

## **FREMONT ENVIRONMENTAL INC.**

May 23, 2017

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. Henehan, 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:**

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**May 23, 2017**

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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 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 May 1, 2017 in accordance with the Sampling Plan included in Appendix A. The data are summarized in Table 1.

Water table contours inferred from the May 2017 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 May 2017 data.

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

Ground water samples were collected from the six monitoring wells on May 1, 2017 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 May 2017 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.**



5/23/17

Date \_\_\_\_\_

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

Senior Consultant

**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
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
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
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
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
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
Table 910-1 Limits		5	560	700	1,400	None	None	<1.25 x BG	<1.25 x BG	<1.25 x BG				

Bold face values exceed the COGCC limits

NP - No Free Product

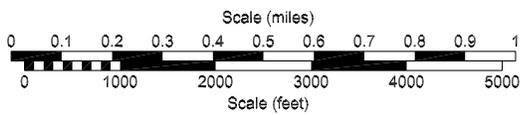
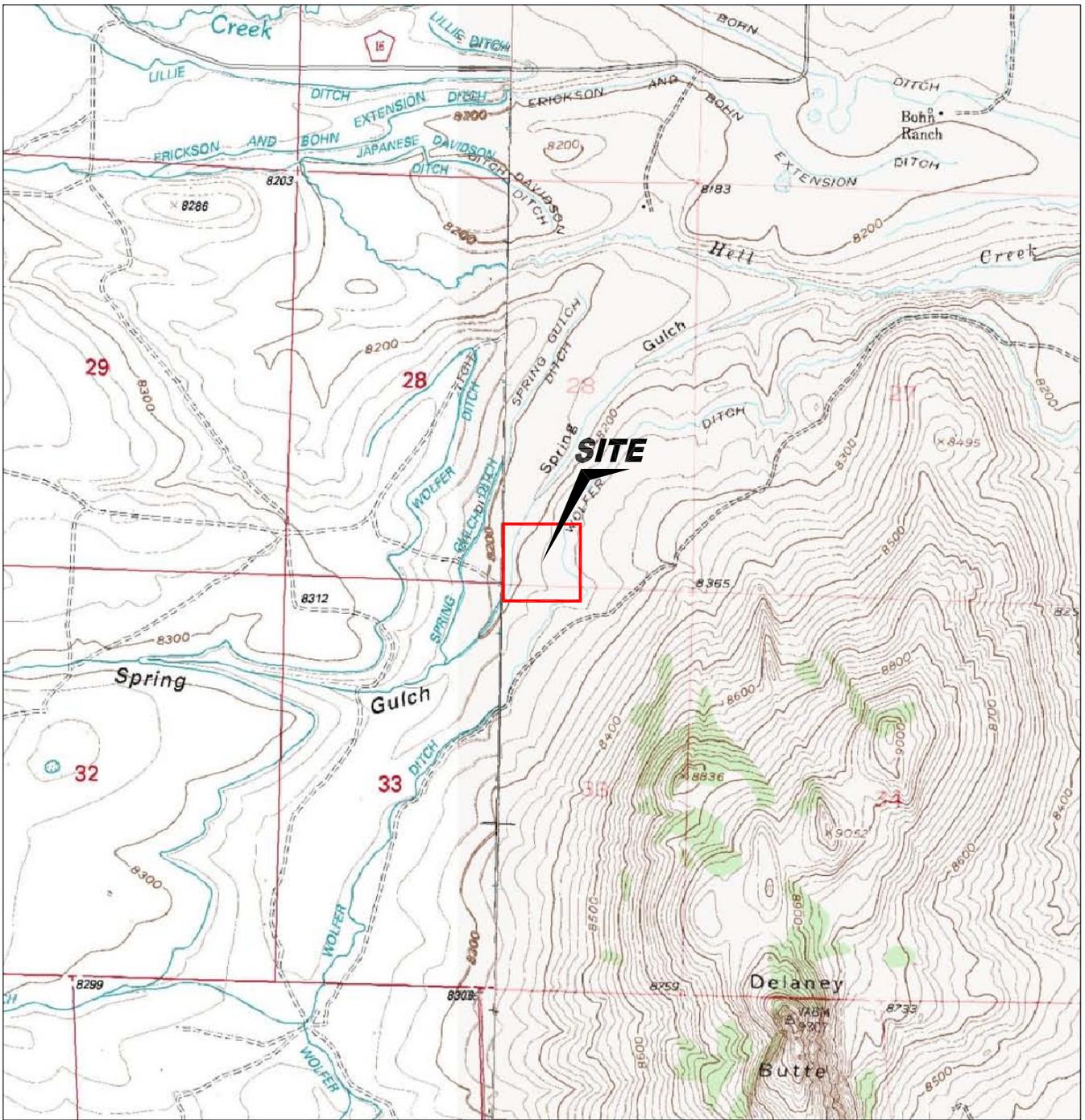
NS - Not Sampled

NM - Not Measured

NA - Not Analyzed

BG - Background

## 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 11/10/16	Reviewed by	Filename 16119T





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

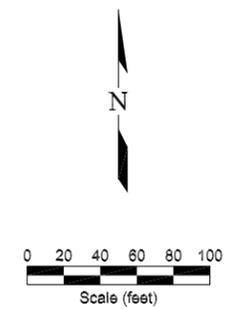
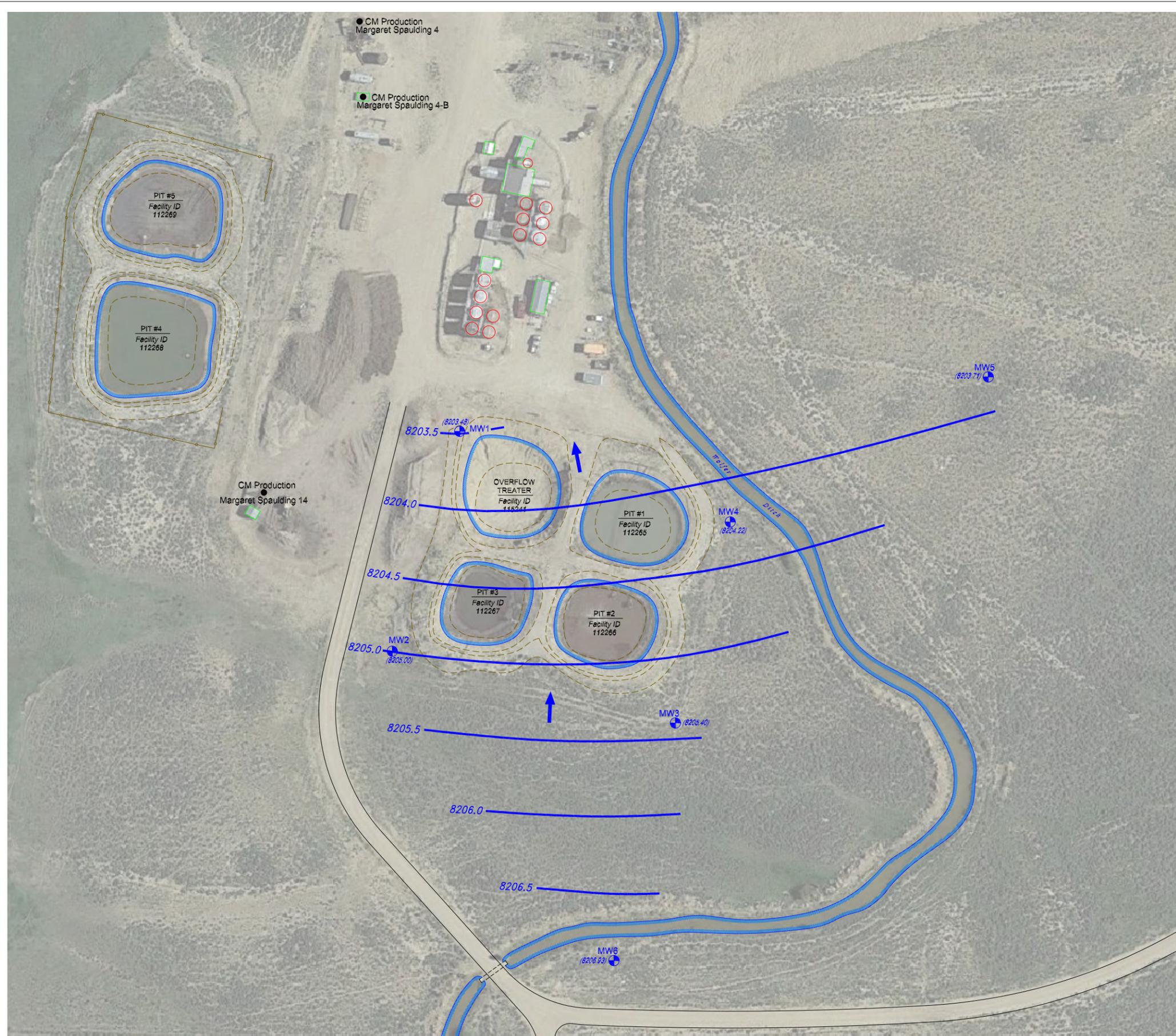


Figure 2  
SITE MAP

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

Project No. C016-119	Prepared by	Drawn by JMA	
Date 11/14/16	Reviewed by	Filename 16119Q	



**LEGEND**

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

- (8204.37) GROUND WATER ELEVATION (ft above arbitrary datum)
- NM NOT MEASURED
- 8204.5 WATER TABLE CONTOUR
- ← GROUND WATER FLOW DIRECTION

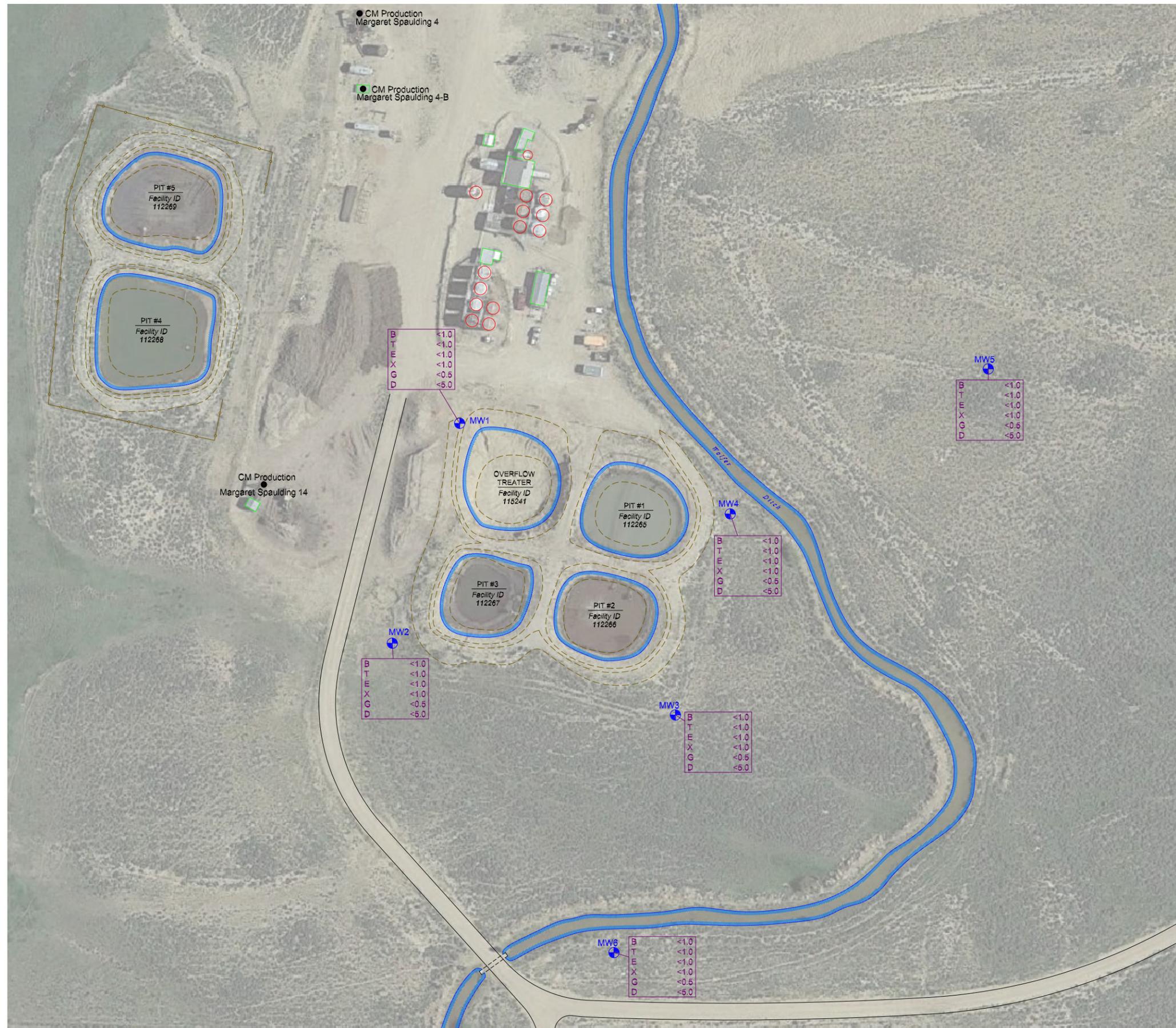
N

0 20 40 60 80 100  
Scale (feet)

Figure 3  
**INFERRED GROUNDWATER CONTOUR**  
MAY 1, 2017

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

Project No. C016-119	Prepared by	Drawn by JMA	
Date 5/16/17	Reviewed by	Filename 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 as gasoline (mg/L)
D	<5.0	TPH as diesel (mg/L)

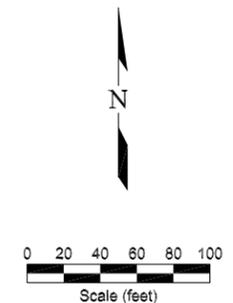


Figure 4  
**GROUND WATER CHEMISTRY MAP**  
 MAY 1, 2017

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

Project No. C016-119	Prepared by	Drawn by JMA	
Date 5/16/17	Reviewed by	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 – 8260C

**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	< 0.000019	< 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	< 1.0
	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

COGCC 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)
<b>COGCC T 910-1</b>		<b>&lt; 1.25 x background</b>	<b>NE</b>	<b>&lt; 1.25 x background</b>	<b>&lt; 1.25 x background</b>
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

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 11, 2017

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020  
RE: COGCC - Spaulding

Enclosed are the results of analyses for samples received by Summit Scientific on 05/03/17 13:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
05/11/17 09:43

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1705034-01	Water	05/01/17 00:00	05/03/17 13:30
MW-2	1705034-02	Water	05/01/17 00:00	05/03/17 13:30
MW-3	1705034-03	Water	05/01/17 00:00	05/03/17 13:30
MW-4	1705034-04	Water	05/01/17 00:00	05/03/17 13:30
MW-5	1705034-05	Water	05/01/17 00:00	05/03/17 13:30
MW-6	1705034-06	Water	05/01/17 00:00	05/03/17 13:30

Summit Scientific

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





Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
05/11/17 09:43

Sample Receipt Checklist

S2 Work Order: 1705034  
Client: Fremont Client Project ID: COGCC - Spaulding  
Shipped Via: H.D. (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: \_\_\_\_\_  
Matrix (check all that apply) \_\_\_\_\_ Air \_\_\_\_\_ Soil/Solid  Water \_\_\_\_\_ Other: \_\_\_\_\_ (Describe)

Cooler ID				
Temp (°C)	<u>6.7</u>			

Thermometer ID: 61857155-K

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

Murp.  
Custodian Printed Name

NA 5-3-17  
Signature or Initials of Custodian

13:30  
Date/Time



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
05/11/17 09:43

**MW-1**  
**1705034-01 (Water)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.00	mg/L	1	1705085	05/09/17	05/09/17	8015M	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		115 %	47.2-150		"	"	"	"	

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

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1705050	05/04/17	05/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		105 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	45-146		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	<b>3.30</b>	1.00	mg/L	1	1705054	05/04/17	05/04/17	EPA 300.0	
Chloride	ND	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental  
 1759 Redwing Lane  
 Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 05/11/17 09:43

**MW-1**  
**1705034-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

**Total Dissolved Solids by 160.1**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>145</b>	8.00	mg/L	1	1705111	05/04/17	05/04/17	EPA 160.1	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
05/11/17 09:43

**MW-2**  
**1705034-02 (Water)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.00	mg/L	1	1705085	05/09/17	05/09/17	8015M	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		116 %	47.2-150		"	"	"	"	

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

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1705050	05/04/17	05/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		105 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	45-146		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	<b>3.68</b>	1.00	mg/L	1	1705054	05/04/17	05/04/17	EPA 300.0	
Chloride	<b>1.13</b>	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental  
 1759 Redwing Lane  
 Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 05/11/17 09:43

**MW-2**  
**1705034-02 (Water)**

**Summit Scientific**

**Total Dissolved Solids by 160.1**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>126</b>	8.00	mg/L	1	1705111	05/04/17	05/04/17	EPA 160.1	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
05/11/17 09:43

**MW-3**  
**1705034-03 (Water)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.00	mg/L	1	1705085	05/09/17	05/09/17	8015M	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		118 %	47.2-150		"	"	"	"	

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

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1705050	05/04/17	05/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		107 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	45-146		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	<b>6.24</b>	1.00	mg/L	1	1705054	05/04/17	05/04/17	EPA 300.0	
Chloride	<b>1.95</b>	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental  
 1759 Redwing Lane  
 Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 05/11/17 09:43

**MW-3**  
**1705034-03 (Water)**

**Summit Scientific**

**Total Dissolved Solids by 160.1**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>152</b>	8.00	mg/L	1	1705111	05/04/17	05/04/17	EPA 160.1	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
05/11/17 09:43

**MW-4**  
**1705034-04 (Water)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.00	mg/L	1	1705085	05/09/17	05/09/17	8015M	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		120 %	47.2-150		"	"	"	"	

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

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1705050	05/04/17	05/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		104 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	45-146		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	<b>5.70</b>	1.00	mg/L	1	1705054	05/04/17	05/04/17	EPA 300.0	
Chloride	<b>2.66</b>	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental  
 1759 Redwing Lane  
 Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 05/11/17 09:43

**MW-4**  
**1705034-04 (Water)**

**Summit Scientific**

**Total Dissolved Solids by 160.1**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>155</b>	8.00	mg/L	1	1705111	05/04/17	05/04/17	EPA 160.1	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
05/11/17 09:43

**MW-5**  
**1705034-05 (Water)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.00	mg/L	1	1705085	05/09/17	05/09/17	8015M	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		118 %	47.2-150		"	"	"	"	

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

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1705050	05/04/17	05/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		108 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	<b>14.1</b>	1.00	mg/L	1	1705054	05/04/17	05/04/17	EPA 300.0	
Chloride	<b>3.97</b>	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental  
 1759 Redwing Lane  
 Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 05/11/17 09:43

**MW-5**  
**1705034-05 (Water)**

**Summit Scientific**

**Total Dissolved Solids by 160.1**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>204</b>	8.00	mg/L	1	1705111	05/04/17	05/04/17	EPA 160.1	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
05/11/17 09:43

**MW-6**  
**1705034-06 (Water)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.00	mg/L	1	1705085	05/09/17	05/09/17	8015M	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		117 %	47.2-150		"	"	"	"	

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

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1705050	05/04/17	05/04/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		106 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	45-146		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	<b>7.54</b>	1.00	mg/L	1	1705054	05/04/17	05/04/17	EPA 300.0	
Chloride	<b>2.09</b>	1.00	"	"	"	"	"	"	

Summit Scientific

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Fremont Environmental  
 1759 Redwing Lane  
 Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 05/11/17 09:43

**MW-6**  
**1705034-06 (Water)**

**Summit Scientific**

**Total Dissolved Solids by 160.1**

Date Sampled: **05/01/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>185</b>	8.00	mg/L	1	1705111	05/04/17	05/04/17	EPA 160.1	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
05/11/17 09:43

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

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

**Batch 1705085 - EPA 3520B**

**Blank (1705085-BLK1)**

Prepared & Analyzed: 05/09/17

C10-C28 (DRO)	ND	5.00	mg/L								
<i>Surrogate: o-Terphenyl</i>	1.48		"	1.25		118	47.2-150				

**LCS (1705085-BS1)**

Prepared & Analyzed: 05/09/17

C10-C28 (DRO)	50.8	5.00	mg/L	49.9		102	80-149				
<i>Surrogate: o-Terphenyl</i>	1.82		"	1.25		145	47.2-150				

**Matrix Spike (1705085-MS1)**

Source: 1705034-01

Prepared & Analyzed: 05/09/17

C10-C28 (DRO)	52.2	5.00	mg/L	49.9	2.03	101	80-120				
<i>Surrogate: o-Terphenyl</i>	1.58		"	1.25		126	47.2-150				

**Matrix Spike Dup (1705085-MSD1)**

Source: 1705034-01

Prepared & Analyzed: 05/09/17

C10-C28 (DRO)	49.1	5.00	mg/L	49.9	2.03	94.4	80-120	6.07	20		
<i>Surrogate: o-Terphenyl</i>	1.55		"	1.25		124	47.2-150				

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
05/11/17 09:43

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

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

**Batch 1705050 - EPA 5030 Water MS**

**Blank (1705050-BLK1)**

Prepared & Analyzed: 05/04/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Gasoline Range Hydrocarbons	ND	500	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	13.9		"	13.3		105	37-154			
<i>Surrogate: Toluene-d8</i>	14.0		"	13.3		105	45-149			
<i>Surrogate: 4-Bromofluorobenzene</i>	14.2		"	13.3		107	45-146			

**LCS (1705050-BS1)**

Prepared & Analyzed: 05/04/17

Benzene	31.0	1.0	ug/l	33.3		93.0	51-132			
Toluene	34.7	1.0	"	33.3		104	51-138			
Ethylbenzene	38.3	1.0	"	33.1		116	58-146			
m,p-Xylene	70.6	2.0	"	66.5		106	57-144			
o-Xylene	35.1	1.0	"	32.7		107	53-146			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	14.7		"	13.3		110	37-154			
<i>Surrogate: Toluene-d8</i>	13.8		"	13.3		104	45-149			
<i>Surrogate: 4-Bromofluorobenzene</i>	14.2		"	13.3		107	45-146			

**Matrix Spike (1705050-MS1)**

Source: 1705034-01

Prepared & Analyzed: 05/04/17

Benzene	31.6	1.0	ug/l	33.3	ND	94.9	34-141			
Toluene	35.4	1.0	"	33.3	ND	106	27-151			
Ethylbenzene	39.7	1.0	"	33.1	ND	120	29-160			
m,p-Xylene	73.1	2.0	"	66.5	ND	110	20-166			
o-Xylene	36.4	1.0	"	32.7	ND	111	33-159			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	14.7		"	13.3		110	37-154			
<i>Surrogate: Toluene-d8</i>	13.7		"	13.3		103	45-149			
<i>Surrogate: 4-Bromofluorobenzene</i>	14.3		"	13.3		107	45-146			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
05/11/17 09:43

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

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

**Batch 1705050 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1705050-MSD1)</b>	<b>Source: 1705034-01</b>			<b>Prepared &amp; Analyzed: 05/04/17</b>						
Benzene	31.5	1.0	ug/l	33.3	ND	94.6	34-141	0.348	32	
Toluene	34.8	1.0	"	33.3	ND	104	27-151	1.48	25	
Ethylbenzene	38.4	1.0	"	33.1	ND	116	29-160	3.33	50	
m,p-Xylene	71.7	2.0	"	66.5	ND	108	20-166	1.93	36	
o-Xylene	35.7	1.0	"	32.7	ND	109	33-159	1.80	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>16.1</i>		<i>"</i>	<i>13.3</i>		<i>121</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.7</i>		<i>"</i>	<i>13.3</i>		<i>103</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>14.3</i>		<i>"</i>	<i>13.3</i>		<i>107</i>	<i>45-146</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
05/11/17 09:43

**Anions by EPA Method 300.0 - Quality Control**  
**Summit Scientific**

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

**Batch 1705054 - General Preparation**

**Blank (1705054-BLK1)**

Prepared & Analyzed: 05/04/17

Chloride	ND	1.00	mg/L						
Sulfate	ND	1.00	"						

**LCS (1705054-BS1)**

Prepared & Analyzed: 05/04/17

Sulfate	14.7	1.00	mg/L	15.0	97.9	90-110		
Chloride	2.80	1.00	"	3.00	93.2	90-110		

**Duplicate (1705054-DUP1)**

Source: 1705042-01

Prepared & Analyzed: 05/04/17

Sulfate	5.56	1.00	mg/L		5.57		0.288	20
Chloride	26.6	1.00	"		26.7		0.203	20

**Matrix Spike (1705054-MS1)**

Source: 1705042-01

Prepared & Analyzed: 05/04/17

Chloride	29.5	1.00	mg/L	3.00	26.7	94.4	90-110	
Sulfate	20.2	1.00	"	15.0	5.57	97.4	90-110	

Summit Scientific

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Fremont Environmental  
 1759 Redwing Lane  
 Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 05/11/17 09:43

**Total Dissolved Solids by 160.1 - Quality Control**  
**Summit Scientific**

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

**Batch 1705111 - General Preparation**

**Blank (1705111-BLK1)**

Prepared & Analyzed: 05/04/17

Total Dissolved Solids      ND      8.00      mg/L

**Duplicate (1705111-DUP1)**

Source: 1705034-01

Prepared & Analyzed: 05/04/17

Total Dissolved Solids      147      8.00      mg/L      145      1.50      20

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: COGCC - Spaulding

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
05/11/17 09:43

### 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