

FREMONT ENVIRONMENTAL INC.

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112268, 112269, 115241, 420409
Document 2496548

November 18, 2018

Mr. Kris Neidel
Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203

Subject: **Ground Water Monitoring Report**
Margaret Spaulding Water Treatment Site
SW ¼ SE ¼ Sec 28, T9N, R81W
Jackson County, Colorado
Fremont Project No. C016-119

Dear Mr. Neidel:

Enclosed please find a copy of the above referenced Ground Water Monitoring Report for the Margaret Spaulding site in Jackson County, Colorado. The enclosed report describes monitoring and sampling efforts to assess ground water 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. Henahan, P.E.
Senior Consultant

Enclosure

GROUND WATER MONITORING REPORT
COLORADO OIL AND GAS CONSERVATION COMMISSION
MARGARET SPAULDING WATER TREATMENT SITE
JACKSON COUNTY, COLORADO
FREMONT PROJECT NO. C016-119

Prepared by:

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

November 18, 2018

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GROUND WATER MONITORING REPORT
COLORADO OIL AND GAS CONSERVATION COMMISSION
MARGARET SPAULDING WATER TREATMENT SITE
JACKSON COUNTY, COLORADO
FREMONT PROJECT NO. C016-119

1.0 INTRODUCTION

The purpose of this document is to present ground water quality data at the out-of-service Margaret Spaulding Water Treatment site in Jackson County, Colorado. Fremont Environmental Inc. (Fremont) was retained by the Colorado Oil and Gas Conservation Commission (COGCC) to collect ground water samples and submit these samples to a third-party laboratory for analyses.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The Margaret Spaulding Water Treatment site is located approximately 11 miles west of Walden, Colorado in Jackson County as shown on Figure 1. The site is located in a rural and agricultural area approximately 1.5 miles southwest of the intersection of County Road 12 and County Road 16. The location is further described as the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 28, Township 9N, Range 81W.

2.2 Site History

The site is a former water treatment and disposal facility for the Margaret Spaulding 4 and 4B wells. The site facilities include above ground storage tanks, water treatment pits, buried and above ground piping, and various buildings. The two wells on this pad were drilled in 1972 to a depth of approximately 2,400 feet. The facilities have been previously owned and operated by Lone Pine Gas, Inc. and CM Production, LLC.

3.0 GROUND WATER MONITORING AND REMEDIATION ACTIVITIES

3.1 Ground Water Level Measurements

Ground water levels were measured in the six monitoring wells on November 1, 2018 in accordance with the Sampling Plan included in Appendix A. The data are summarized in Table 1.

Water table contours inferred from the November 2018 data are illustrated on Figure 3. Based on these data, ground water is inferred to flow to the north. The water table gradient was calculated at approximately 0.006 feet per foot (ft/ft) for the November 2018 data.

3.2 Ground Water Sampling and Analysis

Ground water samples were collected from the six monitoring wells on November 1, 2018 to monitor the magnitude and extent of ground water impacts at the site. The ground water samples were submitted to Summit Scientific Inc. in Golden, Colorado for analyses of benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8260C. In addition, each sample was analyzed for total petroleum hydrocarbons – gasoline range organics (TPH-GRO), TPH – diesel range organics (TPH-DRO), sulfate, chloride and total dissolved solids (TDS). The ground water chemistry data is illustrated on Figure 4.

The laboratory data indicate that all of the petroleum hydrocarbon constituents were below their respective COGCC Table 910-1 limits for the six wells for the November 2018 sampling event. The ground water analytical data are summarized in Table 1. A copy of the laboratory reports, quality control data, and chain-of-custody documentation are presented in Appendix B.

4.0 DISCUSSION

Ground water samples were collected from the six existing monitoring wells at the subject property. As described above, all petroleum hydrocarbon constituents were less than their respective COGCC Table 910-1 limits.

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.**



Paul V. Henahan, P.E.

Senior Consultant

11/18/18
Date_____

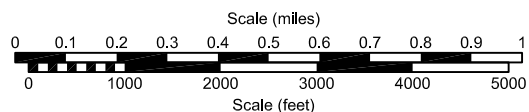
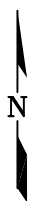
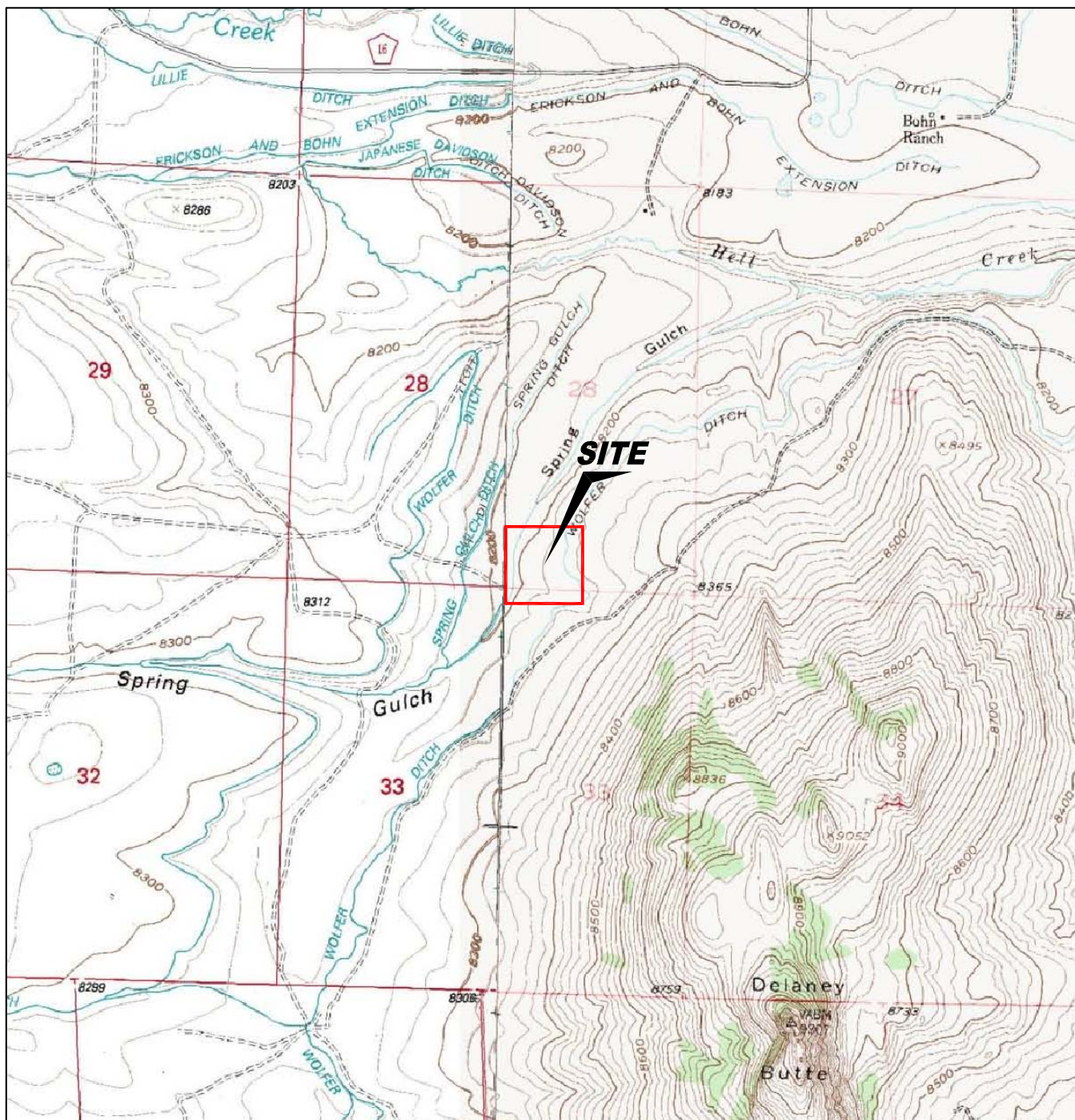
TABLE

TABLE 1
SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA
COLORADO OIL AND GAS CONSERVATION COMMISSION
MARGARET SPAULDING WATER TREATMENT SITE - JACKSON COUNTY, COLORADO
FREMONT PROJECT NO. C016-119

SAMPLE LOCATION	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	SULFATE (mg/L)	CHLORIDE (mg/L)	TDS (mg/L)	TOC ELEVATION (feet)	DEPTH TO GROUND WATER (ft)	GROUND WATER ELEVATION (ft)	FREE PRODUCT THICKNESS (ft)
MW-1	07/07/15	2.1	<0.20	8.8	<0.46	339	16	1.2	2.3	316	8227.34	20.13	8207.21	NP
	11/18/15	<1.0	<5.0	<1.0	<3.0	<0.5	1.5	<5.0	8.29	351		23.84	8203.50	NM
	10/17/16	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	6.17	2.45	196		23.63	8203.71	NP
	05/01/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	3.3	<1.0	145		23.86	8203.48	NP
	10/17/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	4.71	1.43	199		23.60	8203.74	NP
	05/24/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	34.2	<1.0	175		19.79	8207.55	NP
	11/01/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	2.7	<1.0	102		23.42	8203.92	NP
MW-2	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	1.54	5.6	1	183	8219.87	11.16	8208.71	NP
	11/18/15	<1.0	<5.0	<1.0	<3.0	<0.5	0.267	<5.0	6.37	55		15.05	8204.82	NM
	10/17/16	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	4.56	<1.0	91.3		14.85	8205.02	NP
	05/01/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	3.68	1.13	126		14.87	8205.00	NP
	10/17/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	3.18	0.24	114		14.75	8205.12	NP
	05/24/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	10.7	<1.0	62.1		10.14	8209.73	NP
	11/01/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	2.05	<1.0	81.2		14.58	8205.29	NP
MW-3	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	<0.17	3.6	0.61	115	8229.00	18.60	8210.40	NP
	11/18/15	<1.0	<5.0	<1.0	<3.0	<0.5	<0.10	<5.0	7.08	120		23.80	8205.20	NM
	10/17/16	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	2.89	<1.0	72.2		23.63	8205.37	NP
	05/01/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	6.24	1.95	152		23.60	8205.40	NP
	10/17/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	1.29	0.47	97.5		23.57	8205.43	NP
	05/24/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	6.07	1.07	95.3		17.59	8211.41	NP
	11/01/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	2.4	2.94	7.3		23.27	8205.73	NP
MW-4	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	<0.17	5	1.20	112	8235.71	26.65	8209.06	NP
	11/18/15	<1.0	<5.0	<1.0	<3.0	<0.5	<0.10	<5.0	1.27	88		31.52	8204.19	NM
	10/17/16	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	4.75	<1.0	97.5		31.34	8204.37	NP
	05/01/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	5.7	2.66	155		31.49	8204.22	NP
	10/17/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	0.11	4.07	201		31.40	8204.31	NP
	05/24/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	7.52	3.97	118		25.90	8209.81	NP
	11/01/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	2.14	<1.0	81.6		31.03	8204.68	NP
MW-5	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	0.909	11.5	1.40	228	8244.96	36.35	8208.61	NP
	11/18/15	<1.0	<5.0	<1.0	<3.0	<0.5	0.502	NS	NS	NS		41.20	8203.76	NM
	10/17/16	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	17.0	1.27	131		40.97	8203.99	NP
	05/01/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	14.1	3.97	204		41.25	8203.71	NP
	10/17/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	16.0	1.16	191		41.18	8203.78	NP
	05/24/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	67	2.76	336		35.90	8209.06	NP
	11/01/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	6.74	<1.0	116		40.72	8204.24	NP
MW-6	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	0.521	8.4	4.70	178	8242.23	30.76	8211.47	NP
	11/18/15	<1.0	<5.0	<1.0	<3.0	<0.5	0.146	5.74	8.73	136		35.75	8206.48	NM
	10/17/16	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	6.06	1.74	110		35.64	8206.59	NP

SAMPLE LOCATION	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	TPH-GRO (mg/L)	TPH-DRO (mg/L)	SULFATE (mg/L)	CHLORIDE (mg/L)	TDS (mg/L)	TOC ELEVATION (feet)	DEPTH TO GROUND WATER (ft)	GROUND WATER ELEVATION (ft)	FREE PRODUCT THICKNESS (ft)
MW-6	05/01/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	7.54	2.09	185		35.30	8206.93	NP
	10/17/17	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	5.18	1.43	157		35.73	8206.50	NP
	05/24/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	53.8	1.69	118		28.66	8213.57	NP
	11/01/18	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	5.72	2.65	128		35.16	8207.07	NP
Table 910-1 Limits		5	560	700	1,400	None	None	<1.25 x BG	<1.25 x BG	<1.25 x BG				

FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

Margaret Spaulding Treatment Site
SW SE Section 28, T9N, R81W
Jackson County, Colorado

Project No.
C016-119

Prepared by

Drawn by
JMA

Date
11/16/18






Reviewed by
PH

Filename
16119T





LEGEND



MONITORING WELL
PRODUCTION WELL
FENCE LINE
BUILDING
BUILDING
ABOVE GROUND STORAGE TANK

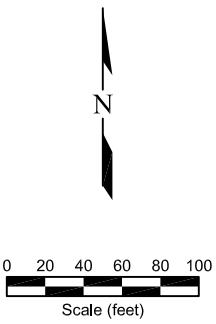


Figure 2
SITE MAP

Margaret Spaulding Treatment Site
SW SE Section 28, T9N, R81W
Jackson County, Colorado

Project No. C016-119	Prepared by JMA	Drawn by JMA
Date 11/16/18	Reviewed by PH	Filename 16119Q

REMONT
ENVIRONMENTAL
FE



LEGEND

MONITORING WELL

PRODUCTION WELL

FENCE LINE

BUILDING

ABOVE GROUND STORAGE TANK

GROUND WATER ELEVATION (ft above arbitrary datum)

NOT MEASURED

WATER TABLE CONTOUR

GROUND WATER FLOW DIRECTION

Scale (feet)

Figure 3

INFERRED GROUNDWATER CONTOUR

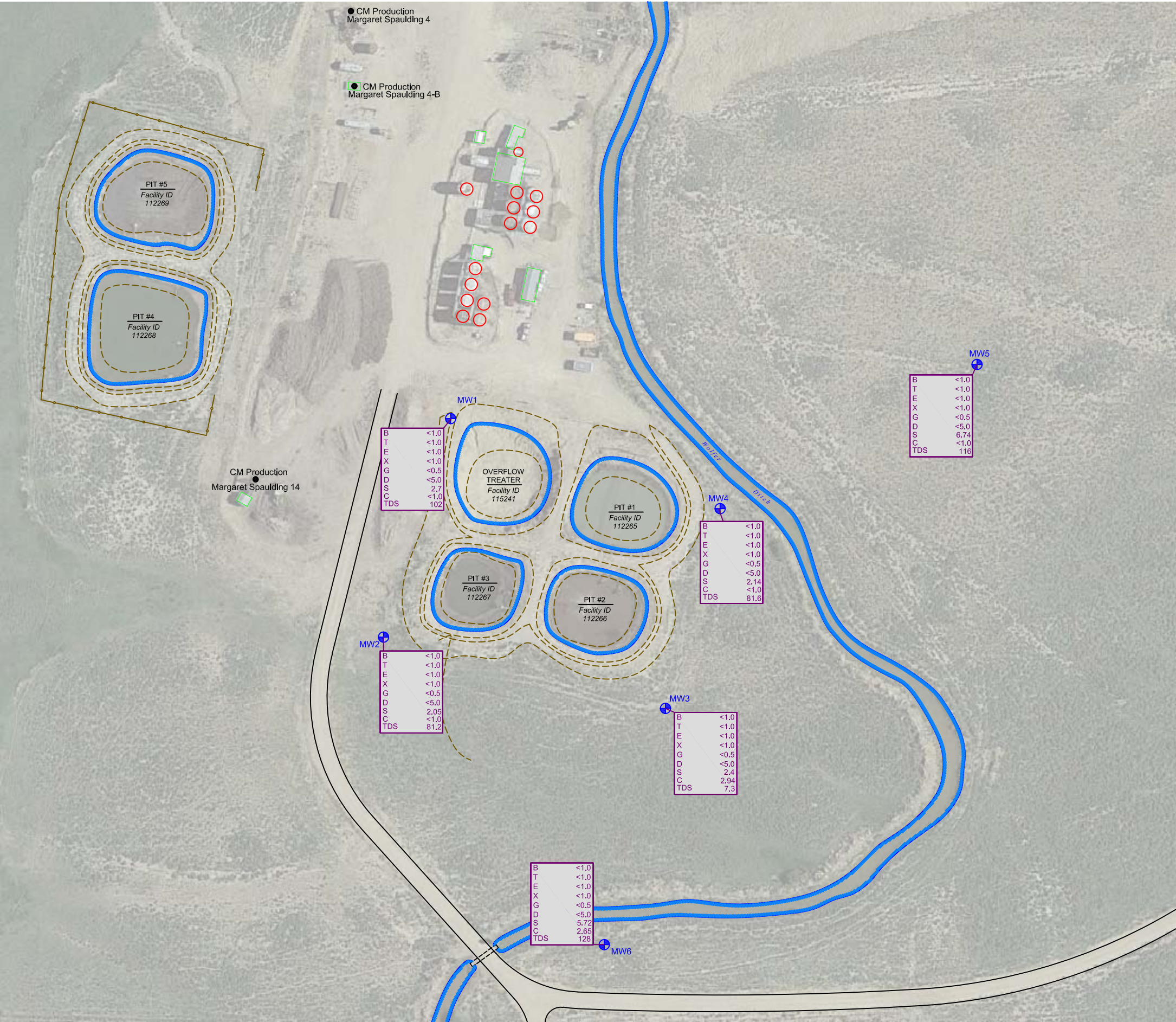
November 1, 2018

Margaret Spaulding Treatment Site

SW SE Section 28, T9N, R81W

Jackson County, Colorado

Project No.	Prepared by	Drawn by	
C016-119	JMA		
Date	Reviewed by	Filename	
11/16/18	PH	16119Q	



LEGEND

MONITORING WELL

PRODUCTION WELL

FENCE LINE

BUILDING

ABOVE GROUND STORAGE TANK

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)
G	<0.5	TPH-GRO as gasoline (mg/L)
D	<5.0	TPH-DRO as diesel (mg/L)
S	2.7	TOTAL SULFATE (mg/L)
C	<1.0	TOTAL CHLORIDE (mg/L)
TDS	128	TOTAL TDS (mg/L)

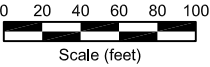


Figure 4

GROUND WATER CHEMISTRY MAP

November 1, 2018

Margaret Spaulding Treatment Site

SW SE Section 28, T9N, R81W

Jackson County, Colorado

Project No.

C016-119

Prepared by

JMA

Drawn by

JMA

Date

11/16/18

Reviewed by

PH

Filename

16119Q

APPENDIX A

SAMPLING PLAN

SAMPLING METHODS AND PROCEDURES

Water Level Measurements

All ground water level measurements will be obtained using an electric measuring device, which indicates when a probe is in contact with ground water. Measurements will be obtained by lowering the device into the well until the water surface had been encountered, and by measuring the distance from the top of the inside riser pipe to the probe. All of the measurements will be recorded to the nearest 0.01 ft. To minimize cross-contamination, the water level indicator will be decontaminated with isopropyl alcohol or distilled water between each well.

Monitoring Well Sampling

All monitoring wells were sampled from the “cleanest” to the “most contaminated” according to the protocols listed below.

Field Protocol

- | | |
|--------|--|
| Step 1 | Measure water level in each well. |
| Step 2 | Purge each monitoring well by evacuating a minimum of three well bore volumes using a disposable polyethylene bailer. |
| Step 3 | Collect water samples using a disposable polyethylene bailer. |
| Step 4 | Cool samples to approximately 4°C for transportation. |
| Step 5 | Store water samples and transport to a specific laboratory, following all documentation and chain-of-custody procedures. |

Upon completion of ground water sampling, a chain-of-custody log will be completed. Chain-of-custody records include the following information: project, project number, shipped by, shipped to, suspected hazard, sampling point, location, field identification number, date collected, sample type, number of containers, analysis required, and sampler's signature.

The chain-of-custody records will be shipped with the samples to the laboratory. Upon arrival at the laboratory the samples will be checked in and signed by the appropriate laboratory personnel. Laboratory identification numbers will be noted on the chain-of-custody record. Upon completion of the laboratory analysis, the completed chain-of-custody record will be returned to the project manager.

Analytical Methods

The following list identifies the various chemical constituents and analytical methods which will be used for their quantification.

<u>Chemical Parameter</u>	<u>Method</u>
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	EPA Method – 8260B

APPENDIX B

HISTORICAL GROUND WATER DATA

Appendix B - Historical Analytical Results
Groundwater Analytical Results
Summary of Volatile Organic Compounds and Total Petroleum Hydrocarbons
CM Production Inc. - Lone Pine Field Pits

Station ID#	Date Sampled	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)
COGCC 910-1		0.005	0.56	0.7	1.4	N/A	N/A
MW-1	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	4.3
	1/8/2013	< 0.001	0.0032	< 0.001	< 0.001	0.057	2.1
	9/19/2013	< 0.001	< 0.002	0.00073 J	< 0.001	NA	26.8
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	6.5
	3/25/2014	< 0.001	< 0.001	< 0.002	< 0.001	NA	2.26
	6/26/2014	0.0029	< 0.001	0.0081	< 0.001	< 0.2	6.6
	9/22/2014	< 0.001	< 0.001	0.0089 J	< 0.001	< 0.2	8.57
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	4.1
MW-2	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	1.1
	1/8/2013	< 0.001	0.0029	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	< 0.40
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	2.5
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	1.48
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.31
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	1.44
MW-3	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	3.9
	1/8/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	< 1.0
	3/25/2014	< 0.001	< 0.002	< 0.002	< 0.003	NA	0.441
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	0.418
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	0.399
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	0.214
MW-4	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	1.2
	1/8/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	1.7
	3/25/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	3.12
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	1.65
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.21
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.05	1.09
MW-5	4/17/2012	NS	NS	NS	NS	NS	NS
	1/8/2013	NS	NS	NS	NS	NS	NS
	2/5/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	2.63
	11/19/2014	NS	NS	NS	NS	NS	NS
MW-6	4/17/2012	NS	NS	NS	NS	NS	NS
	1/8/2013	NS	NS	NS	NS	NS	NS
	2/5/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.57
	11/19/2014	NS	NS	NS	NS	NS	NS

COGCC 910-1 Colorado Oil and Gas Conservation Commission Table 910-1 Concentration Levels

mg/L milligrams per liter

N/A Not Applicable (COGCC has not established a Table 910-1 Concentration Level for GRO or DRO in Groundwater)

< or ND Not Detected NA Not Analyzed NS Not Sampled

Appendix B - Historical Analytical Results
Groundwater Analytical Results
Semi-Volatile Organic Compounds - Polycyclic Aromatic Hydrocarbons
CM Production Inc. - Lone Pine Field Pits

Station ID#	Date Sampled	Acenaphthene (mg/l)	Anthracene (mg/l)	Benzo(a) anthracene (mg/l)	Benzo(b) fluoranthene (mg/l)	Benzo(a) pyrene (mg/l)	Chrysene (mg/l)	Dibenzo(a,h) anthracene (mg/l)	Fluoranthene (mg/l)	Fluorene (mg/l)	Indeno (1,2,3-cd) pyrene (mg/l)	Naphthalene (mg/l)	Pyrene (mg/l)	DRO (mg/l)
COGCC 910-1		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
CDPHE-WQCC Reg 41		0.42	2.1	0.00048	0.00048	0.00048	0.00048	0.00048	0.28	0.28	0.00048	0.14	0.21	NE
MW-1	9/19/2013	0.0003	< 0.00019	< 0.000095	< 0.000095	< 0.00019	0.00014	< 0.000095	< 0.00019	0.002	< 0.00019	0.00036	< 0.00019	26.8
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	6.5
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	2.26
	6/26/2014	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	6.6
	9/22/2014	0.00038	< 0.00019	< 0.000095	< 0.000095	< 0.000095	0.00017	< 0.000095	< 0.00019	< 0.00019	0.000071	< 0.00019	< 0.00019	8.57
	11/19/2014	< 0.0047	< 0.0047	< 0.0047	< 0.00094	< 0.00094	< 0.00094	< 0.00094	< 0.0047	< 0.0047	< 0.00094	< 0.0047	< 0.0047	4.1
MW-2	9/19/2013	< 0.00038	< 0.00038	< 0.00019	< 0.00019	< 0.00038	< 0.00019	< 0.00019	< 0.00038	< 0.00038	< 0.00039	< 0.00039	< 0.00038	< 0.40
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	2.5
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	1.48
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	1.31
	11/19/2014	< 0.0047	< 0.0047	< 0.000094	< 0.000094	< 0.00094	< 0.00094	< 0.000094	< 0.0047	< 0.0047	< 0.000094	< 0.0047	< 0.0047	1.44
MW-3	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.10	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 1.0
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	0.441
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.418
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	0.399
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.214
MW-4	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	1.7
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	3.12
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.65
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	1.21
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-5	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/22/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.63
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/22/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.57
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

OGCC 910- Colorado Oil and Gas Conservation Commission Table 910-1 Concentration Levels

mg/L milligrams per liter

N/A Not Applicable - Total PAH (polycyclic aromatic hydrocarbons)

NE None Established - the COGCC has Table 910-1 Concentration Levels for PAHs in soil, but has not established PAH concentrations in Groundwater

< Not Detected above the laboratory reporting limit

NS Not Sampled

Note: Upgradient wells MW-5 and MW-6 were not sampled.

Appendix B - Historical Analytical Results
Summary of Inorganic Compounds in Groundwater
CM Production Inc. - Lone Pine Field Pits
Groundwater Monitoring

Station ID#	Date Measured	Chloride (mg/L)	Iron (mg/L)	TDS (mg/L)	Sulfate (mg/L)
COGCC T 910-1		< 1.25 x background	NE	< 1.25 x background	< 1.25 x background
MW-1	4/17/2012	9.41		360	3.43
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	4.6		452	2.5
	9/23/2014	2.7	30.1	470	2.6
	11/19/2014	3.9	42.1	384	4.5
MW-2	4/17/2012	1.71		120	4.48
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	1.3		156	6.0
	9/22/2014	1.0	29.2	230	4.0
	11/19/2014	0.8	66.8	156	3.2
MW-3	4/17/2012	6.8		160	10.04
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	0.93		133	4.9
	9/23/2014	0.51	49.1	130	2.3
	11/19/2014	1.3	71.5	100	2.6
MW-4	4/17/2012	6.34		160	4.47
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	2.3		134	4.7
	9/22/2014	0.84	64.7	144	4.2
	11/19/2014	0.71	44.4	90.0	3.2
MW-5	4/17/2012	NS		NS	NS
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	NS		NS	NS
	9/22/2014	1.0	27.7	150	8.8
	11/19/2014	NS	NS	NS	NS
MW-6	4/17/2012	NS		NS	NS
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	NS		NS	NS
	9/22/2014	2.1	74.8	168	6.8
	11/19/2014	NS	NS	NS	NS

mg/L milligrams per liter

ND Not Detected

NS Not Sampled

APPENDIX C

LABORATORY DOCUMENTATION

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

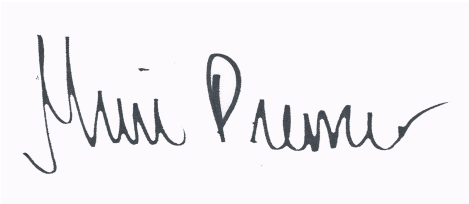
303.277.9310

November 09, 2018

Paul Henehan
Fremont Environmental
PO Box 1289
Wellington, CO 80549
RE: COGCC - Spaulding

Enclosed are the results of analyses for samples received by Summit Scientific on 11/02/18 17:13. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premer", on a light blue background.

Muri Premer For Ben Shrewsbury
Laboratory Manager



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1811037-01	Water	11/01/18 00:00	11/02/18 17:13
MW-2	1811037-02	Water	11/01/18 00:00	11/02/18 17:13
MW-3	1811037-03	Water	11/01/18 00:00	11/02/18 17:13
MW-4	1811037-04	Water	11/01/18 00:00	11/02/18 17:13
MW-5	1811037-05	Water	11/01/18 00:00	11/02/18 17:13
MW-6	1811037-06	Water	11/01/18 00:00	11/02/18 17:13

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

S₂

7811037

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: Fremont Environmental

Project Manager: Paul Henehan

Address: P.O Box 1289

E-Mail: paulh@fremontenv.com, kenr@fremontenv.com

City/State/Zip: Wellington, CO 80549

Bill to: PAUL HENEHAN

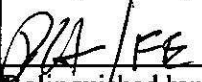
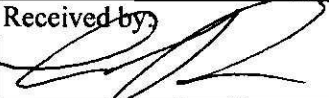
Phone: 303-956-8714

Project Name: COGCC - SPAUDING

Sampler Name: HENEHAN

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions	
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEX	Naphthalene	GRO	DRO	AN SULFATE	CHLORIDE	TDS		
1	MW-1	11/1/18		7			✓		✓					✓		✓	✓	✓	✓	✓	
2	MW-2																				
3	MW-3																				
4	MW-4																				
5	MW-5																				
6	MW-6																				
7																					
8																					
9																					
10																					

Relinquished by: 	Date/Time: 11/2/18 1713	Received by: 	Date/Time: 11-2-18 1713	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____ Sample Integrity: Temperature Upon Receipt: 7.5 Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

S2 Work Order 1811037

Client: Fremont Client Project ID: COACC - SPARKING

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

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Temp (°C)	<u>7.5</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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) ⁽¹⁾ ?			<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 ⁽¹⁾ ?			<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):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

UP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

11.2.18 1345
Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-1
1811037-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1811045	11/05/18	11/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.3 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	1811047	11/05/18	11/06/18	EPA 8015M	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		121 %	58.9-148		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	ND	1.00	mg/L	1	1811053	11/05/18	11/08/18	EPA 300.0	
Sulfate	2.70	1.00	"	"	"	"	"	"	

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
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-1

1811037-01 (Water)

Summit Scientific

Anions by EPA Method 300.0

Total Dissolved Solids by SM2540C

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	102	10.0		mg/L	1	1811095	11/07/18	11/08/18	SM2540C	

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
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-2
1811037-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1811045	11/05/18	11/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	5.0	mg/L	1	1811047	11/05/18	11/06/18	EPA 8015M	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		117 %	58.9-148		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	ND	1.00	mg/L	1	1811053	11/05/18	11/08/18	EPA 300.0	
Sulfate	2.05	1.00	"	"	"	"	"	"	

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
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-2

1811037-02 (Water)

Summit Scientific

Total Dissolved Solids by SM2540C

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	81.2	10.0		mg/L	1	1811095	11/07/18	11/08/18	SM2540C	

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
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-3
1811037-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1811045	11/05/18	11/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.0 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	5.0	mg/L	1	1811047	11/05/18	11/06/18	EPA 8015M	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		115 %	58.9-148		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	2.40	1.00	mg/L	1	1811053	11/05/18	11/08/18	EPA 300.0	
Chloride	2.94	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-3

1811037-03 (Water)

Summit Scientific

Total Dissolved Solids by SM2540C

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	77.3	10.0		mg/L	1	1811095	11/07/18	11/08/18	SM2540C	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-4
1811037-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1811045	11/05/18	11/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	5.0	mg/L	1	1811047	11/05/18	11/06/18	EPA 8015M	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		121 %	58.9-148		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	ND	1.00	mg/L	1	1811053	11/05/18	11/08/18	EPA 300.0	
Sulfate	2.14	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-4

1811037-04 (Water)

Summit Scientific

Total Dissolved Solids by SM2540C

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	81.6	10.0		mg/L	1	1811095	11/07/18	11/08/18	SM2540C	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-5
1811037-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1811045	11/05/18	11/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	5.0	mg/L	1	1811047	11/05/18	11/06/18	EPA 8015M	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		120 %	58.9-148		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	6.74	1.00	mg/L	1	1811053	11/05/18	11/08/18	EPA 300.0	
Chloride	ND	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-5

1811037-05 (Water)

Summit Scientific

Total Dissolved Solids by SM2540C

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	116	10.0		mg/L	1	1811095	11/07/18	11/08/18	SM2540C	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-6
1811037-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1811045	11/05/18	11/07/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		88.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	1811047	11/05/18	11/06/18	EPA 8015M	

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		128 %	58.9-148		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	5.72	1.00	mg/L	1	1811053	11/05/18	11/08/18	EPA 300.0	
Chloride	2.65	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

MW-6

1811037-06 (Water)

Summit Scientific

Total Dissolved Solids by SM2540C

Date Sampled: **11/01/18 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	128	10.0		mg/L	1	1811095	11/07/18	11/08/18	SM2540C	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]
Project Manager: Paul Henehan

Reported:
11/09/18 09:22

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1811045 - EPA 5030 Water MS

Blank (1811045-BLK1)

Prepared: 11/05/18 Analyzed: 11/06/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Gasoline Range Hydrocarbons	ND	500	"							
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.2		103	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		104	21-167			

LCS (1811045-BS1)

Prepared: 11/05/18 Analyzed: 11/06/18

Benzene	53.0	1.0	ug/l	50.0		106	70-130			
Toluene	51.5	1.0	"	50.0		103	70-130			
Ethylbenzene	52.0	1.0	"	50.0		104	70-130			
m,p-Xylene	104	2.0	"	100		104	70-130			
o-Xylene	51.3	1.0	"	50.0		103	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.2		105	23-173			
Surrogate: Toluene-d8	13.7		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

LCS Dup (1811045-BSD1)

Prepared: 11/05/18 Analyzed: 11/06/18

Benzene	52.6	1.0	ug/l	50.0		105	70-130	0.681	20	
Toluene	51.3	1.0	"	50.0		103	70-130	0.331	20	
Ethylbenzene	49.9	1.0	"	50.0		99.8	70-130	4.03	20	
m,p-Xylene	101	2.0	"	100		101	70-130	3.13	20	
o-Xylene	49.9	1.0	"	50.0		99.9	70-130	2.71	20	
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.2		104	23-173			
Surrogate: Toluene-d8	13.9		"	13.3		105	20-170			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		103	21-167			

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1811045 - EPA 5030 Water MS

Matrix Spike (1811045-MS1)	Source: 1811025-01			Prepared: 11/05/18 Analyzed: 11/06/18						
Benzene	52.1	1.0	ug/l	50.0	ND	104	70-130			
Toluene	50.9	1.0	"	50.0	ND	102	70-130			
Ethylbenzene	51.7	1.0	"	50.0	ND	103	70-130			
m,p-Xylene	103	2.0	"	100	ND	103	70-130			
o-Xylene	53.0	1.0	"	50.0	ND	106	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.2		99.9	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.6	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167			

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]
Project Manager: Paul Henehan

Reported:
11/09/18 09:22

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1811047 - EPA 3520B

Blank (1811047-BLK1)

Prepared: 11/05/18 Analyzed: 11/06/18

C10-C28 (DRO) ND 5.0 mg/L

LCS (1811047-BS1)

Prepared: 11/05/18 Analyzed: 11/06/18

C10-C28 (DRO) 48.7 5.0 mg/L 50.0 97.4 70-130

Matrix Spike (1811047-MS1)

Source: 1811026-01

Prepared: 11/05/18 Analyzed: 11/06/18

C10-C28 (DRO) 49.9 5.0 mg/L 50.0 4.58 90.7 70-130

Matrix Spike Dup (1811047-MSD1)

Source: 1811026-01

Prepared: 11/05/18 Analyzed: 11/06/18

C10-C28 (DRO) 49.4 5.0 mg/L 50.0 4.58 89.6 70-130 1.13 20

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

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

Batch 1811053 - General Preparation

Blank (1811053-BLK1)

Prepared & Analyzed: 11/05/18

Chloride	ND	1.00	mg/L
Sulfate	ND	1.00	"

LCS (1811053-BS1)

Prepared & Analyzed: 11/05/18

Chloride	3.19	1.00	mg/L	3.00	106	90-110
Sulfate	15.3	1.00	"	15.0	102	90-110

Duplicate (1811053-DUP1)

Source: 1811022-01

Prepared & Analyzed: 11/05/18

Chloride	1.98	1.00	mg/L	2.00	1.01	20
Sulfate	0.0460	1.00	"	0.0470	2.15	20

Matrix Spike (1811053-MS1)

Source: 1811022-01

Prepared & Analyzed: 11/05/18

Chloride	5.13	1.00	mg/L	3.00	2.00	104	80-120
Sulfate	17.8	1.00	"	15.0	0.0470	118	80-120

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

Reported:

11/09/18 09:22

Total Dissolved Solids by SM2540C - Quality Control

Summit Scientific

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

Batch 1811095 - General Preparation

Blank (1811095-BLK1)

Prepared: 11/07/18 Analyzed: 11/08/18

Total Dissolved Solids ND 10.0 mg/L

Duplicate (1811095-DUP1)

Source: 1811037-01

Prepared: 11/07/18 Analyzed: 11/08/18

Total Dissolved Solids 102 10.0 mg/L 102 0.295 20

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]
Project Manager: Paul Henehan

Reported:
11/09/18 09:22

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