

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 03, 2024

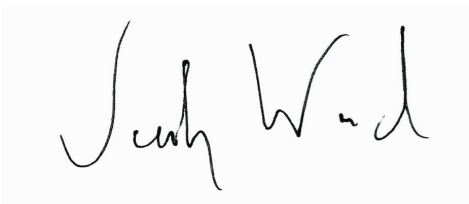
Paul Henchan  
Fremont Environmental  
PO Box 1289  
Wellington, CO 80549

RE: Noble - Pappenheim (SI)

Work Order #2404283

Enclosed are the results of analyses for samples received by Summit Scientific on 04/16/24 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Jacob Wood". The signature is written in a cursive style with a large initial "J" and "W".

Jacob Wood For Paul Shrewsbury  
President



Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PWV-CEN 3FT	2404283-01	Soil	04/16/24 00:00	04/16/24 16:30
PWV-N 4FT	2404283-02	Soil	04/16/24 00:00	04/16/24 16:30
PWV-S 4FT	2404283-03	Soil	04/16/24 00:00	04/16/24 16:30
PWV-E 4FT	2404283-04	Soil	04/16/24 00:00	04/16/24 16:30
PWV-W 4FT	2404283-05	Soil	04/16/24 00:00	04/16/24 16:30
SEP-CEN 7FT	2404283-06	Soil	04/16/24 00:00	04/16/24 16:30
SEP-N 4FT	2404283-07	Soil	04/16/24 00:00	04/16/24 16:30
SEP-S 4FT	2404283-08	Soil	04/16/24 00:00	04/16/24 16:30
SEP-E 4FT	2404283-09	Soil	04/16/24 00:00	04/16/24 16:30
SEP-W 4FT	2404283-10	Soil	04/16/24 00:00	04/16/24 16:30

Summit Scientific

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# SUMMIT SCIENTIFIC

4653 Table Mountain Drive  
Golden, CO 80403  
303-277-9310

Lab ID	Page 1 of 1
2404283	

<b>Send Data To:</b>		<b>Send Invoice To:</b>
Client: Fremont Environmental, Inc.	Project Manager: Henahan	Company: Chevron
Address: 8305 6th St.	E-Mail: <del>Chevron Dist. List</del> <del>BOC Dist. List</del> <del>CMW Dist. List</del>	Project Name/Location:
City/State/Zip: Wellington, CO, 80549	<del>Fremont Dist. List</del> <del>PaulH, ethanB, field, mikeG, jared, shirley, stans, oarons</del> <del>(tammyA)</del>	AFE#:
Phone: 603-477-6907	Project Name: Noble - Pappenheim (SI)	PO/Billing Codes: ULRWE-A3114-ARW
Sampler Name: Ethan Black	Project Number:	Contact: Dan P.

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEX, Naphthalene, TMBS	TPH (C6-C36)	PAH	SAR, EC, pH, Boron		Metals (Table 915-1)
1	DJV-CEN 3FT	4/16/24		2			X			X			X	X	X	X		
2	DJV-N 4FT																	
3	DJV-S 4FT																	
4	DJV-E 4FT																	
5	DJV-W 4FT																	
6	SEP-CEN 7FT																	
7	SEP-N 4FT																	
8	SEP-S 4FT																	
9	SEP-E 4FT																	
10	SEP-W 4FT																	
11																		
12																		
13																		
14																		
15																		

Relinquished by: <i>Ethan Black</i>	Date/Time: 4/16/24 1530	Received by: S2 - North Office	Date/Time: 4/16/24 1530	TAT Business Days	Field DO	Notes:
Relinquished by: <i>SL</i>	Date/Time: 4/16/24 1630	Received by: <i>[Signature]</i>	Date/Time: 4/16/24 1630	Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
Temperature Upon Receipt: 11.9	Corrected Temperature: 0	IR gun #: 1	HNO3 lot #:	Standard	X Field Turb.	

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2404283

Client: Fremont

Client Project ID: Noble-Papperheim (SI)

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other

Airbill #: \_\_\_\_\_

Matrix (Check all that apply)

Air

Sol/Solid

Water

Other

Temp (°C)

11.9

Thermometer #

1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? (1) NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on 206</u>
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? (1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>no sample times</u>
Is the COC properly relinquished by the client w/ date and time recorded? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? (1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? (1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Some names didn't match</u>
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? (1) Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? (1) Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any): <u>Received 4 jars labeled PNV-S, none labeled PNV-W</u>				

(1) If NO, then contact the client before proceeding with analysis and note in case narrative.

AS

Custodian Printed Name

4/16/24

Date/Time

4.5



Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-CEN 3FT**  
**2404283-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHD0629	04/18/24	04/20/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0544	136 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0373	93.2 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0410	102 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHD0633	04/18/24	04/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	6.88	55.0 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-CEN 3FT**  
**2404283-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0589	04/18/24	04/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0153	45.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0158	47.5 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0744	04/22/24	05/30/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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PO Box 1289  
Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-CEN 3FT  
2404283-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	4.02	0.181	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B	
Barium	87.0	0.362	"	"	"	"	"	"	
Cadmium	0.234	0.181	"	"	"	"	"	"	
Copper	7.97	0.362	"	"	"	"	"	"	
Lead	7.62	0.181	"	"	"	"	"	"	
Nickel	8.22	0.362	"	"	"	"	"	"	
Silver	0.0306	0.0181	"	"	"	"	"	"	
Zinc	33.6	0.362	"	"	"	"	"	"	
Selenium	ND	0.236	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0870	04/24/24	04/24/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	81.9	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	4.54	0.0500	"	"	"	"	"	"	
Sodium	48.3	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.41	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**PWV-CEN 3FT  
 2404283-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>% Solids</b>	<b>85.1</b>	%	1	BHD0768	04/22/24	04/23/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**


Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.343</b>	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>8.77</b>		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-N 4FT**  
**2404283-02 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHD0629	04/18/24	04/20/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0519	130 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0374	93.4 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0392	98.0 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHD0633	04/18/24	04/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	7.16	57.2 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-N 4FT**  
**2404283-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0589	04/18/24	04/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0138	41.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0134	40.3 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0744	04/22/24	05/30/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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PO Box 1289  
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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-N 4FT**  
**2404283-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	5.27	0.200	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B	
Barium	75.7	0.400	"	"	"	"	"	"	
Cadmium	0.247	0.200	"	"	"	"	"	"	
Copper	9.00	0.400	"	"	"	"	"	"	
Lead	8.24	0.200	"	"	"	"	"	"	
Nickel	12.1	0.400	"	"	"	"	"	"	
Silver	0.0388	0.0200	"	"	"	"	"	"	
Zinc	37.0	0.400	"	"	"	"	"	"	
Selenium	0.302	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0870	04/24/24	04/24/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	859	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	56.2	0.0500	"	"	"	"	"	"	
Sodium	65.2	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.582	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**PWV-N 4FT**  
**2404283-02 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	82.5	%	1	BHD0768	04/22/24	04/23/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**


Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.278	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.52		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-S 4FT**  
**2404283-03 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHD0966	04/25/24	04/25/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0338	84.5 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0412	103 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0393	98.3 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHD0967	04/25/24	04/25/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	11.8	94.5 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-S 4FT**  
**2404283-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0974	04/26/24	04/27/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0179	53.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0177	53.2 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0982	04/26/24	05/25/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-S 4FT**  
**2404283-03 (Soil)**

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**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.65	0.200	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B	
Barium	299	0.400	"	"	"	"	"	"	
Cadmium	0.238	0.200	"	"	"	"	"	"	
Copper	5.18	0.400	"	"	"	"	"	"	
Lead	7.08	0.200	"	"	"	"	"	"	
Nickel	7.79	0.400	"	"	"	"	"	"	
Silver	0.0215	0.0200	"	"	"	"	"	"	
Zinc	32.3	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0980	04/26/24	04/30/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	60.2	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	12.4	0.0500	"	"	"	"	"	"	
Sodium	12.4	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.380	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**PWV-S 4FT**  
**2404283-03 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	88.1	%	1	BHD0978	04/26/24	04/29/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**


Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.483	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.52		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-E 4FT**  
**2404283-04 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHD0629	04/18/24	04/20/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0550	138 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0371	92.8 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0395	98.8 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHD0633	04/18/24	04/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	9.34	74.7 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-E 4FT**  
**2404283-04 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0589	04/18/24	04/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0141	42.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0163	48.9 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0744	04/22/24	05/30/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-E 4FT**  
**2404283-04 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	3.99	0.200	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B
Barium	208	0.400	"	"	"	"	"	"
Cadmium	0.271	0.200	"	"	"	"	"	"
Copper	7.77	0.400	"	"	"	"	"	"
Lead	8.12	0.200	"	"	"	"	"	"
Nickel	9.41	0.400	"	"	"	"	"	"
Silver	0.0319	0.0200	"	"	"	"	"	"
Zinc	37.8	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0870	04/24/24	04/24/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	45.9	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	6.20	0.0500	"	"	"	"	"	"	
Sodium	61.7	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.27	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**PWV-E 4FT**  
**2404283-04 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	83.7	%	1	BHD0768	04/22/24	04/23/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**


Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.535	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.77		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-W 4FT**  
**2404283-05 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHD0966	04/25/24	04/25/24	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0307	76.7 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0389	97.3 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0379	94.7 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHD0967	04/25/24	04/25/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	11.1	89.1 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**PWV-W 4FT**  
**2404283-05 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0974	04/26/24	04/27/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0142	42.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0166	49.8 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0982	04/26/24	05/25/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PWV-W 4FT**  
**2404283-05 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.90	0.200	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B	
Barium	100	0.400	"	"	"	"	"	"	
Cadmium	0.292	0.200	"	"	"	"	"	"	
Copper	7.33	0.400	"	"	"	"	"	"	
Lead	7.30	0.200	"	"	"	"	"	"	
Nickel	9.83	0.400	"	"	"	"	"	"	
Silver	0.0349	0.0200	"	"	"	"	"	"	
Zinc	36.3	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0980	04/26/24	04/30/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	53.5	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	5.39	0.0500	"	"	"	"	"	"	
Sodium	80.2	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.80	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**PWV-W 4FT**  
**2404283-05 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	85.9	%	1	BHD0978	04/26/24	04/29/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

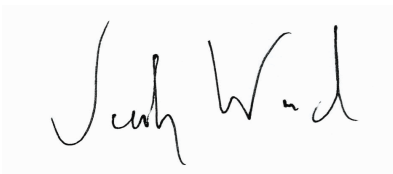
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.547	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.95		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-CEN 7FT**  
**2404283-06 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHD0629	04/18/24	04/20/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>6.7</b>	<b>0.50</b>	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0532	133 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0432	108 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0543	136 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>10000</b>	50	mg/kg	1	BHD0633	04/18/24	04/22/24	EPA 8015M	
<b>C28-C36 (ORO)</b>	<b>3200</b>	50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	21.6	173 %	30-150		"	"	"	"	S-02

**PAH by EPA Method 8270D SIM**

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Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

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06/03/24 15:38

**SEP-CEN 7FT**  
**2404283-06 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0589	04/18/24	04/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0175	52.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0244	73.2 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0744	04/22/24	05/30/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-CEN 7FT**  
**2404283-06 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.21	0.181	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B	
Barium	25.3	0.362	"	"	"	"	"	"	
Cadmium	0.454	0.181	"	"	"	"	"	"	
Copper	22.2	0.362	"	"	"	"	"	"	
Lead	10.9	0.181	"	"	"	"	"	"	
Nickel	15.2	0.362	"	"	"	"	"	"	
Silver	0.0672	0.0181	"	"	"	"	"	"	
Zinc	65.8	0.362	"	"	"	"	"	"	
Selenium	0.378	0.236	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0870	04/24/24	04/24/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	271	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	146	0.0500	"	"	"	"	"	"	
Sodium	41.0	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.499	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**SEP-CEN 7FT  
 2404283-06 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	81.4	%	1	BHD0768	04/22/24	04/23/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**


Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.06	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.01		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-N 4FT**  
**2404283-07 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHD0629	04/18/24	04/20/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0509	127 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0369	92.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0390	97.4 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHD0633	04/18/24	04/23/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	9.53	76.2 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-N 4FT**  
**2404283-07 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0589	04/18/24	04/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0166	49.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0136	40.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0744	04/22/24	05/30/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-N 4FT**  
**2404283-07 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	3.90	0.200	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B
Barium	30.5	0.400	"	"	"	"	"	"
Cadmium	0.390	0.200	"	"	"	"	"	"
Copper	28.8	0.400	"	"	"	"	"	"
Lead	19.0	0.200	"	"	"	"	"	"
Nickel	10.5	0.400	"	"	"	"	"	"
Silver	0.0822	0.0200	"	"	"	"	"	"
Zinc	72.4	0.400	"	"	"	"	"	"
Selenium	0.312	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0870	04/24/24	04/24/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	73.8	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	24.2	0.0500	"	"	"	"	"	"	
Sodium	11.8	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.305	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**SEP-N 4FT**  
**2404283-07 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>% Solids</b>	<b>80.1</b>	%	1	BHD0768	04/22/24	04/23/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

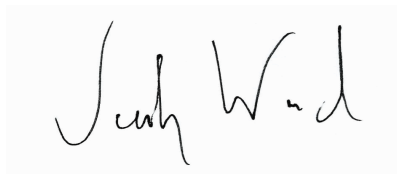
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.571</b>	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>8.33</b>		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-S 4FT**  
**2404283-08 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHD0629	04/18/24	04/20/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0544	136 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0369	92.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0391	97.8 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHD0633	04/18/24	04/23/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	9.83	78.6 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-S 4FT**  
**2404283-08 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0589	04/18/24	04/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0160	47.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0136	40.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0744	04/22/24	05/30/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-S 4FT**  
**2404283-08 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	4.31	0.180	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B
Barium	87.8	0.360	"	"	"	"	"	"
Cadmium	0.270	0.180	"	"	"	"	"	"
Copper	8.17	0.360	"	"	"	"	"	"
Lead	7.66	0.180	"	"	"	"	"	"
Nickel	8.63	0.360	"	"	"	"	"	"
Silver	0.0347	0.0180	"	"	"	"	"	"
Zinc	33.8	0.360	"	"	"	"	"	"
Selenium	ND	0.234	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0870	04/24/24	04/24/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	124	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	25.7	0.0500	"	"	"	"	"	"	
Sodium	8.41	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.180	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Reported:**  
 06/03/24 15:38

**SEP-S 4FT**  
**2404283-08 (Soil)**

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**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	84.0	%	1	BHD0768	04/22/24	04/23/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**


Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.803	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.31		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-E 4FT**  
**2404283-09 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHD0629	04/18/24	04/20/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0467	117 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0370	92.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0399	99.7 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHD0633	04/18/24	04/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	8.06	64.5 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-E 4FT**  
**2404283-09 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0589	04/18/24	04/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0144	43.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0147	44.1 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0744	04/22/24	05/30/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-E 4FT**  
**2404283-09 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	4.66	0.200	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B	
Barium	99.9	0.400	"	"	"	"	"	"	
Cadmium	0.289	0.200	"	"	"	"	"	"	
Copper	9.07	0.400	"	"	"	"	"	"	
Lead	8.20	0.200	"	"	"	"	"	"	
Nickel	9.47	0.400	"	"	"	"	"	"	
Silver	0.0347	0.0200	"	"	"	"	"	"	
Zinc	37.0	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0870	04/24/24	04/24/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	76.9	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	7.51	0.0500	"	"	"	"	"	"	
Sodium	1.66	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0484	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**SEP-E 4FT**  
**2404283-09 (Soil)**

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**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	85.1	%	1	BHD0768	04/22/24	04/23/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

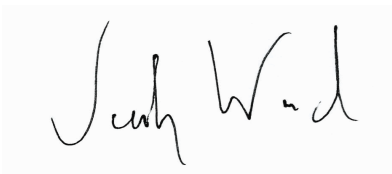
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.448	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.39		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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**Reported:**  
06/03/24 15:38

**SEP-W 4FT**  
**2404283-10 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHD0629	04/18/24	04/20/24	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0584	146 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0361	90.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0405	101 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHD0633	04/18/24	04/22/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	8.68	69.5 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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06/03/24 15:38

**SEP-W 4FT**  
**2404283-10 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHD0589	04/18/24	04/20/24	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0136	40.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0135	40.4 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHD0744	04/22/24	05/30/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**SEP-W 4FT**  
**2404283-10 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	4.75	0.200	mg/kg dry	1	BHD1033	04/29/24	05/26/24	EPA 6020B	
Barium	110	0.400	"	"	"	"	"	"	
Cadmium	0.281	0.200	"	"	"	"	"	"	
Copper	8.65	0.400	"	"	"	"	"	"	
Lead	7.67	0.200	"	"	"	"	"	"	
Nickel	10.8	0.400	"	"	"	"	"	"	
Silver	0.0307	0.0200	"	"	"	"	"	"	
Zinc	33.5	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHD0870	04/24/24	04/24/24	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	65.1	0.0500	mg/L dry	1	BHE0045	05/01/24	05/31/24	EPA 6020B	
Magnesium	27.6	0.0500	"	"	"	"	"	"	
Sodium	16.8	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.440	0.00100	units	1	BHF0035	06/03/24	06/03/24	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**SEP-W 4FT**  
**2404283-10 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	88.1	%	1	BHD0768	04/22/24	04/23/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

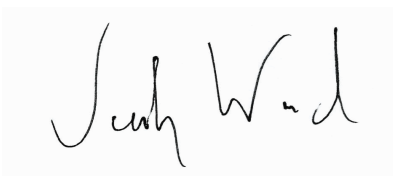
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.617	0.0100	mmhos/cm	1	BHE0047	05/01/24	05/06/24	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **04/16/24 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.56		pH Units	1	BHE0046	05/01/24	05/06/24	EPA 9045D	

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Wellington CO, 80549

Project: Noble - Pappenheim (SI)

Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch BHD0629 - EPA 5030 Soil MS

##### Blank (BHD0629-BLK1)

Prepared: 04/18/24 Analyzed: 04/19/24

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0485		"	0.0400		121	50-150			
<i>Surrogate: Toluene-d8</i>	0.0375		"	0.0400		93.8	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0393		"	0.0400		98.3	50-150			

##### LCS (BHD0629-BS1)

Prepared: 04/18/24 Analyzed: 04/19/24

Benzene	0.0826	0.0020	mg/kg	0.100		82.6	70-130			
Toluene	0.0895	0.0050	"	0.100		89.5	70-130			
Ethylbenzene	0.0974	0.0050	"	0.100		97.4	70-130			
m,p-Xylene	0.183	0.010	"	0.200		91.4	70-130			
o-Xylene	0.0917	0.0050	"	0.100		91.7	70-130			
1,2,4-Trimethylbenzene	0.0909	0.0050	"	0.100		90.9	70-130			
1,3,5-Trimethylbenzene	0.0926	0.0050	"	0.100		92.6	70-130			
Naphthalene	0.0890	0.0038	"	0.100		89.0	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0519		"	0.0400		130	50-150			
<i>Surrogate: Toluene-d8</i>	0.0378		"	0.0400		94.6	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0375		"	0.0400		93.8	50-150			

##### Matrix Spike (BHD0629-MS1)

Source: 2404279-01

Prepared: 04/18/24 Analyzed: 04/19/24

Benzene	0.0794	0.0020	mg/kg	0.100	ND	79.4	70-130			
Toluene	0.0830	0.0050	"	0.100	ND	83.0	70-130			
Ethylbenzene	0.0893	0.0050	"	0.100	ND	89.3	70-130			
m,p-Xylene	0.169	0.010	"	0.200	ND	84.3	70-130			
o-Xylene	0.0837	0.0050	"	0.100	ND	83.7	70-130			
1,2,4-Trimethylbenzene	0.0816	0.0050	"	0.100	ND	81.6	70-130			
1,3,5-Trimethylbenzene	0.0838	0.0050	"	0.100	ND	83.8	70-130			
Naphthalene	0.0805	0.0038	"	0.100	ND	80.5	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0508		"	0.0400		127	50-150			
<i>Surrogate: Toluene-d8</i>	0.0380		"	0.0400		95.0	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0389		"	0.0400		97.3	50-150			

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Wellington CO, 80549

Project: Noble - Pappenheim (SI)

Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

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

**Batch BHD0629 - EPA 5030 Soil MS**

**Matrix Spike Dup (BHD0629-MSD1)**

Source: 2404279-01

Prepared: 04/18/24 Analyzed: 04/19/24

Benzene	0.0922	0.0020	mg/kg	0.100	ND	92.2	70-130	14.9	30
Toluene	0.0973	0.0050	"	0.100	ND	97.3	70-130	15.9	30
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	70-130	14.7	30
m,p-Xylene	0.192	0.010	"	0.200	ND	95.9	70-130	12.9	30
o-Xylene	0.0960	0.0050	"	0.100	ND	96.0	70-130	13.7	30
1,2,4-Trimethylbenzene	0.0918	0.0050	"	0.100	ND	91.8	70-130	11.8	30
1,3,5-Trimethylbenzene	0.0946	0.0050	"	0.100	ND	94.6	70-130	12.0	30
Naphthalene	0.0834	0.0038	"	0.100	ND	83.4	70-130	3.52	30
Surrogate: 1,2-Dichloroethane-d4	0.0517		"	0.0400		129	50-150		
Surrogate: Toluene-d8	0.0387		"	0.0400		96.8	50-150		
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.4	50-150		

**Batch BHD0966 - EPA 5030 Soil MS**

**Blank (BHD0966-BLK1)**

Prepared: 04/25/24 Analyzed: 04/26/24

Benzene	ND	0.0020	mg/kg						
Toluene	ND	0.0050	"						
Ethylbenzene	ND	0.0050	"						
Xylenes (total)	ND	0.010	"						
1,2,4-Trimethylbenzene	ND	0.0050	"						
1,3,5-Trimethylbenzene	ND	0.0050	"						
Naphthalene	ND	0.0038	"						
Gasoline Range Hydrocarbons	ND	0.50	"						
Surrogate: 1,2-Dichloroethane-d4	0.0302		"	0.0400		75.6	50-150		
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	50-150		
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.0	50-150		

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch BHD0966 - EPA 5030 Soil MS**

**LCS (BHD0966-BS1)**

Prepared: 04/25/24 Analyzed: 04/26/24

Benzene	0.0776	0.0020	mg/kg	0.100		77.6	70-130			
Toluene	0.0958	0.0050	"	0.100		95.8	70-130			
Ethylbenzene	0.0926	0.0050	"	0.100		92.6	70-130			
m,p-Xylene	0.176	0.010	"	0.200		88.1	70-130			
o-Xylene	0.0872	0.0050	"	0.100		87.2	70-130			
1,2,4-Trimethylbenzene	0.0831	0.0050	"	0.100		83.1	70-130			
1,3,5-Trimethylbenzene	0.0862	0.0050	"	0.100		86.2	70-130			
Naphthalene	0.0722	0.0038	"	0.100		72.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0259		"	0.0400		64.6	50-150			
Surrogate: Toluene-d8	0.0440		"	0.0400		110	50-150			
Surrogate: 4-Bromofluorobenzene	0.0381		"	0.0400		95.3	50-150			

**Matrix Spike (BHD0966-MS1)**

Source: 2404283-03

Prepared: 04/25/24 Analyzed: 04/26/24

Benzene	0.0561	0.0020	mg/kg	0.100	ND	56.1	70-130			QM-07
Toluene	0.0811	0.0050	"	0.100	ND	81.1	70-130			
Ethylbenzene	0.0771	0.0050	"	0.100	ND	77.1	70-130			
m,p-Xylene	0.146	0.010	"	0.200	ND	72.8	70-130			
o-Xylene	0.0731	0.0050	"	0.100	ND	73.1	70-130			
1,2,4-Trimethylbenzene	0.0691	0.0050	"	0.100	ND	69.1	70-130			QM-07
1,3,5-Trimethylbenzene	0.0721	0.0050	"	0.100	ND	72.1	70-130			
Naphthalene	0.0576	0.0038	"	0.100	ND	57.6	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0260		"	0.0400		65.0	50-150			
Surrogate: Toluene-d8	0.0447		"	0.0400		112	50-150			
Surrogate: 4-Bromofluorobenzene	0.0385		"	0.0400		96.2	50-150			

**Matrix Spike Dup (BHD0966-MSD1)**

Source: 2404283-03

Prepared: 04/25/24 Analyzed: 04/26/24

Benzene	0.0607	0.0020	mg/kg	0.100	ND	60.7	70-130	7.86	30	QM-07
Toluene	0.0872	0.0050	"	0.100	ND	87.2	70-130	7.24	30	
Ethylbenzene	0.0815	0.0050	"	0.100	ND	81.5	70-130	5.56	30	
m,p-Xylene	0.157	0.010	"	0.200	ND	78.3	70-130	7.25	30	
o-Xylene	0.0770	0.0050	"	0.100	ND	77.0	70-130	5.19	30	
1,2,4-Trimethylbenzene	0.0735	0.0050	"	0.100	ND	73.5	70-130	6.23	30	
1,3,5-Trimethylbenzene	0.0762	0.0050	"	0.100	ND	76.2	70-130	5.58	30	
Naphthalene	0.0586	0.0038	"	0.100	ND	58.6	70-130	1.70	30	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0241		"	0.0400		60.2	50-150			
Surrogate: Toluene-d8	0.0458		"	0.0400		115	50-150			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.4	50-150			

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PO Box 1289  
Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BHD0633 - EPA 3550A**

**Blank (BHD0633-BLK1)**

Prepared: 04/18/24 Analyzed: 04/19/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	15.3		"	12.5		122		30-150			

**LCS (BHD0633-BS1)**

Prepared: 04/18/24 Analyzed: 04/19/24

C10-C28 (DRO)	456	50	mg/kg	500		91.2		70-130			
Surrogate: <i>o</i> -Terphenyl	17.9		"	12.5		143		30-150			

**Matrix Spike (BHD0633-MS1)**

Source: 2404279-01

Prepared: 04/18/24 Analyzed: 04/19/24

C10-C28 (DRO)	441	50	mg/kg	500	17.0	84.7		70-130			
Surrogate: <i>o</i> -Terphenyl	12.8		"	12.5		102		30-150			

**Matrix Spike Dup (BHD0633-MSD1)**

Source: 2404279-01

Prepared: 04/18/24 Analyzed: 04/19/24

C10-C28 (DRO)	423	50	mg/kg	500	17.0	81.3		70-130	4.02	20	
Surrogate: <i>o</i> -Terphenyl	13.2		"	12.5		105		30-150			

**Batch BHD0967 - EPA 3550A**

**Blank (BHD0967-BLK1)**

Prepared: 04/25/24 Analyzed: 04/26/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	17.5		"	12.5		140		30-150			

**LCS (BHD0967-BS1)**

Prepared: 04/25/24 Analyzed: 04/26/24

C10-C28 (DRO)	486	50	mg/kg	500		97.2		70-130			
Surrogate: <i>o</i> -Terphenyl	15.3		"	12.5		123		30-150			

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Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BHD0967 - EPA 3550A**

**Matrix Spike (BHD0967-MS1)**

Source: 2404283-03

Prepared: 04/25/24 Analyzed: 04/26/24

C10-C28 (DRO)	503	50	mg/kg	500	36.1	93.4	70-130			
Surrogate: o-Terphenyl	12.8		"	12.5		102	30-150			


**Matrix Spike Dup (BHD0967-MSD1)**

Source: 2404283-03

Prepared: 04/25/24 Analyzed: 04/26/24

C10-C28 (DRO)	455	50	mg/kg	500	36.1	83.8	70-130	10.0	20	
Surrogate: o-Terphenyl	13.8		"	12.5		110	30-150			

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PAH by EPA Method 8270D SIM - Quality Control**  
**Summit Scientific**

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

**Batch BHD0589 - EPA 5030 Soil MS**

**Blank (BHD0589-BLK1)**

Prepared: 04/18/24 Analyzed: 04/19/24

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0373</i>		"	<i>0.0333</i>		<i>112</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0206</i>		"	<i>0.0333</i>		<i>61.9</i>	<i>40-150</i>			

**LCS (BHD0589-BS1)**

Prepared: 04/18/24 Analyzed: 04/19/24

Acenaphthene	0.0251	0.00500	mg/kg	0.0333		75.2	31-137			
Anthracene	0.0243	0.00500	"	0.0333		72.8	30-120			
Benzo (a) anthracene	0.0229	0.00500	"	0.0333		68.7	30-120			
Benzo (a) pyrene	0.0221	0.00500	"	0.0333		66.2	30-120			
Benzo (b) fluoranthene	0.0208	0.00500	"	0.0333		62.5	30-120			
Benzo (k) fluoranthene	0.0240	0.00500	"	0.0333		72.1	30-120			
Chrysene	0.0261	0.00500	"	0.0333		78.4	30-120			
Dibenz (a,h) anthracene	0.0187	0.00500	"	0.0333		56.1	30-120			
Fluoranthene	0.0242	0.00500	"	0.0333		72.7	30-120			
Fluorene	0.0248	0.00500	"	0.0333		74.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0186	0.00500	"	0.0333		55.7	30-120			
Pyrene	0.0292	0.00500	"	0.0333		87.6	35-142			
1-Methylnaphthalene	0.0216	0.00500	"	0.0333		64.6	35-142			
2-Methylnaphthalene	0.0228	0.00500	"	0.0333		68.4	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0201</i>		"	<i>0.0333</i>		<i>60.2</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0170</i>		"	<i>0.0333</i>		<i>51.1</i>	<i>40-150</i>			

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Wellington CO, 80549

Project: Noble - Pappenheim (SI)

Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

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

**Batch BHD0589 - EPA 5030 Soil MS**

<b>Matrix Spike (BHD0589-MS1)</b>	<b>Source: 2404211-06</b>			<b>Prepared: 04/18/24 Analyzed: 04/19/24</b>						
Acenaphthene	0.0190	0.00500	mg/kg	0.0333	ND	57.0	31-137			
Anthracene	0.0200	0.00500	"	0.0333	ND	59.9	30-120			
Benzo (a) anthracene	0.0198	0.00500	"	0.0333	ND	59.4	30-120			
Benzo (a) pyrene	0.0185	0.00500	"	0.0333	ND	55.4	30-120			
Benzo (b) fluoranthene	0.0149	0.00500	"	0.0333	ND	44.8	30-120			
Benzo (k) fluoranthene	0.0159	0.00500	"	0.0333	ND	47.8	30-120			
Chrysene	0.0196	0.00500	"	0.0333	ND	58.7	30-120			
Dibenz (a,h) anthracene	0.0174	0.00500	"	0.0333	ND	52.1	30-120			
Fluoranthene	0.0194	0.00500	"	0.0333	ND	58.1	30-120			
Fluorene	0.0196	0.00500	"	0.0333	ND	58.9	30-120			
Indeno (1,2,3-cd) pyrene	0.0139	0.00500	"	0.0333	ND	41.6	30-120			
Pyrene	0.0205	0.00500	"	0.0333	ND	61.6	35-142			
1-Methylnaphthalene	0.0162	0.00500	"	0.0333	ND	48.6	15-130			
2-Methylnaphthalene	0.0153	0.00500	"	0.0333	ND	45.8	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0141</i>		<i>"</i>	<i>0.0333</i>		<i>42.3</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0134</i>		<i>"</i>	<i>0.0333</i>		<i>40.3</i>	<i>40-150</i>			

<b>Matrix Spike Dup (BHD0589-MSD1)</b>	<b>Source: 2404211-06</b>			<b>Prepared: 04/18/24 Analyzed: 04/19/24</b>						
Acenaphthene	0.0174	0.00500	mg/kg	0.0333	ND	52.2	31-137	8.87	30	
Anthracene	0.0172	0.00500	"	0.0333	ND	51.5	30-120	15.2	30	
Benzo (a) anthracene	0.0176	0.00500	"	0.0333	ND	52.8	30-120	11.8	30	
Benzo (a) pyrene	0.0167	0.00500	"	0.0333	ND	50.2	30-120	9.83	30	
Benzo (b) fluoranthene	0.0157	0.00500	"	0.0333	ND	47.2	30-120	5.35	30	
Benzo (k) fluoranthene	0.0136	0.00500	"	0.0333	ND	40.7	30-120	16.1	30	
Chrysene	0.0172	0.00500	"	0.0333	ND	51.6	30-120	13.0	30	
Dibenz (a,h) anthracene	0.0181	0.00500	"	0.0333	ND	54.2	30-120	4.02	30	
Fluoranthene	0.0166	0.00500	"	0.0333	ND	49.7	30-120	15.7	30	
Fluorene	0.0173	0.00500	"	0.0333	ND	52.0	30-120	12.4	30	
Indeno (1,2,3-cd) pyrene	0.0145	0.00500	"	0.0333	ND	43.4	30-120	4.33	30	
Pyrene	0.0177	0.00500	"	0.0333	ND	53.1	35-142	14.8	30	
1-Methylnaphthalene	0.0162	0.00500	"	0.0333	ND	48.6	15-130	0.0165	50	
2-Methylnaphthalene	0.0161	0.00500	"	0.0333	ND	48.2	15-130	5.12	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0145</i>		<i>"</i>	<i>0.0333</i>		<i>43.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0150</i>		<i>"</i>	<i>0.0333</i>		<i>44.9</i>	<i>40-150</i>			

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PAH by EPA Method 8270D SIM - Quality Control**  
**Summit Scientific**

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

**Batch BHD0974 - EPA 5030 Soil MS**

**Blank (BHD0974-BLK1)**

Prepared & Analyzed: 04/26/24

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0345</i>		"	<i>0.0333</i>		<i>104</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0278</i>		"	<i>0.0333</i>		<i>83.5</i>		<i>40-150</i>		

**LCS (BHD0974-BS1)**

Prepared & Analyzed: 04/26/24

Acenaphthene	0.0363	0.00500	mg/kg	0.0333	109	31-137
Anthracene	0.0328	0.00500	"	0.0333	98.4	30-120
Benzo (a) anthracene	0.0338	0.00500	"	0.0333	101	30-120
Benzo (a) pyrene	0.0380	0.00500	"	0.0333	114	30-120
Benzo (b) fluoranthene	0.0383	0.00500	"	0.0333	115	30-120
Benzo (k) fluoranthene	0.0329	0.00500	"	0.0333	98.6	30-120
Chrysene	0.0389	0.00500	"	0.0333	117	30-120
Dibenz (a,h) anthracene	0.0357	0.00500	"	0.0333	107	30-120
Fluoranthene	0.0307	0.00500	"	0.0333	92.2	30-120
Fluorene	0.0356	0.00500	"	0.0333	107	30-120
Indeno (1,2,3-cd) pyrene	0.0392	0.00500	"	0.0333	118	30-120
Pyrene	0.0393	0.00500	"	0.0333	118	35-142
1-Methylnaphthalene	0.0363	0.00500	"	0.0333	109	35-142
2-Methylnaphthalene	0.0362	0.00500	"	0.0333	109	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0368</i>		"	<i>0.0333</i>	<i>110</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0308</i>		"	<i>0.0333</i>	<i>92.5</i>	<i>40-150</i>

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Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

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

**Batch BHD0974 - EPA 5030 Soil MS**

<b>Matrix Spike (BHD0974-MS1)</b>	<b>Source: 2404268-02</b>			<b>Prepared &amp; Analyzed: 04/26/24</b>							
Acenaphthene	0.0281	0.00500	mg/kg	0.0333	ND	84.3	31-137				
Anthracene	0.0277	0.00500	"	0.0333	ND	83.2	30-120				
Benzo (a) anthracene	0.0310	0.00500	"	0.0333	ND	93.1	30-120				
Benzo (a) pyrene	0.0230	0.00500	"	0.0333	ND	69.0	30-120				
Benzo (b) fluoranthene	0.0219	0.00500	"	0.0333	ND	65.6	30-120				
Benzo (k) fluoranthene	0.0236	0.00500	"	0.0333	ND	70.8	30-120				
Chrysene	0.0317	0.00500	"	0.0333	ND	95.1	30-120				
Dibenz (a,h) anthracene	0.0185	0.00500	"	0.0333	ND	55.4	30-120				
Fluoranthene	0.0289	0.00500	"	0.0333	ND	86.7	30-120				
Fluorene	0.0393	0.00500	"	0.0333	0.0439	NR	30-120				QM-01
Indeno (1,2,3-cd) pyrene	0.0210	0.00500	"	0.0333	ND	62.9	30-120				
Pyrene	0.0301	0.00500	"	0.0333	0.0111	57.2	35-142				
1-Methylnaphthalene	0.0395	0.00500	"	0.0333	0.0580	NR	15-130				QM-01
2-Methylnaphthalene	0.0346	0.00500	"	0.0333	0.0294	15.6	15-130				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0281</i>		"	<i>0.0333</i>		<i>84.2</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0304</i>		"	<i>0.0333</i>		<i>91.3</i>	<i>40-150</i>				

<b>Matrix Spike Dup (BHD0974-MSD1)</b>	<b>Source: 2404268-02</b>			<b>Prepared: 04/26/24 Analyzed: 04/27/24</b>							
Acenaphthene	0.0309	0.00500	mg/kg	0.0333	ND	92.8	31-137	9.64	30		
Anthracene	0.0271	0.00500	"	0.0333	ND	81.2	30-120	2.40	30		
Benzo (a) anthracene	0.0336	0.00500	"	0.0333	ND	101	30-120	7.91	30		
Benzo (a) pyrene	0.0238	0.00500	"	0.0333	ND	71.5	30-120	3.54	30		
Benzo (b) fluoranthene	0.0213	0.00500	"	0.0333	ND	63.9	30-120	2.53	30		
Benzo (k) fluoranthene	0.0221	0.00500	"	0.0333	ND	66.2	30-120	6.69	30		
Chrysene	0.0351	0.00500	"	0.0333	ND	105	30-120	10.1	30		
Dibenz (a,h) anthracene	0.0231	0.00500	"	0.0333	ND	69.3	30-120	22.3	30		
Fluoranthene	0.0258	0.00500	"	0.0333	ND	77.4	30-120	11.3	30		
Fluorene	0.0205	0.00500	"	0.0333	0.0439	NR	30-120	62.9	30		QM-01
Indeno (1,2,3-cd) pyrene	0.0282	0.00500	"	0.0333	ND	84.5	30-120	29.4	30		
Pyrene	0.0383	0.00500	"	0.0333	0.0111	81.8	35-142	23.9	30		
1-Methylnaphthalene	0.0385	0.00500	"	0.0333	0.0580	NR	15-130	2.56	50		QM-01
2-Methylnaphthalene	0.0388	0.00500	"	0.0333	0.0294	28.3	15-130	11.5	50		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0294</i>		"	<i>0.0333</i>		<i>88.1</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0294</i>		"	<i>0.0333</i>		<i>88.3</i>	<i>40-150</i>				

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 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BHD0744 - EPA 3050B**

<b>Blank (BHD0744-BLK1)</b>											
Prepared: 04/22/24 Analyzed: 05/30/24											
Boron	ND	2.00	mg/L								
<b>LCS (BHD0744-BS1)</b>											
Prepared: 04/22/24 Analyzed: 05/30/24											
Boron	5.07	2.00	mg/L	5.00		101	80-120				
<b>Duplicate (BHD0744-DUP1)</b>											
Source: 2404276-01 Prepared: 04/22/24 Analyzed: 05/30/24											
Boron	0.178	2.00	mg/L		0.202			12.6	20		
<b>Matrix Spike (BHD0744-MS1)</b>											
Source: 2404276-01 Prepared: 04/22/24 Analyzed: 05/30/24											
Boron	4.63	2.00	mg/L	4.99	0.202	88.7	75-125				
<b>Matrix Spike Dup (BHD0744-MSD1)</b>											
Source: 2404276-01 Prepared: 04/22/24 Analyzed: 05/30/24											
Boron	4.59	2.00	mg/L	4.99	0.202	87.9	75-125	0.888	25		

**Batch BHD0982 - EPA 3050B**

<b>Blank (BHD0982-BLK1)</b>											
Prepared: 04/26/24 Analyzed: 05/25/24											
Boron	ND	2.00	mg/L								
<b>LCS (BHD0982-BS1)</b>											
Prepared: 04/26/24 Analyzed: 05/25/24											
Boron	4.73	2.00	mg/L	5.00		94.6	80-120				
<b>Duplicate (BHD0982-DUP1)</b>											
Source: 2404283-03 Prepared: 04/26/24 Analyzed: 05/25/24											
Boron	0.188	2.00	mg/L		0.238			23.3	20		QR-01
<b>Matrix Spike (BHD0982-MS1)</b>											
Source: 2404283-03 Prepared: 04/26/24 Analyzed: 05/25/24											
Boron	5.41	2.00	mg/L	5.01	0.238	103	75-125				

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Project: Noble - Pappenheim (SI)

Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**

**Summit Scientific**

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

**Batch BHD0982 - EPA 3050B**


**Matrix Spike Dup (BHD0982-MSD1)**

**Source: 2404283-03**

Prepared: 04/26/24 Analyzed: 05/25/24

Boron	5.06	2.00	mg/L	5.01	0.238	96.4	75-125	6.62	25	
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Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BHD1033 - EPA 3050B**

**Blank (BHD1033-BLK1)**

Prepared: 04/29/24 Analyzed: 05/26/24

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							
Selenium	ND	0.260	"							

**LCS (BHD1033-BS1)**

Prepared: 04/29/24 Analyzed: 05/26/24

Arsenic	38.2	0.200	mg/kg wet	40.0	95.4	80-120
Barium	38.0	0.400	"	40.0	95.1	80-120
Cadmium	1.89	0.200	"	2.00	94.4	80-120
Copper	38.1	0.400	"	40.0	95.3	80-120
Lead	18.6	0.200	"	20.0	93.2	80-120
Nickel	37.9	0.400	"	40.0	94.7	80-120
Silver	1.89	0.0200	"	2.00	94.4	80-120
Zinc	37.5	0.400	"	40.0	93.7	80-120
Selenium	4.11	0.260	"	4.00	103	80-120

**Duplicate (BHD1033-DUP1)**

Source: 2404283-01

Prepared: 04/29/24 Analyzed: 05/26/24

Arsenic	4.00	0.200	mg/kg dry	4.02	0.526	20	
Barium	117	0.400	"	87.0	29.7	20	QR-04
Cadmium	0.261	0.200	"	0.234	11.2	20	
Copper	8.12	0.400	"	7.97	1.94	20	
Lead	8.07	0.200	"	7.62	5.77	20	
Nickel	9.15	0.400	"	8.22	10.6	20	
Silver	0.0308	0.0200	"	0.0306	0.396	20	
Zinc	37.3	0.400	"	33.6	10.5	20	
Selenium	ND	0.260	"	ND		20	

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Project: Noble - Pappenheim (SI)

Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BHD1033 - EPA 3050B**

**Matrix Spike (BHD1033-MS1)**

Source: 2404283-01

Prepared: 04/29/24 Analyzed: 05/26/24

Arsenic	46.4	0.200	mg/kg dry	43.5	4.02	97.5	75-125			
Barium	133	0.400	"	43.5	87.0	106	75-125			
Cadmium	2.41	0.200	"	2.18	0.234	99.9	75-125			
Copper	51.7	0.400	"	43.5	7.97	101	75-125			
Lead	29.4	0.200	"	21.8	7.62	99.9	75-125			
Nickel	51.4	0.400	"	43.5	8.22	99.3	75-125			
Silver	2.16	0.0200	"	2.18	0.0306	97.8	75-125			
Zinc	83.3	0.400	"	43.5	33.6	114	75-125			
Selenium	4.29	0.260	"	4.35	ND	98.5	75-125			

**Matrix Spike Dup (BHD1033-MSD1)**

Source: 2404283-01

Prepared: 04/29/24 Analyzed: 05/26/24

Arsenic	45.4	0.200	mg/kg dry	43.5	4.02	95.0	75-125	2.34	25
Barium	131	0.400	"	43.5	87.0	102	75-125	1.57	25
Cadmium	2.41	0.200	"	2.18	0.234	100	75-125	0.162	25
Copper	50.8	0.400	"	43.5	7.97	98.5	75-125	1.70	25
Lead	29.0	0.200	"	21.8	7.62	98.4	75-125	1.14	25
Nickel	50.5	0.400	"	43.5	8.22	97.3	75-125	1.75	25
Silver	2.14	0.0200	"	2.18	0.0306	96.8	75-125	1.03	25
Zinc	81.6	0.400	"	43.5	33.6	110	75-125	1.98	25
Selenium	4.34	0.260	"	4.35	ND	99.7	75-125	1.22	25

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Project: Noble - Pappenheim (SI)  
Project Number: UWRWE-A3114-ABN  
Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

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

**Batch BHD0870 - 3060A Mod**

**Blank (BHD0870-BLK1)**

Prepared & Analyzed: 04/24/24

Chromium, Hexavalent      ND      0.30    mg/kg wet

**LCS (BHD0870-BS1)**

Prepared & Analyzed: 04/24/24

Chromium, Hexavalent      25.4      0.30    mg/kg wet      25.0      102      80-120

**Duplicate (BHD0870-DUP1)**

**Source: 2404283-01**

Prepared & Analyzed: 04/24/24

Chromium, Hexavalent      ND      0.30    mg/kg dry      ND      20

**Matrix Spike (BHD0870-MS1)**

**Source: 2404283-01**

Prepared & Analyzed: 04/24/24

Chromium, Hexavalent      27.2      0.30    mg/kg dry      29.4      ND      92.6      75-125

**Matrix Spike Dup (BHD0870-MSD1)**

**Source: 2404283-01**

Prepared & Analyzed: 04/24/24

Chromium, Hexavalent      27.2      0.30    mg/kg dry      29.4      ND      92.6      75-125      0.00      20

**Batch BHD0980 - 3060A Mod**

**Blank (BHD0980-BLK1)**

Prepared: 04/26/24 Analyzed: 04/30/24

Chromium, Hexavalent      ND      0.30    mg/kg wet

**LCS (BHD0980-BS1)**

Prepared: 04/26/24 Analyzed: 04/30/24

Chromium, Hexavalent      25.4      0.30    mg/kg wet      25.0      102      80-120

**Duplicate (BHD0980-DUP1)**

**Source: 2404283-03**

Prepared: 04/26/24 Analyzed: 04/30/24

Chromium, Hexavalent      ND      0.30    mg/kg dry      ND      20

**Matrix Spike (BHD0980-MS1)**

**Source: 2404283-03**

Prepared: 04/26/24 Analyzed: 04/30/24

Chromium, Hexavalent      27.7      0.30    mg/kg dry      28.4      ND      97.4      75-125

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Pappenheim (SI)

Project Number: UWRWE-A3114-ABN

Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**Hexavalent Chromium by EPA Method 7196 - Quality Control**

**Summit Scientific**

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

**Batch BHD0980 - 3060A Mod**

**Matrix Spike Dup (BHD0980-MSD1)**

Source: 2404283-03

Prepared: 04/26/24 Analyzed: 04/30/24

Chromium, Hexavalent	27.7	0.30	mg/kg dry	28.4	ND	97.4	75-125	0.00	20	
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 Wellington CO, 80549

Project: Noble - Pappenheim (SI)  
 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BHE0045 - General Preparation**

**Blank (BHE0045-BLK1)**

Prepared: 05/01/24 Analyzed: 05/31/24


Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BHE0045-BS1)**

Prepared: 05/01/24 Analyzed: 05/31/24

Calcium	5.30	0.0500	mg/L wet	5.00		106	70-130			
Magnesium	5.06	0.0500	"	5.00		101	70-130			
Sodium	4.99	0.0500	"	5.00		99.7	70-130			

Summit Scientific



*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.*



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 06/03/24 15:38

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

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

**Batch BHD0768 - General Preparation**

Duplicate (BHD0768-DUP1)	Source: 2404283-01		Prepared: 04/22/24 Analyzed: 04/23/24	
% Solids	85.8	%	85.1	0.777 20

Summit Scientific

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**Reported:**  
 06/03/24 15:38

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BHE0047 - General Preparation**

**Blank (BHE0047-BLK1)**

Prepared: 05/01/24 Analyzed: 05/06/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BHE0047-BS1)**

Prepared: 05/01/24 Analyzed: 05/06/24

Specific Conductance (EC) 0.158 0.0100 mmhos/cm 0.150 105 95-105


**Duplicate (BHE0047-DUP1)**

**Source: 2404282-01**

Prepared: 05/01/24 Analyzed: 05/06/24

Specific Conductance (EC) 0.848 0.0100 mmhos/cm 0.856 0.950 20

Summit Scientific



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 Project Number: UWRWE-A3114-ABN  
 Project Manager: Paul Henchan

**Reported:**  
 06/03/24 15:38

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BHE0046 - General Preparation**

**LCS (BHE0046-BS1)**

Prepared: 05/01/24 Analyzed: 05/06/24

pH	9.24	pH Units	9.18	101	95-105
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**Duplicate (BHE0046-DUP1)**

Source: 2404282-01

Prepared: 05/01/24 Analyzed: 05/06/24

pH	8.02	pH Units	8.06	0.498	20
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Summit Scientific

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Project: Noble - Pappenheim (SI)

Project Number: UWRWE-A3114-ABN

Project Manager: Paul Henchan

**Reported:**  
06/03/24 15:38

### Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- QR-04 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QR-01 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference