

Wellhead Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional attachments (optional): <u> </u>		Pit Closure <u> </u>		Tank Battery Closure <u> </u>		Flowline Closure: <u> </u>		Partially Buried Vault Closure <u> </u>
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Site Name & COGCC Facility Number: HSR-Dougery #1-20	Date: 02/03/23	Remediation Project #: 24368
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Associated Wells: 05-123-15388	Age of Site: years	Number of Photos Attached: 1
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Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.303170 / -104.679640	Estimated Facility Size (acres): <u> </u>
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General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)

Good condition

USCS Soil Type: silty SAND	Estimated Depth to Groundwater: ~7-11'
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Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)

None observed

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)

None observed

Wellhead(s)						
Well API	05-123-15388					
Age	years					
Condition of surface around wellhead	Good - Per Crew					
PID Readings	N/A - Excavated upon arrival					
Condition of subsurface (staining present)	Good - No odor/no staining					
PID Readings	3.8	0.6	1.2	0.7	6.6	
Sample taken? Location/Sample ID#	WH-SS-01	WH-SS-02	WH-SS-03	WH-SS-04	WH-FS-01	
Photo Number(s)	See photo log					

Other observations regarding wellheads:

Well casing cut/capped following assessment

Summary

Was impacted soil identified? No Yes - less than 10 cubic yards Yes - more than 10 cubic yards

Total number of samples field screened: 5	Total number of samples collected: 5
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Highest PID Reading: 6.6	Total number of samples submitted to lab for analysis: 1
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If more than 10 cubic yards of impacted soil were observed:

Vertical extent:	Estimated spill volume:
N/A	
Lateral extent:	Volume of soil removed:

Is additional investigation required?

Was groundwater encountered during the investigation? No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils

Measured depth to groundwater:	Was remedial groundwater removal conducted? Yes No
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Date Groundwater was encountered:	Commencement date of removal:
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Sheen on groundwater? Yes No	Volume of groundwater removed prior to sampling:
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Free product observed? Yes No	Volume of groundwater removed post sampling:
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Total number of samples collected:	Total Volume of groundwater removed:
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Total number of samples submitted to lab for analysis:	
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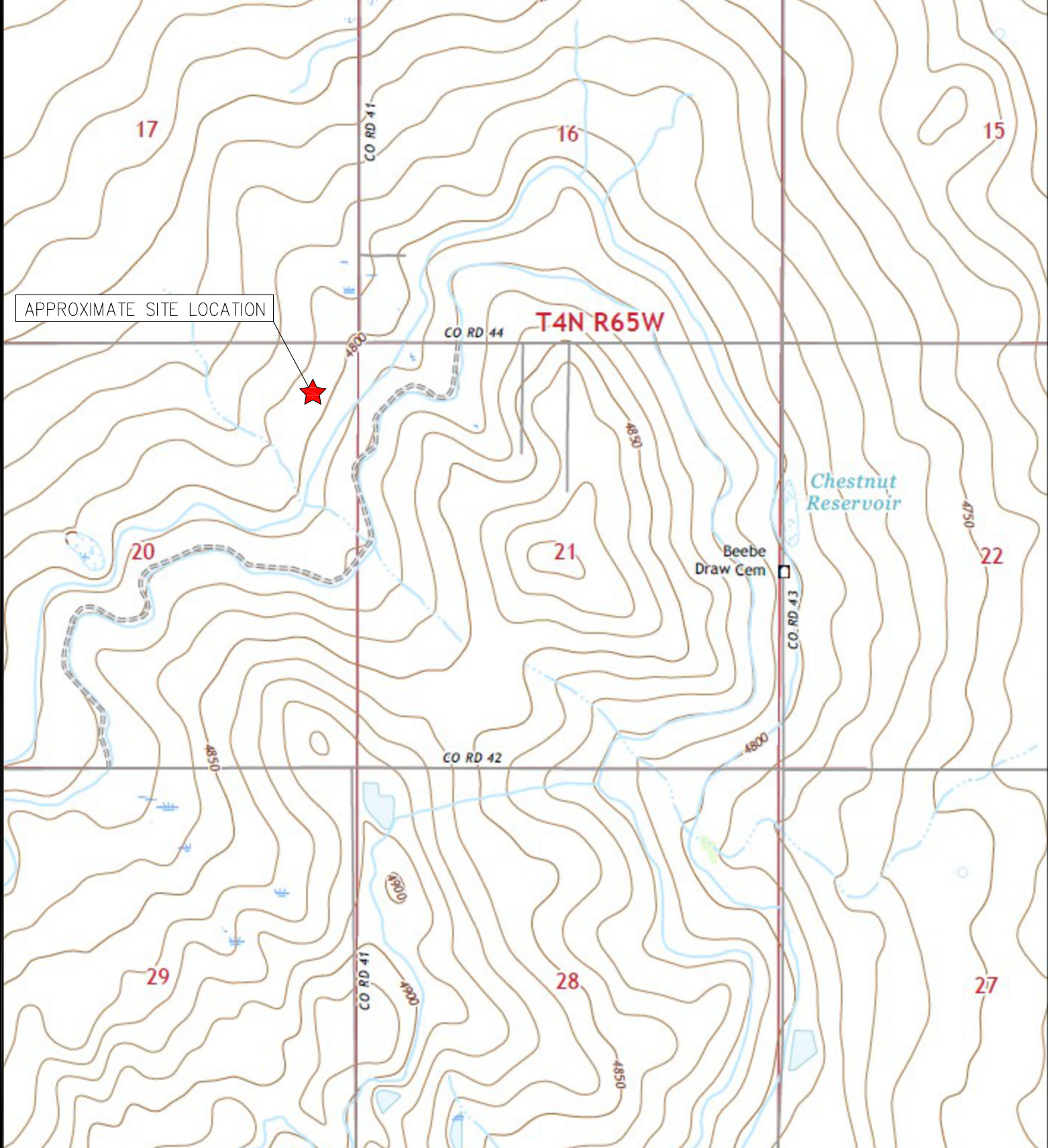


FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map



APPROXIMATE SITE LOCATION



TOPOGRAPHIC SITE LOCATION MAP
 HSR-DOUGERY #1-20
 CLOSURE ASSESSMENT
 40.303170 / -104.679640
 NE¼ NE¼ SEC.20 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-15388
 REMEDIATION # 24368

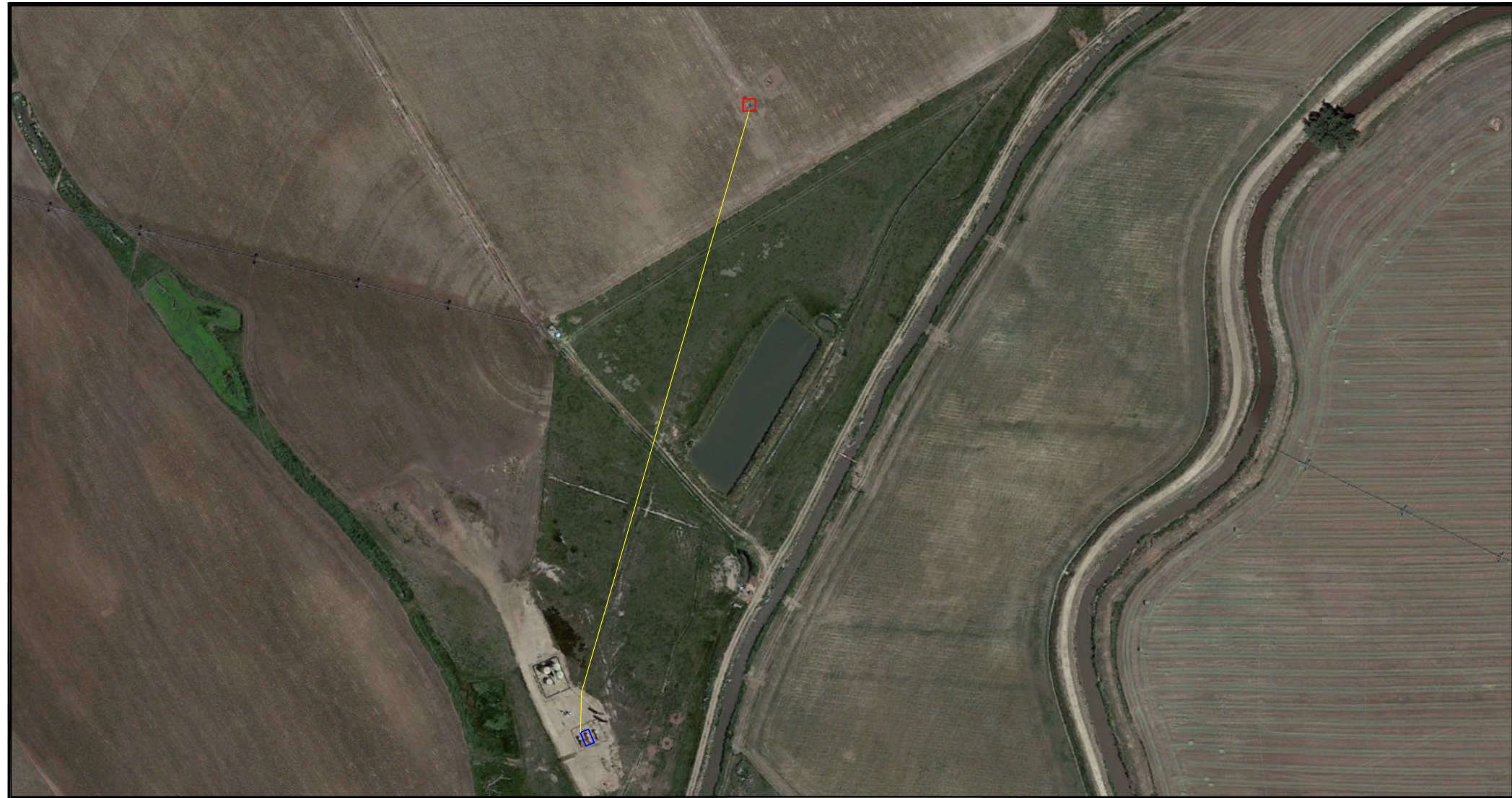


EAGLE
 ENVIRONMENTAL
 CONSULTING, LLC

8000 W 44th Ave, Wheat Ridge, CO 80033
 Ph: 303-433-0479 • F: 303-325-5449

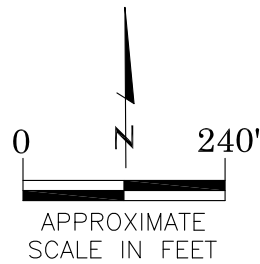
SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, LA SALLE, CO QUADRANGLE 2022

FIGURE 1



LEGEND

- FORMER HSR-DOUGERY #1-20 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



AERIAL SITE LOCATION MAP
 HSR-DOUGERY #1-20
 CLOSURE ASSESSMENT
 40.303170 / -104.679640
 NE¼ NE¼ SEC.20 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-15388
 REMEDIATION # 24368

FIGURE NO.
2

DRAWN BY:
EL



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LEGEND

- WELLHEAD ASSESSMENT BOUNDARIES
- APPROXIMATE LOCATION OF SOIL SAMPLES FIELD SCREENED, ONLY, WITH PHOTOIONIZATION DETECTOR
- 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)
G = TPH-GRO (mg/kg)
D = TPH-DRO (mg/kg)
R = TPH-RRO (mg/kg)
1,2,4-TMB = 1,2,4 TRIMETHYLBENZENE (mg/kg)
1,3,5-TMB = 1,3,5 TRIMETHYLBENZENE (mg/kg)
Brrn= BORON (mg/L)
EC = SPECIFIC CONDUCTANCE (mmhos/cm)
SAR= SODIUM ADSORPTION RATIO
pH = pH (pH UNITS)
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (mg/kg)

mg/kg = MILLIGRAMS PER KILOGRAM
 mg/L = MILLIGRAMS PER LITER
 mmhos/cm = MILLIMHOS PER CENTIMETER

(BRL) – ALL VALUES BELOW REGULATORY LIMITS

TPH-GRO = TOTAL PETROLEUM HYDROCARBONS – GASOLINE RANGE ORGANICS
 TPH-DRO = TOTAL PETROLEUM HYDROCARBONS – DIESEL RANGE ORGANICS
 TPH-RRO = TOTAL PETROLEUM HYDROCARBONS – RESIDUAL RANGE ORGANICS

NOTES:
 VALUES PRESENTED IN **BOLD** EXCEED COGCC TABLE 915-1 REGULATORY LIMITS.

COGCC = COLORADO OIL AND GAS CONSERVATION COMMISSION

SOIL ANALYTICAL MAP
 HSR-DOUGERY #1-20
 CLOSURE ASSESSMENT
 40.303170 / -104.679640
 NE¼ NE¼ SEC.20 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-15388
 REMEDIATION # 24368

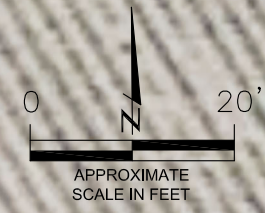


FIGURE NO.
3
DRAWN BY:
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 Ph: 303-433-0479 • F: 303-325-5449



TABLES

Table 1: Photoionization Detector Reading Summary

Table 2: Soil Analytical Results Summary

TABLE 1
PHOTOIONIZATION DETECTOR READING SUMMARY
HSR-DOUGERY #1-20
CLOSURE ASSESSMENT
40.303170 / -104.679640
NE¼ NE¼ SEC.20 T4N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-15388
REMEDIATION # 24368

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-SS-01 @ 5' (40.303182 / -104.679667)	02/03/23	5	3.8	N
WH-SS-02 @ 5' (40.303169 / -104.679649)	02/03/23	5	0.6	N
WH-SS-03 @ 5' (40.303156 / -104.679667)	02/03/23	5	1.2	N
WH-SS-04 @ 5' (40.303169 / -104.679686)	02/03/23	5	0.7	N
WH-FS-01 @ 6' (40.303168 / -104.679667)	02/03/23	6	6.6	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				



TABLE 2
 SOIL ANALYTICAL RESULTS SUMMARY
 HSR-DOUGERY #1-20
 CLOSURE ASSESSMENT
 40.303170 / -104.679640
 NE¼ NE¼ SEC.20 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-15388
 REMEDIATION # 24368

Sample Location		WH-FS-01 @ 6'		
(Latitude / Longitude)		(40.303168 / -104.679667)		
Sample Date		2/3/2023		
Sample Depth		6'		
PID Reading (ppm-v)		6.6		
Regulatory Limits				
Chemical of Concern	Units	COGCC Table 915-1 RSSLs	COGCC Table 915-1 GSSLs	
VOCS				
Benzene	mg/kg	1.2	0.0026	<0.00200
Toluene	mg/kg	490	0.69	<0.00200
Ethylbenzene	mg/kg	5.8	0.78	<0.00200
Total Xylenes	mg/kg	58	9.9	<0.00200
1,2,4-Trimethylbenzene	mg/kg	30	0.0081	<0.00200
1,3,5-Trimethylbenzene	mg/kg	27	0.0087	<0.00200
TOTAL PETROLEUM HYDROCARBONS				
TPH-GRO	mg/kg	500	--	<0.200
TPH-DRO	mg/kg	500	--	<25.0
TPH-RRO	mg/kg	500	--	<100
POLYCYCLIC AROMATIC HYDROCARBONS				
1-Methyl-naphthalene	mg/kg	18	0.006	<0.00201
2-Methyl-naphthalene	mg/kg	24	0.019	<0.00201
Acenaphthene	mg/kg	360	0.55	<0.00067
Anthracene	mg/kg	1800	5.8	<0.00067
Benzo(a)-anthracene	mg/kg	1.1	0.011	<0.00067
Benzo(a)-pyrene	mg/kg	0.11	0.24	0.00103
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	0.00106
Benzo(k)-fluoranthene	mg/kg	11	2.9	0.000478
Chrysene	mg/kg	110	9	0.000763
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	<0.00067
Fluoranthene	mg/kg	240	8.9	0.000685
Fluorene	mg/kg	240	0.54	<0.00067
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	0.000775
Naphthalene	mg/kg	2	0.0038	<0.00201
Pyrene	mg/kg	180	1.3	0.00115
SOIL SUITABILITY (Inorganics)				
Boron	mg/L	2	--	0.180
pH	standard unit	6-8.3	--	8.07
Sodium Adsorption Ratio (SAR)	--	<6	--	2.12
Specific Conductance (EC)	mmhos/cm	<4	--	0.634
COGCC = Colorado Oil and Gas Conservation Commission mg/kg = milligrams per kilogram mmhos/cm = millimhos per centimeter PID = Photoionization Detector ppm-v = parts per million by volume mg/L = milligrams per liter SAR = Sodium Adsorption Ratio Notes: Values presented with a less than symbol (<) did not contain concentrations at or above the laboratory reporting limit and/or minimum detection limit. Values presented in BOLD exceed COGCC Table 915-1 Regulatory Limits.				



ATTACHMENT A

Photo Log

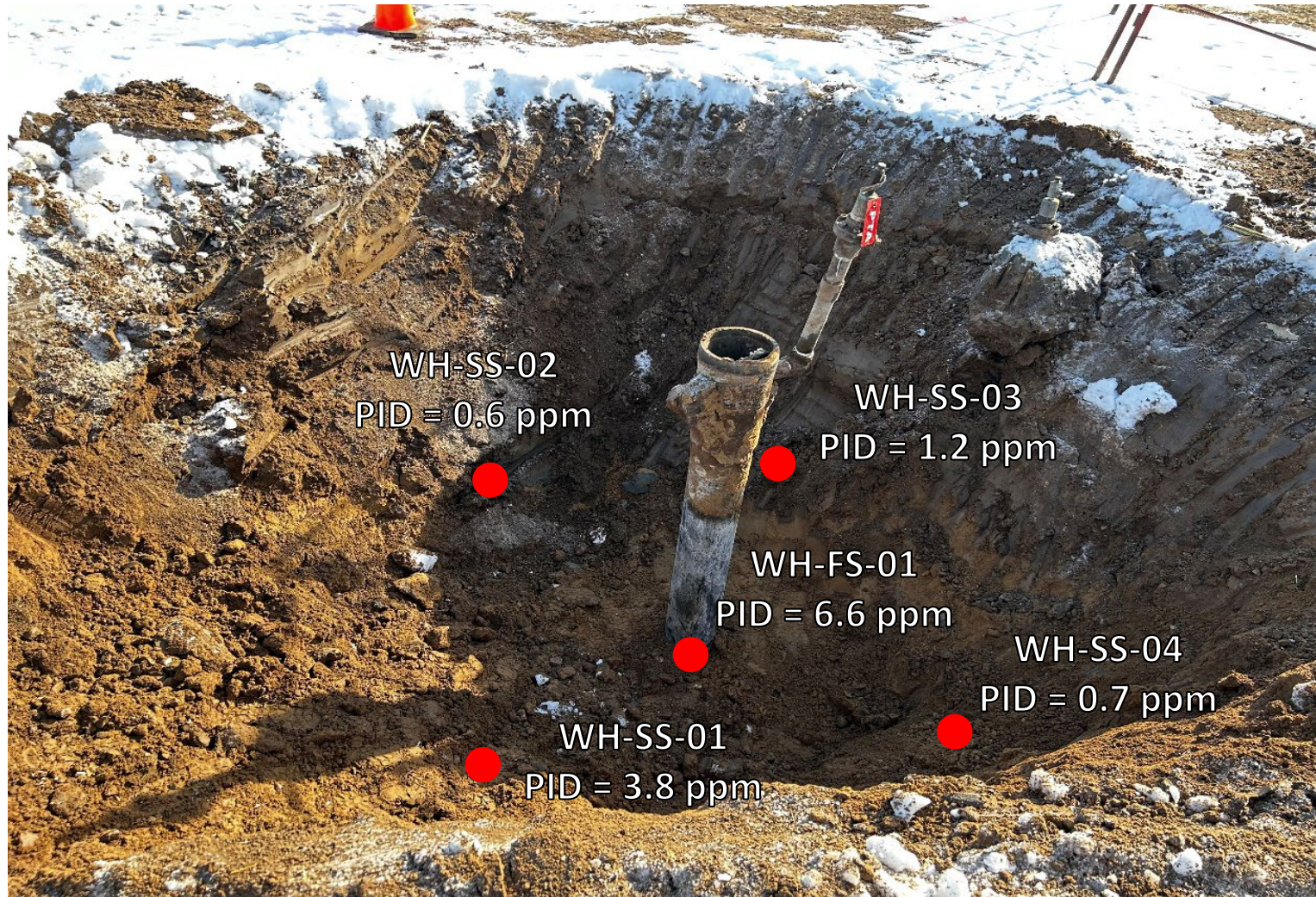
HSR-Dougery #1-20
API # 05-123-15388
Remediation # 24368

Closure Assessment

February 2023



Wellhead Excavation – 02/03/23



Looking southeast

No petroleum hydrocarbon staining or odor observed



ATTACHMENT B

Laboratory Analytical Report



February 08, 2023

Eagle Environmental Consulting, Inc.

Martin C Eckert III

8000 W 44th Ave

Wheat Ridge CO 80033

Project Name - Noble - HSR - Dougery #1-20

Project Number - [none]

Attached are your analytical results for Noble - HSR - Dougery #1-20 received by Origins Laboratory, Inc. February 03, 2023. This project is associated with Origins project number Y302087-01.

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



Eagle Environmental Consulting, Inc.
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Dougery #1-20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-FS-01@6'	Y302087-01	Soil	February 3, 2023 10:13	02/03/2023 17:00

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.
 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4302087 Client: Eagle
 Client Project ID: Dougery #1-20
 Checklist Completed by: EHS/DE Shipped Via: HD
 Date/time completed: 2/3/23 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: NA
 Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 Cooler Number/Temperature: 1 / 1.9 °c _____ / _____ °c _____ / _____ °c (Describe)
 Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		X		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			X	
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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			X	
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 (Project Manager)

2/6/23
 Date/Time Reviewed

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.
 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

WH-FS-01@6'
2/3/2023 10:13:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y302087-01 (Soil)

Boron (DTPA Sorbitol)

Boron	0.180		0.100	mg/L	1	B3B0608	02/06/2023	02/07/2023	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND		25.0	mg/kg	1	B3B0601	02/06/2023	02/07/2023	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	91.8 %		50-150			"	"	"	
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GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B3B0332	02/03/2023	02/07/2023	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	105 %		70-130			"	"	"	
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.
 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

WH-FS-01@6'
2/3/2023 10:13:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y302087-01 (Soil)

GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	97.8 %		70-130			B3B03 32	02/03/2023	02/07/2023	
Surrogate: 4-Bromofluorobenzene	91.2 %		70-130			"	"	"	

Metals by Saturated Paste by EPA 6010

Calcium	1.68		0.499	meq/L	10	[CALC]	02/06/2023	02/07/2023	
Magnesium	ND		0.823	"	"	"	"	"	
Sodium	2.19		0.435	"	"	"	"	"	

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00109	0.00201	mg/Kg	1	L662481	02/07/2023	02/07/2023	
2-Methylnaphthalene	ND	0.00194	0.00201	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	0.00103	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	0.00106	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	0.000478	0.000437	0.00067	"	"	"	"	"	J
Chrysene	0.000763	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	0.000685	0.000394	0.00067	"	"	"	"	"	
Fluorene	ND	0.000286	0.00067	"	"	"	"	"	

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.
 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

WH-FS-01@6'
2/3/2023 10:13:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, LLC.
Y302087-01 (Soil)

PAH by 8270D SIM

Indeno(1,2,3-cd)pyrene	0.000775	0.000627	0.00067	mg/Kg	1	L662481	02/07/2023	02/07/2023	
Naphthalene	ND	0.00145	0.00201	"	"	"	"	"	
Pyrene	0.00115	0.000643	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	48.5 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	55.8 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	49.7 %		29-110			"	"	"	

pH in Soil by 9045D

pH	8.07			pH Units	1	B3B0607	02/06/2023	02/07/2023	
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SAR by 20B Saturated Paste

SAR	2.12			SAR	1	B3B0604	02/06/2023	02/07/2023	
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Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.634		0.00500	mmhos/cm	1	B3B0607	02/06/2023	02/07/2023	
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Eagle Environmental Consulting, Inc.
 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B3B0332 - EPA 5030 (soil)

Blank (B3B0332-BLK1)

Prepared: 02/03/2023 Analyzed: 02/06/2023

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125	110		70-130			
Surrogate: Toluene-d8	0.12		"	0.125	94.8		70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125	91.7		70-130			

Origins Laboratory, Inc.



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 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

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

Batch B3B0332 - EPA 5030 (soil)

LCS (B3B0332-BS1)

Prepared: 02/03/2023 Analyzed: 02/06/2023

1,2,4-Trimethylbenzene	0.0996	0.00200	mg/kg	0.100		99.6	70-130			
1,3,5-Trimethylbenzene	0.106	0.00200	"	0.100		106	70-130			
Benzene	0.0982	0.00200	"	0.100		98.2	70-130			
Ethylbenzene	0.108	0.00200	"	0.100		108	70-130			
Naphthalene	0.106	0.00380	"	0.100		106	70-130			
Toluene	0.104	0.00200	"	0.100		104	70-130			
o-Xylene	0.0998	0.00200	"	0.100		99.8	70-130			
m,p-Xylene	0.218	0.00400	"	0.200		109	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.3	70-130			

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Eagle Environmental Consulting, Inc.
 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B3B0332 - EPA 5030 (soil)

Matrix Spike (B3B0332-MS1)	Source: Y302060-01			Prepared: 02/03/2023 Analyzed: 02/06/2023						
1,2,4-Trimethylbenzene	0.0957	0.00200	mg/kg	0.100	ND	95.7	70-130			
1,3,5-Trimethylbenzene	0.101	0.00200	"	0.100	ND	101	70-130			
Benzene	0.0990	0.00200	"	0.100	ND	99.0	70-130			
Ethylbenzene	0.107	0.00200	"	0.100	ND	107	70-130			
Naphthalene	0.0924	0.00380	"	0.100	ND	92.4	70-130			
Toluene	0.104	0.00200	"	0.100	ND	104	70-130			
o-Xylene	0.0994	0.00200	"	0.100	ND	99.4	70-130			
m,p-Xylene	0.219	0.00400	"	0.200	ND	109	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.1	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.
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 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B3B0332 - EPA 5030 (soil)

Matrix Spike Dup (B3B0332-MSD1)	Source: Y302060-01			Prepared: 02/03/2023 Analyzed: 02/06/2023						
1,2,4-Trimethylbenzene	0.0999	0.00200	mg/kg	0.100	ND	99.9	70-130	4.33	20	
1,3,5-Trimethylbenzene	0.106	0.00200	"	0.100	ND	106	70-130	4.29	20	
Benzene	0.0977	0.00200	"	0.100	ND	97.7	70-130	1.30	20	
Ethylbenzene	0.109	0.00200	"	0.100	ND	109	70-130	1.86	20	
Naphthalene	0.102	0.00380	"	0.100	ND	102	70-130	9.72	20	
Toluene	0.105	0.00200	"	0.100	ND	105	70-130	0.802	20	
o-Xylene	0.102	0.00200	"	0.100	ND	102	70-130	2.15	20	
m,p-Xylene	0.221	0.00400	"	0.200	ND	111	70-130	1.16	20	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		103	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.1	70-130			

Origins Laboratory, Inc.



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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3B0601 - EPA 3580										
Blank (B3B0601-BLK1)										
					Prepared: 02/06/2023 Analyzed: 02/07/2023					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	27		"	24.9		108	50-150			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Extractable Petroleum Hydrocarbons by 8015D - 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 B3B0601 - EPA 3580

LCS (B3B0601-BS1)

Prepared: 02/06/2023 Analyzed: 02/06/2023

Diesel (C10-C28)	970	50.0	mg/kg	1000		97.0	70-130			
Residual Range Organics (C28-C40)	1100	200	"	1000		110	70-130			
Surrogate: o-Terphenyl	47		"	49.8		95.4	50-150			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Extractable Petroleum Hydrocarbons by 8015D - 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 B3B0601 - EPA 3580

Matrix Spike (B3B0601-MS1)	Source: Y302060-01			Prepared: 02/06/2023 Analyzed: 02/06/2023						
Diesel (C10-C28)	947	50.0	mg/kg	1000	ND	94.7	70-130			
Residual Range Organics (C28-C40)	1090	200	"	1000	ND	109	70-130			
Surrogate: o-Terphenyl	46		"	49.8		91.8	50-150			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3B0601 - EPA 3580										
Matrix Spike Dup (B3B0601-MSD1)					Source: Y302060-01					Prepared: 02/06/2023 Analyzed: 02/06/2023
Diesel (C10-C28)	934	50.0	mg/kg	1000	ND	93.4	70-130	1.42	35	
Residual Range Organics (C28-C40)	1060	200	"	1000	ND	106	70-130	3.29	35	
Surrogate: o-Terphenyl	45		"	49.8		91.1	50-150			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Extractable Petroleum Hydrocarbons by 8015D - 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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Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B3B0604 - Saturated Paste Metals

Blank (B3B0604-BLK1)

Prepared: 02/06/2023 Analyzed: 02/07/2023

SAR	0.00		SAR							
Calcium PPM	ND	10.0	mg/L							
Magnesium PPM	ND	10.0	"							
Sodium PPM	ND	10.0	"							

Duplicate (B3B0604-DUP1)

Source: Y302060-04

Prepared: 02/06/2023 Analyzed: 02/07/2023

Calcium PPM	29.8	10.0	mg/L		27.4			8.09	50	
SAR	0.00		SAR		0.616			200	200	
Magnesium PPM	4.66	10.0	mg/L		4.07			13.6	50	
Sodium PPM	14.4	10.0	"		13.1			9.66	50	

Batch B3B0608 - DTPA Sorbitol Preparation

Blank (B3B0608-BLK1)

Prepared: 02/06/2023 Analyzed: 02/07/2023

Boron	ND	0.100	mg/L							
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Duplicate (B3B0608-DUP1)

Source: Y302076-01

Prepared: 02/06/2023 Analyzed: 02/07/2023

Boron	0.498	0.100	mg/L		0.464			7.25	50	
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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

Saturated Paste - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3B0607 - Saturated Paste pH/EC										
Blank (B3B0607-BLK1)					Prepared: 02/06/2023 Analyzed: 02/07/2023					
Specific Conductance (EC)	ND	0.00500	mmhos/cm							
Duplicate (B3B0607-DUP1)					Source: Y302060-04 Prepared: 02/06/2023 Analyzed: 02/07/2023					
pH	8.07		pH Units		8.03			0.497	25	
Specific Conductance (EC)	0.319	0.00500	mmhos/cm		0.300			5.91	25	

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

PAH by 8270D SIM - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L662481 - 3550B

MSD (L 82755-MSD-L662481)		Source: 82755			Prepared: 02/07/2023 Analyzed: 02/07/2023					
2-Methylnaphthalene	0.0983	0.00201	mg/Kg	0.164	<0.00194	59.9	30-130	4.6	30	
Fluorene	0.108	0.00067	"	0.164	0.000437	65.5	30-130	6.2	30	
Pyrene	0.0977	0.00067	"	0.164	0.000744	59.1	30-130	9	30	
Indeno(1,2,3-cd)pyrene	0.152	0.00067	"	0.164	<0.000627	92.6	30-130	18.5	30	
Fluoranthene	0.103	0.00067	"	0.164	0.000687	62.3	30-130	7.4	30	
Dibenz(a,h)anthracene	0.165	0.00067	"	0.164	<0.000614	101	30-130	16.6	30	
Chrysene	0.109	0.00067	"	0.164	<0.000624	66.4	30-130	6.2	30	
Naphthalene	0.0933	0.00201	"	0.164	<0.00145	56.8	30-130	4.5	30	
1-Methylnaphthalene	0.099	0.00201	"	0.164	<0.00109	60.3	30-130	3.9	30	
Benzo(k)fluoranthene	0.0916	0.00067	"	0.164	<0.000437	55.8	30-130	20	30	
Acenaphthene	0.103	0.00067	"	0.164	0.000417	62.5	30-130	5.6	30	
Anthracene	0.109	0.00067	"	0.164	<0.000334	66.4	30-130	1.8	30	
Benzo(a)anthracene	0.113	0.00067	"	0.164	<0.000493	68.9	30-130	6.8	30	
Benzo(a)pyrene	0.125	0.00067	"	0.164	<0.000468	76.2	30-130	6.9	30	
Benzo(b)fluoranthene	0.0976	0.00067	"	0.164	<0.000585	59.5	30-130	13.7	30	
Surrogate: 2-Fluorobiphenyl	51		"	0.329	165	51	33-115			
Surrogate: Nitrobenzene-d5	49.8		"	0.329	165	49.8	29-110			
Surrogate: 4-Terphenyl-d14	51.6		"	0.329	185	51.6	33-122			

MS (L 82755-MS-L662481)		Source: 82755			Prepared: 02/07/2023 Analyzed: 02/07/2023					
Benzo(k)fluoranthene	0.112	0.00067	mg/Kg	0.166	<0.000437	67.4	30-130			
Acenaphthene	0.109	0.00067	"	0.166	0.000417	65.4	30-130			
Naphthalene	0.0976	0.00201	"	0.166	<0.00145	58.7	30-130			
Indeno(1,2,3-cd)pyrene	0.183	0.00067	"	0.166	<0.000627	110	30-130			
Fluorene	0.115	0.00067	"	0.166	0.000437	69	30-130			
Fluoranthene	0.111	0.00067	"	0.166	0.000687	66.4	30-130			
Dibenz(a,h)anthracene	0.195	0.00067	"	0.166	<0.000614	117	30-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

PAH by 8270D SIM - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L662481 - 3550B

MS (L 82755-MS-L662481)		Source: 82755			Prepared: 02/07/2023 Analyzed: 02/07/2023					
Chrysene	0.116	0.00067	mg/Kg	0.166	<0.000624	69.8	30-130			
1-Methylnaphthalene	0.103	0.00201	"	0.166	<0.00109	62	30-130			
Benzo(a)pyrene	0.134	0.00067	"	0.166	<0.000468	80.7	30-130			
Anthracene	0.111	0.00067	"	0.166	<0.000334	66.8	30-130			
Pyrene	0.107	0.00067	"	0.166	0.000744	64	30-130			
2-Methylnaphthalene	0.103	0.00201	"	0.166	<0.00194	62	30-130			
Benzo(b)fluoranthene	0.112	0.00067	"	0.166	<0.000585	67.4	30-130			
Benzo(a)anthracene	0.121	0.00067	"	0.166	<0.000493	72.8	30-130			
Surrogate: Nitrobenzene-d5	53.1		"	0.331	165	53.1	29-110			
Surrogate: 4-Terphenyl-d14	58.6		"	0.331	185	58.6	33-122			
Surrogate: 2-Fluorobiphenyl	51.3		"	0.331	165	51.3	33-115			

LCS (LCS-L662481)		Prepared: 02/07/2023 Analyzed: 02/07/2023								
Chrysene	0.118	0.00067	mg/Kg	0.167		70.6	30-130			
Dibenz(a,h)anthracene	0.195	0.00067	"	0.167		117	30-130			
Fluoranthene	0.117	0.00067	"	0.167		70	30-130			
Fluorene	0.114	0.00067	"	0.167		68.2	30-130			
Indeno(1,2,3-cd)pyrene	0.195	0.00067	"	0.167		117	30-130			
Naphthalene	0.0982	0.00201	"	0.167		58.8	30-130			
Benzo(k)fluoranthene	0.111	0.00067	"	0.167		66.4	30-130			
Pyrene	0.113	0.00067	"	0.167		67.6	30-130			
Benzo(a)pyrene	0.128	0.00067	"	0.167		76.6	30-130			
Benzo(a)anthracene	0.122	0.00067	"	0.167		73	30-130			
Anthracene	0.111	0.00067	"	0.167		66.4	30-130			
Acenaphthene	0.108	0.00067	"	0.167		64.6	30-130			
2-Methylnaphthalene	0.102	0.00201	"	0.167		61	30-130			
1-Methylnaphthalene	0.104	0.00201	"	0.167		62.2	30-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - HSR - Dougery #1-20

PAH by 8270D SIM - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L662481 - 3550B

LCS (LCS-L662481)

Prepared: 02/07/2023 Analyzed: 02/07/2023

Benzo(b)fluoranthene	0.118	0.00067	mg/Kg	0.167		70.6	30-130			
Surrogate: Nitrobenzene-d5	55.5		"	0.333		55.5	29-110			
Surrogate: 4-Terphenyl-d14	69.6		"	0.333		69.6	33-122			
Surrogate: 2-Fluorobiphenyl	54.6		"	0.333		54.6	33-115			

LRB (LRB-L662481)

Prepared: 02/07/2023 Analyzed: 02/07/2023

Chrysene	ND	0.00067	mg/Kg				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Naphthalene	ND	0.00201	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00201	"				-			
1-Methylnaphthalene	ND	0.00201	"				-			
Pyrene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Surrogate: Nitrobenzene-d5	54.6		"	0.333		54.6	29-110			
Surrogate: 4-Terphenyl-d14	63		"	0.333		63	33-122			
Surrogate: 2-Fluorobiphenyl	53.1		"	0.333		53.1	33-115			

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8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - HSR - Dougery #1-20

Notes and Definitions

U Sample is Non-Detect.

J Estimated Value. Analyte below reported quantitation limit.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

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