FREMONT ENVIRONMENTAL INC.

August 20, 2020

Mr. Jacob Evans
Noble Energy Inc.
2115 117th Ave,
Greeley, CO 80634

Subject: **Groundwater Monitoring Report**
Weezer G02-32 (Wellhead)
API # 05-123-25720
Weld County, Colorado
Fremont Project No. C019-078
Facility #336707, Remediation # 14376

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Groundwater Monitoring Report for the Weezer G02-32 wellhead site in Weld County, Colorado. The enclosed report describes monitoring and sampling efforts to assess groundwater quality at the site. 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

1759 REDWING LANE, BROOMFIELD, CO 80020
(303) 956-8714 (DIRECT)

GROUNDWATER MONITORING REPORT

NOBLE ENERGY INC.

WEEZER G02-32 (WELLHEAD)

WELD COUNTY, COLORADO

FREMONT PROJECT NO. C019-078

FACILITY #336707, REMEDIATION #14376

Prepared by:

Fremont Environmental Inc.
1759 Redwing Lane
Broomfield, CO 80020
(303) 956-8714

August 20, 2020

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NOBLE ENERGY INC.

WEEZER G02-32 (WELLHEAD)

WELD COUNTY, COLORADO

FREMONT PROJECT NO. C019-078

FACILITY #336707, REMEDIATION #14376

1.0 INTRODUCTION

The purpose of this document is to present surface water and groundwater quality data collected at the Weezer G02-32 wellhead site. Impacted soil and groundwater were identified at this location during plugging and abandonment of this well. Five monitoring wells were installed at this site on October 21, 2019 to delineate the magnitude and extent of subsurface impacts.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The Weezer G02-32 wellhead site is located approximately four miles southeast of La Salle, Colorado in Weld County as shown on Figure 1. The site is in a rural and agricultural area 0.3 miles east of the intersection of Weld County Rd 43 and Weld County Rd 48. The location is further described as the SE ¼ of the SW ¼ of Section 3, Township 4N, Range 65W.

2.2 Site History

The site consists of the area adjacent to the former Weezer G02-32 wellhead. The Weezer G02-32 well was drilled in 2008 to a depth of 7,182 feet. Soil impacts were identified at the location while the Weezer G02-32 was being plugged and abandoned.

During the well abandonment, a limited excavation to remediate the source impacts was undertaken. Laboratory analyses of the soil and groundwater samples collected from the excavation indicated petroleum constituent concentrations of total petroleum hydrocarbons (TPH) were greater than the Colorado Oil and Gas Conservation Commission's (COGCC's) Table 910-1 limits in two of the samples. A site investigation was conducted in October 2019 to determine the extent of subsurface impacts and five monitoring wells were installed as a result.

On December 17, 2019, Apex Companies collected surface water samples from four submerged wellheads adjacent to the abandoned Weezer G02-32 well after bubbling was observed in the surface water adjacent to each well. Laboratory analysis confirmed the presence of dissolved gases in the surface water. These data are summarized on Table 1.

3.0 SITE INVESTIGATION ACTIVITIES

3.1 Groundwater Level Measurements

Groundwater levels were measured in the five monitoring wells on July 16, 2020. The water level data are summarized in Table 1. Water table contours inferred from the July 2020 data are illustrated on Figure 3.

Based on these data, groundwater is inferred to flow to the northeast. The water table gradient was calculated at approximately 0.0003 feet per foot (ft/ft) for the July 2020 data.

3.2 Groundwater Sampling and Analysis

Groundwater samples were collected from the five monitoring wells on July 16, 2020. The samples were collected using a low flow sampling technique. A Geotech peristaltic pump was used to purge and sample groundwater from each monitoring well. An In-Situ Aqua TROLL 600 was used to monitor the temperature, specific conductivity, pH, oxygen

reduction potential (ORP), dissolved oxygen and turbidity of the groundwater. When these parameters stabilized, groundwater samples were collected and placed in an ice filled cooler. The field data showing the stabilization of these parameters is provided in Appendix B.

The groundwater samples were submitted to Origins Laboratory, Inc. in Denver, Colorado for analyses of benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260D and dissolved gasses by method RSK 175. Additional hydrocarbon gas analysis was performed by the Dolan Integration Group (DIG) in Westminster, Colorado to classify the methane isotopes. The groundwater chemistry is illustrated on Figure 4 and summarized in Table 1.

A copy of all laboratory reports, quality control data, and chain-of-custody documentation are presented in Appendix A. The methane stable isotope interpretive plots are presented in Appendix C.

Dissolved concentrations of BTEX for the July 2020 sampling event were less than the respective COGCC Table 910-1 limits. However, detectable concentrations of thermogenic methane were present in each of the groundwater samples. The lowest methane concentration (575 ug/L) was observed in monitoring well MW-2 and the highest concentration (6,350 ug/L) was detected in MW-4. Surface water was not present during the July 2020 sampling event.

4.0 DISCUSSION

Due to a release from the flow line near the wellhead of the Weezer G02-32 well, groundwater monitoring was conducted in July 2020. Groundwater samples were collected from the five monitoring wells; BTEX concentrations were below the COGCC

Table 910-1 levels in all five wells though dissolved thermogenic methane was present in each well.

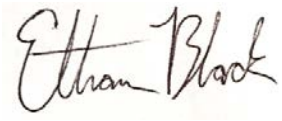
Additional groundwater monitoring wells will be installed to fully delineate the extent of dissolved gases and establish points of compliance for this site. Further, soil vapor points will be installed to assess the presence of dissolved gases within the vadose zone.

Noble will continue to sample the groundwater on a quarterly basis using low flow sampling techniques to monitor the groundwater quality at this location.

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.**



8/20/19

_____ Date_____

Ethan D. Black
Geologist

Reviewed by:

8/20/19

_____ Date_____

Paul V. Henehan, P.E.

Senior Consultant

TABLES

TABLE 1

SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA

NOBLE ENERGY INC.

WEEZER G3-22 (WELLHEAD), WELD COUNTY, COLORADO

FREMONT PROJECT NO. C019-078

SAMPLE LOCATION	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	METHANE (µg/L)	ETHANE (µg/L)	PROPANE (µg/L)	TOC ELEVATION (feet)	DEPTH TO GROUND WATER (ft)	GROUND WATER ELEVATION (ft)	FREE PRODUCT THICKNESS (ft)
MW-1	10/21/19	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	100.00	2.98	97.02	NP
	03/17/20	<4.00	<4.00	<4.00	<4.00	2070	51.1	<20.0		3.27	96.73	NP
	07/16/20	<1.0	<1.0	<1.0	<1.0	648	<10.0	<20.0		3.88	96.12	NP
MW-2	10/21/19	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	100.06	3.03	97.03	NP
	03/17/20	<4.00	<4.00	<4.00	<4.00	287	<10.0	<20.0		3.32	96.74	NP
	07/16/20	<1.0	<1.0	<1.0	<1.0	575	<10.0	<20.0		3.93	96.13	NP
MW-3	10/21/19	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	99.80	2.83	96.97	NP
	03/17/20	<4.00	<4.00	<4.00	<4.00	141	<10.0	<20.0		3.07	96.73	NP
	07/16/20	<1.0	<1.0	<1.0	<1.0	944	<10.0	<20.0		3.68	96.12	NP
MW-4	10/21/19	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	99.94	2.97	96.97	NP
	03/17/20	<4.00	<4.00	<4.00	<4.00	8960	1690	24.2		3.21	96.73	NP
	07/16/20	<1.0	<1.0	<1.0	<1.0	6350	1320	<20.0		3.83	96.11	NP
MW-5	10/21/19	<1.0	<1.0	<1.0	<2.0	NA	NA	NA	99.87	2.88	96.99	NP
	03/17/20	<4.00	<4.00	<4.00	<4.00	9710	4310	733		3.13	96.74	NP
	07/16/20	<1.0	<1.0	<1.0	<1.0	4680	724	43.0		3.78	96.09	NP
Weezer G3-21 (surface)	12/17/19	<4.00	<4.00	<4.00	<4.00	14200	6070	2850	NAP	NAP	NAP	NAP
Weezer G2-32 (surface)	12/17/19	<4.00	<4.00	<4.00	<4.00	16400	6750	3180	NAP	NAP	NAP	NAP
Weezer G3-24 (surface)	12/17/19	<4.00	<4.00	<4.00	<4.00	3320	1020	437	NAP	NAP	NAP	NAP
Weezer G3-33 (surface)	12/17/19	<4.00	<4.00	<4.00	<4.00	12400	5500	2580	NAP	NAP	NAP	NAP
Table 910-1 Limits		5	560	700	1,400							

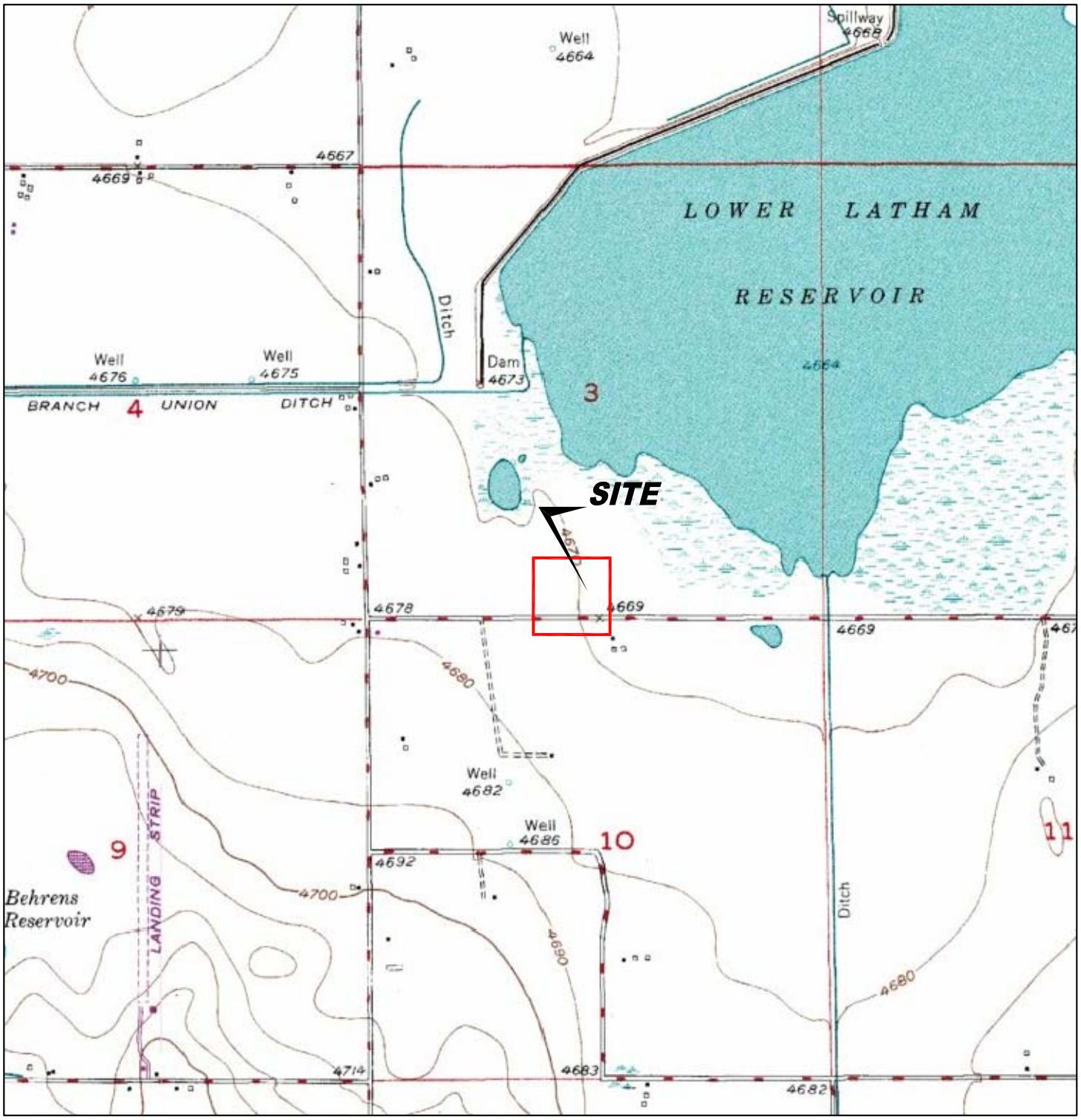
Bold face values exceed the COGCC limits

NP - No Free Product

NA - Not Analyzed

NAP - Not Applicable

FIGURES



N

Scale (miles)

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

0 1000 2000 3000 4000 5000

Scale (feet)

USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1

SITE LOCATION MAP

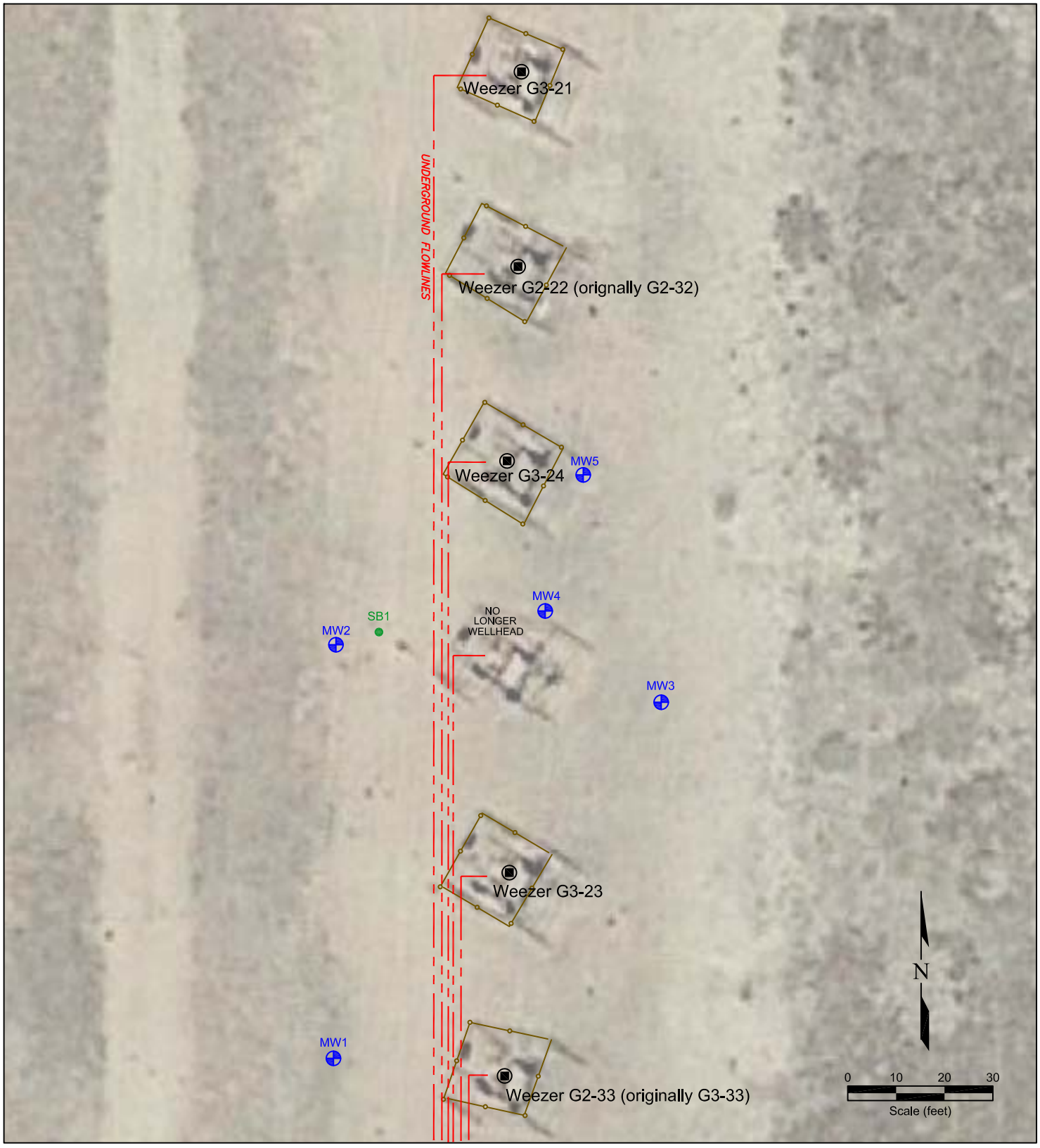
NOBLE ENERGY, INC. ~ WEEZER G02-32

SESW Section 3, T4N, R65W ~ 40.33602°, -104.65135°

Weld County, Colorado

Project No.	Prepared by	Drawn by
C019-078		**TA**
Date	Reviewed by	Filename
8/19/20	**EB**	**19078T**

FREMONT ENVIRONMENTAL



LEGEND

- SOIL BORING
- WELL HEAD LOCATION
- MONITORING WELL
- UNDERGROUND FLOW LINE
- FENCE LINE

Figure 2

SITE MAP

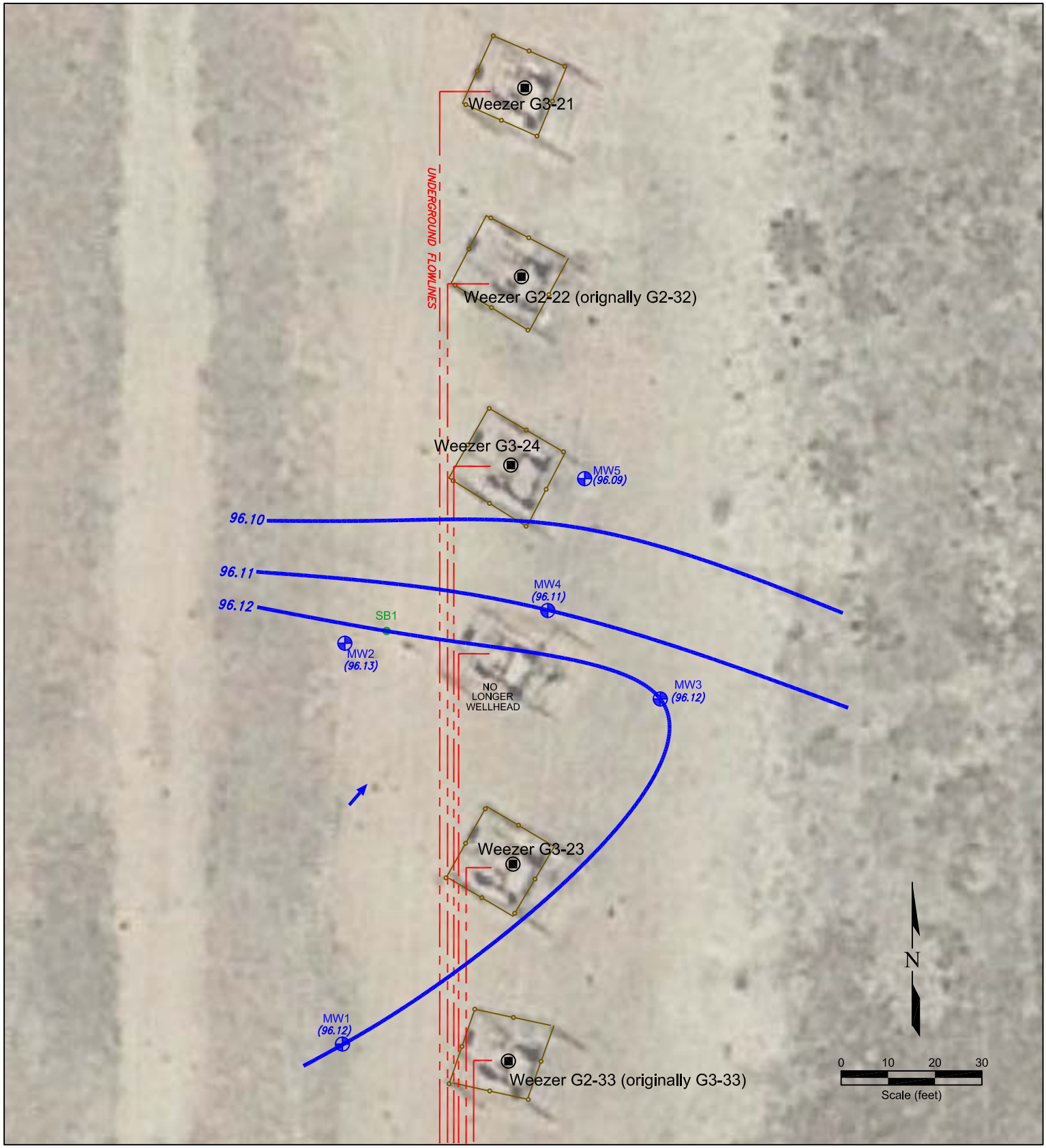
NOBLE ENERGY, INC. ~ WEEZER G02-32

SESW Section 3, T4N, R65W ~ 40.33602°, -104.65135°

Weld County, Colorado

Project No.	Prepared by	Drawn by
C019-078		**TDA**
Date	Reviewed by	Filename
8/19/20	**EB**	**19078Q**

FREMONT ENVIRONMENTAL



LEGEND

- SOIL BORING
- WELL HEAD LOCATION
- MONITORING WELL
- UNDERGROUND FLOW LINE
- FENCE LINE
- (96.12) GROUND WATER ELEVATION (feet above mean sea level)
- 96.12 WATER TABLE CONTOUR (feet above mean sea level)
- INFERRED GROUND WATER FLOW DIRECTION

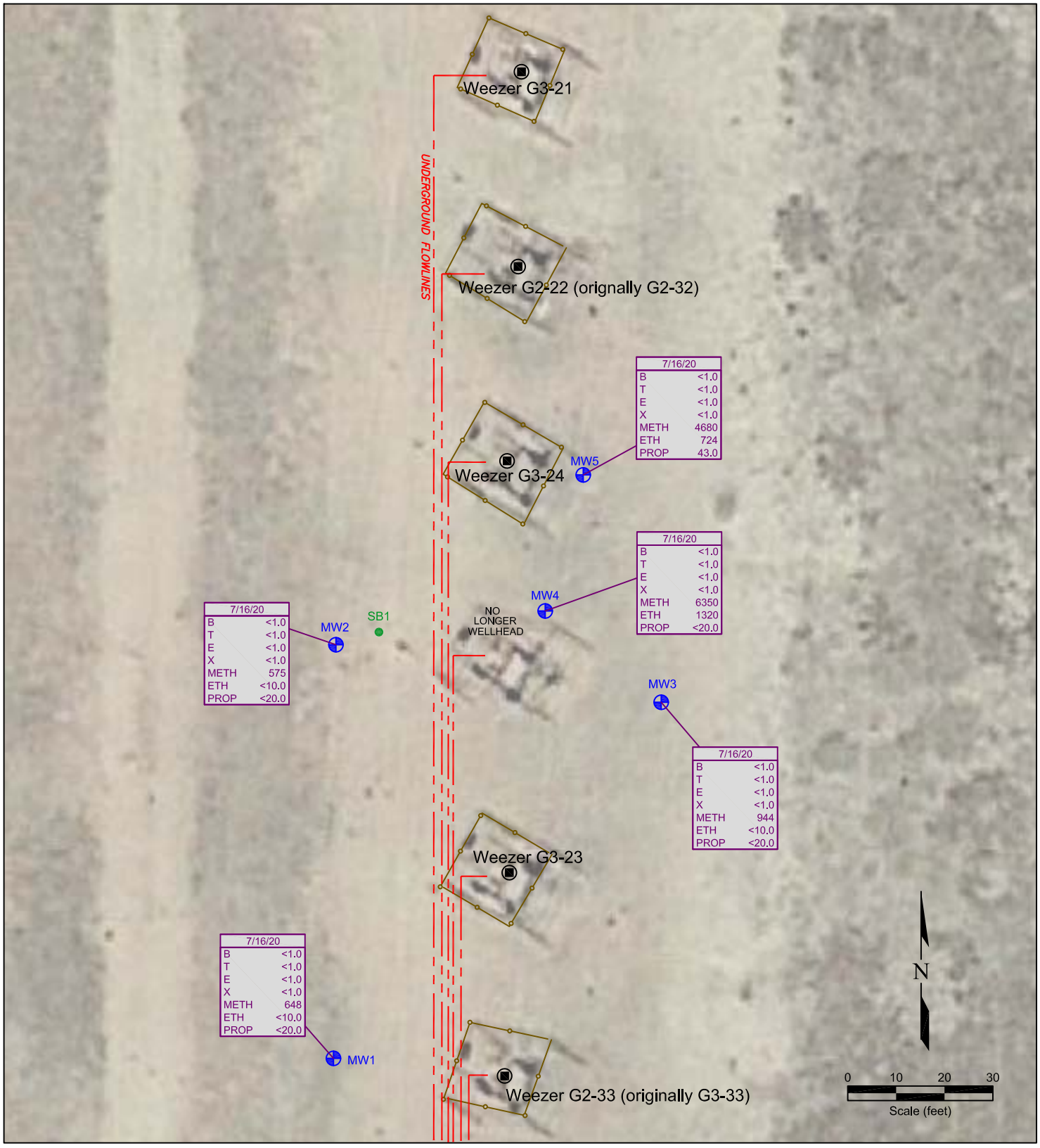
Figure 3

INFERRED GROUNDWATER CONTOUR MAP
July 16, 2020

NOBLE ENERGY, INC. ~ WEEZER G02-32
SESW Section 3, T4N, R65W ~ 40.33602°, -104.65135°
Weld County, Colorado

Project No.	Prepared by	Drawn by
C019-078		**TDA**
Date	Reviewed by	Filename
8/19/20	**EB**	**19078Q**

FREMONT ENVIRONMENTAL



LEGEND

- SOIL BORING
- WELL HEAD LOCATION
- MONITORING WELL
- UNDERGROUND FLOW LINE
- FENCE LINE

7/16/20	DATE SAMPLED
B <1.0	BENZENE ug/L)
T <1.0	TOLUENE (ug/L)
E <1.0	ETHYLBENZENE (ug/L)
X <1.0	TOTAL XYLENES (ug/L)
METH 648	METHANE (ug/L)
ETH <10.0	ETHANE (ug/L)
PROP <20.0	PROPANE (ug/L)

Figure 4

GROUNDWATER CHEMISTRY MAP

July 16, 2020

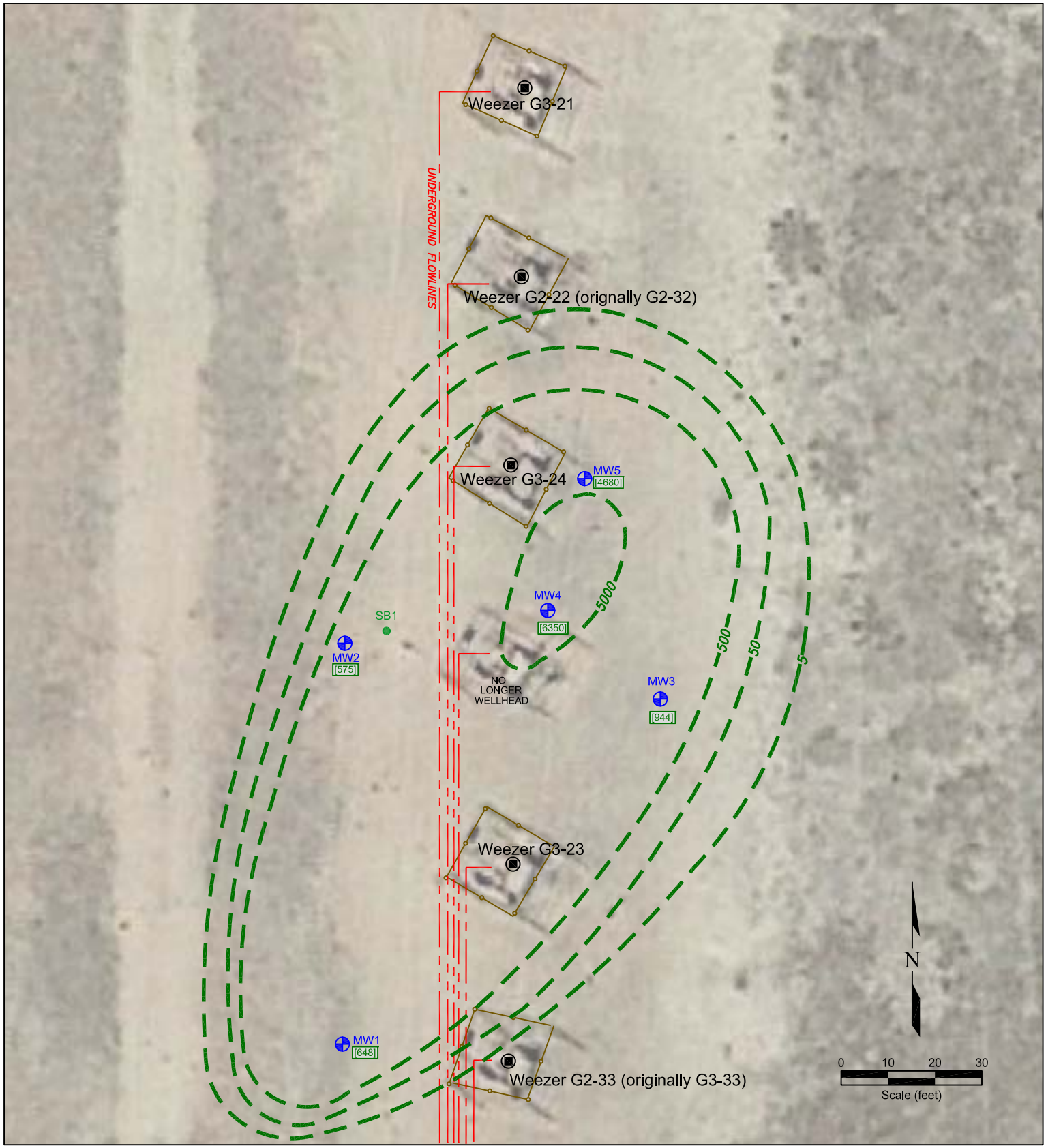
NOBLE ENERGY, INC. ~ WEEZER G02-32

SESW Section 3, T4N, R65W ~ 40.33602°, -104.65135°

Weld County, Colorado

Project No.	Prepared by	Drawn by
C019-078		**TDA**
Date	Reviewed by	Filename
8/19/20	**EB**	**19078Q**

FREMONT ENVIRONMENTAL



LEGEND

- SOIL BORING
- WELL HEAD LOCATION
- MONITORING WELL
- UNDERGROUND FLOW LINE
- FENCE LINE
- [648] METHANE (ug/L)
- 5000 METHANE ISO-CONCENTRATION (dashed where inferred)

Figure 5

METHANE ISO-CONCENTRATION MAP

July 16, 2020

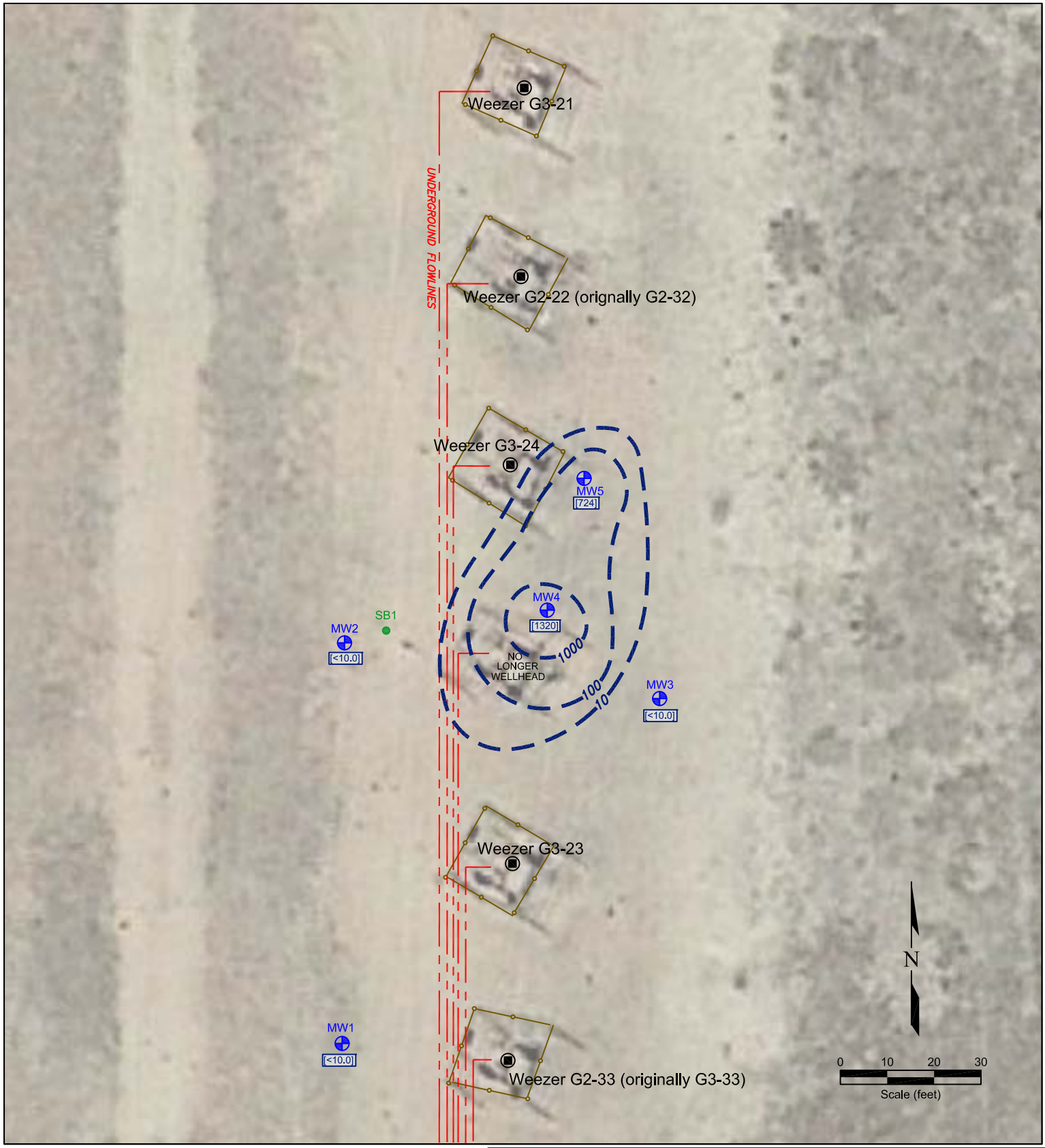
NOBLE ENERGY, INC. ~ WEEZER G02-32

SESW Section 3, T4N, R65W ~ 40.33602°, -104.65135°

Weld County, Colorado

Project No.	Prepared by	Drawn by
C019-078		**TDA**
Date	Reviewed by	Filename
8/19/20	**EB**	**19078Q**

FREMONT ENVIRONMENTAL



LEGEND

- SOIL BORING
- WELL HEAD LOCATION
- MONITORING WELL
- UNDERGROUND FLOW LINE
- FENCE LINE
- [724] ETHANE (ug/L)
- 100 ETHANE ISO-CONCENTRATION (dashed where inferred)

Figure 6

ETHANE ISO-CONCENTRATION MAP

July 16, 2020

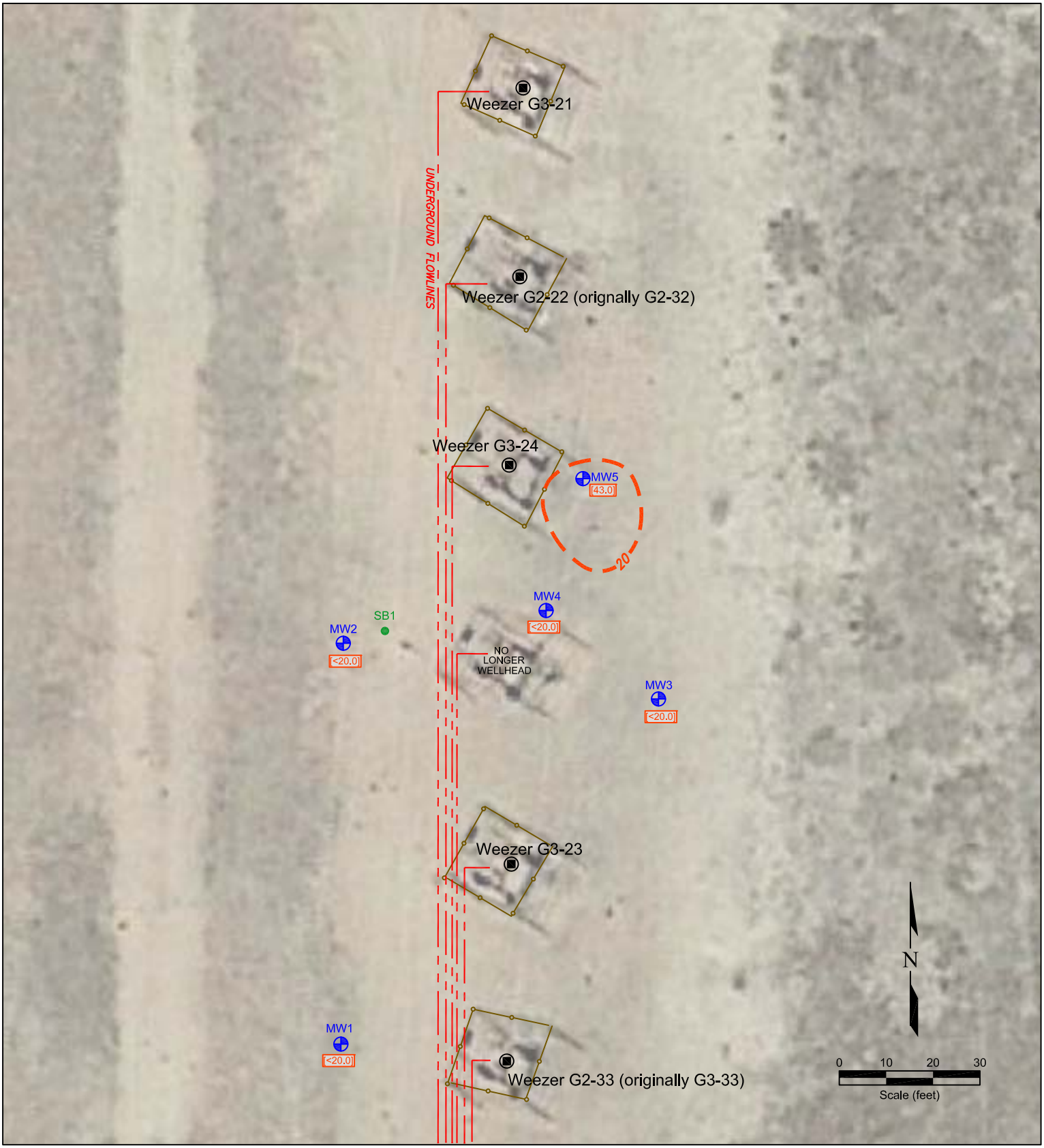
NOBLE ENERGY, INC. ~ WEEZER G02-32

SESW Section 3, T4N, R65W ~ 40.33602°, -104.65135°

Weld County, Colorado

Project No.	Prepared by	Drawn by
C019-078		**TDA**
Date	Reviewed by	Filename
8/20/20	**EB**	**19078Q**

FREMONT ENVIRONMENTAL



LEGEND

- SOIL BORING
- WELL HEAD LOCATION
- MONITORING WELL
- UNDERGROUND FLOW LINE
- FENCE LINE
- [43.0] PROPANE (ug/L)
- 20 PROPANE ISO-CONCENTRATION (dashed where inferred)

Figure 7

PROPANE ISO-CONCENTRATION MAP
July 16, 2020

NOBLE ENERGY, INC. ~ WEEZER G02-32
SESW Section 3, T4N, R65W ~ 40.33602°, -104.65135°
Weld County, Colorado

Project No.	Prepared by	Drawn by
C019-078		**TDA**
Date	Reviewed by	Filename
8/20/20	**EB**	**19078Q**

FREMONT ENVIRONMENTAL

APPENDIX A

LABORATORY DOCUMENTATION

ORIGINS LABORATORY, INC

August 25, 2020

Fremont Environmental

Paul Henehan

8305 6th St, PO Box 1289

Wellington CO 80549

Project Name - Noble - Weezer G02-32 **Project Number - C019-078**

Attached are your analytical results for Noble - Weezer G02-32 received by Origins Laboratory, Inc. July 16, 2020. This project is associated with Origins project number Y007243-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com

ORIGINS LABORATORY, INC

Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	Y007243-01	Water	July 16, 2020 6:46	07/16/2020 19:00
MW-2	Y007243-02	Water	July 16, 2020 7:50	07/16/2020 19:00
MW-3	Y007243-03	Water	July 16, 2020 12:30	07/16/2020 19:00
MW-4	Y007243-04	Water	July 16, 2020 13:35	07/16/2020 19:00
MW-5	Y007243-05	Water	July 16, 2020 14:35	07/16/2020 19:00

Per the phone call from Ethan on 08/25/20, the project name was changed to Weezer G02-32.

Origins Laboratory, Inc.

Jen Pellegrini

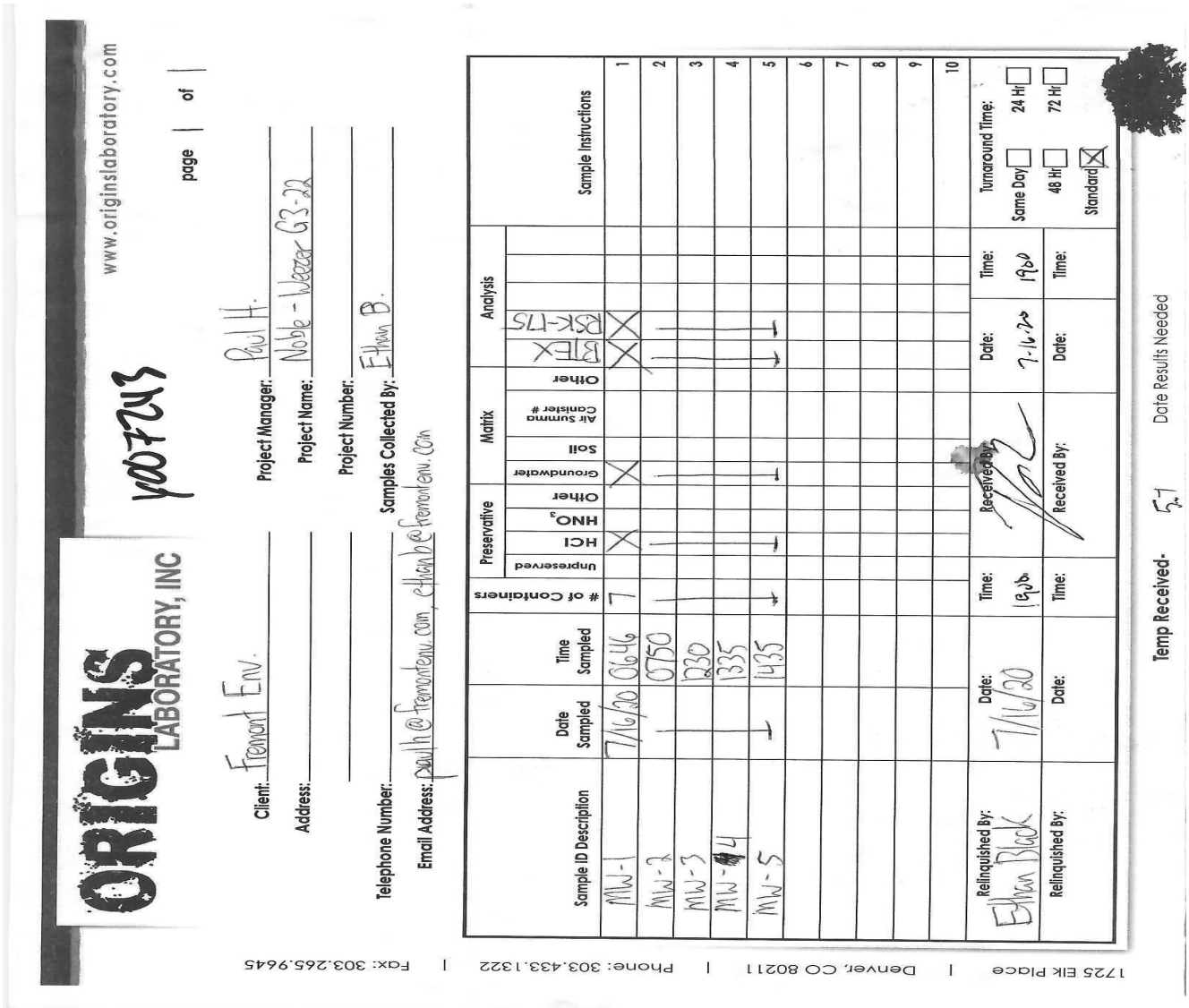
Jen Pellegrini For Noelle Doyle Mathis, President

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

ORIGINS LABORATORY, INC

Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32



Origins Laboratory, Inc.

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

Jen Pellegrini For Noelle Doyle Mathis, President

ORIGINS LABORATORY, INC

Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X007243
Client: Fremont
Client Project ID: Weezer G3-22
Checklist Completed by: JG
Shipped Via: HD
Date/time completed: 7/17/20
Airbill #: (UPS, FedEx, Hand Delivered, Pick-up, etc.) N/A
Matrix(s) Received: (Check all that apply): ____Soil/Solid X Water ____Other:____
Cooler Number/Temperature: 1 / 5.7 °C ____/____°C ____/____°C ____/____°C (Describe)
Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C[1]?	✓			
Is there ice present (document if blue ice is used)	✓			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Were all samples received intact[1]?	✓			
Was adequate sample volume provided[1]?	✓			
Are short holding time analytes or samples with HTs due within 48 hours present[1]?		✓		
Is a chain-of-custody (COC) present and filled out completely[1]?	✓			
Does the COC agree with the number and type of sample bottles received[1]?	✓			
Do the sample IDs on the bottle labels match the COC[1]?	✓			
Is the COC properly relinquished by the client with date and time recorded[1]?	✓			
For volatiles in water – is there headspace (> ¼ inch bubble) present? **If yes, contact client and note in narrative.**		✓		
Are samples preserved that require preservation and was it checked [1]? *(note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)*		✓		
Additional Comments (if any):				

[1]*If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.*

Reviewed by (Project Manager) 7-20-20 Date/Time Reviewed

Origins Laboratory, Inc.

Jen Pellegrini

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.

Jen Pellegrini For Noelle Doyle Mathis, President

Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

MW-1
7/16/2020 6:46:00AM

Origins Laboratory, Inc.
Y007243-01 (Water)

BTEX by EPA 8260D

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
Benzene	ND	1.00	ug/L	1	B0G1704	ZZZ	07/17/2020	07/18/2020	U
Toluene	ND	1.00	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	1.00	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	1.00	"	"	"	ZZZ	"	"	U
Surrogate: 1,2-Dichloroethane-d4	*116 %*	*70-130*			"		"	"	
Surrogate: Toluene-d8	*91.6 %*	*70-130*			"		"	"	
Surrogate: 4-Bromofluorobenzene	*96.8 %*	*70-130*			"		"	"	

Dissolved Gasses by RSK 175

Ethane	ND	10.0	ug/L	1	11111		07/16/2020	07/20/2020	
Methane	**648**	10.0	"	"	"		"	"	
n-Propane	ND	20.0	"	"	"		"	"	

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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

Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

MW-2
7/16/2020 7:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes

Origins Laboratory, Inc.

Y007243-02 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B0G1704	KDK	07/17/2020	07/21/2020	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U
Surrogate: 1,2-Dichloroethane-d4	*92.8 %*		*70-130*			"	"	"	
Surrogate: Toluene-d8	*99.1 %*		*70-130*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*102 %*		*70-130*			"	"	"	

Dissolved Gasses by RSK 175

Ethane	ND	10.0	ug/L	1	11111		07/16/2020	07/20/2020	
Methane	**575**	10.0	"	"	"		"	"	
n-Propane	ND	20.0	"	"	"		"	"	

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

MW-3
7/16/2020 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes

Origins Laboratory, Inc.

Y007243-03 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B0G1704	KDK	07/17/2020	07/21/2020	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U
Surrogate: 1,2-Dichloroethane-d4	*96.2 %*		*70-130*			"	"	"	
Surrogate: Toluene-d8	*98.6 %*		*70-130*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*101 %*		*70-130*			"	"	"	

Dissolved Gasses by RSK 175

Ethane	ND	10.0	ug/L	1	11111		07/16/2020	07/20/2020	
Methane	**944**	10.0	"	"	"		"	"	
n-Propane	ND	20.0	"	"	"		"	"	

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

MW-4
7/16/2020 1:35:00PM

Origins Laboratory, Inc.
Y007243-04 (Water)

BTEX by EPA 8260D

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
Benzene	ND	1.00	ug/L	1	B0G1704	KDK	07/17/2020	07/21/2020	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U
Surrogate: 1,2-Dichloroethane-d4	*94.8 %*	*70-130*			"		"	"	
Surrogate: Toluene-d8	*99.3 %*	*70-130*			"		"	"	
Surrogate: 4-Bromofluorobenzene	*101 %*	*70-130*			"		"	"	

Dissolved Gasses by RSK 175

Ethane	**1320**	10.0	ug/L	1	11111		07/16/2020	07/20/2020	
Methane	**6350**	10.0	"	"	"		"	"	
n-Propane	ND	20.0	"	"	"		"	"	

Origins Laboratory, Inc.

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Jen Pellegrini For Noelle Doyle Mathis, President

Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

MW-5
7/16/2020 2:35:00PM

Origins Laboratory, Inc.
Y007243-05 (Water)

BTEX by EPA 8260D

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
Benzene	ND	1.00	ug/L	1	B0G1704	KDK	07/17/2020	07/21/2020	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U
Surrogate: 1,2-Dichloroethane-d4	*93.1 %*		*70-130*			*"*	*"*	*"*	
Surrogate: Toluene-d8	*97.9 %*		*70-130*			*"*	*"*	*"*	
Surrogate: 4-Bromofluorobenzene	*101 %*		*70-130*			*"*	*"*	*"*	

Dissolved Gasses by RSK 175

Ethane	**724**	10.0	ug/L	1	11111		07/16/2020	07/20/2020	
Methane	**4680**	10.0	"	"	"		"	"	
n-Propane	**43.0**	20.0	"	"	"		"	"	

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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Fremont Environmental
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Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B0G1704 - EPA 5030B (Water)										
Blank (B0G1704-BLK1)					Prepared: 07/17/2020 Analyzed: 07/17/2020					
Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	*71*		"	*62.5*		*114*	*70-130*			
Surrogate: Toluene-d8	*55*		"	*62.5*		*87.5*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*62*		"	*62.5*		*98.9*	*70-130*			

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Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B0G1704 - EPA 5030B (Water)										
LCS (B0G1704-BS1)					Prepared: 07/17/2020 Analyzed: 07/17/2020					
Benzene	36.0	1.00	ug/L	50.0		71.9	70-130			
Toluene	40.5	1.00	"	50.0		81.1	70-130			
Ethylbenzene	42.1	1.00	"	50.0		84.3	70-130			
m,p-Xylene	91.4	2.00	"	100		91.4	70-130			
o-Xylene	48.8	1.00	"	50.0		97.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	*72*		*"*	*62.5*		*115*	*70-130*			
Surrogate: Toluene-d8	*57*		*"*	*62.5*		*91.5*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*57*		*"*	*62.5*		*90.8*	*70-130*			

Origins Laboratory, Inc.

Jen Pellegrini

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Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B0G1704 - EPA 5030B (Water)										
Matrix Spike (B0G1704-MS1)		**Source: Y007233-01**			Prepared: 07/17/2020 Analyzed: 07/17/2020					
Benzene	39.2	1.00	ug/L	50.0	ND	78.4	70-130			
Toluene	47.1	1.00	"	50.0	ND	94.2	70-130			
Ethylbenzene	48.5	1.00	"	50.0	0.090	96.8	70-130			
m,p-Xylene	105	2.00	"	100	0.230	105	70-130			
o-Xylene	54.8	1.00	"	50.0	ND	110	70-130			
Surrogate: 1,2-Dichloroethane-d4	*70*		"	*62.5*		*112*	*70-130*			
Surrogate: Toluene-d8	*59*		"	*62.5*		*94.9*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*57*		"	*62.5*		*91.4*	*70-130*			

Origins Laboratory, Inc.

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Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B0G1704 - EPA 5030B (Water)										
Matrix Spike Dup (B0G1704-MSD1)		**Source: Y007233-01**			Prepared: 07/17/2020 Analyzed: 07/18/2020					
Benzene	37.7	1.00	ug/L	50.0	ND	75.4	70-130	3.98	20	
Toluene	45.5	1.00	"	50.0	ND	91.0	70-130	3.50	20	
Ethylbenzene	46.3	1.00	"	50.0	0.090	92.4	70-130	4.58	20	
m,p-Xylene	101	2.00	"	100	0.230	101	70-130	3.77	20	
o-Xylene	52.1	1.00	"	50.0	ND	104	70-130	5.01	20	
Surrogate: 1,2-Dichloroethane-d4	*69*		*"*	*62.5*		*110*	*70-130*			
Surrogate: Toluene-d8	*61*		*"*	*62.5*		*97.6*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*57*		*"*	*62.5*		*91.1*	*70-130*			

Origins Laboratory, Inc.

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Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: C019-078
Project: Noble - Weezer G02-32

Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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Chain of Custody Form

JOB 20074330 - 4334 DIG-023377 - 023381

dig Geochemistry for Energy
Dolan Integration Group

main 303.531.2030 • info@digforenergy.com • digforenergy.com
Office and Lab 11025 Dover St • Ste 800 • Westminster, CO 80021

Send Data to:
Name: Jennifer Pellegrini
Company: Origins Laboratory
Address: 1725 W Elk Place
City, State: Denver, CO 80211
Phone:
Email: jpellegrini@originslab.com
jmerrill@originslab.com

Send invoice to (if different):
Name:
Company:
Address:
City, State:
Phone:
Email:

Additional Information:
AFE #:
Project: Y007243
PO #:
Location:
Sampled By:
Notes:

Turnaround Time: ☒ Standard (≤ 10 business days) ☐ Rush (≤ 5 business days) ☐ Expedited Rush (≤ 3 business

Sample Description				Analysis Requested						
Container Number	Sample Identification	Date Sampled	Time	Gas Composition* N_2, O_2+Ar, CO_2, He, H_2,C_1-C_6+	RSK-175: N_2, O_2+Ar, CO_2, He, H_2,C_1-C_6+ with dissolved C_1, C_2, & C_3 (water samples only)	$\delta^{13}C$ Methane (Carbon)	δD Methane (Hydrogen)	$\delta^{13}C$ Ethane-Pentane (C_2-C_5, if present)	$\delta^{13}C$ CO_2 (if present)	Comments
Y007243-01	MW-1	07/16/20	0646	X		X	X	X	X	
Y007243-02	MW-2	07/16/20	0750	X		X	X	X	X	
Y007243-03	MW-3	07/16/20	1230	X		X	X	X	X	
Y007243-04	MW-4	07/16/20	1335	X		X	X	X	X	
Y007243-05	MW-5	07/16/20	1435	X		X	X	X	X	

Chain-of-Custody Record

	Signature	Company	Date	Time
Relinquished by		Origins	7/27/20	1510
Received by		DIG	7-27-20	1510
Relinquished by				
Received by				
Relinquished by				
Received by				

*Gas composition vs RSK-175- Gas composition is a basic analysis of the concentration (ppm) of gases within the headspace of the sample (headspace is created at the lab). RSK-175 is a specific analysis technique combined with calculations to give the total dissolved gas of each species in the water sample (mg/L). Why one or the other? Gas composition gives us a quick, general look at relative concentrations and ratios (e.g., gas wetness). RSK-175 gives us an exact total of gas present in the sample (headspace and dissolved in the water). Questions? Give us a call at 303-531-2030.

APPENDIX B

LOW FLOW SAMPLING PARAMETERS

LOW FLOW GROUNDWATER SAMPLING PARAMETERS

NOBLE ENERGY INC

WEEZER G3-22 (WELLHEAD), WELD COUNTY, COLORADO

FREMONT PROJECT NO. C019-078

7/16/2020

MW-1

Time (min)	Temp (Deg C)	Spec. Cond. (mmhos)	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (ntu)
5	17.51	2399.50	7.30	56.5	1.18	386.0
10	17.30	2393.90	7.30	-2.3	0.50	238.7
15	17.24	2414.30	7.31	-14.4	0.35	187.0
20	17.24	2419.60	7.32	-14.7	0.25	187.3
25	17.26	2420.10	7.32	-17.1	0.22	179.7
30	17.27	2421.90	7.33	-17.2	0.2	174.2

Total Purge volume = 4.0 gal

MW-2

Time (min)	(Deg C)	Spec. Cond. (mmhos)	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (ntu)
5	21.04	62.21	7.41	20.6	1.4	50.960
10	18.37	38.05	7.37	-13.3	0.25	123.52
15	18.05	36.76	7.37	-15.6	0.20	53.160
20	17.96	36.40	7.37	-17.9	0.19	22.950
25	17.94	36.95	7.38	-20.4	0.21	15.960
30	17.95	37.11	7.38	-21.6	0.19	15.480
35	17.95	37.22	7.38	-23.1	0.21	15.460

Total Purge volume = 4.0 gal

MW-3

Time (min)	Temp (Deg C)	Spec. Cond. (mmhos)	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (ntu)
5	18.11	1880.7	7.04	54.1	0.61	281.77
10	16.02	2346.9	7.06	30.3	0.21	172.62
15	15.38	2339.7	7.08	22.3	0.29	73.51
20	15.37	2338.2	7.08	21.5	0.41	65.39
25	15.34	2335.5	7.08	18.4	0.37	63.77
30	15.32	2317.4	7.08	16.5	0.52	65.72

Total Purge volume = 4.0 gal

MW-4

Time (min)	Temp (Deg C)	Spec. Cond. (mmhos)	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (ntu)
5	21.23	679.56	7.11	-26.7	8.21	0.43
10	18.59	762.60	7.51	-74.7	8.29	0.23
15	18.11	809.73	7.71	-95	8.19	0.18
20	18.08	805.14	7.72	-96.3	8.18	0.19
25	17.87	821.90	7.78	-98.2	8.13	0.18

Total Purge volume = 2.5 gal

MW-5

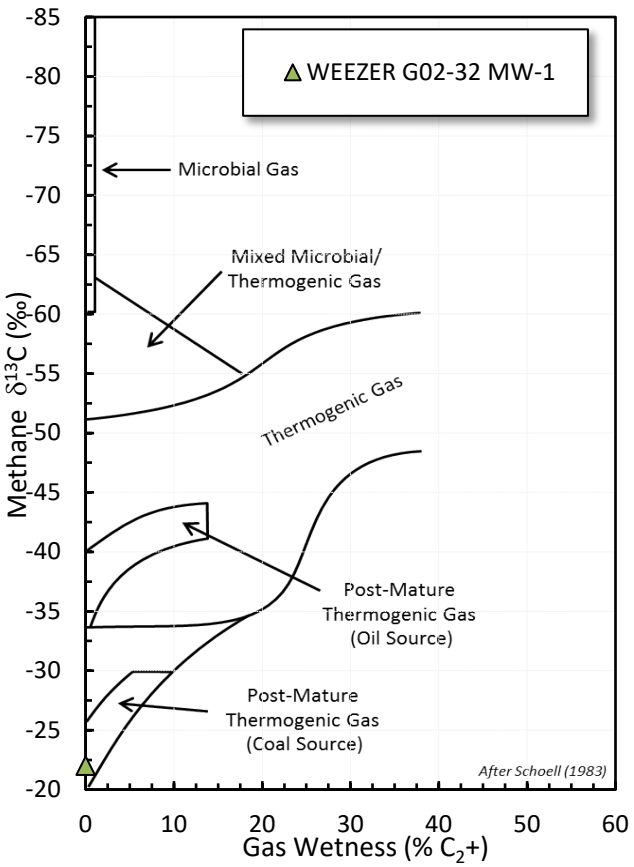
Time (min)	Temp (Deg C)	Spec. Cond. (mmhos)	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (ntu)
5	22.06	1850.1	7.7	-162.6	1.31	435.1
10	18.1	1841.1	7.44	-162.6	0.4	185.65
15	17.64	1928.0	7.45	-168.2	0.33	34.06
20	17.47	1936.1	7.46	-175.5	0.31	25.02
25	17.42	1944.1	7.46	-179.9	0.29	20.24
30	17.43	1947.8	7.46	-183.0	0.28	24.93
35	17.34	1955.5	7.47	-185.2	0.25	24.18

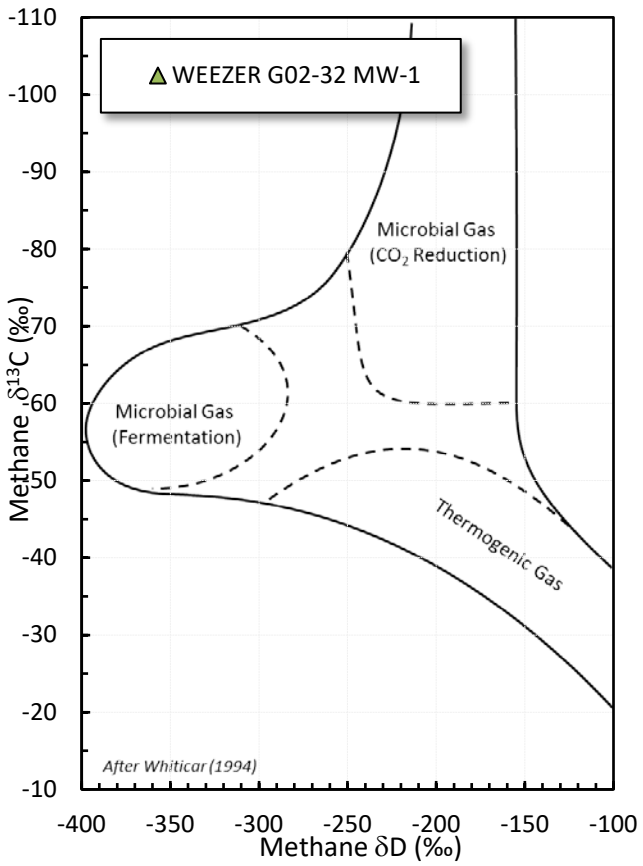
Total Purge volume = 4.0 gal

APPENDIX C

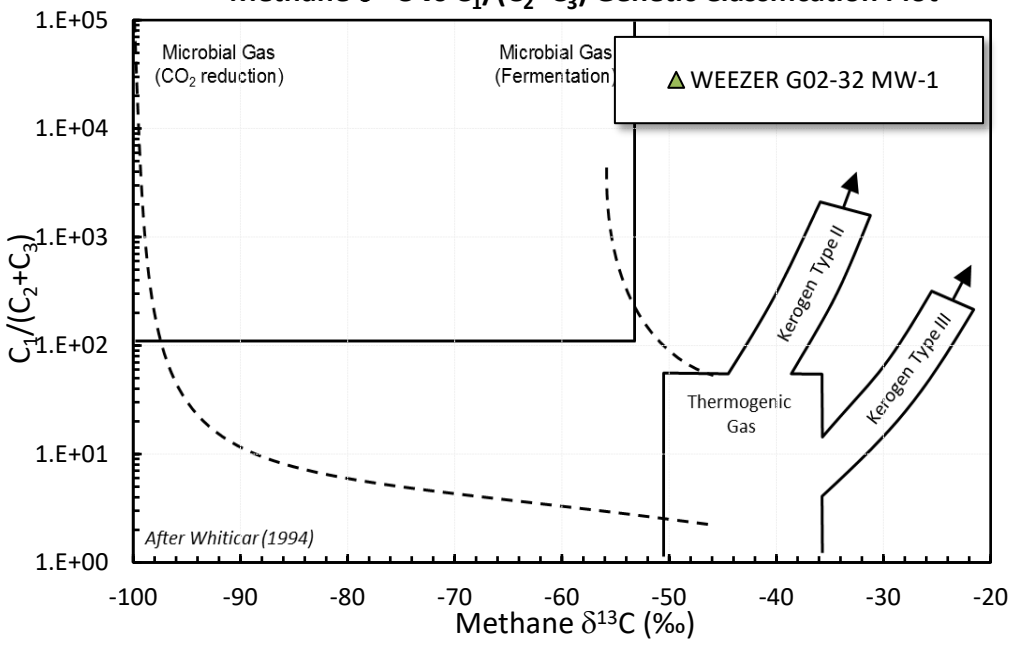
STABLE ISOTOPE INTERPRETIVE PLOTS

Stable Isotope Interpretive Plots

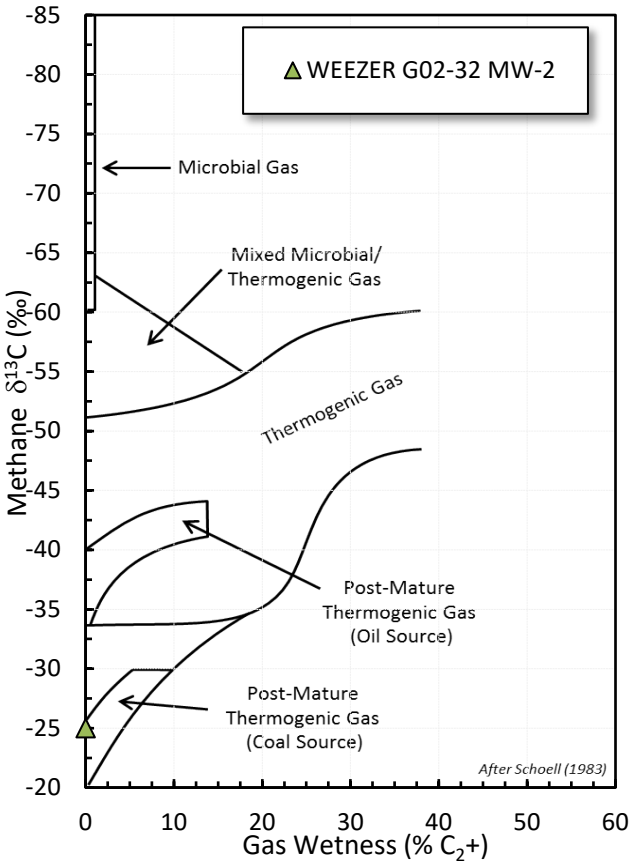


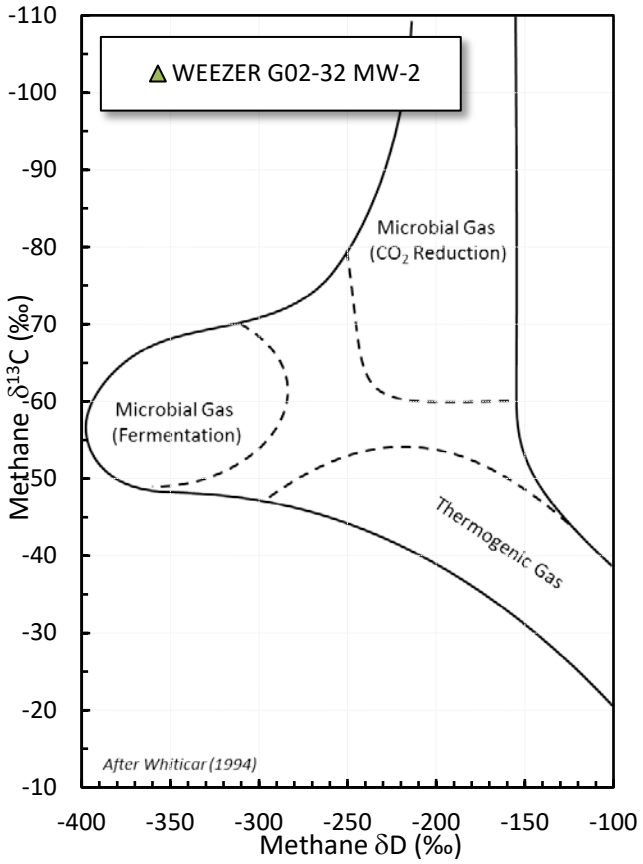


Methane $\delta^{13}C$ vs $C_1/(C_2+C_3)$ Genetic Classification Plot

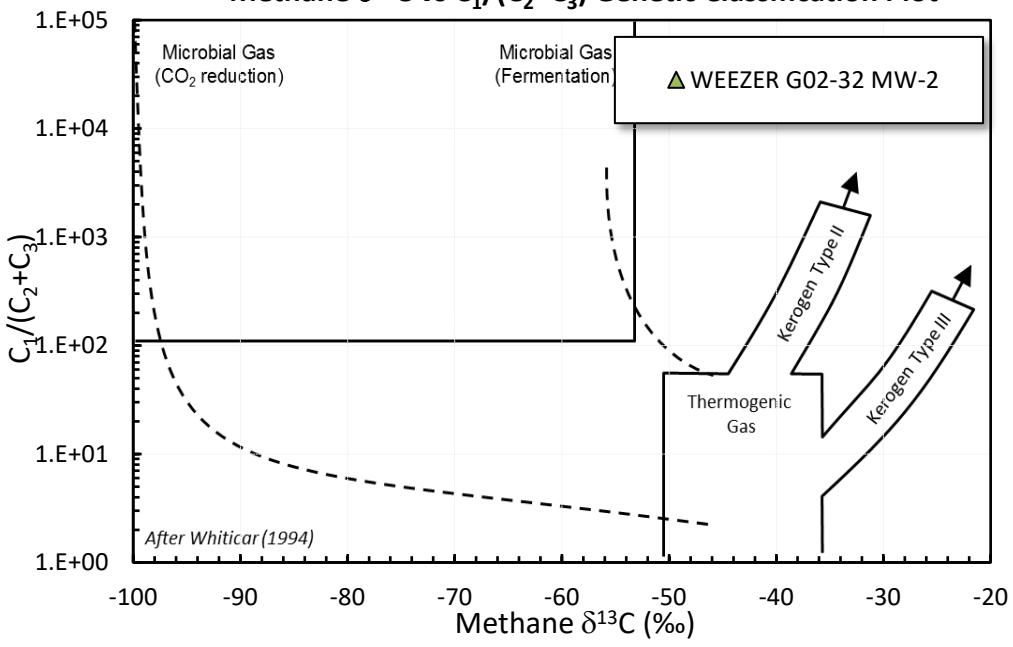


Stable Isotope Interpretive Plots

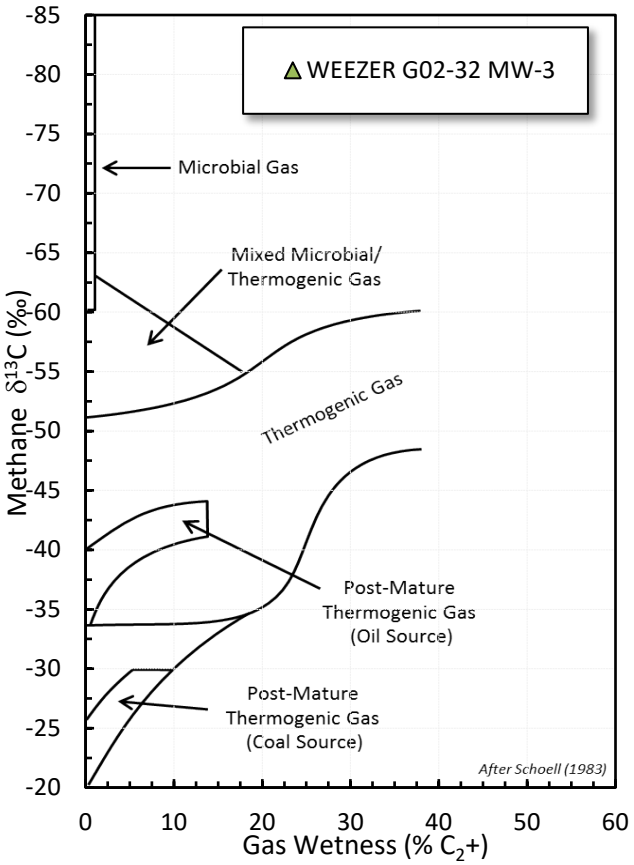


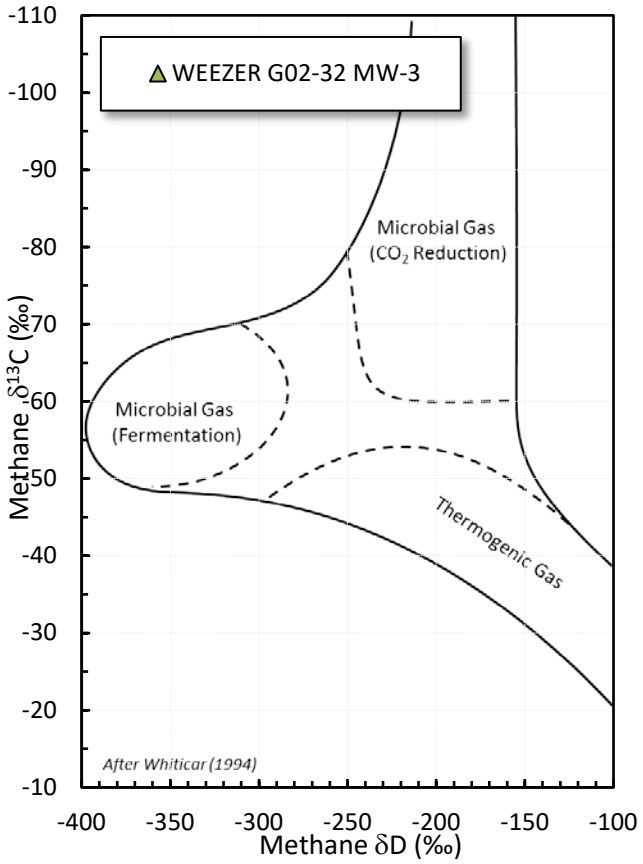


Methane $\delta^{13}C$ vs $C_1/(C_2+C_3)$ Genetic Classification Plot

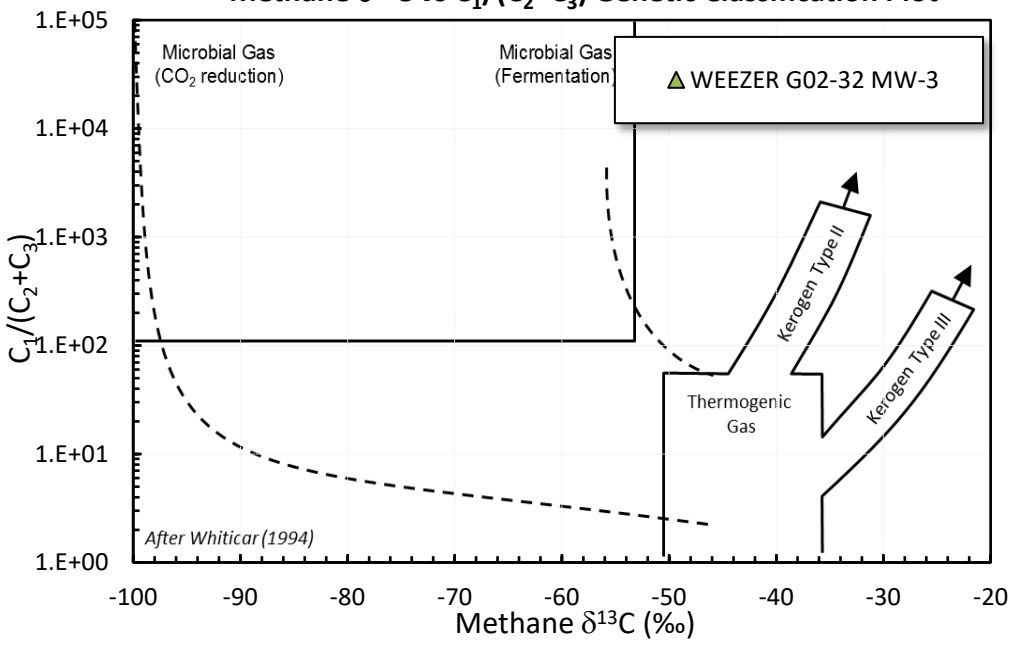


Stable Isotope Interpretive Plots

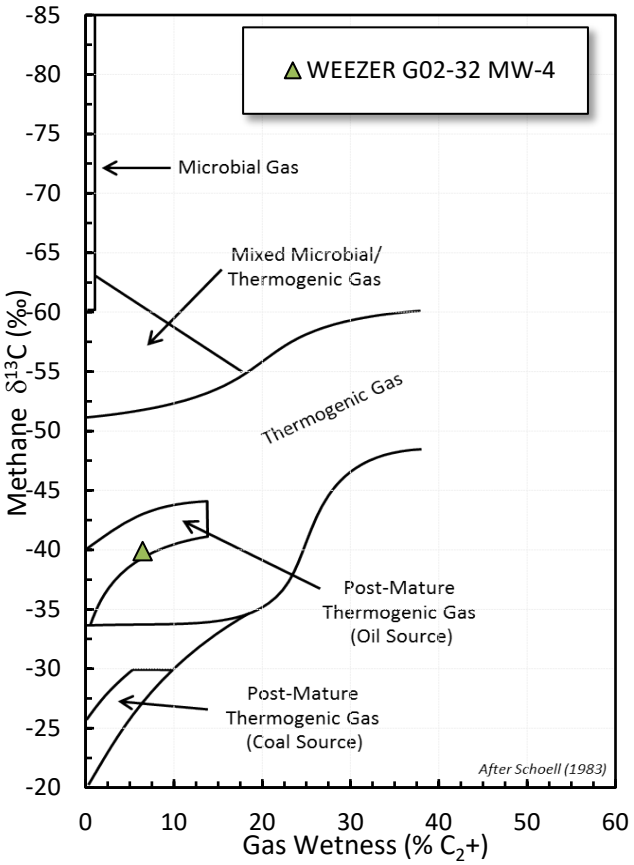


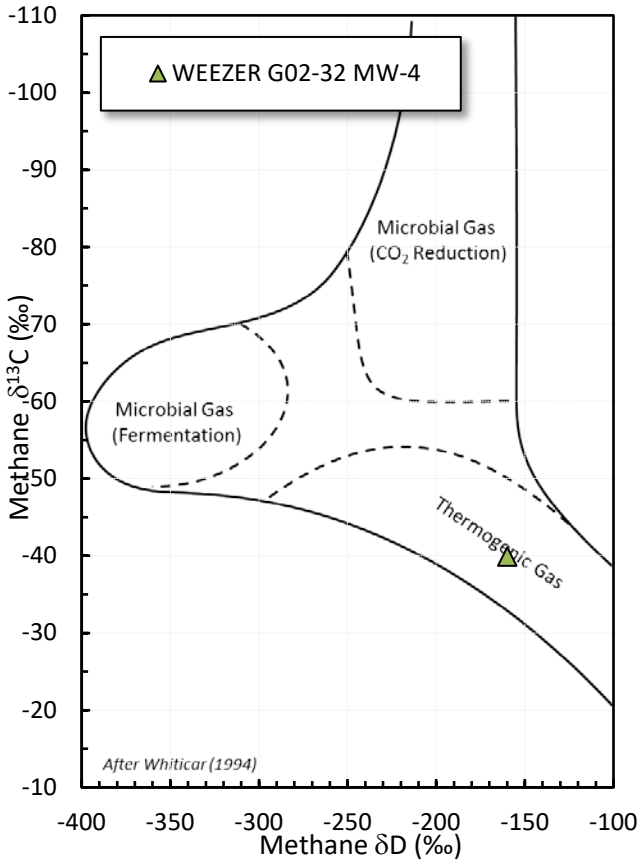


Methane $\delta^{13}C$ vs $C_1/(C_2+C_3)$ Genetic Classification Plot

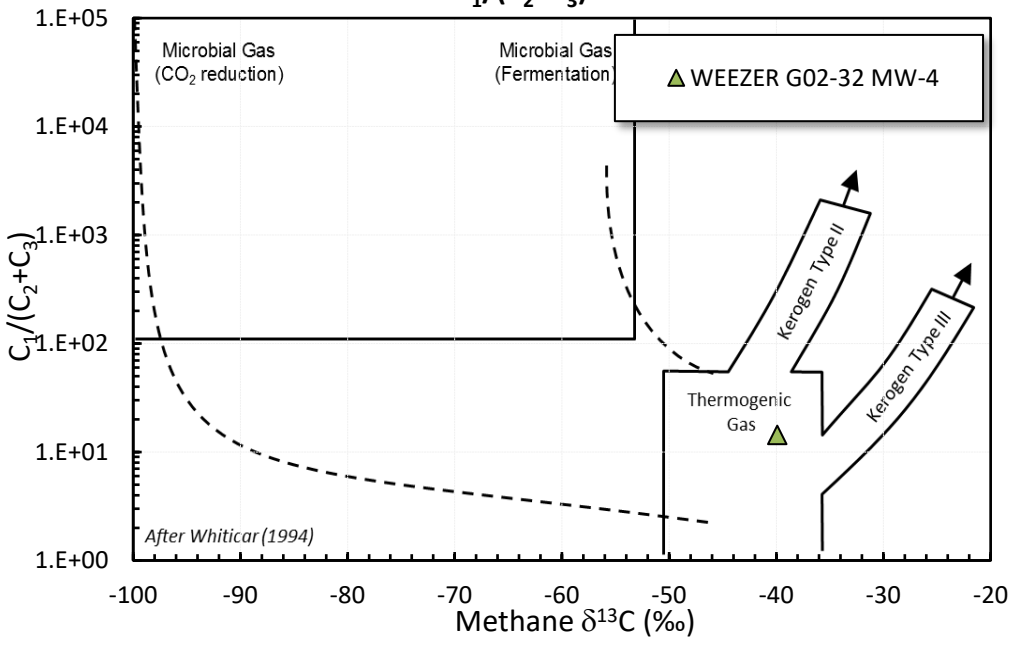


Stable Isotope Interpretive Plots

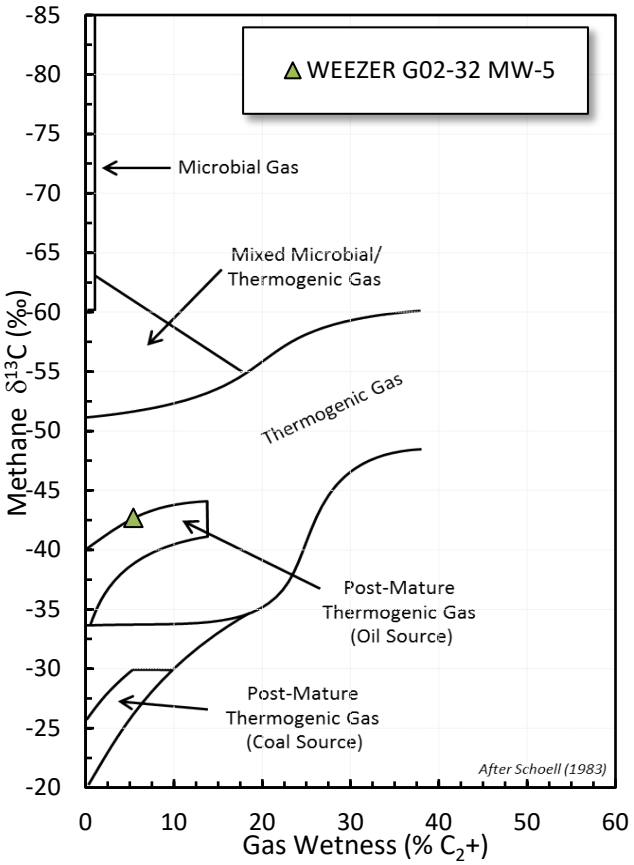


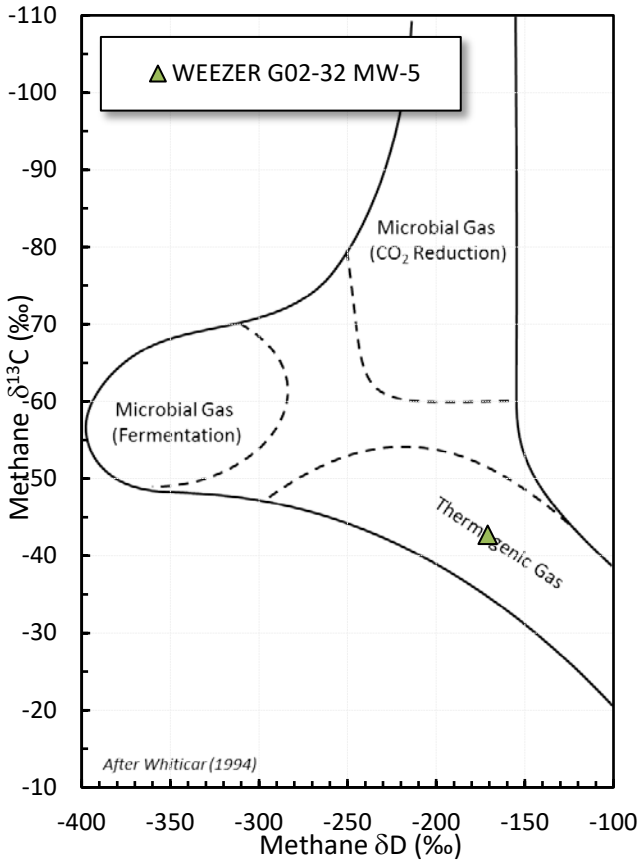


Methane $\delta^{13}C$ vs $C_1/(C_2+C_3)$ Genetic Classification Plot



Stable Isotope Interpretive Plots





Methane $\delta^{13}C$ vs $C_1/(C_2+C_3)$ Genetic Classification Plot