

# **FREMONT ENVIRONMENTAL INC.**

September 24, 2017

Mr. Jacob Evans  
Noble Energy Inc.  
2115 117<sup>th</sup> Ave,  
Greeley, CO 80634

Subject:     **Excavation Report**  
          Weideman PM J28-2, 28-7  
          API # 05-123-14002 (J28-2)  
          Weld County, Colorado  
          Fremont Project No. C016-110  
          Facility #327010, Remediation #10028

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Excavation Report for the Weideman PM J28-2, 28-7 release site in Weld County, Colorado. The enclosed report describes excavation actions to remove impacted soil from the water vault area. Quarterly ground water monitoring will continue at the location due to impacts from an unrelated historical issue.

Please contact me at (303) 956-8714 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,  
**FREMONT ENVIRONMENTAL INC.**



Paul V. Henehan, P.E.  
Senior Consultant

Enclosure

**EXCAVATION REPORT**

**NOBLE ENERGY INC.**

**WEIDEMAN PM J28-2, 28-7**

**WELD COUNTY, COLORADO**

**FREMONT PROJECT NO. C016-110**

**FACILITY #327010, REMEDIATION #10028**

**Prepared by:**

**Fremont Environmental Inc.**

**1759 Redwing Lane**

**Broomfield, CO 80020**

**(303) 956-8714**

**September 24, 2017**

## TABLE OF CONTENTS

1.0 INTRODUCTION .....	1
2.0 BACKGROUND INFORMATION .....	1
2.1 Site Location .....	1
2.2 Site History .....	1
3.0 FIELD ACTIVITIES .....	2
4.0 DISCUSSION .....	4
5.0 REMARKS .....	4

### Table

Table 1:	Summary of Petroleum Constituents in Soil Chemistry Data
Table 2:	Summary of Petroleum Constituents in Ground Water Chemistry Data

### Figures

Figure 1:	Site Location Map
Figure 2:	Site Map
Figure 3:	Excavation and Sample Locations for Laboratory Analyses

### Appendix

Appendix A:	Laboratory Documentation
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**EXCAVATION REPORT**  
**NOBLE ENERGY INC.**  
**WEIDEMAN PM J28-2, 28-7**  
**WELD COUNTY, COLORADO**  
**FREMONT PROJECT NO. C016-110**  
**FACILITY #327010, REMEDIATION #10028**

**1.0 INTRODUCTION**

The purpose of this document is to present information collected during the excavation of petroleum-impacted soil at the Weideman PM J28-2, 28-7 release location in Weld County, Colorado. Impacted soil was identified at this site due to a historical release from the facility's water vault. This three-day excavation project was completed on September 6, 2017.

**2.0 BACKGROUND INFORMATION**

**2.1 Site Location**

The Weideman PM J28-2, 28-7 site is located approximately three miles southwest of Greeley, Colorado in Weld County as shown on Figure 1. The site is in a rural and agricultural area on the southeast corner of the intersection of 37<sup>th</sup> St. and 65<sup>th</sup> Ave. The location is further described as the NE  $\frac{1}{4}$  of the SW  $\frac{1}{4}$  of Section 28, Township 5N, Range 66W.

**2.2 Site History**

The site consists of the area adjacent to the former water vault for the Weideman PM J28-2, 28-7 natural gas wells. The Weideman PM J28-2 well was drilled in 1988 to a depth of 7,501 feet. Soil impacts were identified at the location during removal of the water vault in September 2016. These soil impacts initiated this excavation effort.

During the water vault removal in September 2016, a limited excavation to remediate the source impacts was undertaken. Five soil samples were collected from the excavation sidewalls and floor and analyzed for petroleum constituents. The laboratory analyses of the soil samples indicated that petroleum constituent concentrations of benzene, xylenes and total petroleum hydrocarbons (TPH) were greater than the Colorado Oil and Gas Conservation Commission's (COGCC's) Table 910-1 limits in three of the five samples. These data indicated that the South and West Walls were not impacted, however, additional soil removal was required to the east and north. At that time, ground water was not present within the excavation. The initial excavation work indicated that additional soil removal would be necessary from the source area (the former water vault).

### **3.0 FIELD ACTIVITIES**

Remediation efforts consisted of the excavation of petroleum-impacted soil beneath the former water vault and along the separator oil and water piping. The soil consisted of roadbase which was underlain by sand to a depth of at least 10 feet. Unlike the initial excavation work performed in September 2016, ground water was encountered during this second phase of soil removal. The 15' x 30' excavated area is shown on Figure 3.

Excavation began at the former water vault location on September 1, 2017. Soil removal took place in the area adjacent to and below the former water vault to a depth of approximately nine feet at which point ground water was encountered. Excavation continued until all soil impacts were removed on September 6, 2017. The sidewall samples collected during the September 2017 excavation work, as well as those collected in September 2016 (South and West Walls only), indicated that no residual petroleum impacts were present.

The four September 2017 sidewall samples were collected as grab samples near the lower portion of the excavation wall at depths of nine to 12 feet. The soil samples were analyzed by Summit Scientific Inc. of Golden, Colorado for benzene, toluene, ethylbenzene and xylenes (BTEX), naphthalene, Total Petroleum Hydrocarbons - Gasoline Range Organics (TPH-GRO) by EPA method 8260C, and TPH - Diesel Range Organics (TPH-DRO) by EPA method 8015. The laboratory reports and chain-of-custody documentation are included in Appendix A. A ground water sample was collected at the southern end of the excavation beneath the former water vault's location. This sample was also sent to the laboratory for BTEX analysis by EPA Method 8260C.

Summaries of the laboratory data are included in Tables 1 and 2. Table 1 presents the laboratory analyses for each soil sample. In addition, a column stating whether the laboratory analyses passed or failed the COGCC Table 910-1 limits is provided. The laboratory analyses indicated that all four soil samples collected from the sidewalls in September 2017 achieved the COGCC Table 910-1 limits. These sidewall samples, in conjunction with the South and West Wall samples collected in September 2016, indicate that residual soil impacts have been removed. Table 2 presents the ground water analytical data; the water sample (W1) had BTEX concentrations less than the COGCC Table 910-1 allowable limits.

A total of 160 cubic yards of petroleum-impacted soil were removed by Energis Oilfield Services Inc. from the location during the course of this project. The impacted soil was disposed of at the Waste Management Inc. Northern Colorado landfill in Ault, Colorado as non-hazardous waste. The site was re-contoured to match the surrounding surface after backfilling was completed.

#### 4.0 DISCUSSION

Site remediation of the Weideman PM J28-2, 28-7 location was completed on September 6, 2017 by excavation and disposal of impacted soil. Approximately 160 cubic yards of impacted soil were excavated and removed from this site.

As demonstrated by the soil sampling and analyses, the petroleum-impacted soil has been removed from the former water vault area by excavation. This was confirmed by the analyses of the soil samples collected from the sidewalls and the ground water sample, which were below the COGCC Table 910-1 limits. Ground water monitoring will continue on a quarterly basis and a ground water remediation plan will be developed to address residual dissolved phase impacts.

#### 5.0 REMARKS

The discussion and conclusions contained in this report represent our professional opinions. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by **FREMONT ENVIRONMENTAL INC.**

 For MVA

9/24/17

Date \_\_\_\_\_

\_\_\_\_\_  
Mark Taylor

Construction Consultant

Reviewed by:



9/24/17

Date \_\_\_\_\_

\_\_\_\_\_  
Paul V. Henehan, P.E.

Senior Consultant

## **TABLES**

**TABLE 1**  
**SUMMARY OF SOIL CHEMISTRY DATA**  
**NOBLE ENERGY INC.**  
**WEIDEMAN PM J28-2, 28-7, WELD COUNTY, COLORADO**  
**FREMONT PROJECT NO. C016-110**

Sample	Depth (ft)	Date Sampled	Location	Pass or Fail	Benzene mg/kg	Toluene mg/kg	Ethyl-Benzene mg/kg	Xylenes mg/kg	Naphthalene mg/kg	TPH GRO mg/kg	TPH DRO mg/kg
<b>Water Vault</b>											
N. Wall 14'	14	9/30/2016	Wall	<b>Fail</b>	<b>3.0</b>	84	16	<b>300</b>	2.3	<b>4300</b>	<b>2300</b>
S. Wall 11'	11	9/30/2016	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
E. Wall 13'	13	9/30/2016	Wall	<b>Fail</b>	<b>0.32</b>	26	19	<b>330</b>	3.2	<b>5300</b>	<b>3000</b>
W. Wall 13'	13	9/30/2016	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
Floor 14'	14	9/30/2016	Floor	<b>Fail</b>	<b>1.6</b>	22	15	270	2.2	<b>3500</b>	<b>1400</b>
E. Wall 9 Ft	9	9/1/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
W. Wall 9 Ft	9	9/1/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
North Wall 12'	12	9/5/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
NE Wall 12'	12	9/5/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
COGCC Table 910 Limits					0.17	85	100	175	23	500	500

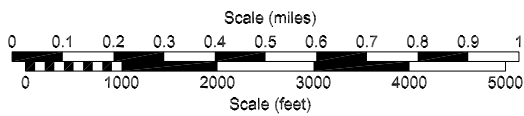
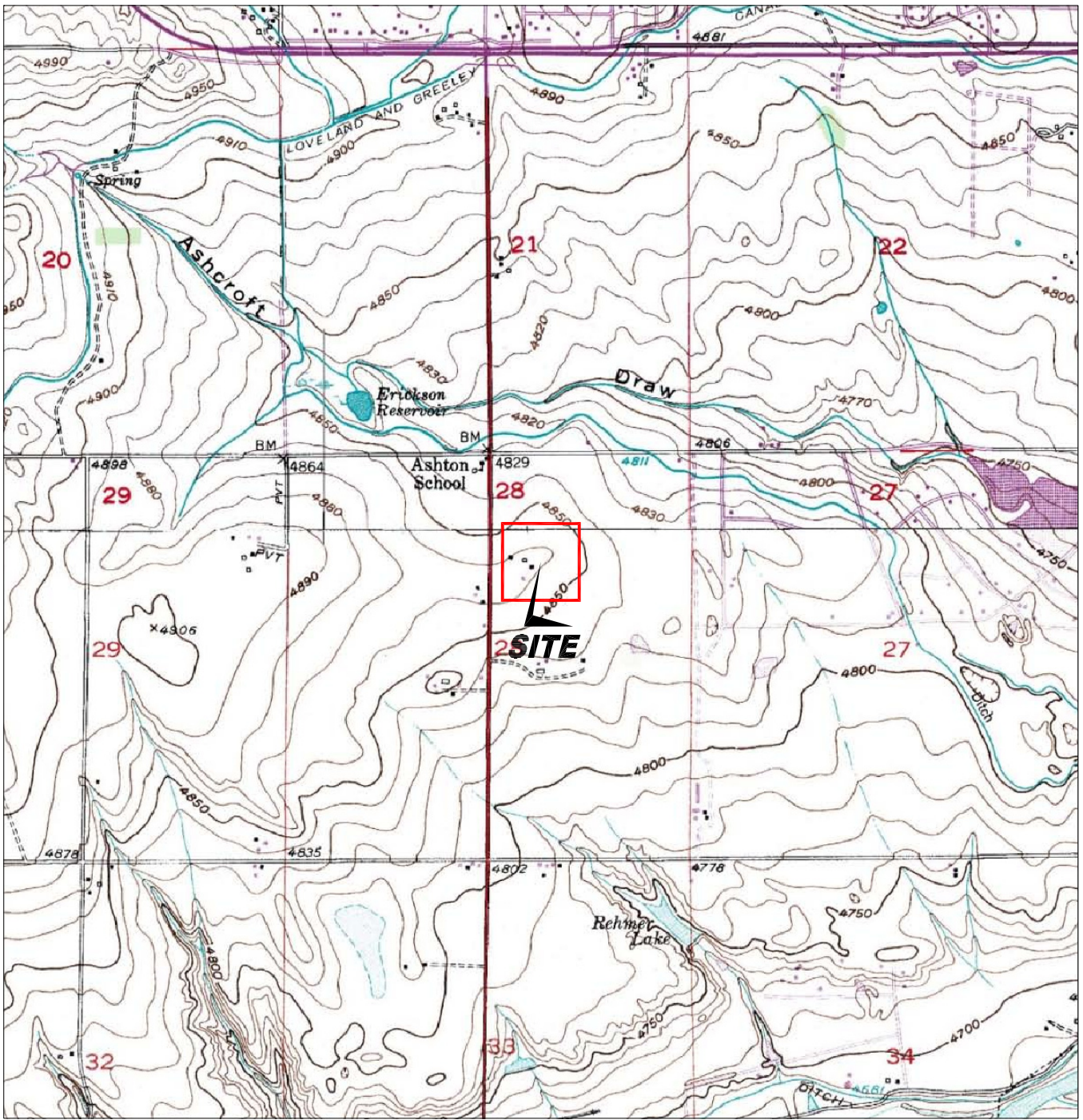
Bold faced values exceed the COGCC Table 910-1 concentrations

**TABLE 2**  
**SUMMARY OF GROUND WATER CHEMISTRY DATA**  
**NOBLE ENERGY INC.**  
**WIEDEMAN PM J28-2, 28-7**  
**FREMONT PROJECT NO. C016-110**

<b>SAMPLE LOCATION</b>	<b>DATE</b>	<b>BENZENE (µg/L)</b>	<b>TOLUENE (µg/L)</b>	<b>ETHYL BENZENE (µg/L)</b>	<b>TOTAL XYLENES (µg/L)</b>
W1	08/30/17	<1.0	<1.0	<1.0	<2.0
Table 910-1 Limits		5	560	700	1,400

Bold face values exceed the COGCC limits

## FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

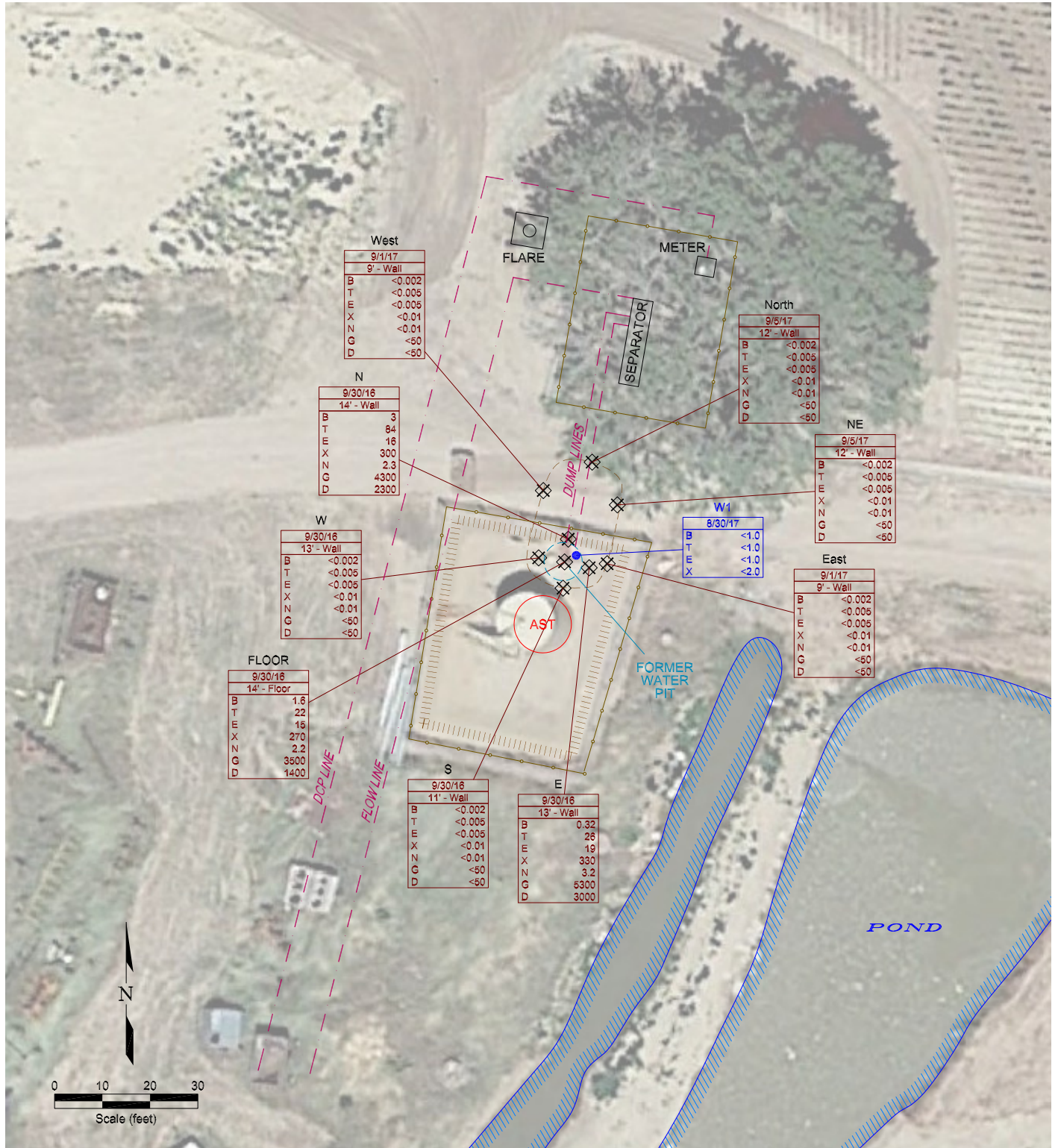
Figure 1  
SITE LOCATION MAP

Noble Wiedeman PM J28-2, 28-7  
NE SW Section 28, T5N, R66W  
Weld County, Colorado

Project No. C016-110	Prepared by	Drawn by JMA
Date 10/2/16	Reviewed by	Filename 16110T







**LEGEND**

	FENCE LINE		ABOVE GROUND STORAGE TANK
	CONTAINMENT BERM		FORMER FACILITY
	BERM OF EXCAVATION		
	SOIL SAMPLE LOCATION		WATER SAMPLE LOCATION

DATE SAMPLED	DEPTH (ft) and LOCATION	DATE SAMPLED	DEPTH (ft) and LOCATION
9/30/16	11' - Wall	9/30/17	11' - Wall
B	<0.002	B	<1.0
T	<0.005	T	<1.0
E	<0.01	E	<1.0
X	<0.01	X	<2.0
N	<0.01		
G	<50		
D	<50		

DATE SAMPLED	DEPTH (ft) and LOCATION	DATE SAMPLED	DEPTH (ft) and LOCATION
9/30/16	11' - Wall	9/30/16	13' - Wall
B	<0.002	B	0.32
T	<0.005	T	26
E	<0.005	E	19
X	<0.01	X	330
N	<0.01	N	3.2
G	<50	G	5300
D	<50	D	3000

**Figure 3**  
**EXCAVATION SOIL & WATER CHEMISTRY**

**Noble Wiedeman PM J28-2, 28-7**  
NE SW Section 28, T5N, R66W  
Weld County, Colorado

Project No. <b>C016-110</b>	Prepared by	Drawn by <b>JMA</b>
Date <b>9/25/17</b>	Reviewed by	Filename <b>16110Q</b>



APPENDIX A

LABORATORY DOCUMENTATION

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 02, 2016

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020

RE: Noble - Wiedeman PMJ 28-2, 28-7

Enclosed are the results of analyses for samples received by Summit Scientific on 09/30/16 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
North Wall 14'	1609209-01	Soil	09/30/16 00:00	09/30/16 18:00
South Wall 11'	1609209-02	Soil	09/30/16 00:00	09/30/16 18:00
East Wall 13'	1609209-03	Soil	09/30/16 00:00	09/30/16 18:00
West Wall 13'	1609209-04	Soil	09/30/16 00:00	09/30/16 18:00
Floor 14'	1609209-05	Soil	09/30/16 00:00	09/30/16 18:00

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.*



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

# Summit Scientific 1609209

S<sub>2</sub>

741 Corporate Circle Suite I • Golden, Colorado 80401  
303-277-9310 • 303-277-9531 Fax

Client: Fremont Environmental noble Page 1 of 1  
Address: 1630 S College Ave Project Manager: Paul Henehan  
City/State/Zip: Fort Collins, CO 80525 E-Mail: paulh@fremontenv.com  
Phone: (303) 956-8714 Fax: Project Name: noble-wiedeman PMJ 28-2, 28-7 Howard  
Sampler Name: MT Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions	
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	DRO/GRO	BTEX	Table 910-1 Metals	pH/EC	SAR		PAH SIM
North wall 14'	9/30/16		1									X	X	X	X			X North
South wall 11'																		
East wall 13'																		
West wall 13'																		
Floor 14'												X	X					X

Relinquished by: <u>[Signature]</u> (Date/Time: <u>9/30/16 16:00</u> )	Received by: <u>[Signature]</u> (Date/Time: <u>9-30-16 10:00</u> )	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>	Notes:
Relinquished by: <u>[Signature]</u> (Date/Time: <u>9-30-16 16:00</u> )	Received by: _____ (Date/Time: _____)	Sample Integrity: Temperature Upon Receipt: <u>5.7</u> Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	
Relinquished by: _____ (Date/Time: _____)	Received in Lab by: _____ (Date/Time: _____)		

www.s2scientific.com



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

**Sample Receipt Checklist**

S2 Work Order: 1609209

Client: Fremont Client Project ID: Noble-Wiedeman PMJ 28-2, 28-7

Shipped Via: H.D. on ice Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	<u>5.7</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input checked="" type="checkbox"/>			
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
_____				

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

Nuri P.  
Custodian Printed Name

NP 9-30-16  
Signature or Initials of Custodian

18:00  
Date/Time



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

**North Wall 14'**  
**1609209-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>2300</b>	50	mg/kg	1	1609264	09/30/16	10/01/16	8015M	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		103 %	30-150		"	"	"	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>2.3</b>	1.0	mg/kg	100	1609263	09/30/16	10/01/16	EPA 8260B	
<b>Benzene</b>	<b>3.0</b>	0.20	"	"	"	"	"	"	
<b>Toluene</b>	<b>84</b>	0.50	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>16</b>	0.50	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>300</b>	1.0	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>4300</b>	500	"	10	"	"	"	"	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		111 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		82.0 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		127 %	21-167		"	"	"	"	

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>668</b>	10.8	mg/kg dry	1	1609250	09/30/16	09/30/16	EPA 6020/Mod. USDA60 6(2, 3A)	

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.*



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

**North Wall 14'**  
**1609209-01 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	242	5.42	mg/kg dry	1	1609250	09/30/16	09/30/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	97.5	5.42	"	"	"	"	"	"	
Sodium Adsorption Ratio	0.820		units	"	1610002	10/01/16	10/02/16	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.681	0.0100	mmhos/cm	1	1609265	09/30/16	10/02/16	SM 2510B	
% Solids	92.3		%	"	1610001	10/01/16	10/01/16	% calculation	
pH	8.85	0.100	pH Units	"	1609266	09/30/16	10/02/16	EPA 9045	

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

**South Wall 11'**  
**1609209-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609264	09/30/16	10/01/16	8015M	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		94.7 %	30-150		"	"	"	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609263	09/30/16	09/30/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1400</b>	10.9	mg/kg dry	1	1609250	09/30/16	09/30/16	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

**South Wall 11'**  
**1609209-02 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	344	5.45	mg/kg dry	1	1609250	09/30/16	09/30/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	106	5.45	"	"	"	"	"	"	
Sodium Adsorption Ratio	0.660		units	"	1610002	10/01/16	10/02/16	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.00	0.100	pH Units	1	1609266	09/30/16	10/02/16	EPA 9045	
% Solids	91.8		%	"	1610001	10/01/16	10/01/16	% calculation	
Specific Conductance (EC)	0.792	0.0100	mmhos/cm	"	1609265	09/30/16	10/02/16	SM 2510B	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

**East Wall 13'**  
**1609209-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>3000</b>	50	mg/kg	1	1609264	09/30/16	10/01/16	8015M	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		115 %	30-150		"	"	"	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>3.2</b>	1.0	mg/kg	100	1609263	09/30/16	10/01/16	EPA 8260B	
<b>Benzene</b>	<b>0.32</b>	0.20	"	"	"	"	"	"	
<b>Toluene</b>	<b>26</b>	0.50	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>19</b>	0.50	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>330</b>	1.0	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>5300</b>	5000	"	"	"	"	"	"	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		109 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		76.3 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		146 %	21-167		"	"	"	"	

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>320</b>	11.0	mg/kg dry	1	1609250	09/30/16	09/30/16	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

**East Wall 13'**  
**1609209-03 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	187	5.48	mg/kg dry	1	1609250	09/30/16	09/30/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	31.1	5.48	"	"	"	"	"	"	
Sodium Adsorption Ratio	0.340		units	"	1610002	10/01/16	10/02/16	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.340	0.0100	mmhos/cm	1	1609265	09/30/16	10/02/16	SM 2510B	
% Solids	91.2		%	"	1610001	10/01/16	10/01/16	% calculation	
pH	8.33	0.100	pH Units	"	1609266	09/30/16	10/02/16	EPA 9045	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

**West Wall 13'**  
**1609209-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609264	09/30/16	10/01/16	8015M	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		90.4 %	30-150		"	"	"	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609263	09/30/16	09/30/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	21-167		"	"	"	"	

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>509</b>	10.9	mg/kg dry	1	1609250	09/30/16	09/30/16	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

**West Wall 13'**  
**1609209-04 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	278	5.45	mg/kg dry	1	1609250	09/30/16	09/30/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	124	5.45	"	"	"	"	"	"	
Sodium Adsorption Ratio	0.960		units	"	1610002	10/01/16	10/02/16	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.14	0.100	pH Units	1	1609266	09/30/16	10/02/16	EPA 9045	
% Solids	91.8		%	"	1610001	10/01/16	10/01/16	% calculation	
Specific Conductance (EC)	0.698	0.0100	mmhos/cm	"	1609265	09/30/16	10/02/16	SM 2510B	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

**Floor 14'**  
**1609209-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1400</b>	50	mg/kg	1	1609264	09/30/16	10/01/16	8015M	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		108 %	30-150		"	"	"	"	

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

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>2.2</b>	1.0	mg/kg	100	1609263	09/30/16	10/01/16	EPA 8260B	
<b>Benzene</b>	<b>1.6</b>	0.20	"	"	"	"	"	"	
<b>Toluene</b>	<b>22</b>	0.50	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>15</b>	0.50	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>270</b>	1.0	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>3500</b>	500	"	10	"	"	"	"	

Date Sampled: **09/30/16 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		111 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		68.0 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		133 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

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

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

**Batch 1609264 - EPA 3550A**

**Blank (1609264-BLK1)**

Prepared & Analyzed: 09/30/16

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	11.4		"	12.5		91.1	30-150				

**LCS (1609264-BS1)**

Prepared & Analyzed: 09/30/16

C10-C28 (DRO)	493	50	mg/kg	499		98.8	73-134				
<i>Surrogate: o-Terphenyl</i>	11.8		"	12.5		94.6	30-150				

**Matrix Spike (1609264-MS1)**

Source: 1609207-01

Prepared & Analyzed: 09/30/16

C10-C28 (DRO)	464	50	mg/kg	499	9.97	90.9	50-148				
<i>Surrogate: o-Terphenyl</i>	12.4		"	12.5		99.0	30-150				

**Matrix Spike Dup (1609264-MSD1)**

Source: 1609207-01

Prepared & Analyzed: 09/30/16

C10-C28 (DRO)	472	50	mg/kg	499	9.97	92.6	50-148	1.80	20		
<i>Surrogate: o-Terphenyl</i>	12.6		"	12.5		101	30-150				

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

**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 1609263 - EPA 5030 Soil MS**

**Blank (1609263-BLK1)**

Prepared & Analyzed: 09/30/16

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>96.0</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0383</i>		<i>"</i>	<i>0.0400</i>		<i>95.8</i>	<i>21-167</i>			

**LCS (1609263-BS1)**

Prepared & Analyzed: 09/30/16

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0763	0.0020	"	0.100		76.3	58-130			
Toluene	0.0835	0.0050	"	0.100		83.5	61-134			
Ethylbenzene	0.106	0.0050	"	0.0992		107	74-139			
m,p-Xylene	0.219	0.010	"	0.200		110	73-137			
o-Xylene	0.105	0.0050	"	0.0980		107	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>99.9</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.0</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>99.1</i>	<i>21-167</i>			

**Matrix Spike (1609263-MS1)**

Source: 1609207-01

Prepared & Analyzed: 09/30/16

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0702	0.0020	"	0.0906	ND	77.5	30-131			
Toluene	0.0779	0.0050	"	0.0906	ND	86.0	30-134			
Ethylbenzene	0.0962	0.0050	"	0.0899	ND	107	22-153			
m,p-Xylene	0.199	0.010	"	0.181	ND	110	10-159			
o-Xylene	0.0961	0.0050	"	0.0888	ND	108	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0383</i>		<i>"</i>	<i>0.0362</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0351</i>		<i>"</i>	<i>0.0362</i>		<i>96.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0370</i>		<i>"</i>	<i>0.0362</i>		<i>102</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

**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 1609263 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1609263-MSD1)</b>	<b>Source: 1609207-01</b>			<b>Prepared &amp; Analyzed: 09/30/16</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	10-158			42	
Benzene	0.0766	0.0020	"	0.0990	ND	77.3	30-131	8.66	34	
Toluene	0.0843	0.0050	"	0.0990	ND	85.2	30-134	7.95	30	
Ethylbenzene	0.103	0.0050	"	0.0982	ND	105	22-153	6.87	24	
m,p-Xylene	0.214	0.010	"	0.198	ND	108	10-159	7.52	68	
o-Xylene	0.104	0.0050	"	0.0970	ND	107	31-151	7.47	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0416</i>		<i>"</i>	<i>0.0396</i>		<i>105</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0383</i>		<i>"</i>	<i>0.0396</i>		<i>96.6</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0386</i>		<i>"</i>	<i>0.0396</i>		<i>97.5</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
10/02/16 12:50

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1609250 - General Preparation**

**Blank (1609250-BLK1)**

Prepared & Analyzed: 09/30/16

Calcium	ND	10.0	mg/kg wet						
Magnesium	ND	5.00	"						
Sodium	ND	5.00	"						

**LCS (1609250-BS1)**

Prepared & Analyzed: 09/30/16

Calcium	472	10.0	mg/kg wet	500	94.3	82.9-118			
Magnesium	478	5.00	"	500	95.6	77.1-123			
Sodium	401	5.00	"	500	80.2	71-129			

**Duplicate (1609250-DUP1)**

Source: 1609119-04

Prepared & Analyzed: 09/30/16

Calcium	11300	8.50	mg/kg dry	12800			12.3	200	
Magnesium	952	4.25	"	1080			12.8	200	
Sodium	4750	4.25	"	4820			1.38	200	

**Matrix Spike (1609250-MS1)**

Source: 1609119-04

Prepared & Analyzed: 09/30/16

Calcium	10200	8.50	mg/kg dry	425	12800	NR	75-125		QM-02
Magnesium	1140	4.25	"	425	1080	12.6	75-125		QM-02
Sodium	4970	4.25	"	425	4820	36.2	75-125		QM-02

**Matrix Spike Dup (1609250-MSD1)**

Source: 1609119-04

Prepared & Analyzed: 09/30/16

Calcium	10000	8.50	mg/kg dry	425	12800	NR	75-125	1.85	25	QM-02
Magnesium	1280	4.25	"	425	1080	45.9	75-125	11.7	25	QM-02
Sodium	5010	4.25	"	425	4820	44.4	75-125	0.697	25	QM-02

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

**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 1609265 - General Preparation**

<b>Blank (1609265-BLK1)</b>											
Prepared: 09/30/16 Analyzed: 10/02/16											
Specific Conductance (EC)	ND	0.0100	mmhos/cm								
<b>LCS (1609265-BS1)</b>											
Prepared: 09/30/16 Analyzed: 10/02/16											
Specific Conductance (EC)	0.500	0.0100	mmhos/cm	0.500	100	90-110					
<b>Duplicate (1609265-DUP1)</b>											
Source: 1609209-02 Prepared: 09/30/16 Analyzed: 10/02/16											
Specific Conductance (EC)	0.783	0.0100	mmhos/cm		0.792			1.21	20		

**Batch 1609266 - General Preparation**

<b>LCS (1609266-BS1)</b>											
Prepared: 09/30/16 Analyzed: 10/02/16											
pH	6.02	0.100	pH Units	6.00	100	95-105					
<b>Duplicate (1609266-DUP1)</b>											
Source: 1609209-03 Prepared: 09/30/16 Analyzed: 10/02/16											
pH	8.38	0.100	pH Units		8.33			0.598	20		

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Wiedeman PMJ 28-2, 28-7

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/02/16 12:50

### Notes and Definitions

- QM-02 The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
- 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

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

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September 11, 2017

Paul Henehan

Fremont Environmental

1759 Redwing Lane

Broomfield, CO 80020

RE: Noble - Weideman PMJ 28-2

Enclosed are the results of analyses for samples received by Summit Scientific on 09/05/17 15:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'Ben Shrewsbury', with a long, sweeping horizontal stroke extending to the right.

Ben Shrewsbury

Laboratory Manager



Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:36

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
E Wall 9 Ft	1709018-01	Soil	09/01/17 00:00	09/05/17 15:10
W Wall 9 Ft	1709018-02	Soil	09/01/17 00:00	09/05/17 15:10

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.*

# Summit Scientific

S<sub>2</sub>

1709018

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933

Page | of |

Client: Fremont Environmental

Project Manager: Paul Henehan

Address: P.O. Box 1289

E-Mail: paulh@fremontenv.com

INVOICE: HOWARD

City/State/Zip: PO Box 1829 Wellington, CO 80549

Phone: 303-956-8714

Fax:

Project Name: NOBLE - WEIDEMAN PM J28-2

Sampler Name:

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions	
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	GRO/DRO	Napthalene	SAR	EC	Ph		
1	E. WALL 9 FT	9/1/17		1			✓			✓				✓	✓	✓				
2	W. WALL 9 FT	9/1/17		1			✓			✓				✓	✓	✓				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: <u>PWA/FE</u>	Date/Time: <u>9/5/17 15:10</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9-5-17 15:10</u>	<b>Turn Around Time</b> (Check) Same Day <input type="checkbox"/> 72 hours <input checked="" type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 hours <input type="checkbox"/> <b>Sample Integrity:</b> Temperature Upon Receipt: <u>4.2</u> Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Notes:</b>
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

1709018

Sample Receipt Checklist

S2 Work Order: \_\_\_\_\_

Client: FREMONT-NOBLE Client Project ID: NOBLE-WIEDEMAN PM J28-2

Shipped Via: H.D. GNICE Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	4.2				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	

Additional Comments (if any):  
 \_\_\_\_\_  
 \_\_\_\_\_

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

Murip.  
 Custodian Printed Name

MS 9-5-17  
 Signature or Initials of Custodian

18:00  
 Date/Time



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:36

**E Wall 9 Ft**  
**1709018-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1709036	09/06/17	09/06/17	8015M	

Date Sampled: **09/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		86.4 %	30-150		"	"	"	"	

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

Date Sampled: **09/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1709035	"	09/06/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:36

**W Wall 9 Ft  
1709018-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1709036	09/06/17	09/06/17	8015M	

Date Sampled: **09/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		97.4 %	30-150		"	"	"	"	

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

Date Sampled: **09/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1709035	"	09/07/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.4 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:36

**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 1709036 - EPA 3550A**

**Blank (1709036-BLK1)**

Prepared & Analyzed: 09/06/17

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	10.6		"	12.5		85.1	30-150				

**LCS (1709036-BS1)**

Prepared & Analyzed: 09/06/17

C10-C28 (DRO)	385	50	mg/kg	499		77.2	73-134				
<i>Surrogate: o-Terphenyl</i>	11.3		"	12.5		90.6	30-150				

**Matrix Spike (1709036-MS1)**

Source: 1709018-01

Prepared & Analyzed: 09/06/17

C10-C28 (DRO)	382	50	mg/kg	499	8.10	75.0	50-148				
<i>Surrogate: o-Terphenyl</i>	11.6		"	12.5		92.5	30-150				

**Matrix Spike Dup (1709036-MSD1)**

Source: 1709018-01

Prepared & Analyzed: 09/06/17

C10-C28 (DRO)	396	50	mg/kg	499	8.10	77.8	50-148	3.63	20		
<i>Surrogate: o-Terphenyl</i>	11.9		"	12.5		95.4	30-150				

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
09/11/17 17:36

**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 1709035 - EPA 5030 Soil MS**

**Blank (1709035-BLK1)**

Prepared & Analyzed: 09/06/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0405</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.6</i>	<i>21-167</i>			

**LCS (1709035-BS1)**

Prepared & Analyzed: 09/06/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0819	0.0020	"	0.100		81.9	58-130			
Toluene	0.0927	0.0050	"	0.100		92.7	61-134			
Ethylbenzene	0.111	0.0050	"	0.0992		112	74-139			
m,p-Xylene	0.218	0.010	"	0.200		109	73-137			
o-Xylene	0.105	0.0050	"	0.0980		107	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0383</i>		<i>"</i>	<i>0.0400</i>		<i>95.8</i>	<i>21-167</i>			

**Matrix Spike (1709035-MS1)**

Source: 1709018-01

Prepared & Analyzed: 09/06/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0819	0.0020	"	0.100	ND	81.9	30-131			
Toluene	0.0944	0.0050	"	0.100	ND	94.4	30-134			
Ethylbenzene	0.112	0.0050	"	0.0992	ND	113	22-153			
m,p-Xylene	0.217	0.010	"	0.200	ND	109	10-159			
o-Xylene	0.106	0.0050	"	0.0980	ND	108	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0380</i>		<i>"</i>	<i>0.0400</i>		<i>95.0</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0385</i>		<i>"</i>	<i>0.0400</i>		<i>96.3</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:36

**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 1709035 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1709035-MSD1)</b>	<b>Source: 1709018-01</b>			<b>Prepared &amp; Analyzed: 09/06/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	10-158			42	
Benzene	0.0824	0.0020	"	0.100	ND	82.4	30-131	0.621	34	
Toluene	0.0959	0.0050	"	0.100	ND	95.9	30-134	1.58	30	
Ethylbenzene	0.112	0.0050	"	0.0992	ND	112	22-153	0.134	24	
m,p-Xylene	0.216	0.010	"	0.200	ND	108	10-159	0.373	68	
o-Xylene	0.105	0.0050	"	0.0980	ND	107	31-151	1.25	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0430</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.0</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.4</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:36

### Notes and Definitions

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

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 11, 2017

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020

RE: Noble - Weideman PMJ 28-2-7

Enclosed are the results of analyses for samples received by Summit Scientific on 09/05/17 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'Ben Shrewsbury', with a long, sweeping horizontal stroke extending to the right.

Ben Shrewsbury  
Laboratory Manager



Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Weideman PMJ 28-2-7

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:49

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
North Wall 12'	1709021-01	Soil	09/05/17 00:00	09/05/17 16:00
NorthEast Wall 12'	1709021-02	Soil	09/05/17 00:00	09/05/17 16:00

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.*

# Summit Scientific

1709021

S<sub>2</sub>

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401

303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: Fremont Environmental

*Coble*

Project Manager: Paul Henehan

Address: P.O. Box 1289

E-Mail: paulh@fremontenv.com

City/State/Zip: PO Box 1829 Wellington, CO 80549

Phone: 303-956-8714

Fax:

Project Name: *Noble-Weideman ~~PMJ~~ PMJ 28-2-7*

Sampler Name: *Mark T*

Project Number: *6016-110*

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions			
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	GRO/DRO	Napthalene	SAR	EC	Ph				
1	<i>North wall 12'</i>	<i>9/5/17</i>		<i>1</i>			<i>✓</i>			<i>✓</i>				<i>✓</i>	<i>✓</i>	<i>✓</i>						
2	<i>North East wall 12'</i>	<i>9/5/17</i>		<i>1</i>			<i>✓</i>			<i>✓</i>				<i>✓</i>	<i>✓</i>	<i>✓</i>						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
Relinquished by: <i>[Signature]</i>		Date/Time: <i>9/5/17 18:00</i>		Received by: <i>NA 9-5-17</i>		Date/Time: <i>16:00</i>		Turn Around Time (Check)						Notes:								
Relinquished by:		Date/Time:		Received by:		Date/Time:		Same Day <input type="checkbox"/> 72 hours 24 hours <input checked="" type="checkbox"/> <b>Standard</b> 48 hours <input type="checkbox"/>														
Relinquished by:		Date/Time:		Received by:		Date/Time:		Sample Integrity: Temperature Upon Receipt: <i>7.9</i> Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No														

1709021

Sample Receipt Checklist

S2 Work Order: \_\_\_\_\_

Client: FREMONT-NOBLE Client Project ID: NOBLE-WIEDEMAN PMJ 28-2-7

Shipped Via: H.D. Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	7.9				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
Are short holding time analytes or samples with HTs due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			✓	
Are samples preserved that require preservation <b>(excluding cooling)</b> <sup>(1)</sup> ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			✓	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			✓	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			✓	

Additional Comments (if any):

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

Murip  
 Custodian Printed Name

MS 9-5-17  
 Signature or Initials of Custodian

19:00  
 Date/Time



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2-7

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:49

**North Wall 12'**  
**1709021-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/05/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1709036	09/06/17	09/07/17	8015M	

Date Sampled: **09/05/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		96.7 %	30-150		"	"	"	"	

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

Date Sampled: **09/05/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1709035	"	09/07/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/05/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2-7

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:49

**NorthEast Wall 12'**  
**1709021-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/05/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1709036	09/06/17	09/07/17	8015M	

Date Sampled: **09/05/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		101 %	30-150		"	"	"	"	

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

Date Sampled: **09/05/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1709035	"	09/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/05/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2-7

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:49

**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 1709036 - EPA 3550A**

**Blank (1709036-BLK1)**

Prepared & Analyzed: 09/06/17

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	<i>10.6</i>		"	<i>12.5</i>		<i>85.1</i>	<i>30-150</i>				

**LCS (1709036-BS1)**

Prepared & Analyzed: 09/06/17

C10-C28 (DRO)	385	50	mg/kg	499		77.2	73-134				
<i>Surrogate: o-Terphenyl</i>	<i>11.3</i>		"	<i>12.5</i>		<i>90.6</i>	<i>30-150</i>				

**Matrix Spike (1709036-MS1)**

Source: 1709018-01

Prepared & Analyzed: 09/06/17

C10-C28 (DRO)	382	50	mg/kg	499	8.10	75.0	50-148				
<i>Surrogate: o-Terphenyl</i>	<i>11.6</i>		"	<i>12.5</i>		<i>92.5</i>	<i>30-150</i>				

**Matrix Spike Dup (1709036-MSD1)**

Source: 1709018-01

Prepared & Analyzed: 09/06/17

C10-C28 (DRO)	396	50	mg/kg	499	8.10	77.8	50-148	3.63		20	
<i>Surrogate: o-Terphenyl</i>	<i>11.9</i>		"	<i>12.5</i>		<i>95.4</i>	<i>30-150</i>				

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Weideman PMJ 28-2-7

Project Number: C016-110  
Project Manager: Paul Henehan

Reported:  
09/11/17 17:49

**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 1709035 - EPA 5030 Soil MS**

**Blank (1709035-BLK1)**

Prepared & Analyzed: 09/06/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0405</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.6</i>	<i>21-167</i>			

**LCS (1709035-BS1)**

Prepared & Analyzed: 09/06/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0819	0.0020	"	0.100		81.9	58-130			
Toluene	0.0927	0.0050	"	0.100		92.7	61-134			
Ethylbenzene	0.111	0.0050	"	0.0992		112	74-139			
m,p-Xylene	0.218	0.010	"	0.200		109	73-137			
o-Xylene	0.105	0.0050	"	0.0980		107	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0383</i>		<i>"</i>	<i>0.0400</i>		<i>95.8</i>	<i>21-167</i>			

**Matrix Spike (1709035-MS1)**

Source: 1709018-01

Prepared & Analyzed: 09/06/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0819	0.0020	"	0.100	ND	81.9	30-131			
Toluene	0.0944	0.0050	"	0.100	ND	94.4	30-134			
Ethylbenzene	0.112	0.0050	"	0.0992	ND	113	22-153			
m,p-Xylene	0.217	0.010	"	0.200	ND	109	10-159			
o-Xylene	0.106	0.0050	"	0.0980	ND	108	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0380</i>		<i>"</i>	<i>0.0400</i>		<i>95.0</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0385</i>		<i>"</i>	<i>0.0400</i>		<i>96.3</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Weideman PMJ 28-2-7

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:49

**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 1709035 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1709035-MSD1)</b>	<b>Source: 1709018-01</b>			<b>Prepared &amp; Analyzed: 09/06/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	10-158			42	
Benzene	0.0824	0.0020	"	0.100	ND	82.4	30-131	0.621	34	
Toluene	0.0959	0.0050	"	0.100	ND	95.9	30-134	1.58	30	
Ethylbenzene	0.112	0.0050	"	0.0992	ND	112	22-153	0.134	24	
m,p-Xylene	0.216	0.010	"	0.200	ND	108	10-159	0.373	68	
o-Xylene	0.105	0.0050	"	0.0980	ND	107	31-151	1.25	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0430</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.0</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.4</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2-7

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
09/11/17 17:49

### Notes and Definitions

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

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 06, 2017

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020

RE: Noble - Weideman PMJ 28-2

Enclosed are the results of analyses for samples received by Summit Scientific on 08/30/17 13:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ben Shrewsbury', with a long, sweeping horizontal stroke extending to the right.

Ben Shrewsbury  
Laboratory Manager



Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 13:38

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WI	1708278-01	Water	08/30/17 00:00	08/30/17 13:30

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.*

# Summit Scientific

S<sub>2</sub>

1708278

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: Fremont Environmental

Project Manager: Paul Henehan

Address: P.O. Box 1289

E-Mail: paulh@fremontenv.com

City/State/Zip: PO Box 1829 Wellington, CO 80549

Phone: 303-956-8714

Fax:

Project Name: NOBLE - WEIDEMAN PM J282

Sampler Name: HENEHAN

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions			
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	GRO/DRO	Napthalene	SAR	EC	Ph				
1	N. WALL 9 FT	8/30/17		1			✓			✓				✓	✓	✓						
2	S. WALL 9 FT	↓		1						✓				✓	✓	✓						
3	E. WALL 9 FT			1							✓				✓	✓	✓					
4	W. WALL 9 FT			1							✓				✓	✓	✓					
5	WI				2				✓						✓							
6																						
7																						
8																						
9																						
10																						

Relinquished by: <i>PAUL HENEHAN</i>	Date/Time: 8/30/17 13:30	Received by: <i>PAUL HENEHAN</i>	Date/Time: 8-30-17 13:30	<b>Turn Around Time</b> (Check) Same Day _____ 72 hours _____ 24 hours _____ <b>Standard</b> _____ 48 hours _____ <b>Sample Integrity:</b> Temperature Upon Receipt: Intact: <b>Yes</b> No	<b>Notes:</b>
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

1708278

S2 Work Order: \_\_\_\_\_

Noble-

Client: Fremont-Noble Client Project ID: Wiedeman PM J28-2

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

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

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID				
Temp (°C)				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	X			
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
If custody seals are present, are they intact <sup>(1)</sup> ?			X	
Are short holding time analytes or samples with HTs due within 48 hours present?			X	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>		X		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			X	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			X	
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				

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

Murip.  
Custodian Printed Name

WA 8-30-17  
Signature or Initials of Custodian

14:00  
Date/Time



Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 13:38

**WI**  
**1708278-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1708303	09/01/17	09/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
09/06/17 13:38

### 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 1708303 - EPA 5030 Water MS

##### Blank (1708303-BLK1)

Prepared & Analyzed: 09/01/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.1	45-146			

##### LCS (1708303-BS1)

Prepared & Analyzed: 09/01/17

Benzene	41.2	1.0	ug/l	33.3		124	51-132			
Toluene	41.6	1.0	"	33.3		125	51-138			
Ethylbenzene	42.6	1.0	"	33.1		129	58-146			
m,p-Xylene	78.7	2.0	"	66.5		118	57-144			
o-Xylene	39.5	1.0	"	32.7		121	53-146			
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.3		114	37-154			
Surrogate: Toluene-d8	13.7		"	13.3		103	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.1	45-146			

##### Matrix Spike (1708303-MS1)

Source: 1708273-01

Prepared & Analyzed: 09/01/17

Benzene	42.5	1.0	ug/l	33.3	ND	128	34-141			
Toluene	42.9	1.0	"	33.3	ND	129	27-151			
Ethylbenzene	44.9	1.0	"	33.1	ND	136	29-160			
m,p-Xylene	82.2	2.0	"	66.5	ND	124	20-166			
o-Xylene	41.5	1.0	"	32.7	ND	127	33-159			
Surrogate: 1,2-Dichloroethane-d4	15.6		"	13.3		117	37-154			
Surrogate: Toluene-d8	13.7		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.7	45-146			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 13:38

**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 1708303 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1708303-MSD1)</b>	<b>Source: 1708273-01</b>			<b>Prepared &amp; Analyzed: 09/01/17</b>						
Benzene	41.5	1.0	ug/l	33.3	ND	125	34-141	2.31	32	
Toluene	41.4	1.0	"	33.3	ND	124	27-151	3.58	25	
Ethylbenzene	44.6	1.0	"	33.1	ND	135	29-160	0.849	50	
m,p-Xylene	81.0	2.0	"	66.5	ND	122	20-166	1.43	36	
o-Xylene	41.0	1.0	"	32.7	ND	125	33-159	1.31	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>15.4</i>		<i>"</i>	<i>13.3</i>		<i>116</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.3</i>		<i>"</i>	<i>13.3</i>		<i>99.5</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.3</i>		<i>"</i>	<i>13.3</i>		<i>99.9</i>	<i>45-146</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Weideman PMJ 28-2

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 13:38

### Notes and Definitions

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