09	20	
Toluene	0.094	0.002	"	0.100	ND	94.4	70-130	3.10	20	
Ethylbenzene	0.101	0.002	"	0.100	ND	101	70-130	6.64	20	
m,p-Xylene	0.204	0.004	"	0.200	ND	102	70-130	6.43	20	
o-Xylene	0.099	0.002	"	0.100	ND	98.9	70-130	5.35	20	
Naphthalene	0.091	0.007	"	0.100	ND	90.8	70-130	6.79	20	
Surrogate: 1,2-Dichloroethane-d4	70		ug/kg	62.5		111	70-130			
Surrogate: Toluene-d8	66		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.4	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.
4101 Inca Street
Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

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 8015C - 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 B7D1005 - EPA 3550B

Blank (B7D1005-BLK1)

Prepared: 04/10/2017 Analyzed: 04/10/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
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Surrogate: o-Terphenyl

45

"

50.0

89.8

59-131

Blank (B7D1005-BLK2)

Prepared: 04/10/2017 Analyzed: 04/10/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
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Surrogate: o-Terphenyl

35

"

50.0

69.9

59-131

LCS (B7D1005-BS1)

Prepared: 04/10/2017 Analyzed: 04/10/2017

Diesel (C10-C28)	751	50.0	mg/kg	1000		75.1	64-121			
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Surrogate: o-Terphenyl

39

"

50.0

77.9

59-131

LCS (B7D1005-BS2)

Prepared: 04/10/2017 Analyzed: 04/10/2017

Diesel (C10-C28)	766	50.0	mg/kg	1000		76.6	64-121			
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Surrogate: o-Terphenyl

39

"

50.0

78.4

59-131

Matrix Spike (B7D1005-MS1)

Source: Y704038-02

Prepared: 04/10/2017 Analyzed: 04/10/2017

Diesel (C10-C28)	830	50.0	mg/kg	1000	136	69.4	53-125			
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Surrogate: o-Terphenyl

38

"

50.0

76.1

59-131

Matrix Spike (B7D1005-MS2)

Source: Y704038-03

Prepared: 04/10/2017 Analyzed: 04/10/2017

Diesel (C10-C28)	868	50.0	mg/kg	1000	149	71.9	53-125			
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Surrogate: o-Terphenyl

40

"

50.0

80.6

59-131

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

Extractable Petroleum Hydrocarbons by 8015C - 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 B7D1005 - EPA 3550B

Matrix Spike Dup (B7D1005-MSD1)		Source: Y704038-02			Prepared: 04/10/2017 Analyzed: 04/10/2017					
Diesel (C10-C28)	841	50.0	mg/kg	1000	136	70.5	53-125	1.33	20	
Surrogate: o-Terphenyl	38		"	50.0		77.0	59-131			
Matrix Spike Dup (B7D1005-MSD2)		Source: Y704038-03			Prepared: 04/10/2017 Analyzed: 04/10/2017					
Diesel (C10-C28)	1080	50.0	mg/kg	1000	149	92.8	53-125	21.4	20	QR-02
Surrogate: o-Terphenyl	49		"	50.0		97.6	59-131			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.
4101 Inca Street
Denver CO 80211

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7D1007 - NO PREP										
Duplicate (B7D1007-DUP1)		Source: Y704039-01			Prepared: 04/10/2017 Analyzed: 04/10/2017					
pH	8.43		pH Units		8.40			0.357	25	
Batch B7D1008 - NO PREP										
Blank (B7D1008-BLK1)		Prepared: 04/10/2017 Analyzed: 04/10/2017								
Specific Conductance (EC)	0.00340		mmhos/cm							
Duplicate (B7D1008-DUP1)		Source: Y704039-01			Prepared: 04/10/2017 Analyzed: 04/10/2017					
Specific Conductance (EC)	0.0933		mmhos/cm		0.0875			6.42	25	

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - HSR - Barbour 4-7 & HSR -
Petrie 3-7

Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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