

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>
Site Name & COGCC Facility Number: Herbst #1-22-4-64		Date: 02/14/23					Remediation Project #: 21809	
Associated Wells: 05-123-10933		Age of Site: years					Number of Photos Attached: 1	
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.296279 / -104.529783							Estimated Facility Size (acres): <u> </u>	
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Good condition								
USCS Soil Type: silty SAND				Estimated Depth to Groundwater: ~8-12'				
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	05-123-10933							
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	3.0	2.8	3.4	3.2	3.5			
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				
Highest PID Reading: 3.5				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:				
Lateral extent:				Volume of soil removed:				
N/A								
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				
Date Groundwater was encountered:				Commencement date of removal:				
Sheen on groundwater? Yes No				Volume of groundwater removed prior to sampling:				
Free product observed? Yes No				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:								

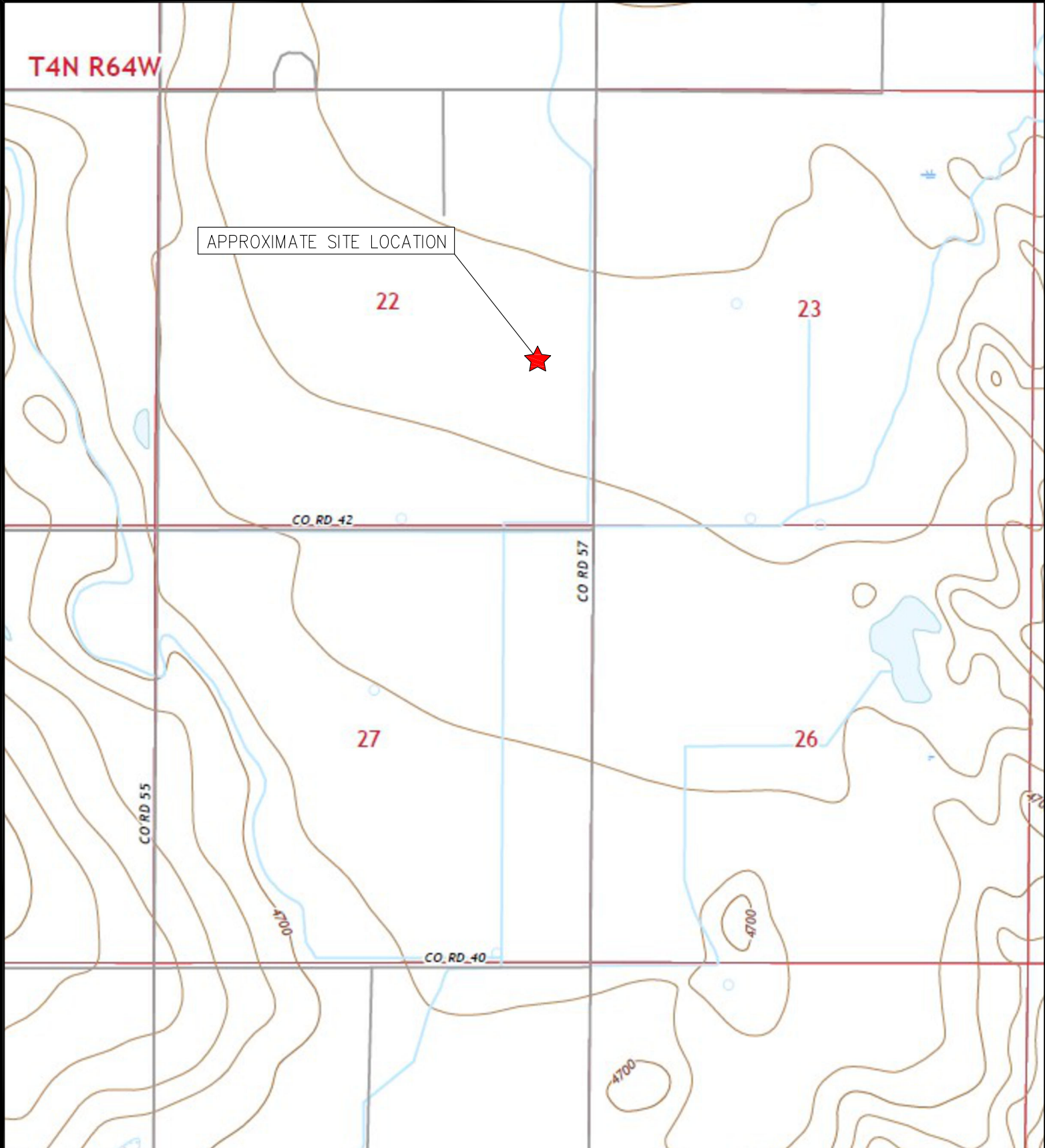


FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map



TOPOGRAPHIC SITE LOCATION MAP
 HERBST #1-22-4-64
 CLOSURE ASSESSMENT
 40.296279 / -104.529783
 NE¼ SE¼ SEC.22 T4N R64W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-10933
 REMEDIATION # 21809



EAGLE
 ENVIRONMENTAL
 CONSULTING, LLC

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

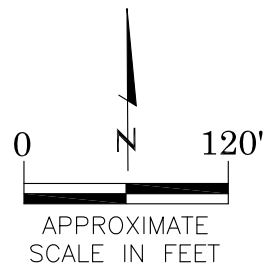
SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP,
 VALLEY VIEW SCHOOL, CO QUADRANGLE 2022

FIGURE 1



LEGEND

- FORMER HERBST #1-22-4-64 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



AERIAL SITE LOCATION MAP
 HERBST #1-22-4-64
 CLOSURE ASSESSMENT
 40.296279 / -104.529783
 NE¼ SE¼ SEC.22 T4N R64W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-10933
 REMEDIATION # 21809

FIGURE NO.
2

DRAWN BY:
EL



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



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

(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
HERBST #1-22-4-64
CLOSURE ASSESSMENT
40.296279 / -104.529783
NE¼ SE¼ SEC.22 T4N R64W 6PM
WELD COUNTY, COLORADO
API # 05-123-10933
REMEDATION # 21809

FIGURE NO.

3

DRAWN BY:

EL



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TABLES

Table 1: Photoionization Detector Reading Summary

Table 2: Soil Analytical Results Summary

TABLE 1
PHOTOIONIZATION DETECTOR READING SUMMARY
HERBST #1-22-4-64
CLOSURE ASSESSMENT
40.296279 / -104.529783
NE¼ SE¼ SEC.22 T4N R64W 6PM
WELD COUNTY, COLORADO
API # 05-123-10933
REMEDATION # 21809

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-SS-01 @ 5' (40.296297 / -104.529790)	02/14/23	5	3.0	N
WH-SS-02 @ 5' (40.296286 / -104.529768)	02/14/23	5	2.8	N
WH-SS-03 @ 5' (40.296273 / -104.529792)	02/14/23	5	3.4	N
WH-SS-04 @ 5' (40.296284 / -104.529810)	02/14/23	5	3.2	N
WH-FS-01 @ 6' (40.296287 / -104.529789)	02/14/23	6	3.5	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				



TABLE 2
SOIL ANALYTICAL RESULTS SUMMARY
HERBST #1-22-4-64
CLOSURE ASSESSMENT
40.296279 / -104.529783
NE¼ SE¼ SEC.22 T4N R64W 6PM
WELD COUNTY, COLORADO
API # 05-123-10933
REMEDATION # 21809

Sample Location				WH-FS-01 @ 6'
(Latitude / Longitude)				(40.296287 / -104.529789)
Sample Date				2/14/2023
Sample Depth				6'
PID Reading (ppm-v)				3.5
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	<0.00067
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	<0.00067
Benzo(k)-fluoranthene	mg/kg	11	2.9	<0.00067
Chrysene	mg/kg	110	9	<0.00067
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	<0.00067
Fluoranthene	mg/kg	240	8.9	<0.00067
Fluorene	mg/kg	240	0.54	<0.00067
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	<0.00067
Naphthalene	mg/kg	2	0.0038	<0.00201
Pyrene	mg/kg	180	1.3	<0.00067
SOIL SUITABILITY (Inorganics)				
Boron	mg/L	2	--	<0.100
pH	standard unit	6-8.3	--	7.85
Sodium Adsorption Ratio (SAR)	--	<6	--	4.01
Specific Conductance (EC)	mmhos/cm	<4	--	0.647
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 Adsoption 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.				
VOCs - Volatile Organic Compounds				
RSSLs = Residential Soil Screening Levels				
GSSLs = Protection of Groundwater Soil Screening Levels				
TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics				
TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics				
TPH-RRO = Total Petroleum Hydrocarbons - Residual Range Organics				



ATTACHMENT A

Photo Log

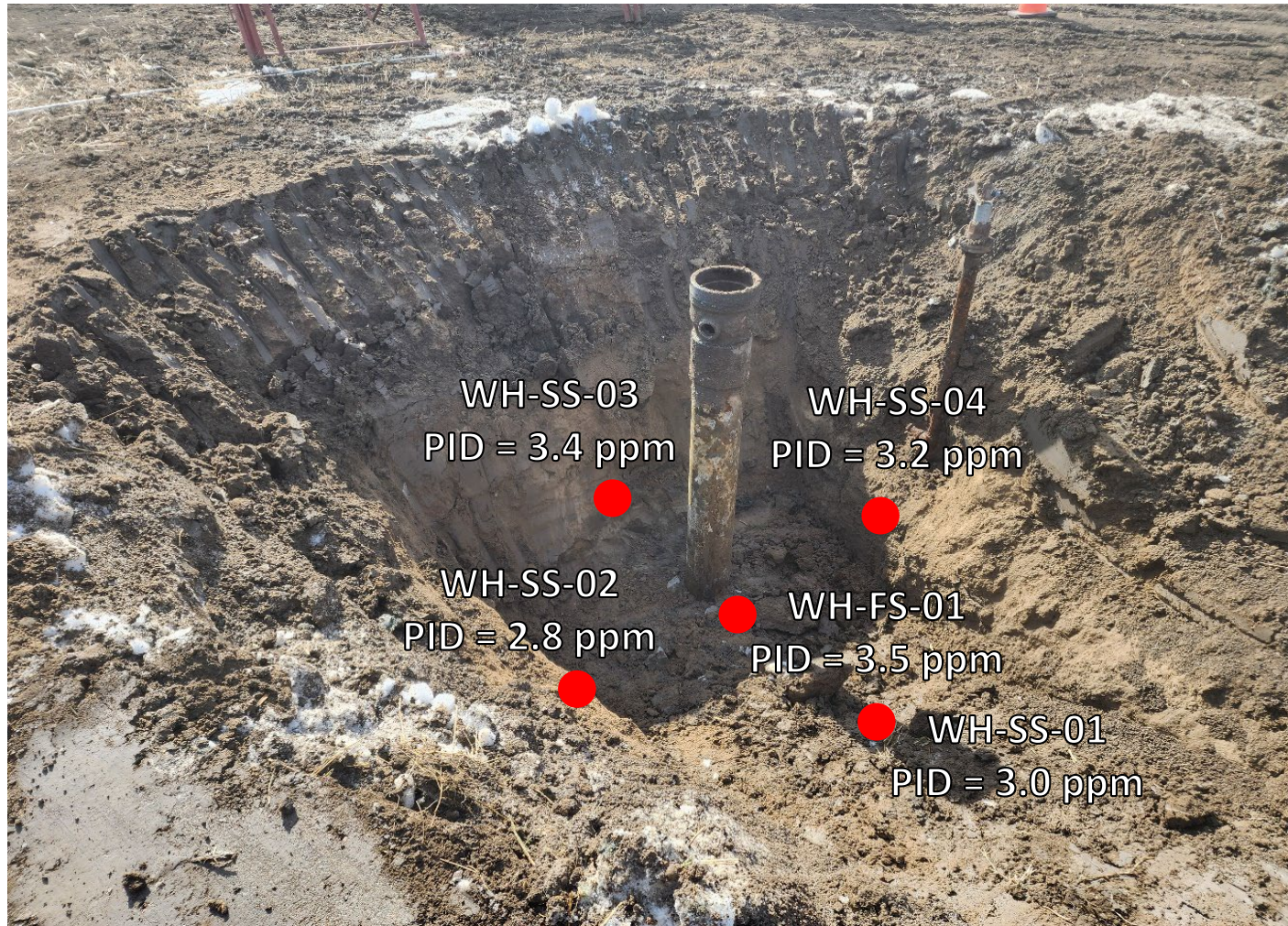
Herbst #1-22-4-64
API # 05-123-10933
Remediation # 21809

Closure Assessment

February 2023



Wellhead Excavation – 02/14/23



Looking southwest

No petroleum hydrocarbon staining or odor observed



ATTACHMENT B

Laboratory Analytical Report



February 23, 2023

Eagle Environmental Consulting, Inc.

Martin C Eckert III

8000 W 44th Ave

Wheat Ridge CO 80033

Project Name - Noble - Herbst #1-22-4-64

Project Number - [none]

Attached are your analytical results for Noble - Herbst #1-22-4-64 received by Origins Laboratory, Inc. February 14, 2023. This project is associated with Origins project number Y302280-01.

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.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Noble - Herbst #1-22-4-64

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-FS-01@6'	Y302280-01	Soil	February 14, 2023 12:40	02/14/2023 15:38

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 - Herbst #1-22-4-64

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4302280

Client: Eagle

Client Project ID: Herbst #1-22-4-64

Checklist Completed by: EHS/

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

Date/time completed: 2/14/23

Airbill #: NA

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

Cooler Number/Temperature: 1 13.0 °C / _____ °C / _____ °C (Describe)

Thermometer ID: 1004

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 (Project Manager) [Signature]

Date/Time Reviewed 2/15/23

Origins Laboratory, Inc.

[Signature]

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 - Herbst #1-22-4-64

WH-FS-01@6'

2/14/2023 12:40:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y302280-01 (Soil)

Boron (DTPA Sorbitol)

Boron	ND	0.100	mg/L	1	B3B1506	02/15/2023	02/16/2023	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B3B1501	02/15/2023	02/15/2023	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	97.5 %	50-150		"	"	"
------------------------	--------	--------	--	---	---	---

GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B3B1430	02/14/2023	02/15/2023	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	93.2 %	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 - Herbst #1-22-4-64

WH-FS-01@6'

2/14/2023 12:40:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y302280-01 (Soil)

GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	96.6 %	70-130	B3B14 30	02/14/2023	02/15/2023
Surrogate: 4-Bromofluorobenzene	99.2 %	70-130	"	"	"

Metals by Saturated Paste by EPA 6010

Calcium	0.724	0.499	meq/L	10	[CALC]	02/17/2023	02/20/2023
Magnesium	ND	0.823	"	"	"	"	"
Sodium	3.17	0.435	"	"	"	"	"

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00109	0.00201	mg/Kg	1	L664850	02/20/2023	02/20/2023
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	ND	0.000468	0.00067	"	"	"	"	"
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"
Chrysene	ND	0.000624	0.00067	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"
Fluoranthene	ND	0.000394	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 - Herbst #1-22-4-64

WH-FS-01@6'

2/14/2023 12:40:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, LLC.
Y302280-01 (Soil)

PAH by 8270D SIM

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L664850	02/20/2023	02/20/2023
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"
Naphthalene	ND	0.00145	0.00201	"	"	"	"	"
Pyrene	ND	0.000643	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	51.5 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	68.4 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	58.9 %	29-110	"	"	"

pH in Soil by 9045D

pH	7.85	pH Units	1	B3B1718	02/17/2023	02/18/2023
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SAR by 20B Saturated Paste

SAR	4.01	SAR	1	B3B1716	02/17/2023	02/20/2023
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Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.647	0.00500	mmhos/cm	1	B3B1718	02/17/2023	02/18/2023
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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 - Herbst #1-22-4-64

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 B3B1430 - EPA 5030 (soil)										
Blank (B3B1430-BLK1)					Prepared: 02/14/2023 Analyzed: 02/15/2023					
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	0.11		"	0.125		88.0	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.3	70-130			

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 - Herbst #1-22-4-64

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 B3B1430 - EPA 5030 (soil)										
LCS (B3B1430-BS1)					Prepared: 02/14/2023 Analyzed: 02/15/2023					
1,2,4-Trimethylbenzene	0.104	0.00200	mg/kg	0.100		104	70-130			
1,3,5-Trimethylbenzene	0.104	0.00200	"	0.100		104	70-130			
Benzene	0.0907	0.00200	"	0.100		90.7	70-130			
Ethylbenzene	0.0970	0.00200	"	0.100		97.0	70-130			
Naphthalene	0.109	0.00380	"	0.100		109	70-130			
Toluene	0.109	0.00200	"	0.100		109	70-130			
o-Xylene	0.0978	0.00200	"	0.100		97.8	70-130			
m,p-Xylene	0.202	0.00400	"	0.200		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		86.5	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.3	70-130			

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 - Herbst #1-22-4-64

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 B3B1430 - EPA 5030 (soil)										
Matrix Spike (B3B1430-MS1)		Source: Y302258-01			Prepared: 02/14/2023 Analyzed: 02/15/2023					
1,2,4-Trimethylbenzene	0.0843	0.00200	mg/kg	0.100	ND	84.3	70-130			
1,3,5-Trimethylbenzene	0.0822	0.00200	"	0.100	ND	82.2	70-130			
Benzene	0.0787	0.00200	"	0.100	ND	78.7	70-130			
Ethylbenzene	0.0792	0.00200	"	0.100	ND	79.2	70-130			
Naphthalene	0.0931	0.00380	"	0.100	ND	93.1	70-130			
Toluene	0.0910	0.00200	"	0.100	ND	91.0	70-130			
o-Xylene	0.0817	0.00200	"	0.100	ND	81.7	70-130			
m,p-Xylene	0.166	0.00400	"	0.200	ND	83.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		89.1	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.5	70-130			

Origins Laboratory, Inc.



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Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Herbst #1-22-4-64

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 B3B1430 - EPA 5030 (soil)										
Matrix Spike Dup (B3B1430-MSD1)	Source: Y302258-01				Prepared: 02/14/2023 Analyzed: 02/15/2023					
1,2,4-Trimethylbenzene	0.0958	0.00200	mg/kg	0.100	ND	95.8	70-130	12.7	20	
1,3,5-Trimethylbenzene	0.0947	0.00200	"	0.100	ND	94.7	70-130	14.2	20	
Benzene	0.0867	0.00200	"	0.100	ND	86.7	70-130	9.68	20	
Ethylbenzene	0.0886	0.00200	"	0.100	ND	88.6	70-130	11.2	20	
Naphthalene	0.105	0.00380	"	0.100	ND	105	70-130	12.4	20	
Toluene	0.100	0.00200	"	0.100	ND	100	70-130	9.45	20	
o-Xylene	0.0915	0.00200	"	0.100	ND	91.5	70-130	11.3	20	
m,p-Xylene	0.186	0.00400	"	0.200	ND	92.9	70-130	11.0	20	
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		88.1	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.8	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.
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Martin C Eckert III
Project Number: [none]
Project: Noble - Herbst #1-22-4-64

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 B3B1501 - EPA 3580										
Blank (B3B1501-BLK1)					Prepared: 02/15/2023 Analyzed: 02/15/2023					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	25		"	24.9		101	50-150			

Origins Laboratory, Inc.



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Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Herbst #1-22-4-64

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 B3B1501 - EPA 3580

LCS (B3B1501-BS1)

Prepared: 02/15/2023 Analyzed: 02/15/2023

Diesel (C10-C28)	796	50.0	mg/kg	1000		79.6	70-130			
Residual Range Organics (C28-C40)	764	200	"	1000		76.4	70-130			
Surrogate: o-Terphenyl	49		"	49.8		99.1	50-150			

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 - Herbst #1-22-4-64

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 B3B1501 - EPA 3580

Matrix Spike (B3B1501-MS1)		Source: Y302274-01			Prepared: 02/15/2023 Analyzed: 02/15/2023					
Diesel (C10-C28)	819	50.0	mg/kg	1000	ND	81.9	70-130			
Residual Range Organics (C28-C40)	735	200	"	1000	ND	73.5	70-130			
Surrogate: o-Terphenyl	47		"	49.8		94.2	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 - Herbst #1-22-4-64

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 B3B1501 - EPA 3580										
Matrix Spike Dup (B3B1501-MSD1)		Source: Y302274-01			Prepared: 02/15/2023 Analyzed: 02/15/2023					
Diesel (C10-C28)	809	50.0	mg/kg	1000	ND	80.9	70-130	1.26	35	
Residual Range Organics (C28-C40)	742	200	"	1000	ND	74.2	70-130	0.932	35	
Surrogate: o-Terphenyl	55		"	49.8		110	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 - Herbst #1-22-4-64

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 B3B1506 - DTPA Sorbitol Preparation

Blank (B3B1506-BLK1)

Prepared: 02/15/2023 Analyzed: 02/16/2023

Boron ND 0.100 mg/L

Duplicate (B3B1506-DUP1)

Source: Y302217-14

Prepared: 02/15/2023 Analyzed: 02/16/2023

Boron 0.237 0.0995 mg/L 0.332 33.5 50

Batch B3B1716 - Saturated Paste Metals

Blank (B3B1716-BLK1)

Prepared: 02/17/2023 Analyzed: 02/20/2023

Calcium PPM ND 10.0 mg/L

SAR 0.00 SAR

Magnesium PPM ND 10.0 mg/L

Sodium PPM ND 10.0 "

Duplicate (B3B1716-DUP1)

Source: Y302246-38

Prepared: 02/17/2023 Analyzed: 02/20/2023

Calcium PPM 59.6 10.0 mg/L 49.7 18.0 50

SAR 0.00 SAR 2.25 200 200

Magnesium PPM 31.0 10.0 mg/L 25.2 20.6 50

Sodium PPM 94.3 10.0 " 78.2 18.6 50

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Martin C Eckert III
Project Number: [none]
Project: Noble - Herbst #1-22-4-64

Saturated Paste - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3B1718 - Saturated Paste pH/EC										
Blank (B3B1718-BLK1)					Prepared: 02/17/2023 Analyzed: 02/18/2023					
Specific Conductance (EC)	ND	0.00500	mmhos/cm							
Duplicate (B3B1718-DUP1)					Source: Y302321-01 Prepared: 02/17/2023 Analyzed: 02/18/2023					
pH	8.66		pH Units		8.51			1.88	25	
Specific Conductance (EC)	1.42	0.00500	mmhos/cm		1.42			0.141	25	

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Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Herbst #1-22-4-64

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 L664850 - 3550B

MSD (L 88623-MSD-L664850)		Source: 88623			Prepared: 02/20/2023 Analyzed: 02/20/2023					
2-Methylnaphthalene	0.0869	0.00201	mg/Kg	0.162	<0.00194	53.6	30-130	4.7	30	
Fluorene	0.0964	0.00067	"	0.162	<0.000286	59.5	30-130	0.1	30	
Pyrene	0.101	0.00067	"	0.162	<0.000643	62.3	30-130	4.2	30	
Indeno(1,2,3-cd)pyrene	0.0733	0.00067	"	0.162	0.00972	39.2	30-130	19.1	30	
Fluoranthene	0.102	0.00067	"	0.162	<0.000394	62.9	30-130	4.4	30	
Dibenz(a,h)anthracene	0.0823	0.00067	"	0.162	0.00204	49.5	30-130	20.4	30	
Chrysene	0.0964	0.00067	"	0.162	0.00259	57.9	30-130	0.9	30	
Naphthalene	0.0889	0.00201	"	0.162	<0.00145	54.8	30-130	5.6	30	
1-Methylnaphthalene	0.091	0.00201	"	0.162	<0.00109	56.1	30-130	4.7	30	
Benzo(k)fluoranthene	0.0763	0.00067	"	0.162	0.00561	43.6	30-130	4.8	30	
Acenaphthene	0.0982	0.00067	"	0.162	<0.000304	60.6	30-130	6.1	30	
Anthracene	0.0972	0.00067	"	0.162	<0.000334	60	30-130	1.6	30	
Benzo(a)anthracene	0.0983	0.00067	"	0.162	0.00124	59.9	30-130	2.1	30	
Benzo(a)pyrene	0.0977	0.00067	"	0.162	0.00957	54.4	30-130	0.6	30	
Benzo(b)fluoranthene	0.0775	0.00067	"	0.162	0.0171	37.2	30-130	2	30	
Surrogate: 2-Fluorobiphenyl	51.3		"	0.325	158	51.3	33-115			
Surrogate: Nitrobenzene-d5	53.2		"	0.325	176	53.2	29-110			
Surrogate: 4-Terphenyl-d14	60		"	0.325	202	60	33-122			

MS (L 88623-MS-L664850)		Source: 88623			Prepared: 02/20/2023 Analyzed: 02/20/2023					
Benzo(k)fluoranthene	0.0801	0.00067	mg/Kg	0.166	0.00561	44.8	30-130			
Acenaphthene	0.0923	0.00067	"	0.166	<0.000304	55.6	30-130			
Naphthalene	0.084	0.00201	"	0.166	<0.00145	50.6	30-130			
Indeno(1,2,3-cd)pyrene	0.0888	0.00067	"	0.166	0.00972	47.6	30-130			
Fluorene	0.0965	0.00067	"	0.166	<0.000286	58.1	30-130			
Fluoranthene	0.0976	0.00067	"	0.166	<0.000394	58.7	30-130			
Dibenz(a,h)anthracene	0.101	0.00067	"	0.166	0.00204	59.6	30-130			

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8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble - Herbst #1-22-4-64

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 L664850 - 3550B

MS (L 88623-MS-L664850)		Source: 88623			Prepared: 02/20/2023 Analyzed: 02/20/2023					
Chrysene	0.0955	0.00067	mg/Kg	0.166	0.00259	55.9	30-130			
1-Methylnaphthalene	0.0868	0.00201	"	0.166	<0.00109	52.2	30-130			
Benzo(a)pyrene	0.0971	0.00067	"	0.166	0.00957	52.7	30-130			
Anthracene	0.0956	0.00067	"	0.166	<0.000334	57.5	30-130			
Pyrene	0.0968	0.00067	"	0.166	<0.000643	58.3	30-130			
2-Methylnaphthalene	0.0829	0.00201	"	0.166	<0.00194	49.9	30-130			
Benzo(b)fluoranthene	0.0791	0.00067	"	0.166	0.0171	37.3	30-130			
Benzo(a)anthracene	0.0962	0.00067	"	0.166	0.00124	57.2	30-130			
Surrogate: Nitrobenzene-d5	50.1		"	0.331	176	50.1	29-110			
Surrogate: 4-Terphenyl-d14	55.8		"	0.331	202	55.8	33-122			
Surrogate: 2-Fluorobiphenyl	48.3		"	0.331	158	48.3	33-115			

LCS (LCS-L664850)		Prepared: 02/20/2023 Analyzed: 02/20/2023								
Chrysene	0.121	0.00067	mg/Kg	0.167		72.4	30-130			
Dibenz(a,h)anthracene	0.121	0.00067	"	0.167		72.4	30-130			
Fluoranthene	0.127	0.00067	"	0.167		76	30-130			
Fluorene	0.119	0.00067	"	0.167		71.2	30-130			
Indeno(1,2,3-cd)pyrene	0.114	0.00067	"	0.167		68.2	30-130			
Naphthalene	0.107	0.00201	"	0.167		64	30-130			
Benzo(k)fluoranthene	0.112	0.00067	"	0.167		67	30-130			
Pyrene	0.126	0.00067	"	0.167		75.4	30-130			
Benzo(a)pyrene	0.13	0.00067	"	0.167		77.8	30-130			
Benzo(a)anthracene	0.125	0.00067	"	0.167		74.8	30-130			
Anthracene	0.119	0.00067	"	0.167		71.2	30-130			
Acenaphthene	0.113	0.00067	"	0.167		67.6	30-130			
2-Methylnaphthalene	0.104	0.00201	"	0.167		62.2	30-130			
1-Methylnaphthalene	0.108	0.00201	"	0.167		64.6	30-130			

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Martin C Eckert III
Project Number: [none]
Project: Noble - Herbst #1-22-4-64

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
Batch L664850 - 3550B										
LCS (LCS-L664850)					Prepared: 02/20/2023 Analyzed: 02/20/2023					
Benzo(b)fluoranthene	0.111	0.00067	mg/Kg	0.167		66.4	30-130			
Surrogate: Nitrobenzene-d5	65.1		"	0.333		65.1	29-110			
Surrogate: 4-Terphenyl-d14	76.5		"	0.333		76.5	33-122			
Surrogate: 2-Fluorobiphenyl	62.7		"	0.333		62.7	33-115			
LRB (LRB-L664850)					Prepared: 02/20/2023 Analyzed: 02/20/2023					
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	63.3		"	0.333		63.3	29-110			
Surrogate: 4-Terphenyl-d14	73.2		"	0.333		73.2	33-122			
Surrogate: 2-Fluorobiphenyl	60.9		"	0.333		60.9	33-115			

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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 - Herbst #1-22-4-64

Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



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