

Wellhead Closure Checklist

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

Additional attachments (optional):		Pit Closure <u> </u>		Tank Battery Closure <u> </u>		Flowline Closure <u> </u>		Partially Buried Vault Closure <u> </u>	
Site Name & COGCC Facility Number: Shable #21-20		Date: 12/09/22					Remediation Project #: 23892		
Associated Wells: 05-123-22446		Age of Site: Years					Number of Photos Attached: 1		
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple)						40.301625 / -104.687906			
Estimated Facility Size (acres):									
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Good									
USCS Soil Type: SC				Estimated Depth to Groundwater: ~10-15'					
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	05-123-22446								
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/Staining								
PID Readings	2.4	1.2	1.3	1.5	3.1				
Sample taken? Location/Sample ID#	WH-SS-01	WH-SS-02	WH-SS-03	WH-SS-04	WH-FS-01				
Photo Number(s)	See photolog								
Other observations regarding wellheads: Well casing cut/capped following assessment.									
Summary									
Was impacted soil identified? <input checked="" type="checkbox"/> 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					
Highest PID Reading: 3.1				Total number of samples submitted to lab for analysis: 1					
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? <input checked="" type="checkbox"/> 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					
Date Groundwater was encountered:				Commencement date of removal:					
Sheen on groundwater? Yes No				N/A					
Free product observed? Yes No				Volume of groundwater removed prior to sampling:					
				Volume of groundwater removed post sampling:					
Total number of samples collected:				Total Volume of groundwater removed:					
Total number of samples submitted to lab for analysis:									

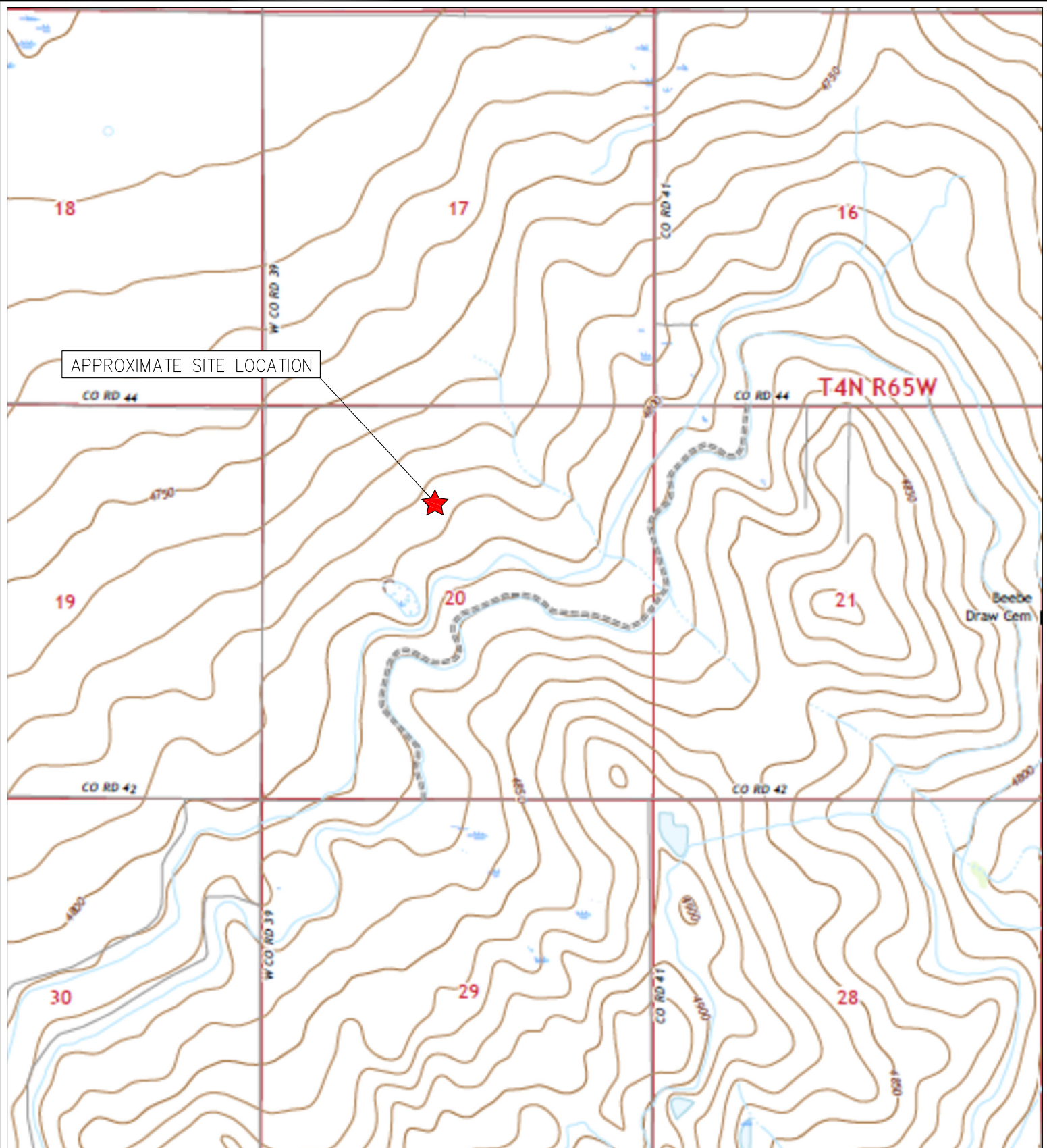


FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map



APPROXIMATE SITE LOCATION



TOPOGRAPHIC SITE LOCATION MAP
 SHABLE #21-20
 CLOSURE ASSESSMENT
 40.301625 / -104.687906
 NE¼ NW¼ SEC.20 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-22446
 REMEDIATION # 23892



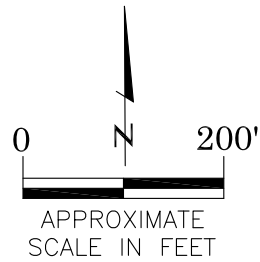
EAGLE
 ENVIRONMENTAL
 CONSULTING, LLC

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



LEGEND

- FORMER SHABLE #21-20 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



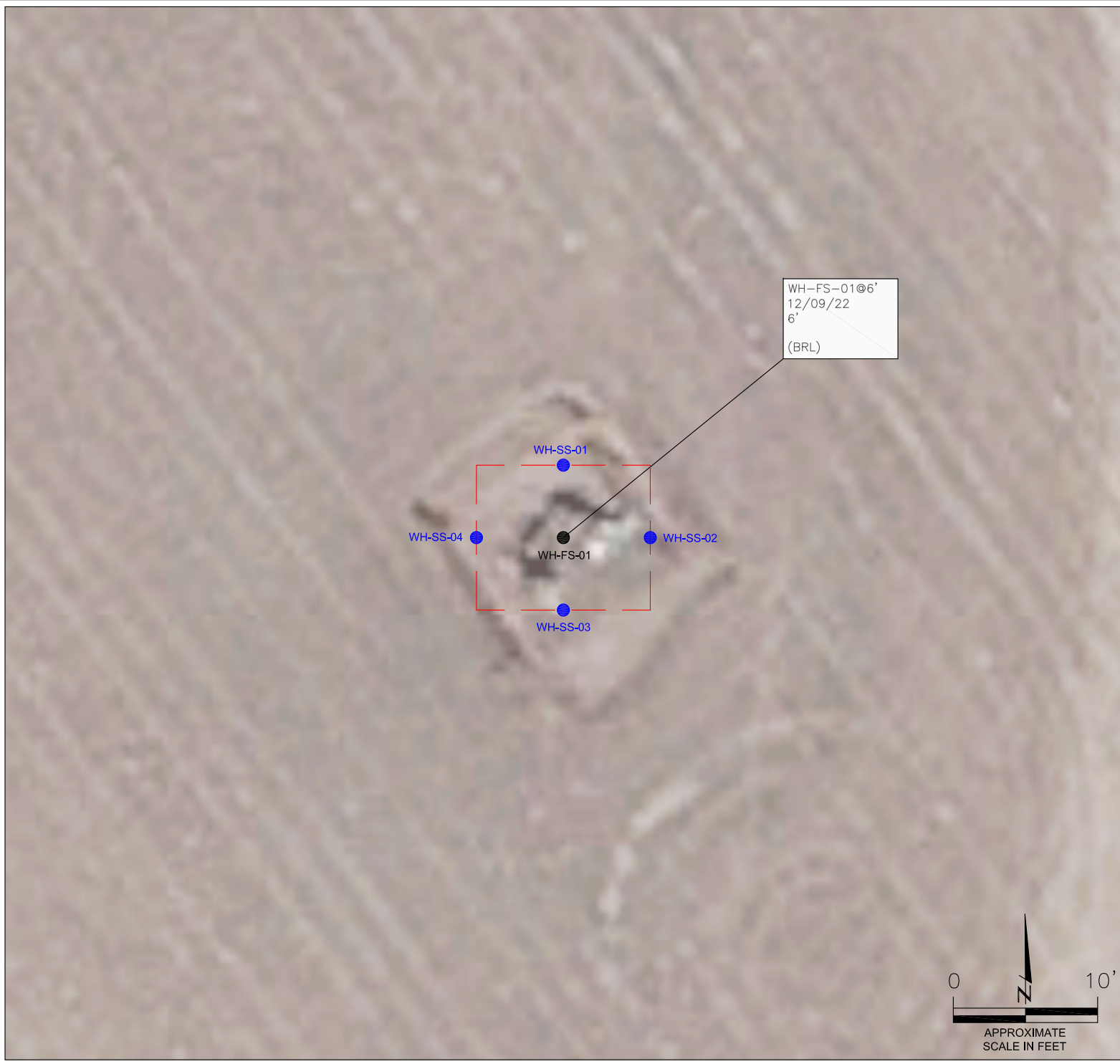
AERIAL SITE LOCATION MAP
 SHABLE #21-20
 CLOSURE ASSESSMENT
 40.301625 / -104.687906
 NE¼ NW¼ SEC.20 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-22446
 REMEDIATION # 23892

FIGURE NO.
2

DRAWN BY:
GK



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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)
Brn= 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

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

(BRL) = ALL VALUES BELOW REGULATORY LIMITS

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

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

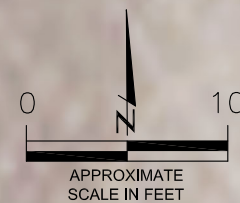
SOIL ANALYTICAL MAP
 SHABLE #21-20
 CLOSURE ASSESSMENT
 40.301625 / -104.687906
 NE¼ NW¼ SEC.20 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-22446
 REMEDIATION # 23892

FIGURE NO.
3

DRAWN BY:
GK



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TABLES

Table 1: Photoionization Detector Reading Summary

Table 2: Soil Analytical Results Summary

TABLE 1
PHOTOIONIZATION DETECTOR READING SUMMARY
SHABLE #21-20
CLOSURE ASSESSMENT
40.301625 / -104.687906
NE¼ NW¼ SEC.20 T4N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-22446
REMEDIATION # 23892

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-SS-01 @ 5' (40.301656 / -104.687939)	12/09/22	5	2.4	N
WH-SS-02 @ 5' (40.301642 / -104.687914)	12/09/22	5	1.2	N
WH-SS-03 @ 5' (40.301628 / -104.687940)	12/09/22	5	1.3	N
WH-SS-04 @ 5' (40.301643 / -104.687960)	12/09/22	5	1.5	N
WH-FS-01 @ 6' (40.301644 / -104.687939)	12/09/22	6	3.1	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				

TABLE 2
SOIL ANALYTICAL RESULTS
SHABLE #21-20
CLOSURE ASSESSMENT
40.301625 / -104.687906
NE¼ NW¼ SEC.20 T4N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-22446
REMEDATION # 23892

Sample Location				WH-FS-01 @ 6'
(Latitude / Longitude)				(40.301644 / -104.687939)
Sample Date				12/9/2022
Sample Depth				6'
PID Reading (ppm-v)				3.1
Regulatory Limits				
Chemical of Concern	Units	ECMC Table 915-1 RSSLs	ECMC 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
Naphthalene	mg/kg	2	0.0038	<0.00380
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	--	44.9
TPH-RRO	mg/kg	500	--	114
POLYCYCLIC AROMATIC HYDROCARBONS				
1-Methyl-naphthalene	mg/kg	18	0.006	<0.00549
2-Methyl-naphthalene	mg/kg	24	0.019	<0.0101
Acenaphthene	mg/kg	360	0.55	<0.00335
Anthracene	mg/kg	1800	5.8	<0.00335
Benzo(a)-anthracene	mg/kg	1.1	0.011	<0.00335
Benzo(a)-pyrene	mg/kg	0.11	0.24	<0.00335
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	<0.00335
Benzo(k)-fluoranthene	mg/kg	11	2.9	<0.00335
Chrysene	mg/kg	110	9	<0.00335
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	<0.00335
Fluoranthene	mg/kg	240	8.9	<0.00335
Fluorene	mg/kg	240	0.54	<0.00335
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	<0.00335
Pyrene	mg/kg	180	1.3	<0.00335
SOIL SUITABILITY (Inorganics)				
Boron	mg/L	2	--	0.251
pH	standard unit	6-8.3	--	8.06
Sodium Adsorption Ratio (SAR)	--	<6	--	3.22
Specific Conductance (EC)	mmhos/cm	<4	--	1.03
ECMC = Energy & Carbon Management 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 Values presented in BOLD exceed ECMC Table 915-1 Regulatory Limits.				



ATTACHMENT A

Photo Log

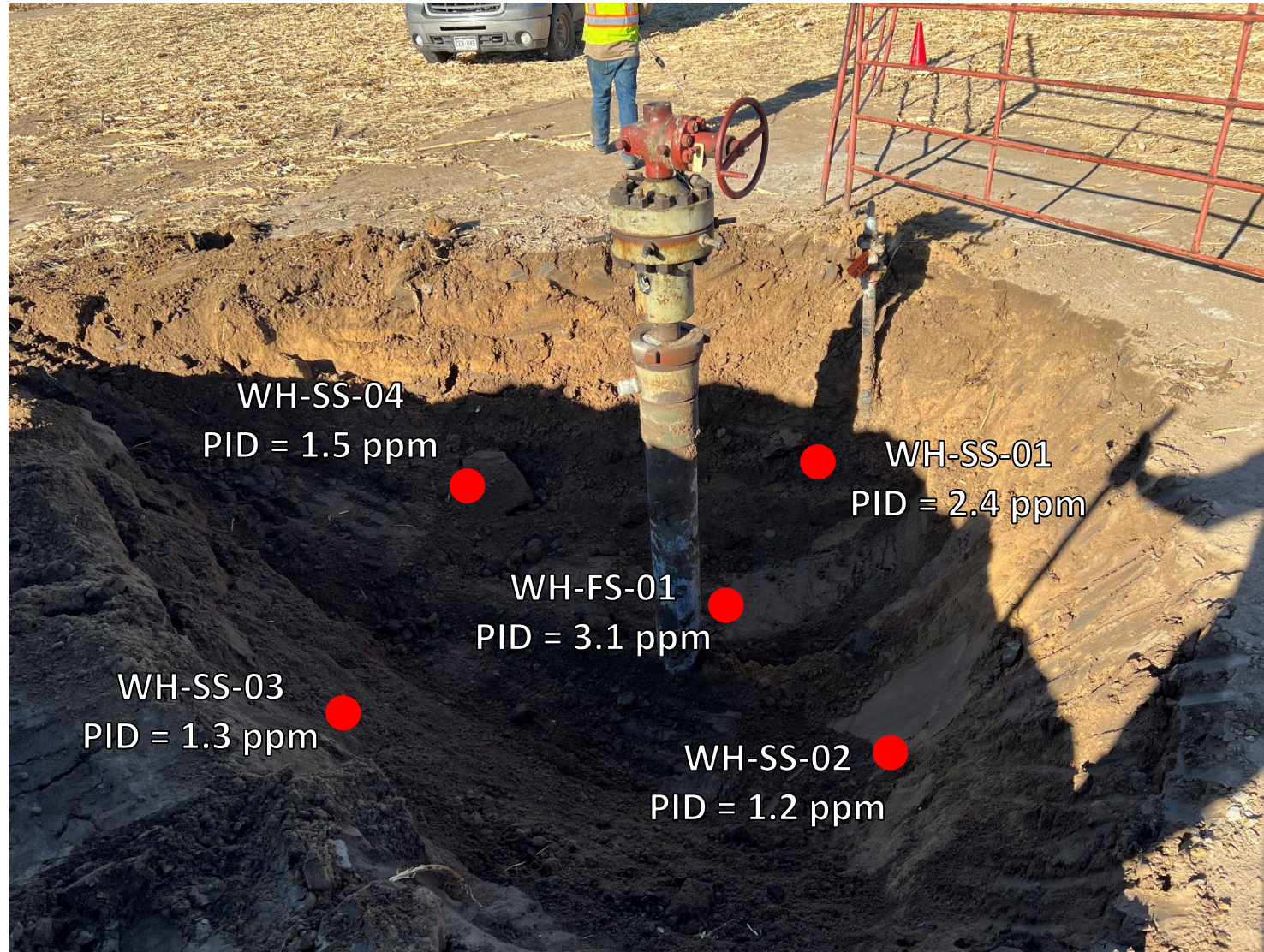
Shable #21-20
API # 05-123-22446
Remediation # 23892

Closure Assessment

December 2022



Wellhead Excavation – 12/09/22



Looking northwest

No petroleum hydrocarbon staining or odor observed



ATTACHMENT B

Laboratory Analytical Report



December 20, 2022

Eagle Environmental Consulting, Inc.

Martin C Eckert III

8000 W 44th Ave

Wheat Ridge CO 80033

Project Name - Noble - Shable #21-20

Project Number - [none]

Attached are your analytical results for Noble - Shable #21-20 received by Origins Laboratory, Inc. December 09, 2022. This project is associated with Origins project number Y212239-01.

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 - Shable #21-20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-FS-01@6'	Y212239-01	Soil	December 9, 2022 13:58	12/09/2022 15:30

Origins Laboratory, Inc.



Jen Pellegrini For Noelle Doyle Mathis, President

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

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

Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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

Sample Receipt Checklist

Origins Work Order: 4212 239 Client: Eagle
 Client Project ID: Shable #21-20

Checklist Completed by: JSH/OE Shipped Via: HD
 Date/time completed: 12/09/12 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: nil

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

Cooler Number/Temperature: 1103 °C / _____ °C / _____ °C (Describe) _____ °C

Thermometer ID: T0011

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"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" 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 checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<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 checked="" 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: JSE (Project Manager) Date/Time Reviewed: 12-12-12

Origins Laboratory, Inc.



Jen Pellegrini For Noelle Doyle Mathis, President

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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 - Shable #21-20

WH-FS-01@6'
12/9/2022 1:58:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y212239-01 (Soil)

Boron (DTPA Sorbitol)

Boron	0.251		0.100	mg/L	1	B2L1207	12/12/2022	12/15/2022	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	44.9		25.0	mg/kg	1	B2L1217	12/12/2022	12/13/2022	
Residual Range Organics (C28-C40)	114		100	"	"	"	"	"	

Surrogate: o-Terphenyl	82.1 %		50-150			"	"	"	
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GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2L1329	12/13/2022	12/14/2022	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

Origins Laboratory, Inc.



Jen Pellegrini For Noelle Doyle Mathis, President

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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 - Shable #21-20

WH-FS-01@6'
12/9/2022 1:58:00PM

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

Origins Laboratory, Inc.
Y212239-01 (Soil)

GBTEX+TMBs by 8260D

Surrogate: 1,2-Dichloroethane-d4	121 %		70-130			B2L13 29	12/13/2022	12/14/2022	
Surrogate: Toluene-d8	103 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.2 %		70-130			"	"	"	

Metals by Saturated Paste by EPA 6010

Calcium	2.71		0.499	meq/L	10	[CALC]	12/12/2022	12/13/2022	
Magnesium	0.968		0.823	"	"	"	"	"	
Sodium	4.36		0.435	"	"	"	"	"	

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00549	0.0101	mg/Kg	5	L653945	12/15/2022	12/16/2022	
2-Methylnaphthalene	ND	0.00972	0.0101	"	"	"	"	"	
Acenaphthene	ND	0.00152	0.00335	"	"	"	"	"	
Anthracene	ND	0.00167	0.00335	"	"	"	"	"	
Benzo(a)anthracene	ND	0.00247	0.00335	"	"	"	"	"	
Benzo(a)pyrene	ND	0.00234	0.00335	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.00293	0.00335	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.00219	0.00335	"	"	"	"	"	
Chrysene	ND	0.00312	0.00335	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.00307	0.00335	"	"	"	"	"	

Origins Laboratory, Inc.



Jen Pellegrini For Noelle Doyle Mathis, President

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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 - Shable #21-20

WH-FS-01@6'
12/9/2022 1:58:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, LLC.
Y212239-01 (Soil)

PAH by 8270D SIM

Fluoranthene	ND	0.00197	0.00335	mg/Kg	5	L653945	12/15/2022	12/16/2022	
Fluorene	ND	0.00143	0.00335	"	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00314	0.00335	"	"	"	"	"	
Naphthalene	ND	0.0073	0.0101	"	"	"	"	"	
Pyrene	ND	0.00322	0.00335	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	48.6 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	57.2 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	48.3 %		29-110			"	"	"	

pH in Soil by 9045D

pH	8.06			pH Units	1	B2L1215	12/12/2022	12/13/2022	
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SAR by 20B Saturated Paste

SAR	3.22			SAR	1	B2L1211	12/12/2022	12/13/2022	
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Specific Conductance Mod. 9050A

Specific Conductance (EC)	1.03		0.00500	mmhos/cm	1	B2L1215	12/12/2022	12/13/2022	
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Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 B2L1217 - EPA 3550B										
Blank (B2L1217-BLK1)										
					Prepared: 12/12/2022 Analyzed: 12/13/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	21		"	24.9		86.1	50-150			

Origins Laboratory, Inc.



Jen Pellegrini For Noelle Doyle Mathis, President

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 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 B2L1217 - EPA 3550B

LCS (B2L1217-BS1)

Prepared: 12/12/2022 Analyzed: 12/13/2022

Diesel (C10-C28)	952	50.0	mg/kg	1000		95.2	70-130			
Residual Range Organics (C28-C40)	866	200	"	1000		86.6	70-130			
Surrogate: o-Terphenyl	47		"	49.8		95.1	50-150			

Origins Laboratory, Inc.



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 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 B2L1217 - EPA 3550B										
Matrix Spike (B2L1217-MS1)		Source: Y212225-01			Prepared: 12/12/2022 Analyzed: 12/13/2022					
Diesel (C10-C28)	985	50.0	mg/kg	1000	ND	98.5	70-130			
Residual Range Organics (C28-C40)	913	200	"	1000	ND	91.3	70-130			
Surrogate: o-Terphenyl	41		"	49.8		82.9	50-150			

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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 - Shable #21-20

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 B2L1217 - EPA 3550B

Matrix Spike Dup (B2L1217-MSD1)	Source: Y212225-01			Prepared: 12/12/2022 Analyzed: 12/13/2022						
Diesel (C10-C28)	956	50.0	mg/kg	1000	ND	95.6	70-130	2.94	35	
Residual Range Organics (C28-C40)	895	200	"	1000	ND	89.5	70-130	1.95	35	
<i>Surrogate: o-Terphenyl</i>	48		"	49.8		95.9	50-150			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 B2L1329 - EPA 5030 (soil)

Blank (B2L1329-BLK1)

Prepared: 12/13/2022 Analyzed: 12/14/2022

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	116		70-130			
Surrogate: Toluene-d8	0.13		"	0.125	102		70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125	100		70-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 B2L1329 - EPA 5030 (soil)

LCS (B2L1329-BS1)

Prepared: 12/13/2022 Analyzed: 12/14/2022

1,2,4-Trimethylbenzene	0.0846	0.00200	mg/kg	0.100		84.6	70-130			
1,3,5-Trimethylbenzene	0.0855	0.00200	"	0.100		85.5	70-130			
Benzene	0.0964	0.00200	"	0.100		96.4	70-130			
Ethylbenzene	0.0854	0.00200	"	0.100		85.4	70-130			
Naphthalene	0.0899	0.00380	"	0.100		89.9	70-130			
Toluene	0.0917	0.00200	"	0.100		91.7	70-130			
o-Xylene	0.0858	0.00200	"	0.100		85.8	70-130			
m,p-Xylene	0.168	0.00400	"	0.200		83.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		112	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		110	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.0	70-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 B2L1329 - EPA 5030 (soil)

Matrix Spike (B2L1329-MS1)	Source: Y212210-01			Prepared: 12/13/2022 Analyzed: 12/14/2022						
1,2,4-Trimethylbenzene	0.107	0.00200	mg/kg	0.100	ND	107	70-130			
1,3,5-Trimethylbenzene	0.108	0.00200	"	0.100	ND	108	70-130			
Benzene	0.123	0.00200	"	0.100	ND	123	70-130			
Ethylbenzene	0.111	0.00200	"	0.100	ND	111	70-130			
Naphthalene	0.120	0.00380	"	0.100	ND	120	70-130			
Toluene	0.115	0.00200	"	0.100	ND	115	70-130			
o-Xylene	0.112	0.00200	"	0.100	ND	112	70-130			
m,p-Xylene	0.219	0.00400	"	0.200	ND	110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		110	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		104	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.1	70-130			

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 Project: Noble - Shable #21-20

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 B2L1329 - EPA 5030 (soil)

Matrix Spike Dup (B2L1329-MSD1)	Source: Y212210-01			Prepared: 12/13/2022 Analyzed: 12/14/2022						
1,2,4-Trimethylbenzene	0.0803	0.00200	mg/kg	0.100	ND	80.3	70-130	28.7	20	QR-02
1,3,5-Trimethylbenzene	0.0794	0.00200	"	0.100	ND	79.4	70-130	30.8	20	QR-02
Benzene	0.0947	0.00200	"	0.100	ND	94.7	70-130	25.7	20	QR-02
Ethylbenzene	0.0838	0.00200	"	0.100	ND	83.8	70-130	28.2	20	QR-02
Naphthalene	0.0920	0.00380	"	0.100	ND	92.0	70-130	26.5	20	QR-02
Toluene	0.0854	0.00200	"	0.100	ND	85.4	70-130	29.6	20	QR-02
o-Xylene	0.0843	0.00200	"	0.100	ND	84.3	70-130	28.1	20	QR-02
m,p-Xylene	0.165	0.00400	"	0.200	ND	82.6	70-130	28.2	20	QR-02
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		113	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		104	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.6	70-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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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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 B2L1207 - DTPA Sorbitol Preparation

Blank (B2L1207-BLK1)

Prepared: 12/12/2022 Analyzed: 12/13/2022

Boron	ND	0.100	mg/L							U
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Duplicate (B2L1207-DUP1)

Source: Y212215-01

Prepared: 12/12/2022 Analyzed: 12/13/2022

Boron	0.813	0.0990	mg/L		0.251			106	50	QR-DUP
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Batch B2L1211 - Saturated Paste Metals

Blank (B2L1211-BLK1)

Prepared: 12/12/2022 Analyzed: 12/13/2022

Calcium PPM	ND	10.0	mg/L							U
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SAR	0.00		SAR							U
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Magnesium PPM	ND	10.0	mg/L							U
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Sodium PPM	ND	10.0	"							U
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Duplicate (B2L1211-DUP1)

Source: Y212169-01

Prepared: 12/12/2022 Analyzed: 12/13/2022

SAR	0.00		SAR		3.40			200	200	U
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Calcium PPM	23.9	10.0	mg/L		21.4			11.0	50	
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Magnesium PPM	4.78	10.0	"		4.04			16.6	50	U
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Sodium PPM	60.8	10.0	"		65.4			7.37	50	
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 Project: Noble - Shable #21-20

Saturated Paste - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2L1215 - Saturated Paste pH/EC										
Blank (B2L1215-BLK1)					Prepared: 12/12/2022 Analyzed: 12/13/2022					
Specific Conductance (EC)	ND	0.00500	mmhos/cm							U
Duplicate (B2L1215-DUP1)					Source: Y212169-01 Prepared: 12/12/2022 Analyzed: 12/13/2022					
pH	8.29		pH Units		8.34			0.601	25	
Specific Conductance (EC)	0.579	0.00500	mmhos/cm		0.559			3.57	25	

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 L653945 - 3550B

MSD (L 82037-MSD-L653945)		Source: Y212239-01			Prepared: 12/15/2022 Analyzed: 12/16/2022					
2-Methylnaphthalene	0.107	0.0101	mg/Kg	0.167	<0.00972	64	30-130	14.8	30	
Fluorene	0.0964	0.00335	"	0.167	<0.00143	57.7	30-130	12.9	30	
Pyrene	0.108	0.00335	"	0.167	<0.00322	64.6	30-130	15.2	30	
Indeno(1,2,3-cd)pyrene	0.0658	0.00335	"	0.167	<0.00314	39.4	30-130	23.8	30	
Fluoranthene	0.109	0.00335	"	0.167	<0.00197	65.2	30-130	15.9	30	
Dibenz(a,h)anthracene	0.0689	0.00335	"	0.167	<0.00307	41.2	30-130	20.6	30	
Chrysene	0.119	0.00335	"	0.167	<0.00312	71.2	30-130	15.3	30	
Naphthalene	0.101	0.0101	"	0.167	<0.00730	60.4	30-130	15.3	30	
1-Methylnaphthalene	0.102	0.0101	"	0.167	<0.00549	61	30-130	17.3	30	
Benzo(k)fluoranthene	0.086	0.00335	"	0.167	<0.00219	51.4	30-130	19.5	30	
Acenaphthene	0.102	0.00335	"	0.167	<0.00152	61	30-130	17	30	
Anthracene	0.105	0.00335	"	0.167	<0.00167	62.8	30-130	16	30	
Benzo(a)anthracene	0.113	0.00335	"	0.167	<0.00247	67.6	30-130	17.6	30	
Benzo(a)pyrene	0.112	0.00335	"	0.167	<0.00234	67	30-130	12.6	30	
Benzo(b)fluoranthene	0.0688	0.00335	"	0.167	<0.00293	41.1	30-130	13.3	30	
Surrogate: 2-Fluorobiphenyl	49.8		"	0.333	158	49.8	33-115			
Surrogate: Nitrobenzene-d5	48.9		"	0.333	157	48.9	29-110			
Surrogate: 4-Terphenyl-d14	60		"	0.333	186	60	33-122			

MS (L 82037-MS-L653945)		Source: Y212239-01			Prepared: 12/15/2022 Analyzed: 12/16/2022					
Benzo(k)fluoranthene	0.0707	0.00335	mg/Kg	0.167	<0.00219	42.3	30-130			
Acenaphthene	0.086	0.00335	"	0.167	<0.00152	51.4	30-130			
Naphthalene	0.0866	0.0101	"	0.167	<0.00730	51.8	30-130			
Indeno(1,2,3-cd)pyrene	0.0518	0.00335	"	0.167	<0.00314	31	30-130			
Fluorene	0.0847	0.00335	"	0.167	<0.00143	50.7	30-130			
Fluoranthene	0.0929	0.00335	"	0.167	<0.00197	55.6	30-130			
Dibenz(a,h)anthracene	0.056	0.00335	"	0.167	<0.00307	33.5	30-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 L653945 - 3550B

MS (L 82037-MS-L653945)		Source: Y212239-01			Prepared: 12/15/2022 Analyzed: 12/16/2022					
Chrysene	0.102	0.00335	mg/Kg	0.167	<0.00312	61	30-130			
1-Methylnaphthalene	0.0857	0.0101	"	0.167	<0.00549	51.3	30-130			
Benzo(a)pyrene	0.0987	0.00335	"	0.167	<0.00234	59.1	30-130			
Anthracene	0.0894	0.00335	"	0.167	<0.00167	53.5	30-130			
Pyrene	0.0927	0.00335	"	0.167	<0.00322	55.5	30-130			
2-Methylnaphthalene	0.0922	0.0101	"	0.167	<0.00972	55.2	30-130			
Benzo(b)fluoranthene	0.0602	0.00335	"	0.167	<0.00293	36	30-130			
Benzo(a)anthracene	0.0947	0.00335	"	0.167	<0.00247	56.7	30-130			
Surrogate: Nitrobenzene-d5	38.7		"	0.333	157	38.7	29-110			
Surrogate: 4-Terphenyl-d14	51.3		"	0.333	186	51.3	33-122			
Surrogate: 2-Fluorobiphenyl	39.9		"	0.333	158	39.9	33-115			

LCS (LCS-L653945)		Prepared: 12/15/2022 Analyzed: 12/16/2022								
Chrysene	0.126	0.00067	mg/Kg	0.167		75.4	30-130			
Dibenz(a,h)anthracene	0.112	0.00067	"	0.167		67	30-130			
Fluoranthene	0.128	0.00067	"	0.167		76.6	30-130			
Fluorene	0.116	0.00067	"	0.167		69.4	30-130			
Indeno(1,2,3-cd)pyrene	0.109	0.00067	"	0.167		65.2	30-130			
Naphthalene	0.112	0.00201	"	0.167		67	30-130			
Benzo(k)fluoranthene	0.101	0.00067	"	0.167		60.4	30-130			
Pyrene	0.127	0.00067	"	0.167		76	30-130			
Benzo(a)pyrene	0.132	0.00067	"	0.167		79	30-130			
Benzo(a)anthracene	0.124	0.00067	"	0.167		74.2	30-130			
Anthracene	0.121	0.00067	"	0.167		72.4	30-130			
Acenaphthene	0.114	0.00067	"	0.167		68.2	30-130			
2-Methylnaphthalene	0.126	0.00201	"	0.167		75.4	30-130			
1-Methylnaphthalene	0.109	0.00201	"	0.167		65.2	30-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble - Shable #21-20

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 L653945 - 3550B

LCS (LCS-L653945)

Prepared: 12/15/2022 Analyzed: 12/16/2022

Benzo(b)fluoranthene	0.0983	0.00067	mg/Kg	0.167		58.8	30-130			
Surrogate: Nitrobenzene-d5	57		"	0.333		57	29-110			
Surrogate: 4-Terphenyl-d14	72.3		"	0.333		72.3	33-122			
Surrogate: 2-Fluorobiphenyl	62.4		"	0.333		62.4	33-115			

LRB (LRB-L653945)

Prepared: 12/15/2022 Analyzed: 12/16/2022

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	53.4		"	0.333		53.4	29-110			
Surrogate: 4-Terphenyl-d14	71.1		"	0.333		71.1	33-122			
Surrogate: 2-Fluorobiphenyl	57.6		"	0.333		57.6	33-115			

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Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Shable #21-20

Notes and Definitions

U Sample is Non-Detect.

QR-DUP RPD exceeds QC acceptance criteria, this indicates source sample is not homogenous.

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 on a wet weight basis.

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