

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: Kammerzell #16-6		Date: 03/10/23				Remediation Project #: 27309			
Associated Wells: 05-123-13706		Age of Site: years				Number of Photos Attached: 1			
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.336396 / -104.814479						Estimated Facility Size (acres): <u> </u>			
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Good condition									
USCS Soil Type: clayey 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	05-123-13706								
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	2.3	1.7	1.8	1.0	4.4				
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? <input checked="" type="radio"/> 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: 4.4				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="radio"/> 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:									

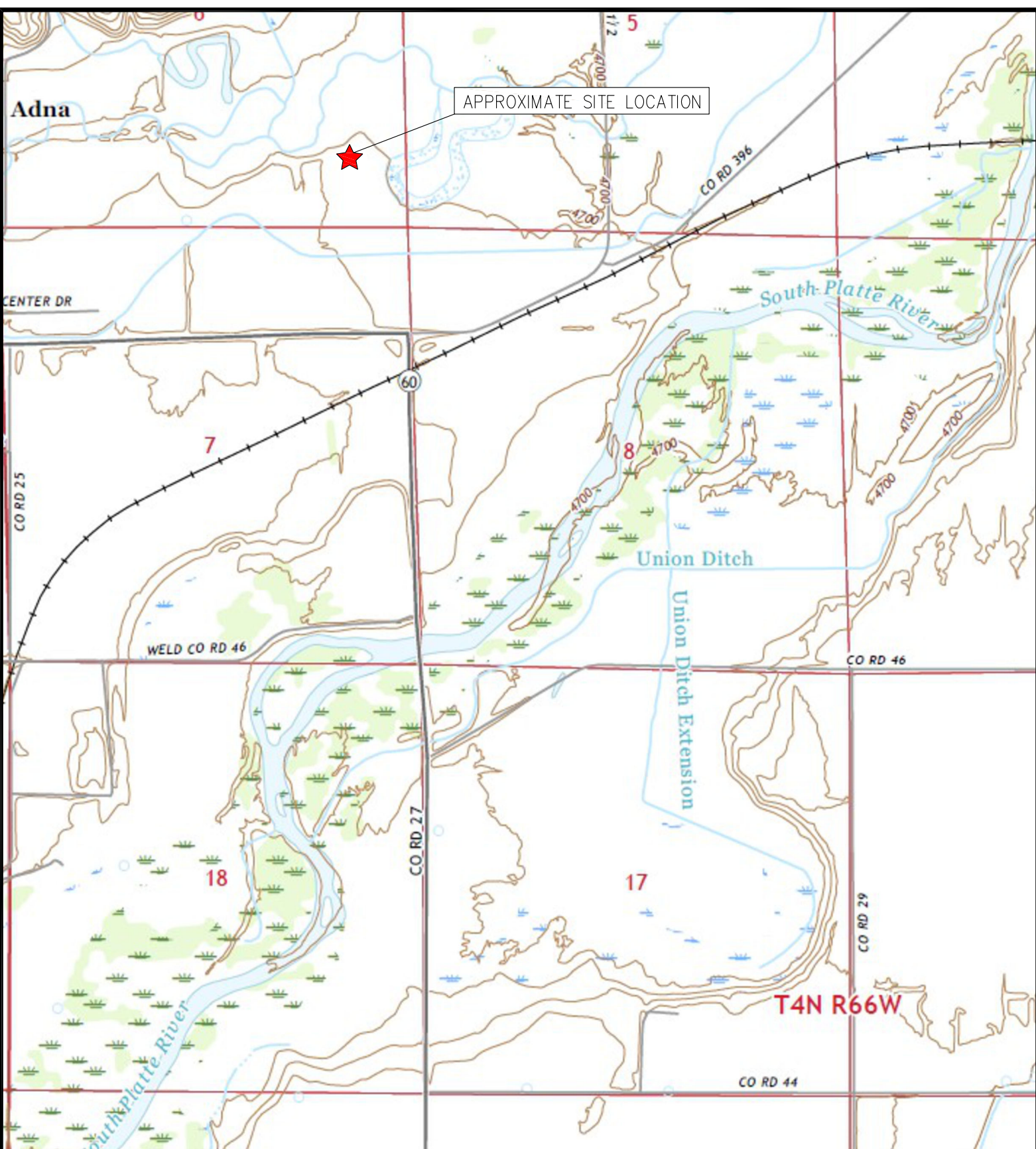


FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map



TOPOGRAPHIC SITE LOCATION MAP
 KAMMERZELL #16-6
 CLOSURE ASSESSMENT
 40.336396 / -104.814479
 SE¼ SE¼ SEC.6 T4N R66W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-13706
 REMEDIATION # 27309



EAGLE
 ENVIRONMENTAL
 CONSULTING, LLC

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

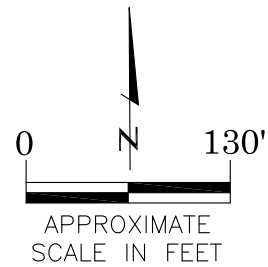
SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP,
 MILLIKEN, CO QUADRANGLE 2022

FIGURE NO. 1



LEGEND

- FORMER KAMMERZELL #16-6 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



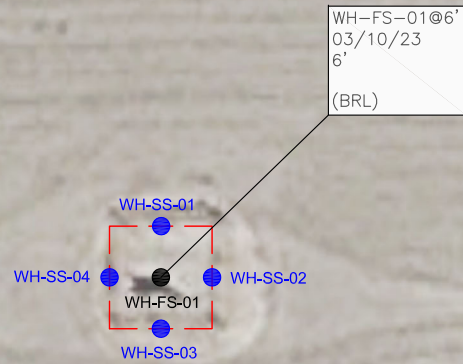
AERIAL SITE LOCATION MAP
 KAMMERZELL #16-6
 CLOSURE ASSESSMENT
 40.336396 / -104.814479
 SE¼ SE¼ SEC.6 T4N R66W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-13706
 REMEDIATION # 27309

FIGURE NO.
2

DRAWN BY:
EL



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 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
 KAMMERZELL #16-6
 CLOSURE ASSESSMENT
 40.336396 / -104.814479
 SE¼ SE¼ SEC.6 T4N R66W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-13706
 REMEDIATION # 27309

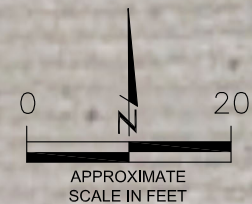


FIGURE NO.
3

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
KAMMERZELL #16-6
CLOSURE ASSESSMENT
40.336396 / -104.814479
SE¼ SE¼ SEC.6 T4N R66W 6PM
WELD COUNTY, COLORADO
API # 05-123-13706
REMEDIATION # 27309

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-SS-01 @ 5' (40.336412 / -104.814483)	03/10/23	5	2.3	N
WH-SS-02 @ 5' (40.336400 / -104.814465)	03/10/23	5	1.7	N
WH-SS-03 @ 5' (40.336387 / -104.814483)	03/10/23	5	1.8	N
WH-SS-04 @ 5' (40.336400 / -104.814502)	03/10/23	5	1.0	N
WH-FS-01 @ 6' (40.336400 / -104.814483)	03/10/23	6	4.4	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				



TABLE 2
SOIL ANALYTICAL RESULTS SUMMARY
KAMMERZELL #16-6
CLOSURE ASSESSMENT
40.336396 / -104.814479
SE¼ SE¼ SEC. 6 T4N R66W 6PM
WELD COUNTY, COLORADO
API # 05-123-13706
REMEDIATION # 27309

Sample Location		WH-FS-01 @ 6'		
(Latitude / Longitude)		(40.336400 / -104.814483)		
Sample Date		3/10/2023		
Sample Depth		6'		
PID Reading (ppm-v)		4.4		
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	0.00193
2-Methyl-naphthalene	mg/kg	24	0.019	0.00319
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	0.000661
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	0.00185
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	0.000716
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	0.00126
SOIL SUITABILITY (Inorganics)				
Boron	mg/L	2	--	0.403
pH	standard unit	6-8.3	--	7.82
Sodium Adsorption Ratio (SAR)	--	<6	--	1.26
Specific Conductance (EC)	mmhos/cm	<4	--	1.98
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

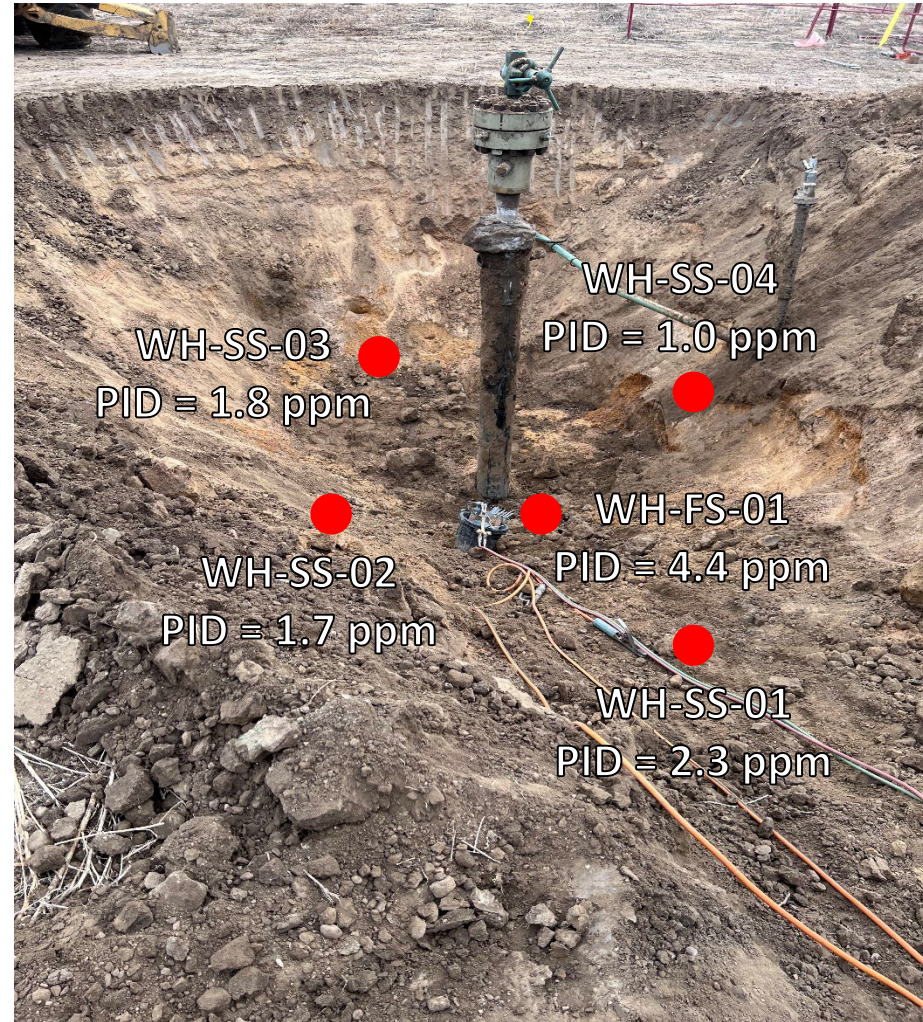
Kammerzell #16-6
API # 05-123-13706
Remediation # 27309

Closure Assessment

March 2023



Wellhead Excavation – 03/10/23



Looking southwest

No petroleum hydrocarbon staining or odor observed



ATTACHMENT B

Laboratory Analytical Report



March 22, 2023

Eagle Environmental Consulting, LLC

Martin C Eckert III

8000 W 44th Ave

Wheat Ridge CO 80033

Project Name - Noble- Kammerzell #16-6

Project Number - [none]

Attached are your analytical results for Noble- Kammerzell #16-6 received by Origins Laboratory, Inc. March 10, 2023. This project is associated with Origins project number Y303300-01.

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, LLC
8000 W 44th Ave
Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble- Kammerzell #16-6

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-FS-01@6'	Y303300-01	Soil	March 10, 2023 12:03	03/10/2023 16:27

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, LLC
 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

www.originslaboratory.com

Y9300

page (of)

ORIGINS
 LABORATORY, INC


Client: Eagle Environmental Consulting
 Address: 8000 W 44th Ave
Wheat Ridge, CO 80033
 Telephone Number: 303-433-0479
 Email Address: mec3@eagle-enviro.com

Project Manager: Martin Eckert III
 Project Name: Kammerzell #16-6
 Project Number: IM
 Samples Collected By: IM

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

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	Turnaround Time			
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #			Other	Other	Other	Other
1NH-FS-01@G'	3/10/23	1205	2	X				X				X	EC/SAR/pH =	Same Day	24 Hr	
												X	3x-urinated paste prep 2	48 Hr	72 Hr	
													AMDLs needed	Standard		

Relinquished By: [Signature] Date: 3/10/23 Time: 1627
 Relinquished By: [Signature] Date: 03/10/2023 Time: 1227
 Received By: [Signature] Date: 03/10/2023 Time: 1227
 Received By: [Signature] Date: 03/10/2023 Time: 1227
 Temp received: 3 Date Results Needed: Noble

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, LLC
 8000 W 44th Ave
 Wheat Ridge CO 80033

Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y303300

Client: Eagle

Client Project ID: Kammerzell #16-6

Checklist Completed by: DE

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

Date/time completed: 03/10/2023

Airbill #: ND

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

Cooler Number/Temperature: 1 / -3 °C 1 °C 1 °C (Describe) 1 °C

Thermometer ID: TD04

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 3/13/23

Origins Laboratory, Inc.

[Signature]

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

Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

WH-FS-01@6'

3/10/2023 12:03:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y303300-01 (Soil)

Boron (DTPA Sorbitol)

Boron	0.403		0.100	mg/L	1	B3C1404	03/14/2023	03/15/2023	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND		25.0	mg/kg	1	B3C1301	03/13/2023	03/15/2023	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	84.5 %		50-150			"	"	"	
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GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B3C1326	03/13/2023	03/15/2023	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	122 %		70-130			"	"	"	
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Origins Laboratory, Inc.



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

Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

WH-FS-01@6'

3/10/2023 12:03:00PM

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

Origins Laboratory, Inc.
Y303300-01 (Soil)

GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	93.5 %		70-130			B3C13 26	03/13/2023	03/15/2023	
Surrogate: 4-Bromofluorobenzene	91.7 %		70-130			"	"	"	

Metals by Saturated Paste by EPA 6010

Calcium	9.29		0.499	meq/L	10	[CALC]	03/15/2023	03/17/2023	
Magnesium	6.09		0.823	"	"	"	"	"	
Sodium	3.49		0.435	"	"	"	"	"	

PAH by 8270D SIM

1-Methylnaphthalene	0.00193	0.00109	0.00201	mg/Kg	1	L670250	03/16/2023	03/17/2023	J
2-Methylnaphthalene	0.00319	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	0.000661	0.000468	0.00067	"	"	"	"	"	J
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	0.00185	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	
Fluorene	0.000716	0.000286	0.00067	"	"	"	"	"	

Origins Laboratory, Inc.



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

Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

WH-FS-01@6'

3/10/2023 12:03:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, LLC.
Y303300-01 (Soil)

PAH by 8270D SIM

Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	mg/Kg	1	L670250	03/16/2023	03/17/2023	
Naphthalene	ND	0.00145	0.00201	"	"	"	"	"	
Pyrene	0.00126	0.000643	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	53.5 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	52 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	50.2 %		29-110			"	"	"	

pH in Soil by 9045D

pH	7.82			pH Units	1	B3C1516	03/15/2023	03/16/2023	
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SAR by 20B Saturated Paste

SAR	1.26			SAR	1	B3C1506	03/15/2023	03/17/2023	
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Specific Conductance Mod. 9050A

Specific Conductance (EC)	1.98		0.00500	mmhos/cm	1	B3C1516	03/15/2023	03/16/2023	
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Origins Laboratory, Inc.



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

Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 B3C1301 - EPA 3580										
Blank (B3C1301-BLK1)										
					Prepared: 03/13/2023 Analyzed: 03/15/2023					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	21		"	24.9		84.6	50-150			

Origins Laboratory, Inc.



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

Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 B3C1301 - EPA 3580

LCS (B3C1301-BS1)

Prepared: 03/13/2023 Analyzed: 03/15/2023

Diesel (C10-C28)	906	50.0	mg/kg	1000		90.6	70-130			
Residual Range Organics (C28-C40)	931	200	"	1000		93.1	70-130			
Surrogate: o-Terphenyl	46		"	49.8		92.3	50-150			

Origins Laboratory, Inc.



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

Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 B3C1301 - EPA 3580

Matrix Spike (B3C1301-MS1)	Source: Y303278-01			Prepared: 03/13/2023 Analyzed: 03/15/2023						
Diesel (C10-C28)	860	50.0	mg/kg	1000	ND	86.0	70-130			
Residual Range Organics (C28-C40)	876	200	"	1000	ND	87.6	70-130			
Surrogate: o-Terphenyl	40		"	49.8		81.0	50-150			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 B3C1301 - EPA 3580

Matrix Spike Dup (B3C1301-MSD1)	Source: Y303278-01			Prepared: 03/13/2023 Analyzed: 03/15/2023						
Diesel (C10-C28)	843	50.0	mg/kg	1000	ND	84.3	70-130	2.04	35	
Residual Range Organics (C28-C40)	856	200	"	1000	ND	85.6	70-130	2.25	35	
<i>Surrogate: o-Terphenyl</i>	40		"	49.8		81.3	50-150			

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 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 B3C1326 - EPA 5030 (soil)

Blank (B3C1326-BLK1)

Prepared: 03/13/2023 Analyzed: 03/14/2023

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	0.15		"	0.125	116		70-130			
Surrogate: Toluene-d8	0.12		"	0.125	96.1		70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125	98.4		70-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 B3C1326 - EPA 5030 (soil)

LCS (B3C1326-BS1)

Prepared: 03/13/2023 Analyzed: 03/14/2023

1,2,4-Trimethylbenzene	0.112	0.00200	mg/kg	0.100		112	70-130			
1,3,5-Trimethylbenzene	0.111	0.00200	"	0.100		111	70-130			
Benzene	0.0932	0.00200	"	0.100		93.2	70-130			
Ethylbenzene	0.104	0.00200	"	0.100		104	70-130			
Naphthalene	0.107	0.00380	"	0.100		107	70-130			
Toluene	0.0933	0.00200	"	0.100		93.3	70-130			
o-Xylene	0.107	0.00200	"	0.100		107	70-130			
m,p-Xylene	0.211	0.00400	"	0.200		105	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		115	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.9	70-130			

Origins Laboratory, Inc.



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Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 B3C1326 - EPA 5030 (soil)

Matrix Spike (B3C1326-MS1)	Source: Y303263-01			Prepared: 03/13/2023 Analyzed: 03/14/2023						
1,2,4-Trimethylbenzene	0.102	0.00200	mg/kg	0.100	ND	102	70-130			
1,3,5-Trimethylbenzene	0.103	0.00200	"	0.100	ND	103	70-130			
Benzene	0.0934	0.00200	"	0.100	ND	93.4	70-130			
Ethylbenzene	0.101	0.00200	"	0.100	ND	101	70-130			
Naphthalene	0.0797	0.00380	"	0.100	ND	79.7	70-130			
Toluene	0.0944	0.00200	"	0.100	ND	94.4	70-130			
o-Xylene	0.102	0.00200	"	0.100	ND	102	70-130			
m,p-Xylene	0.204	0.00400	"	0.200	ND	102	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		108	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.8	70-130			

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 Project: Noble- Kammerzell #16-6

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 B3C1326 - EPA 5030 (soil)

Matrix Spike Dup (B3C1326-MSD1)	Source: Y303263-01			Prepared: 03/13/2023 Analyzed: 03/14/2023						
1,2,4-Trimethylbenzene	0.105	0.00200	mg/kg	0.100	ND	105	70-130	2.51	20	
1,3,5-Trimethylbenzene	0.105	0.00200	"	0.100	ND	105	70-130	2.37	20	
Benzene	0.0980	0.00200	"	0.100	ND	98.0	70-130	4.74	20	
Ethylbenzene	0.0999	0.00200	"	0.100	ND	99.9	70-130	0.857	20	
Naphthalene	0.0993	0.00380	"	0.100	ND	99.3	70-130	21.9	20	QR-02
Toluene	0.100	0.00200	"	0.100	ND	100	70-130	5.82	20	
o-Xylene	0.103	0.00200	"	0.100	ND	103	70-130	1.60	20	
m,p-Xylene	0.204	0.00400	"	0.200	ND	102	70-130	0.118	20	
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		116	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.6	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.4	70-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 B3C1404 - DTPA Sorbitol Preparation

Blank (B3C1404-BLK1)

Prepared: 03/14/2023 Analyzed: 03/15/2023

Boron ND 0.100 mg/L

Duplicate (B3C1404-DUP1)

Source: Y303259-05

Prepared: 03/14/2023 Analyzed: 03/15/2023

Boron 5.84 0.0981 mg/L 7.07 19.1 50

Batch B3C1506 - Saturated Paste Metals

Blank (B3C1506-BLK1)

Prepared: 03/15/2023 Analyzed: 03/17/2023

SAR 0.00 SAR

Calcium PPM ND 10.0 mg/L

Magnesium PPM ND 10.0 "

Sodium PPM ND 10.0 "

Duplicate (B3C1506-DUP1)

Source: Y303267-04

Prepared: 03/15/2023 Analyzed: 03/17/2023

SAR 0.00 SAR 0.957 200 200

Calcium PPM 50.7 10.0 mg/L 57.0 11.8 50

Magnesium PPM 13.8 10.0 " 15.2 9.62 50

Sodium PPM 29.0 10.0 " 31.5 8.31 50

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Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

Saturated Paste - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B3C1516 - Saturated Paste pH/EC										
Blank (B3C1516-BLK1)					Prepared: 03/15/2023 Analyzed: 03/16/2023					
Specific Conductance (EC)	ND	0.00500	mmhos/cm							
Duplicate (B3C1516-DUP1)					Source: Y303267-04 Prepared: 03/15/2023 Analyzed: 03/16/2023					
pH	7.98		pH Units		8.00			0.250	25	
Specific Conductance (EC)	0.708	0.00500	mmhos/cm		0.717			1.25	25	

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Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 L670250 - 3550B

MSD (L 98530-MSD-L670250)		Source: 98530			Prepared: 03/16/2023 Analyzed: 03/17/2023					
2-Methylnaphthalene	0.103	0.00201	mg/Kg	0.165	<0.00194	62.4	30-130	1.9	30	
Fluorene	0.116	0.00067	"	0.165	<0.000286	70.3	30-130	0.8	30	
Pyrene	0.112	0.00067	"	0.165	<0.000643	67.8	30-130	2.7	30	
Indeno(1,2,3-cd)pyrene	0.111	0.00067	"	0.165	<0.000627	67.2	30-130	5.5	30	
Fluoranthene	0.115	0.00067	"	0.165	<0.000394	69.6	30-130	2.6	30	
Dibenz(a,h)anthracene	0.153	0.00067	"	0.165	<0.000614	92.7	30-130	6.7	30	
Chrysene	0.119	0.00067	"	0.165	<0.000624	72.1	30-130	7.8	30	
Naphthalene	0.097	0.00201	"	0.165	<0.00145	58.7	30-130	2.5	30	
1-Methylnaphthalene	0.103	0.00201	"	0.165	<0.00109	62.4	30-130	0.9	30	
Benzo(k)fluoranthene	0.0985	0.00067	"	0.165	<0.000437	59.6	30-130	9.2	30	
Acenaphthene	0.107	0.00067	"	0.165	<0.000304	64.8	30-130	0	30	
Anthracene	0.121	0.00067	"	0.165	<0.000334	73.3	30-130	2.5	30	
Benzo(a)anthracene	0.112	0.00067	"	0.165	<0.000493	67.8	30-130	3.5	30	
Benzo(a)pyrene	0.123	0.00067	"	0.165	<0.000468	74.5	30-130	2.4	30	
Benzo(b)fluoranthene	0.0803	0.00067	"	0.165	<0.000585	48.6	30-130	11.1	30	
Surrogate: 2-Fluorobiphenyl	54.5		"	0.33	176	54.5	33-115			
Surrogate: Nitrobenzene-d5	51.8		"	0.33	172	51.8	29-110			
Surrogate: 4-Terphenyl-d14	60.9		"	0.33	204	60.9	33-122			

MS (L 98530-MS-L670250)		Source: 98530			Prepared: 03/16/2023 Analyzed: 03/17/2023					
Benzo(k)fluoranthene	0.108	0.00067	mg/Kg	0.166	<0.000437	65	30-130			
Acenaphthene	0.107	0.00067	"	0.166	<0.000304	64.4	30-130			
Naphthalene	0.0946	0.00201	"	0.166	<0.00145	56.9	30-130			
Indeno(1,2,3-cd)pyrene	0.105	0.00067	"	0.166	<0.000627	63.2	30-130			
Fluorene	0.115	0.00067	"	0.166	<0.000286	69.2	30-130			
Fluoranthene	0.112	0.00067	"	0.166	<0.000394	67.4	30-130			
Dibenz(a,h)anthracene	0.143	0.00067	"	0.166	<0.000614	86.1	30-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 L670250 - 3550B

MS (L 98530-MS-L670250)	Source: 98530			Prepared: 03/16/2023 Analyzed: 03/17/2023						
Chrysene	0.11	0.00067	mg/Kg	0.166	<0.000624	66.2	30-130			
1-Methylnaphthalene	0.102	0.00201	"	0.166	<0.00109	61.4	30-130			
Benzo(a)pyrene	0.12	0.00067	"	0.166	<0.000468	72.2	30-130			
Anthracene	0.118	0.00067	"	0.166	<0.000334	71	30-130			
Pyrene	0.109	0.00067	"	0.166	<0.000643	65.6	30-130			
2-Methylnaphthalene	0.101	0.00201	"	0.166	<0.00194	60.8	30-130			
Benzo(b)fluoranthene	0.0898	0.00067	"	0.166	<0.000585	54	30-130			
Benzo(a)anthracene	0.116	0.00067	"	0.166	<0.000493	69.8	30-130			
Surrogate: Nitrobenzene-d5	51		"	0.331	172	51	29-110			
Surrogate: 4-Terphenyl-d14	57		"	0.331	204	57	33-122			
Surrogate: 2-Fluorobiphenyl	52.8		"	0.331	176	52.8	33-115			

LCS (LCS-L670250)	Prepared: 03/16/2023 Analyzed: 03/17/2023									
Chrysene	0.131	0.00067	mg/Kg	0.167		78.4	30-130			
Dibenz(a,h)anthracene	0.166	0.00067	"	0.167		99.4	30-130			
Fluoranthene	0.135	0.00067	"	0.167		80.8	30-130			
Fluorene	0.14	0.00067	"	0.167		83.8	30-130			
Indeno(1,2,3-cd)pyrene	0.13	0.00067	"	0.167		77.8	30-130			
Naphthalene	0.122	0.00201	"	0.167		73	30-130			
Benzo(k)fluoranthene	0.117	0.00067	"	0.167		70	30-130			
Pyrene	0.132	0.00067	"	0.167		79	30-130			
Benzo(a)pyrene	0.147	0.00067	"	0.167		88	30-130			
Benzo(a)anthracene	0.135	0.00067	"	0.167		80.8	30-130			
Anthracene	0.146	0.00067	"	0.167		87.4	30-130			
Acenaphthene	0.129	0.00067	"	0.167		77.2	30-130			
2-Methylnaphthalene	0.126	0.00201	"	0.167		75.4	30-130			
1-Methylnaphthalene	0.127	0.00201	"	0.167		76	30-130			

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Martin C Eckert III
 Project Number: [none]
 Project: Noble- Kammerzell #16-6

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 L670250 - 3550B

LCS (LCS-L670250)

Prepared: 03/16/2023 Analyzed: 03/17/2023

Benzo(b)fluoranthene	0.095	0.00067	mg/Kg	0.167		56.8	30-130			
Surrogate: Nitrobenzene-d5	64.5		"	0.333		64.5	29-110			
Surrogate: 4-Terphenyl-d14	71.1		"	0.333		71.1	33-122			
Surrogate: 2-Fluorobiphenyl	66.3		"	0.333		66.3	33-115			

LRB (LRB-L670250)

Prepared: 03/16/2023 Analyzed: 03/17/2023

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	57.6		"	0.333		57.6	29-110			
Surrogate: 4-Terphenyl-d14	73.2		"	0.333		73.2	33-122			
Surrogate: 2-Fluorobiphenyl	62.7		"	0.333		62.7	33-115			

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Wheat Ridge CO 80033

Martin C Eckert III
Project Number: [none]
Project: Noble- Kammerzell #16-6

Notes and Definitions

U Sample is Non-Detect.

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

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.

Calculated results may use J-flag data (instead of reported "ND") as part of calculation to provide a more accurate result.

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