

# **FREMONT ENVIRONMENTAL INC.**

**Doc #1313040  
10/31/2019**

October 27, 2019

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. Hennehan, 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  
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**October 27, 2019**

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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 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 October 8, 2019 in accordance with the Sampling Plan included in Appendix A. The data are summarized in Table 1.

Water table contours inferred from the October 2019 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 0.0057 feet per foot (ft/ft) for the October 2019 data.

#### **3.2 Ground Water Sampling and Analysis**

Ground water samples were collected from the six monitoring wells on October 8, 2019 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 October 2019 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.**



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Paul V. Henahan, P.E.

Senior Consultant

10/27/19  
Date\_\_\_\_\_

## TABLE

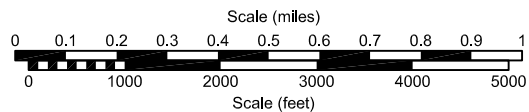
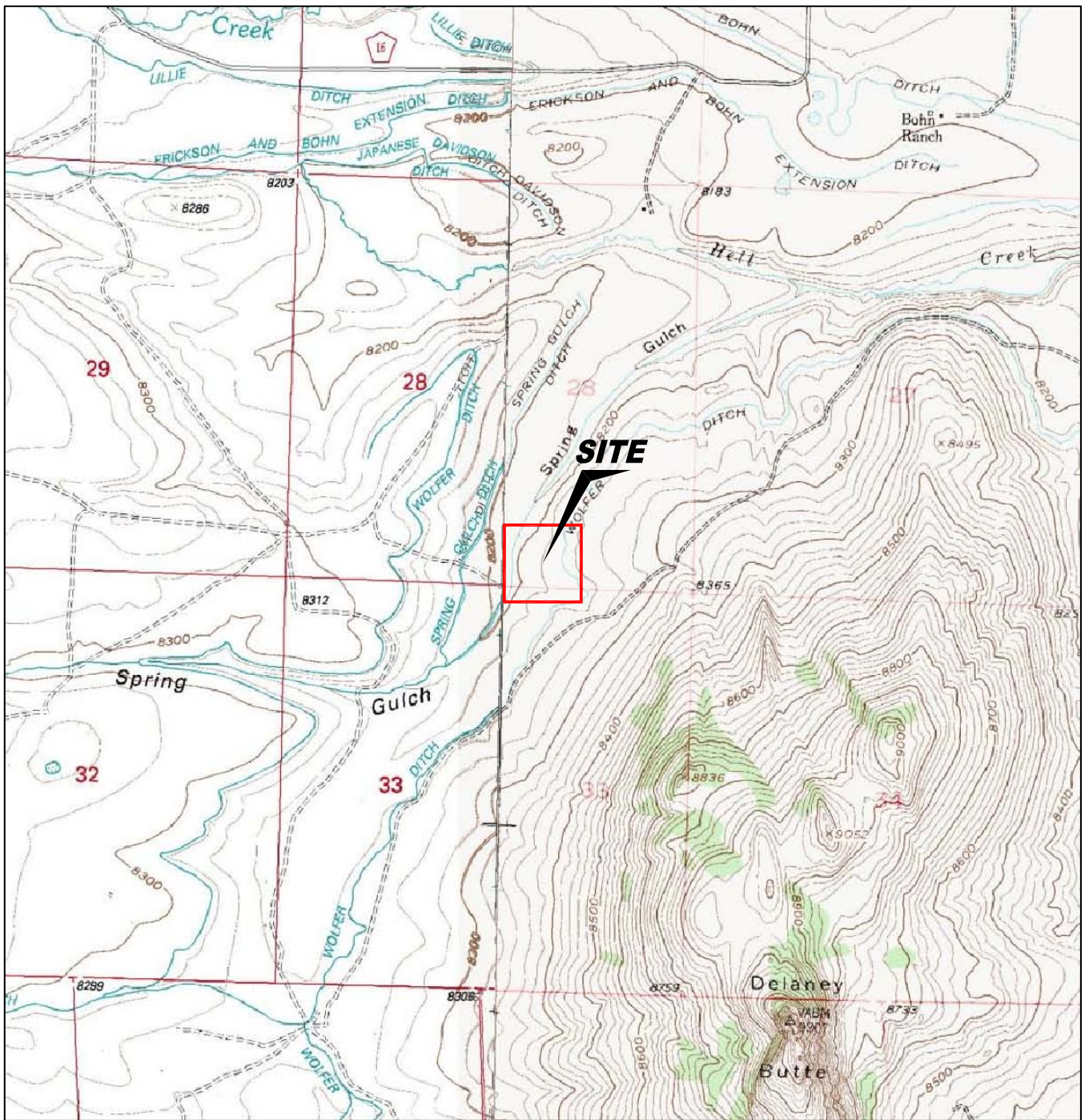
**TABLE 1**  
**SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA**  
**COLORADO OIL AND GAS CONSERVATION COMMISSION**  
**MARGARET SPAULDING WATER TREATMENT SITE - JACKSON COUNTY, COLORADO**  
**FREMONT PROJECT NO. C016-119**

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
	05/15/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	1.41	0.424	65.4		23.52	8203.82	NP
	10/08/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	9.28	1.81	170		22.67	8204.67	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
	05/15/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	2.49	0.519	64.8		14.55	8205.32	NP
	10/08/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	8.1	1.17	83.8		13.88	8205.99	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
	05/15/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	4.87	0.819	93.5		23.34	8205.66	NP
	10/08/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	5.65	0.323	64.3		22.45	8206.55	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
	05/15/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	5.02	1.41	112		31.27	8204.44	NP
	10/08/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	7.74	0.834	78.4		30.08	8205.63	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



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-5	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
	05/15/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	16.4	5.29	164		41.37	8203.59	NP
	10/08/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	15	1.5	110		39.75	8205.21	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
	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
	05/15/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	6.14	1.74	98.4		35.27	8206.96	NP
	10/08/19	<1.0	<1.0	<1.0	<1.0	<0.5	<5.0	11.1	4.86	109		34.44	8207.79	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  
**10/26/19**

Reviewed by  
**PH**






Filename  
**16119T**







LEGEND



MONITORING WELL  
PRODUCTION WELL  
FENCE LINE  
BUILDING  
ABOVE GROUND STORAGE TANK

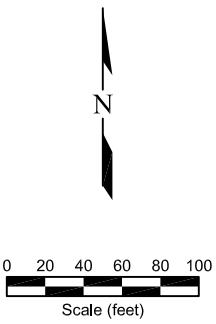


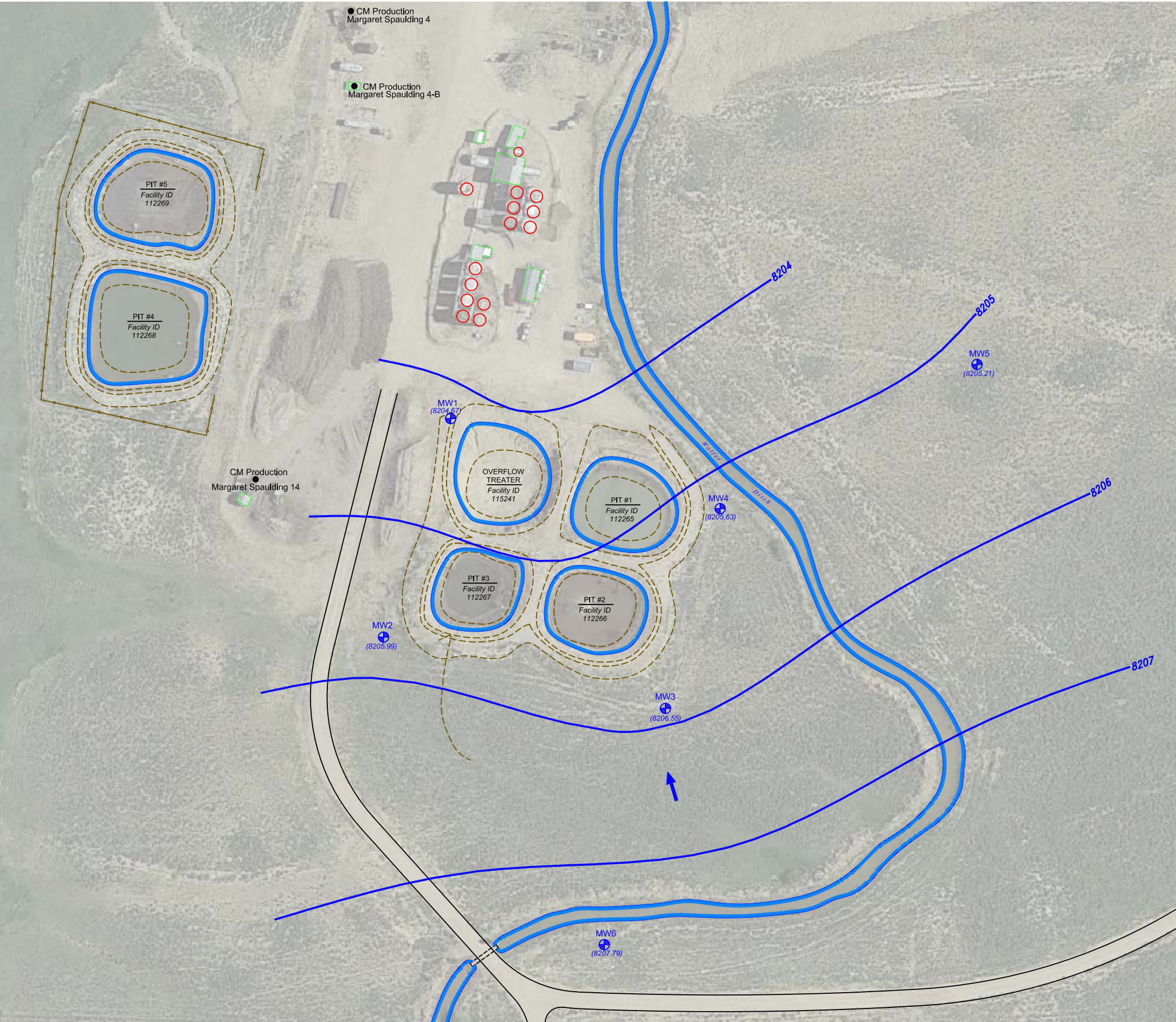
Figure 2  
SITE MAP

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

Project No. C016-119	Prepared by JMA	Drawn by JMA
Date 10/26/19	Reviewed by PH	Filename 16119Q

REMONT  
ENVIRONMENTAL  
FE





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

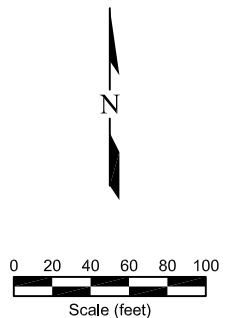


Figure 3

INFERRED GROUNDWATER CONTOUR

October 8, 2019

Margaret Spaulding Treatment Site

SW SE Section 28, T9N, R81W

Jackson County, Colorado

Project No. C016-119	Prepared by JMA	Drawn by JMA
Date 10/26/19	Reviewed by PH	Filename 16119Q

REMONT ENVIRONMENTAL





**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)
<b>COGCC 910-1</b>		<b>0.005</b>	<b>0.56</b>	<b>0.7</b>	<b>1.4</b>	<b>N/A</b>	<b>N/A</b>
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)
<b>COGCC 910-1</b>		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
<b>CDPHE-WQCC Reg 41</b>		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

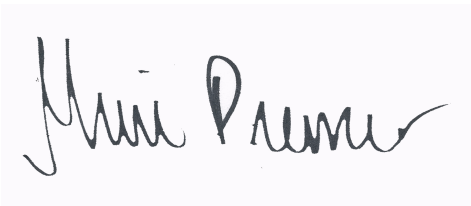
303.277.9310

October 16, 2019

Paul Henehan  
Fremont Environmental  
PO Box 1289  
Wellington, CO 80549  
RE: COGCC - Spaulding  
Work Order # 1910120

Enclosed are the results of analyses for samples received by Summit Scientific on 10/09/19 15:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and reads "Muri Premer".

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:**

10/16/19 12:04

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1910120-01	Water	10/08/19 00:00	10/09/19 15:20
MW-2	1910120-02	Water	10/08/19 00:00	10/09/19 15:20
MW-3	1910120-03	Water	10/08/19 00:00	10/09/19 15:20
MW-4	1910120-04	Water	10/08/19 00:00	10/09/19 15:20
MW-5	1910120-05	Water	10/08/19 00:00	10/09/19 15:20
MW-6	1910120-06	Water	10/08/19 00:00	10/09/19 15:20

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>

1910120

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, ethanb@fremontenv.com

City/State/Zip: Wellington, CO 80549

Bill to: PAUL HENEHAN

Phone: 303-956-8714

Project Name: COGCC-SPAULDING WATER TREATMENT

Sampler Name: HENEHAN

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	BTEX	Naphthalene	GRO	DRO	SULFATES	CHLORIDE	TDS		
1	MW-1	10/8/19		7			✓		✓					✓	✓	✓	✓	✓	✓		
2	MW-2																				
3	MW-3																				
4	MW-4																				
5	MW-5																				
6	MW-6																				
7																					
8																					
9																					
10																					

Relinquished by: <u>PLA/FE</u>	Date/Time: <u>10/9/19 1520</u>	Received by: <u>[Signature]</u>	Date/Time: <u>10/09/19 1520</u>	<b>Turn Around Time</b> (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> <b>Sample Integrity:</b> Temperature Upon Receipt: <u>4.8</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Notes:</b>
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

## Sample Receipt Checklist

S2 Work Order 1910120Client: Fremont Environmental Client Project ID: COGCC - Spaulding Water TreatmentShipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: \_\_\_\_\_Matrix (check all that apply): \_\_\_\_\_ Air \_\_\_\_\_ Soil/Solid X Water \_\_\_\_\_ Other: \_\_\_\_\_  
(Describe)

Temp (°C)	<u>4.8</u>
-----------	------------

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.	<u>X</u>			
Were all samples received intact <sup>(1)</sup> ?	<u>X</u>			
Was adequate sample volume provided <sup>(1)</sup> ?	<u>X</u>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<u>X</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?		<u>X</u>		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<u>X</u>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<u>X</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<u>X</u>		
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	<u>X</u>			<u>HCL</u>
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<u>X</u>	
If dissolved metals are requested, were samples field filtered?			<u>X</u>	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.KB  
Custodian Printed Name or Initials[Signature]  
Signature of Custodian10/09/19  
Date/Time 1535



Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/16/19 12:04

**MW-1**  
**1910120-01 (Water)**

**Summit Scientific**

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

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1910171	10/11/19	10/12/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	1910182	10/14/19	10/15/19	EPA 8015M	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		127 %	58.9-148		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	<b>1.81</b>	0.0600	mg/L	1	1910151	10/10/19	10/11/19	EPA 300.0	

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:**

10/16/19 12:04

**MW-1**

**1910120-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

<b>Sulfate</b>	<b>9.28</b>	0.300	mg/L	1	1910151	10/10/19	10/11/19	EPA 300.0
----------------	-------------	-------	------	---	---------	----------	----------	-----------

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>170</b>	10.0	mg/L	1	1910148	10/10/19	10/10/19	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:**  
10/16/19 12:04

**MW-2**  
**1910120-02 (Water)**

**Summit Scientific**

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

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1910171	10/11/19	10/12/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	5.0	mg/L	1	1910182	10/14/19	10/15/19	EPA 8015M	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		144 %	58.9-148		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	1.17	0.0600	mg/L	1	1910151	10/10/19	10/11/19	EPA 300.0	
Sulfate	8.10	0.300	"	"	"	"	"	"	

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:**

10/16/19 12:04

**MW-2**

**1910120-02 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>83.8</b>	10.0		mg/L	1	1910148	10/10/19	10/10/19	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:**  
10/16/19 12:04

**MW-3**  
**1910120-03 (Water)**

**Summit Scientific**

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

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1910171	10/11/19	10/12/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	1910182	10/14/19	10/15/19	EPA 8015M	

Date Sampled: **10/08/19 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: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	5.65	0.300	mg/L	1	1910151	10/10/19	10/11/19	EPA 300.0	
Chloride	0.323	0.0600	"	"	"	"	"	"	

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

**Reported:**

10/16/19 12:04

**MW-3**

**1910120-03 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>64.3</b>	10.0		mg/L	1	1910148	10/10/19	10/10/19	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:**  
10/16/19 12:04

**MW-4**  
**1910120-04 (Water)**

**Summit Scientific**

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

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1910171	10/11/19	10/12/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.8 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	1910182	10/14/19	10/15/19	EPA 8015M	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		129 %	58.9-148		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	<b>0.834</b>	0.0600	mg/L	1	1910151	10/10/19	10/11/19	EPA 300.0	
Sulfate	<b>7.74</b>	0.300	"	"	"	"	"	"	

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PO Box 1289  
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

**Reported:**

10/16/19 12:04

**MW-4**

**1910120-04 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>78.4</b>	10.0		mg/L	1	1910148	10/10/19	10/10/19	SM2540C	

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Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/16/19 12:04

**MW-5**  
**1910120-05 (Water)**

**Summit Scientific**

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

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1910171	10/11/19	10/12/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.8 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	1910182	10/14/19	10/15/19	EPA 8015M	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		132 %	58.9-148		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	15.0	0.300	mg/L	1	1910151	10/10/19	10/11/19	EPA 300.0	
Chloride	1.50	0.0600	"	"	"	"	"	"	

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PO Box 1289  
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

**Reported:**

10/16/19 12:04

**MW-5**

**1910120-05 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>110</b>	10.0		mg/L	1	1910148	10/10/19	10/10/19	SM2540C	

Summit Scientific

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Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/16/19 12:04

**MW-6**  
**1910120-06 (Water)**

**Summit Scientific**

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

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1910171	10/11/19	10/12/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	1910182	10/14/19	10/15/19	EPA 8015M	

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		129 %	58.9-148		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	11.1	0.300	mg/L	1	1910151	10/10/19	10/11/19	EPA 300.0	
Chloride	4.86	0.0600	"	"	"	"	"	"	

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

**Reported:**

10/16/19 12:04

**MW-6**

**1910120-06 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/08/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>109</b>	10.0		mg/L	1	1910148	10/10/19	10/10/19	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:**  
10/16/19 12:04

## 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 1910171 - EPA 5030 Water MS

##### Blank (1910171-BLK1)

Prepared & Analyzed: 10/11/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Naphthalene	ND	1.0	"							
Gasoline Range Hydrocarbons	ND	500	"							
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.3		104	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	21-167			

##### LCS (1910171-BS1)

Prepared: 10/11/19 Analyzed: 10/12/19

Benzene	33.4	1.0	ug/l	33.3		100	70-130			
Toluene	35.6	1.0	"	33.3		107	70-130			
Ethylbenzene	36.7	1.0	"	33.3		110	70-130			
m,p-Xylene	69.1	2.0	"	66.7		104	70-130			
o-Xylene	35.6	1.0	"	33.3		107	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.8	21-167			

##### Matrix Spike (1910171-MS1)

Source: 1910120-01

Prepared: 10/11/19 Analyzed: 10/12/19

Benzene	35.0	1.0	ug/l	33.3	ND	105	70-130			
Toluene	37.2	1.0	"	33.3	ND	112	70-130			
Ethylbenzene	39.0	1.0	"	33.3	ND	117	70-130			
m,p-Xylene	73.2	2.0	"	66.7	ND	110	70-130			
o-Xylene	37.3	1.0	"	33.3	ND	112	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		102	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.1	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:**

10/16/19 12:04

## 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 1910171 - EPA 5030 Water MS

Matrix Spike Dup (1910171-MSD1)	Source: 1910120-01			Prepared: 10/11/19 Analyzed: 10/12/19						
Benzene	34.8	1.0	ug/l	33.3	ND	104	70-130	0.373	30	
Toluene	37.6	1.0	"	33.3	ND	113	70-130	0.963	30	
Ethylbenzene	39.4	1.0	"	33.3	ND	118	70-130	0.892	30	
m,p-Xylene	73.5	2.0	"	66.7	ND	110	70-130	0.409	30	
o-Xylene	37.6	1.0	"	33.3	ND	113	70-130	0.721	30	
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.7	21-167			

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
10/16/19 12:04

**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 1910182 - EPA 3520B**

**Blank (1910182-BLK1)**

Prepared: 10/14/19 Analyzed: 10/15/19

C10-C28 (DRO) ND 5.0 mg/L

**LCS (1910182-BS1)**

Prepared: 10/14/19 Analyzed: 10/15/19

C10-C28 (DRO) 52.0 5.0 mg/L 50.0 104 70-130

**Matrix Spike (1910182-MS1)**

**Source: 1910120-01**

Prepared: 10/14/19 Analyzed: 10/15/19

C10-C28 (DRO) 56.8 5.0 mg/L 50.0 4.22 105 70-130

**Matrix Spike Dup (1910182-MSD1)**

**Source: 1910120-01**

Prepared: 10/14/19 Analyzed: 10/15/19

C10-C28 (DRO) 50.6 5.0 mg/L 50.0 4.22 92.8 70-130 11.5 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:**  
10/16/19 12:04

### 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 1910151 - General Preparation

##### Blank (1910151-BLK1)

Prepared & Analyzed: 10/10/19

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

##### LCS (1910151-BS1)

Prepared & Analyzed: 10/10/19

Chloride	3.23	0.0600	mg/L	3.00	108	90-110
Sulfate	15.8	0.300	"	15.0	105	90-110

##### Duplicate (1910151-DUP1)

Source: 1910059-01

Prepared & Analyzed: 10/10/19

Chloride	381	6.00	mg/L	378	1.00	20
Sulfate	4990	30.0	"	4750	4.92	20

##### Matrix Spike (1910151-MS1)

Source: 1910059-01

Prepared & Analyzed: 10/10/19

Chloride	682	6.00	mg/L	300	378	101	80-120
Sulfate	6170	30.0	"	1500	4750	94.6	80-120

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PO Box 1289  
Wellington CO, 80549

Project: COGCC - Spaulding

Project Number: [none]

Project Manager: Paul Henehan

**Reported:**

10/16/19 12:04

### Total Dissolved Solids by SM2540C - Quality Control

#### Summit Scientific

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

#### Batch 1910148 - General Preparation

##### Blank (1910148-BLK1)

Prepared & Analyzed: 10/10/19

Total Dissolved Solids ND 10.0 mg/L

##### Duplicate (1910148-DUP1)

Source: 1910110-01

Prepared & Analyzed: 10/10/19

Total Dissolved Solids 561 10.0 mg/L 560 0.214 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:**  
10/16/19 12:04

### 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