

## **Groundwater and Soil Vapor Sampling Results**

**District Six C6**

**Facility ID 286487**

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## INTRODUCTION

Apex Companies, LLC (Apex) has been contracted by Extraction Oil & Gas Inc. (Extraction) to complete monitoring activities, provide data review services, and to prepare reports detailing the results and findings of monitoring activities. The following document is the initial installation and monitoring report for activities conducted during the third quarter (Q3) of 2020 to support the site investigation of the plugged and abandoned well District Six C6 following a mechanical integrity test failure.

Per the site investigation and remediation project #13928 conditions of approval and amended by the Site Investigation and Remediation Workplan (Form 27), document 402332199, five monitoring wells were installed, and sample analyzed for all constituents in Table 3-1 of the Colorado Oil and Gas Conservation Commission (COGCC) Model Sample and Analysis Plan (SAP) with the exception of biological activity reaction tests (BART). Laboratory results will be uploaded into the Colorado Environmental (COENV) database and identified impacts will be reported, as required for each discovery. In addition, eight soil vapor monitoring points were installed, and field screened for methane. A subsequent Form 27 will be submitted following work completion.

## BACKGROUND

### Groundwater Well Installation and Development

Groundwater monitoring well 5993-MH MW-1 (MW-1) was installed on August 28, 2019. Groundwater monitoring wells 60666 MW-2 (MW-2), 60666 MW-3 (MW-3), 60666 MW-4 (MW-4), 60666 MW-5 (MW-5) were installed between April 21, 2020 to April 30, 2020 radially around MW-1. See **Attachment A** for a well location map.

All wells were drilled using a hollow stem auger drill rig. Monitoring wells MW-1, MW-3, MW-4, and MW-5 were drilled and installed at a depth of approximately 85-feet below ground surface (bgs). Each well has a screened interval of 40 feet. MW-2 was drilled and set at a depth of 60-feet bgs with 25-feet of screen. MW-2 was placed at a shallower depth than other onsite wells due to health and safety concerns associated with methane observed during drilling activities.

The wells are all completed at the surface with a flush-mounted well box and set in a two-foot by two-foot by six-inch concrete pad. The wells were permitted through the Division of Water Resources. See **Attachment B** for well permit records and **Attachment C** for well borehole logs and monitoring well completion reports.

During installation at monitoring wells MW-1 and MW-2, positive pressure and emitting vapors were reported from each wellbore. The pressures were also observed during well development and initial sampling events but appear to have dissipated and the positive pressure and emitting vapors remained low during subsequent sample events.

MW-1, MW-3, MW-4, MW-5 were developed to confirm parameter stabilization using a low-flow purge method. Per *U.S EPA Environmental Response Standard Operating Procedures for Monitoring Well Development* (2001), the well shall be considered developed upon parameter stabilization or once the turbidity is below 50 Nephelometric Turbidity Units (NTU). During the well development, turbidity at MW-1 did not reach values of less than 100 NTU; however, field parameters values did stabilize per ASTM D4448-01 (Reapproved 2019) Standard Guide for Sampling Ground-Water Monitoring Wells guidance.

Elevated atmospheric gas readings were detected during well development activities at MW-2, and additional safety measures were taken to dissipate any potential for an explosive atmosphere at the surface during well development. Field parameter stabilization was not achieved at MW-2, so a volumetric purge method was used.

### **Groundwater Well Elevation Survey**

Surface elevations were surveyed at a point at the top of the well casings. These locations were used as a reference point for measuring groundwater depths. See **Attachment D** for monitoring well gauging and inferred groundwater flow diagrams.

Based on elevation data, groundwater flow direction is assumed to be moving in a southwesterly direction.

### **Groundwater Sampling Activities and Results**

The initial samples at MW-1 was collected on October 17, 2019 and MW-2 through MW-5 was collected between in May 2020. Laboratory results from the MW-1 initial sample and subsequent samples indicate Table 910-1 exceedances for benzene; however, no other monitoring well has had a reported benzene exceedance. A slight total petroleum hydrocarbon, gasoline range organics (GRO) and diesel range organics (DRO) detections is consistently seen in the MW-1. GRO has also been detected in the MW-2 and MW-4.

Additional isotopic analysis has been completed at the MW-1, MW-2, MW-4, and MW-5 due to dissolved methane greater than 1 milligram per liter (mg/L). Results from the isotopic analysis has plotted the gas origin in the thermogenic range. Laboratory data from the monitoring wells is accessible in the Colorado Environmental Database.

### Groundwater Isotopic Interpretation

Isotopic water data from MW-1, MW-2, MW-4, and MW-5 was compared to the District Six C6 bradenhead sample (Sample ID 606506), gathered from the Colorado Environmental Database. The data indicates that gasses identified in the monitoring well samples could be related to the bradenhead sample.

Per the original review of the MW-1 results, the methane, ethane, and propane have the same thermogenic source and there was no appreciable mixing of methane from alternative sources. The likely source would be consistent with gas from the J-Sand / Codell / Niobrara production zone. Variations in mole % (MOL) can be explained by solubility and dilution effects that are acting on the MW-1 sample, but not on the bradenhead sample. Hydrocarbons tend to have low solubilities in water and water solubilities tend to decrease with hydrocarbon mass, thus the expectation is progressively less of the heavier hydrocarbons dissolve in water for aqueous samples that are in equilibrium with gas. Therefore, it is expected to see much less butane, pentane and C6+ in the MW-1 sample than we see in the bradenhead gas. The lower British Thermal Unit (BTU) of the MW-1 sample is also explainable by this effect.

Isotope ratio plots, indicate the bradenhead plots almost coincident with the MW-1 sample with variation of <5%. Variations for d13C2 and d13C3 between the two samples are even lower (within 2%) as expected due to reduced chance for any minor mixing with biogenic methane in the area.



## Soil Vapor Monitoring Well Installations

Eight soil vapor monitoring wells were installed on August 28, 2019. The wells are dual-nested into four casings and are radially located, approximately 5-feet from the District Six C6 production well, and are identified as:

- SVP-1-5
- SVP-1-30
- SVP-2-5
- SVP-2-30
- SVP-3-5
- SVP-3-30
- SVP-4-5
- SVP-4-30

Soil vapor probes SVP-1 through SVP-4 were each advanced to 30-feet bgs using a hollow stem auger rig equipped with 6-inch augers. Probes were installed at each location at approximately five and 30-feet bgs. The probe depths are differentiated at the surface using different lengths of stick-up, with the longer tubing associated with the 30-foot probe and the shorter tubing associated with the five-foot probe.

See **Attachment E** for the Soil Vapor Monitoring Probe Construction Diagram

On April 1, 2020, Extraction completed a forward-looking infrared (FLIR) sweep at soil vapor monitoring points SVP-1 through SVP-4 to determine if fugitive vapors were visible. No evidence of hydrocarbons was found, and no additional soil vapor monitoring points have been installed to-date.

## Division of Water Resources Water Wells

All Colorado Division of Water Resources (DWR) water wells within a quarter mile radius were identified and evaluated for inclusion in a sampling event as part of the COGCC approved action plan. All DWR permitted water sources within the quarter-mile radius were eliminated based on an abandoned, incomplete, or expired permit status or after completion of field verification. One water source, Doty 160051, Facility ID 754055, located 0.33 miles from the District Six C6 well was sampled on March 27, 2020. Laboratory data for the sample is accessible in the Colorado Environmental Database, Sample ID 615638. Laboratory analysis indicated no constituents exceeded the threshold limits for immediate COGCC or landowner notification as specified in the COGCC Model SAP.

## QUARTERLY ACTIVITIES

### Groundwater Sampling Activities and Results

Third quarter sampling was completed between August 17 and 19, 2020. The water samples were collected in laboratory-supplied containers and submitted to Summit Scientific Inc. (Summit) in Golden, Colorado for analysis of the required water quality parameters. The results from Summit are listed in the attached Groundwater Monitoring Well Sample Results summary table, **Table 1-1**, and 2020 Q3 Groundwater Laboratory Reports, **Attachment F**.

For comparison purposes, a regulatory limit for each analyte is included in the summary table where applicable. Laboratory results at MW-1 continue to indicate benzene levels above the Table 910-1 thresholds; GRO and DRO were detected. Methane results again indicated the gas was of thermogenic origin. Methane levels at the MW-1 were the highest during Q1 2020 and although not significant, the methane concentration is trending downward at the well, see **Figure 1**.

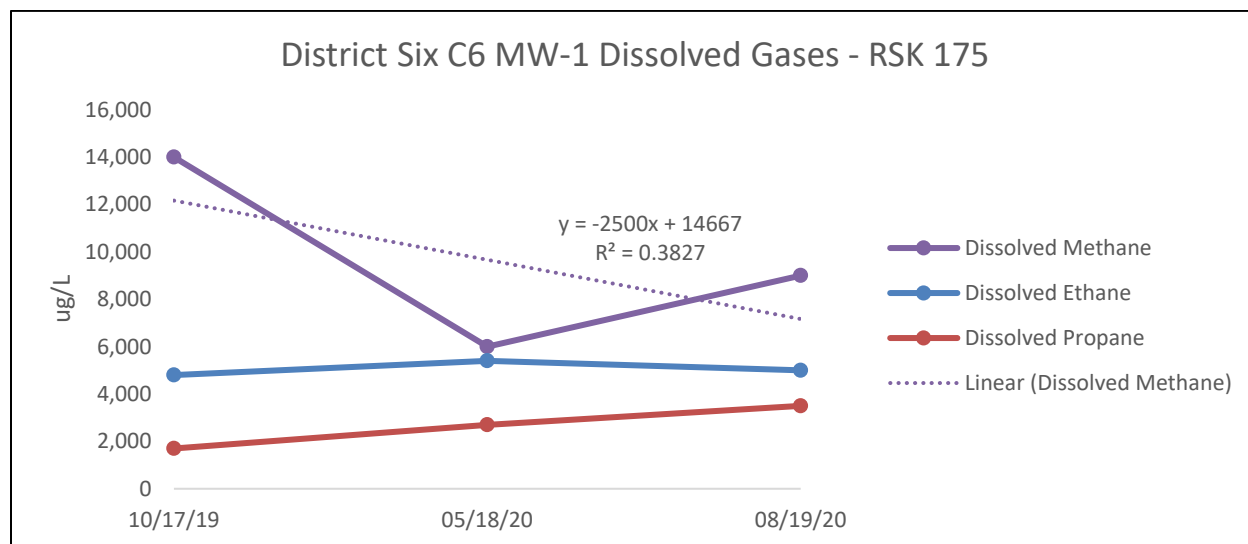


Figure 1 District Six C6 MW-1 Dissolved Gases – RSK 175

Methane levels at the MW-4 were the highest during Q3 2020 and although there is currently not enough data sets to determine a trend, the methane concentration did increase between the initial and first subsequent sampling events, see **Figure 2**. Future samples will be evaluated to determine if there are any significant trends in methane gas concentrations in the water.

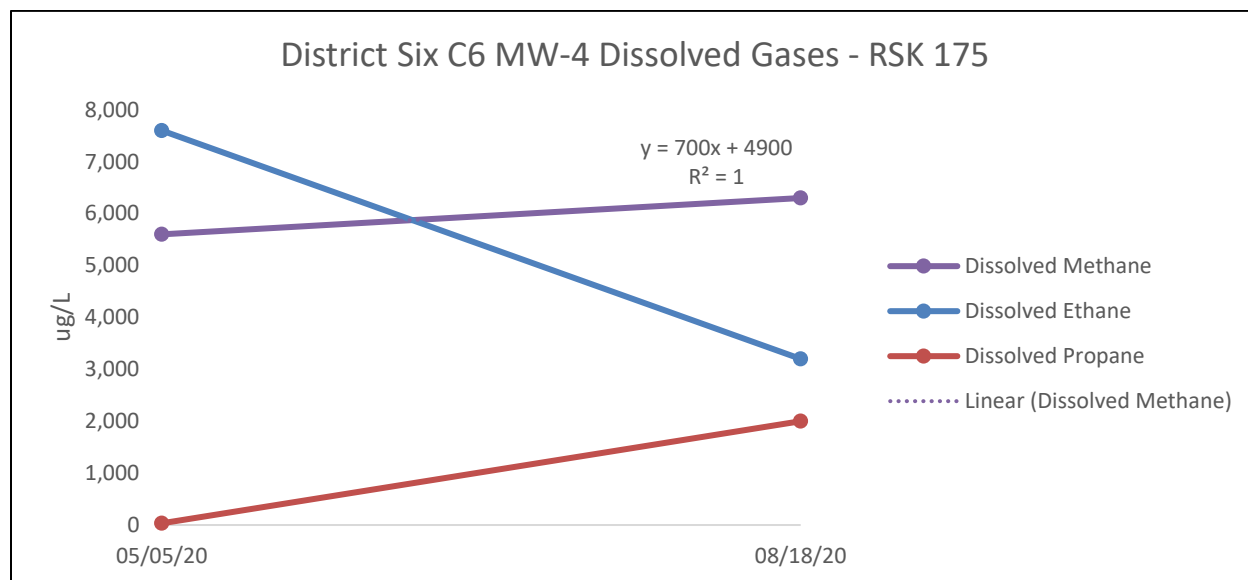


Figure 2 District Six C6 MW-4 Dissolved Gases – RSK 175

Methane levels at the MW-5 were the highest during Q3 2020 and although there is currently not enough data sets to determine a trend, the methane concentration did increase between the initial and first subsequent sampling events, see **Figure 3**. Future samples will be evaluated to determine if there are any significant trends in methane gas concentrations in the water.

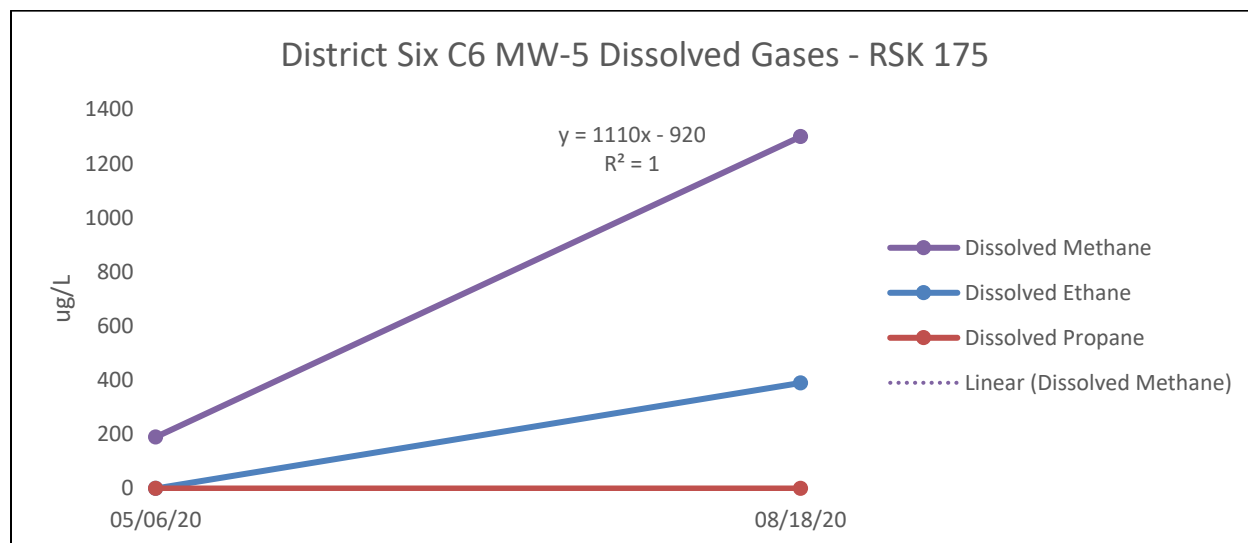


Figure 3 District Six C6 MW-5 Dissolved Gases – RSK 175

### Groundwater Isotopic Interpretation

Additional stable isotope analysis of hydrocarbon gases C1 through C5 was analyzed of the dissolved gas on the MW-1, MW-4, and MW-5 and the stable isotope distribution for methane plots in the thermogenic range. See **Attachment G** for the isotope ratio plots. Laboratory analysis did not detect enough dissolved gas from MW-2 or MW-3 to run the additional isotopic analysis.

The Q3 isotopic gas data from MW-1, MW-4, and MW-5 was compared to the original District Six C6 bradenhead sample (Sample ID 606506). The data continues to indicate the monitoring wells are impacted with a thermogenic gas similar to the District Six C6 bradenhead sample.

### **Soil Vapor Sampling Activities and Results**

Readings were collected from each soil vapor point using a RKL Eagle 2 gas meter. The gas meter was equipped with methane (CH<sub>4</sub>), hydrogen sulfide (H<sub>2</sub>S), carbon monoxide (CO), and O<sub>2</sub> sensors. The field reported results are listed in the attached Soil Vapor Monitoring Point Results summary table, **Table 1-2**.

### **RECOMMEDATIONS AND ADDITIONAL ACTIONS**

Per the Site Investigation and Remediation Workplan (Form 27), document 402460091, conditions of approval, Extraction will install and sample a minimum of three additional monitoring wells during the fourth quarter 2020 in an attempt to determine vertical and lateral extent of impacts to groundwater and to obtain a point of compliance. Extraction will notify COGCC Environmental Protection Specialist (EPS) personnel no less than 72-hours prior to drilling.

Field and laboratory results from the latest sampling events will be uploaded into the Colorado Environmental (COENV) database via Form 43. Extraction will also continue to collect quarterly groundwater samples and complete soil vapor monitoring at the District Six C6 well site through the second quarter 2021 before the plan is re-evaluated.

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	59993-MH MW-1 Facility ID 762176		
				Initial	1	2
Date Sampled	-	-	-	10/17/19	05/18/20	08/19/20
<b>ALKALINITY AS CALCIUM CARBONATE - SM2320B</b>						
Total Alkalinity	mg/l	None	-	260	260	210
Bicarbonate	mg/l	None	-	260	260	210
Carbonate	mg/l	None	-	ND	ND	ND
<b>BTEX - SW8260B</b>						
Benzene	µg/l	5	910-1	<b>160</b>	<b>460</b>	<b>120</b>
Toluene	µg/l	560	910-1	58	51	5.4
Ethylbenzene	µg/l	700	910-1	40	49	9.2
Xylenes (Total)	µg/l	1,400	910-1	49	130	ND
M+P-Xylene	µg/l	None	-	40	110	31
O-Xylene	µg/l	None	-	49	22	7.3
<b>TPH-DRO/GRO - SW8015M/SW8015</b>						
TPH - DRO	mg/l	None	-	ND	0.227	ND
TPH - GRO	mg/l	None	-	0.67	1.3	0.94
<b>DISSOLVED GASES - RSK 175</b>						
Dissolved Methane	µg/l	None	-	14,000	6,000	9,000
Dissolved Ethane	µg/l	None	-	4,800	5,400	5,000
Dissolved Propane	µg/l	None	-	1,700	2,700	3,500
<b>IONS - EPA 300.0</b>						
Bromide	mg/l	None	-	9.64	7.63	4.37
Chloride	mg/l	250	Reg 41	<b>771</b>	<b>512</b>	<b>366</b>
Fluoride	mg/l	4	Reg 41	0.899	0.603	0.358
Nitrate + Nitrite as N	mg/l	10	Reg 41	1.87	0.491	ND
Nitrate as N	mg/l	10	Reg 41	1.87	0.491	ND
Nitrite as N	mg/l	1	Reg 41	ND	ND	ND
Sulfate	mg/l	250	Reg 41	105	63.8	113
<b>METALS EPA 200.8</b>						
Dissolved Barium	mg/l	2	Reg 41	0.125	0.153	0.0853
Dissolved Boron	mg/l	0.4	RSL	0.0751	0.127	0.166
Dissolved Calcium	mg/l	None	-	150	197	170
Dissolved Iron	mg/l	0.3	Reg 41	ND	0.0508	ND
Dissolved Magnesium	mg/l	None	-	88.5	107	91.4
Dissolved Manganese	mg/l	0.05	Reg 41	<b>1.43</b>	<b>1.49</b>	<b>1.51</b>
Dissolved Potassium	mg/l	None	-	3.88	4.91	6.69
Dissolved Selenium	mg/l	0.05	Reg 41	0.00131	ND	ND
Dissolved Sodium	mg/l	None	-	104	174	203
Dissolved Strontium	mg/l	1.2	RSL	<b>1.9</b>	<b>2.53</b>	<b>2.47</b>
<b>WATER QUALITY</b>						
pH	s.u.	6-9	910-1	7.25	8.09	7.39
Specific Conductivity	µmhos/cm	None	-	1,910	3,180	2,420
Total Dissolved Solids	mg/l	1.25 X background	910-1	942	1,580	1,200
Total Phosphorous	mg/l	None	-	0.0940	0.222	ND

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	59993-MH MW-1 Facility ID 762176		
				Initial	1	2
Aqueous						
Delta 13C DIC (d <sup>13</sup> C of DIC)	% per mil	None	-	NA	-17.6	NA
Delta 18O H2O (d <sup>18</sup> O of water)	% per mil	None	-	NA	-13.8	NA
Delta D H2O (dD of water)	% per mil	None	-	NA	-108.3	NA
Gaseous						
Argon (Ar)	MOL %	None	-	0.213	0.203	0.28
C <sub>6</sub> + (hexanes +)	MOL %	None	-	0.0324	0.044	0.0344
Carbon Dioxide (CO <sub>2</sub> )	MOL %	None	-	2.37	1.63	1.91
Carbon Monoxide (CO)	MOL %	None	-	ND	ND	ND
Delta 13C C1 (d <sup>13</sup> C <sub>1</sub> )	% per mil	None	-	NA	NA	NA
Delta 13C C2 (d <sup>13</sup> C <sub>2</sub> )	% per mil	None	-	NA	NA	NA
Delta 13C C3 (d <sup>13</sup> C <sub>3</sub> )	% per mil	None	-	NA	NA	NA
Delta 13C CO2 (d <sup>13</sup> CO <sub>2</sub> )	per mil VPDB	None	-	NA	NA	NA
Delta 13C iC4 (d <sup>13</sup> iC <sub>4</sub> )	per mil VPDB	None	-	NA	NA	NA
Delta 13C nC4 (d <sup>13</sup> nC <sub>4</sub> )	per mil VPDB	None	-	NA	NA	NA
Delta D C1 (dDC <sub>1</sub> )	% per mil	None	-	NA	NA	NA
Ethane (C <sub>2</sub> )	MOL %	None	-	10.19	11.86	10.01
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	cc/L	None	-	8.4	7.5	7.6
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	mg/L	None	-	10	9.4	9.5
Ethylene (C <sub>2</sub> H <sub>4</sub> )	MOL %	None	-	ND	ND	ND
Helium (He)	MOL %	None	-	NA	NA	NA
Helium Dilution Factor	Other	None	-	0.5	0.67	0.62
Hydrogen (H <sub>2</sub> )	MOL %	None	-	ND	ND	ND
Isobutane (iC <sub>4</sub> )	MOL %	None	-	0.273	0.368	0.317
Isopentane (iC <sub>5</sub> )	MOL %	None	-	0.0667	0.0883	0.0785
Methane (C <sub>1</sub> )	MOL %	None	-	65.45	70.18	58.57
Methane, Dissolved (CH <sub>4</sub> )	cc/L	None	-	50	42	42
Methane, Dissolved (CH <sub>4</sub> )	mg/L	None	-	33	28	28
n-Butane (nC <sub>4</sub> )	MOL %	None	-	0.326	0.647	0.518
Nitrogen (N <sub>2</sub> )	MOL %	None	-	15.63	10.79	22.64
n-Pentane (nC <sub>5</sub> )	MOL %	None	-	0.0404	0.0485	0.0428
Oxygen (O <sub>2</sub> )	MOL %	None	-	2.74	ND	2.16
Propane (C <sub>3</sub> )	MOL %	None	-	2.67	4.14	3.44
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	cc/L	None	-	2.1	2.5	2.5
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	mg/L	None	-	3.8	4.6	4.6
Propylene (C <sub>3</sub> H <sub>6</sub> )	MOL %	None	-	ND	ND	ND

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	60666-MH MW-2 Facility ID 766284	
				Initial	1
Date Sampled	-	-	-	05/19/20	08/19/20
<b>ALKALINITY AS CALCIUM CARBONATE - SM2320B</b>					
Total Alkalinity	mg/l	None	-	280	340
Bicarbonate	mg/l	None	-	280	340
Carbonate	mg/l	None	-	ND	ND
<b>BTEX - SW8260B</b>					
Benzene	µg/l	5	910-1	ND	ND
Toluene	µg/l	560	910-1	ND	ND
Ethylbenzene	µg/l	700	910-1	ND	ND
Xylenes (Total)	µg/l	1,400	910-1	ND	ND
M+P-Xylene	µg/l	None	-	0.0038	ND
O-Xylene	µg/l	None	-	0.013	ND
<b>TPH-DRO/GRO - SW8015M/SW8015</b>					
TPH - DRO	mg/l	None	-	ND	ND
TPH - GRO	mg/l	None	-	0.17	ND
<b>DISSOLVED GASES - RSK 175</b>					
Dissolved Methane	µg/l	None	-	2,300	ND
Dissolved Ethane	µg/l	None	-	1,400	ND
Dissolved Propane	µg/l	None	-	ND	ND
<b>IONS - EPA 300.0</b>					
Bromide	mg/l	None	-	0.254	0.252
Chloride	mg/l	250	Reg 41	26.4	26.6
Fluoride	mg/l	4	Reg 41	0.383	0.292
Nitrate + Nitrite as N	mg/l	10	Reg 41	ND	8.88
Nitrate as N	mg/l	10	Reg 41	ND	8.76
Nitrite as N	mg/l	1	Reg 41	0.112	0.114
Sulfate	mg/l	250	Reg 41	157	89.5
<b>METALS EPA 200.8</b>					
Dissolved Barium	mg/l	2	Reg 41	0.0388	0.0397
Dissolved Boron	mg/l	0.4	RSL	0.202	0.206
Dissolved Calcium	mg/l	None	-	92.3	94.500
Dissolved Iron	mg/l	0.3	Reg 41	ND	ND
Dissolved Magnesium	mg/l	None	-	38.9	45.1
Dissolved Manganese	mg/l	0.05	Reg 41	0.165	ND
Dissolved Potassium	mg/l	None	-	4.58	3.97
Dissolved Selenium	mg/l	0.05	Reg 41	0.00409	0.00743
Dissolved Sodium	mg/l	None	-	97.5	82.4
Dissolved Strontium	mg/l	1.2	RSL	1.08	1.25
<b>WATER QUALITY</b>					
pH	s.u.	6-9	910-1	7.47	7.41
Specific Conductivity	µmhos/cm	None	-	1220	1,050
Total Dissolved Solids	mg/l	1.25 X background	910-1	602	517
Total Phosphorous	mg/l	None	-	ND	ND

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	60666-MH MW-2 Facility ID 766284	
				Initial	1
Aqueous					
Delta 13C DIC (d <sup>13</sup> C of DIC)	% per mil	None	-	-13.4	NA
Delta 18O H2O (d <sup>18</sup> O of water)	% per mil	None	-	-13.43	NA
Delta D H2O (dD of water)	% per mil	None	-	-105.4	NA
Gaseous					
Argon (Ar)	MOL %	None	-	0.817	NA
C <sub>6</sub> + (hexanes +)	MOL %	None	-	0.0122	NA
Carbon Dioxide (CO <sub>2</sub> )	MOL %	None	-	0.7	NA
Carbon Monoxide (CO)	MOL %	None	-	ND	NA
Delta 13C C1 (d <sup>13</sup> C <sub>1</sub> )	% per mil	None	-	NA	NA
Delta 13C C2 (d <sup>13</sup> C <sub>2</sub> )	% per mil	None	-	NA	NA
Delta 13C C3 (d <sup>13</sup> C <sub>3</sub> )	% per mil	None	-	NA	NA
Delta 13C CO2 (d <sup>13</sup> CO <sub>2</sub> )	per mil VPDB	None	-	NA	NA
Delta 13C iC4 (d <sup>13</sup> iC <sub>4</sub> )	per mil VPDB	None	-	NA	NA
Delta 13C nC4 (d <sup>13</sup> nC <sub>4</sub> )	per mil VPDB	None	-	NA	NA
Delta D C1 (dDC <sub>1</sub> )	% per mil	None	-	NA	NA
Ethane (C <sub>2</sub> )	MOL %	None	-	1.22	NA
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	cc/L	None	-	13	NA
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	mg/L	None	-	16	NA
Ethylene (C <sub>2</sub> H <sub>4</sub> )	MOL %	None	-	ND	NA
Helium (He)	MOL %	None	-	0.0109	NA
Helium Dilution Factor	Other	None	-	-	NA
Hydrogen (H <sub>2</sub> )	MOL %	None	-	ND	NA
Isobutane (iC <sub>4</sub> )	MOL %	None	-	0.0561	NA
Isopentane (iC <sub>5</sub> )	MOL %	None	-	0.0212	NA
Methane (C <sub>1</sub> )	MOL %	None	-	9.1	NA
Methane, Dissolved (CH <sub>4</sub> )	cc/L	None	-	96	NA
Methane, Dissolved (CH <sub>4</sub> )	mg/L	None	-	64	NA
n-Butane (nC <sub>4</sub> )	MOL %	None	-	0.0984	NA
Nitrogen (N <sub>2</sub> )	MOL %	None	-	68.9	NA
n-Pentane (nC <sub>5</sub> )	MOL %	None	-	0.0134	NA
Oxygen (O <sub>2</sub> )	MOL %	None	-	18.59	NA
Propane (C <sub>3</sub> )	MOL %	None	-	0.457	NA
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	cc/L	None	-	4.8	NA
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	mg/L	None	-	8.9	NA
Propylene (C <sub>3</sub> H <sub>6</sub> )	MOL %	None	-	ND	NA



**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	60666-MH MW-3 Facility ID 766285	
				Initial	1
Date Sampled	-	-	-	05/15/20	08/17/20
<b>ALKALINITY AS CALCIUM CARBONATE - SM2320B</b>					
Total Alkalinity	mg/l	None	-	340	330
Bicarbonate	mg/l	None	-	340	330
Carbonate	mg/l	None	-	ND	ND
<b>BTEX - SW8260B</b>					
Benzene	µg/l	5	910-1	ND	ND
Toluene	µg/l	560	910-1	ND	ND
Ethylbenzene	µg/l	700	910-1	ND	ND
Xylenes (Total)	µg/l	1,400	910-1	ND	ND
M+P-Xylene	µg/l	None	-	ND	ND
O-Xylene	µg/l	None	-	ND	ND
<b>TPH-DRO/GRO - SW8015M/SW8015</b>					
TPH - DRO	mg/l	None	-	ND	ND
TPH - GRO	mg/l	None	-	ND	ND
<b>DISSOLVED GASES - RSK 175</b>					
Dissolved Methane	µg/l	None	-	ND	140
Dissolved Ethane	µg/l	None	-	ND	56
Dissolved Propane	µg/l	None	-	ND	ND
<b>IONS - EPA 300.0</b>					
Bromide	mg/l	None	-	0.404	0.378
Chloride	mg/l	250	Reg 41	47.9	41.5
Fluoride	mg/l	4	Reg 41	0.637	0.485
Nitrate + Nitrite as N	mg/l	10	Reg 41	9.62	9.53
Nitrate as N	mg/l	10	Reg 41	9.62	9.53
Nitrite as N	mg/l	1	Reg 41	ND	ND
Sulfate	mg/l	250	Reg 41	98.7	84.5
<b>METALS EPA 200.8</b>					
Dissolved Barium	mg/l	2	Reg 41	0.0753	0.0867
Dissolved Boron	mg/l	0.4	RSL	0.167	0.216
Dissolved Calcium	mg/l	None	-	109	123
Dissolved Iron	mg/l	0.3	Reg 41	0.0316	0.225
Dissolved Magnesium	mg/l	None	-	45	52
Dissolved Manganese	mg/l	0.05	Reg 41	0.327	0.39
Dissolved Potassium	mg/l	None	-	4.92	5.31
Dissolved Selenium	mg/l	0.05	Reg 41	0.00246	0.0021
Dissolved Sodium	mg/l	None	-	69.3	82.8
Dissolved Strontium	mg/l	1.2	RSL	1.27	1.62
<b>WATER QUALITY</b>					
pH	s.u.	6-9	910-1	7.44	7.28
Specific Conductivity	µmhos/cm	None	-	1260	1110
Total Dissolved Solids	mg/l	1.25 X background	910-1	609	547
Total Phosphorous	mg/l	None	-	0.0620	ND

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	60666-MH MW-3 Facility ID 766285	
				Initial	1
Aqueous					
Delta 13C DIC (d <sup>13</sup> C of DIC)	% per mil	None	-	-13.1	NA
Delta 18O H2O (d <sup>18</sup> O of water)	% per mil	None	-	-13.21	NA
Delta D H2O (dD of water)	% per mil	None	-	-102.9	NA
Gaseous					
Argon (Ar)	MOL %	None	-	NA	NA
C <sub>6</sub> + (hexanes +)	MOL %	None	-	NA	NA
Carbon Dioxide (CO <sub>2</sub> )	MOL %	None	-	NA	NA
Carbon Monoxide (CO)	MOL %	None	-	NA	NA
Delta 13C C1 (d <sup>13</sup> C <sub>1</sub> )	% per mil	None	-	NA	NA
Delta 13C C2 (d <sup>13</sup> C <sub>2</sub> )	% per mil	None	-	NA	NA
Delta 13C C3 (d <sup>13</sup> C <sub>3</sub> )	% per mil	None	-	NA	NA
Delta 13C CO2 (d <sup>13</sup> CO <sub>2</sub> )	per mil VPDB	None	-	NA	NA
Delta 13C iC4 (d <sup>13</sup> iC <sub>4</sub> )	per mil VPDB	None	-	NA	NA
Delta 13C nC4 (d <sup>13</sup> nC <sub>4</sub> )	per mil VPDB	None	-	NA	NA
Delta D C1 (dDC <sub>1</sub> )	% per mil	None	-	NA	NA
Ethane (C <sub>2</sub> )	MOL %	None	-	NA	NA
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	cc/L	None	-	NA	NA
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	mg/L	None	-	NA	NA
Ethylene (C <sub>2</sub> H <sub>4</sub> )	MOL %	None	-	NA	NA
Helium (He)	MOL %	None	-	NA	NA
Helium Dilution Factor	Other	None	-	NA	NA
Hydrogen (H <sub>2</sub> )	MOL %	None	-	NA	NA
Isobutane (iC <sub>4</sub> )	MOL %	None	-	NA	NA
Isopentane (iC <sub>5</sub> )	MOL %	None	-	NA	NA
Methane (C <sub>1</sub> )	MOL %	None	-	NA	NA
Methane, Dissolved (CH <sub>4</sub> )	cc/L	None	-	NA	NA
Methane, Dissolved (CH <sub>4</sub> )	mg/L	None	-	NA	NA
n-Butane (nC <sub>4</sub> )	MOL %	None	-	NA	NA
Nitrogen (N <sub>2</sub> )	MOL %	None	-	NA	NA
n-Pentane (nC <sub>5</sub> )	MOL %	None	-	NA	NA
Oxygen (O <sub>2</sub> )	MOL %	None	-	NA	NA
Propane (C <sub>3</sub> )	MOL %	None	-	NA	NA
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	cc/L	None	-	NA	NA
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	mg/L	None	-	NA	NA
Propylene (C <sub>3</sub> H <sub>6</sub> )	MOL %	None	-	NA	NA

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	60666-MH MW-4 Facility ID 766286	
				Initial	1
Date Sampled	-	-	-	05/05/20	08/18/20
<b>ALKALINITY AS CALCIUM CARBONATE - SM2320B</b>					
Total Alkalinity	mg/l	None	-	280	310
Bicarbonate	mg/l	None	-	280	310
Carbonate	mg/l	None	-	ND	ND
<b>BTEX - SW8260B</b>					
Benzene	µg/l	5	910-1	ND	ND
Toluene	µg/l	560	910-1	ND	ND
Ethylbenzene	µg/l	700	910-1	ND	ND
Xylenes (Total)	µg/l	1,400	910-1	3.3	ND
M+P-Xylene	µg/l	None	-	ND	ND
O-Xylene	µg/l	None	-	3.3	ND
<b>TPH-DRO/GRO - SW8015M/SW8015</b>					
TPH - DRO	mg/l	None	-	ND	ND
TPH - GRO	mg/l	None	-	0.067	0.5
<b>DISSOLVED GASES - RSK 175</b>					
Dissolved Methane	µg/l	None	-	5,600	6,300
Dissolved Ethane	µg/l	None	-	7,600	3,200
Dissolved Propane	µg/l	None	-	33	2,000
<b>IONS - EPA 300.0</b>					
Bromide	mg/l	None	-	0.872	0.498
Chloride	mg/l	250	Reg 41	72.1	40
Fluoride	mg/l	4	Reg 41	0.9	0.335
Nitrate + Nitrite as N	mg/l	10	Reg 41	3.65	ND
Nitrate as N	mg/l	10	Reg 41	3.54	ND
Nitrite as N	mg/l	1	Reg 41	0.114	ND
Sulfate	mg/l	250	Reg 41	<b>282</b>	115
<b>METALS EPA 200.8</b>					
Dissolved Barium	mg/l	2	Reg 41	0.043	0.0418
Dissolved Boron	mg/l	0.4	RSL	0.221	0.259
Dissolved Calcium	mg/l	None	-	93.2	104
Dissolved Iron	mg/l	0.3	Reg 41	0.017	0.0512
Dissolved Magnesium	mg/l	None	-	38.9	46.2
Dissolved Manganese	mg/l	0.05	Reg 41	<b>0.253</b>	0.795
Dissolved Potassium	mg/l	None	-	2.47	3.06
Dissolved Selenium	mg/l	0.05	Reg 41	ND	ND
Dissolved Sodium	mg/l	None	-	86.4	106
Dissolved Strontium	mg/l	1.2	RSL	<b>1.19</b>	1.41
<b>WATER QUALITY</b>					
pH	s.u.	6-9	910-1	7.69	7.26
Specific Conductivity	µmhos/cm	None	-	1220	1050
Total Dissolved Solids	mg/l	1.25 X background	910-1	608	518
Total Phosphorous	mg/l	None	-	ND	ND

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	60666-MH MW-4 Facility ID 766286	
				Initial	1
Aqueous					
Delta 13C DIC (d <sup>13</sup> C of DIC)	% per mil	None	-	-11.1	NA
Delta 18O H2O (d <sup>18</sup> O of water)	% per mil	None	-	-13.69	NA
Delta D H2O (dD of water)	% per mil	None	-	-107.4	NA
Gaseous					
Argon (Ar)	MOL %	None	-	0.392	0.429
C <sub>6</sub> + (hexanes +)	MOL %	None	-	0.0168	0.0108
Carbon Dioxide (CO <sub>2</sub> )	MOL %	None	-	3.8	3.22
Carbon Monoxide (CO)	MOL %	None	-	ND	ND
Delta 13C C1 (d <sup>13</sup> C <sub>1</sub> )	% per mil	None	-	NA	NA
Delta 13C C2 (d <sup>13</sup> C <sub>2</sub> )	% per mil	None	-	NA	NA
Delta 13C C3 (d <sup>13</sup> C <sub>3</sub> )	% per mil	None	-	NA	NA
Delta 13C CO2 (d <sup>13</sup> CO <sub>2</sub> )	per mil VPDB	None	-	NA	NA
Delta 13C iC4 (d <sup>13</sup> iC <sub>4</sub> )	per mil VPDB	None	-	NA	NA
Delta 13C nC4 (d <sup>13</sup> nC <sub>4</sub> )	per mil VPDB	None	-	NA	NA
Delta D C1 (dDC <sub>1</sub> )	% per mil	None	-	NA	NA
Ethane (C <sub>2</sub> )	MOL %	None	-	8.79	6.3
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	cc/L	None	-	4.2	5.1
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	mg/L	None	-	5.3	6.5
Ethylene (C <sub>2</sub> H <sub>4</sub> )	MOL %	None	-	ND	ND
Helium (He)	MOL %	None	-	NA	NA
Helium Dilution Factor	Other	None	-	0.72	0.6
Hydrogen (H <sub>2</sub> )	MOL %	None	-	ND	ND
Isobutane (iC <sub>4</sub> )	MOL %	None	-	0.297	0.203
Isopentane (iC <sub>5</sub> )	MOL %	None	-	0.0686	0.0507
Methane (C <sub>1</sub> )	MOL %	None	-	62.02	41.47
Methane, Dissolved (CH <sub>4</sub> )	cc/L	None	-	28	32
Methane, Dissolved (CH <sub>4</sub> )	mg/L	None	-	19	21
n-Butane (nC <sub>4</sub> )	MOL %	None	-	0.391	0.252
Nitrogen (N <sub>2</sub> )	MOL %	None	-	20.17	37.1
n-Pentane (nC <sub>5</sub> )	MOL %	None	-	0.0272	0.0141
Oxygen (O <sub>2</sub> )	MOL %	None	-	1.49	9.05
Propane (C <sub>3</sub> )	MOL %	None	-	2.54	1.9
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	cc/L	None	-	1.2	1.5
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	mg/L	None	-	2.1	2.7
Propylene (C <sub>3</sub> H <sub>6</sub> )	MOL %	None	-	ND	ND

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	60666-MH MW-5 Facility ID 766287	
				Initial	1
Date Sampled	-	-	-	05/06/20	08/18/20
<b>ALKALINITY AS CALCIUM CARBONATE - SM2320B</b>					
Total Alkalinity	mg/l	None	-	230	220
Bicarbonate	mg/l	None	-	230	220
Carbonate	mg/l	None	-	ND	ND
<b>BTEX - SW8260B</b>					
Benzene	µg/l	5	910-1	ND	ND
Toluene	µg/l	560	910-1	ND	ND
Ethylbenzene	µg/l	700	910-1	ND	ND
Xylenes (Total)	µg/l	1,400	910-1	ND	ND
M+P-Xylene	µg/l	None	-	ND	ND
O-Xylene	µg/l	None	-	ND	ND
<b>TPH-DRO/GRO - SW8015M/SW8015</b>					
TPH - DRO	mg/l	None	-	ND	0.464
TPH - GRO	mg/l	None	-	ND	ND
<b>DISSOLVED GASES - RSK 175</b>					
Dissolved Methane	µg/l	None	-	190	1,300
Dissolved Ethane	µg/l	None	-	ND	390
Dissolved Propane	µg/l	None	-	ND	ND
<b>IONS - EPA 300.0</b>					
Bromide	mg/l	None	-	8.38	3.71
Chloride	mg/l	250	Reg 41	<b>740</b>	330
Fluoride	mg/l	4	Reg 41	0.678	0.307
Nitrate + Nitrite as N	mg/l	10	Reg 41	8.47	4.87
Nitrate as N	mg/l	10	Reg 41	8.47	4.87
Nitrite as N	mg/l	1	Reg 41	ND	ND
Sulfate	mg/l	250	Reg 41	216	141
<b>METALS EPA 200.8</b>					
Dissolved Barium	mg/l	2	Reg 41	0.0641	0.0504
Dissolved Boron	mg/l	0.4	RSL	0.181	0.209
Dissolved Calcium	mg/l	None	-	227	230.000
Dissolved Iron	mg/l	0.3	Reg 41	ND	0.0443
Dissolved Magnesium	mg/l	None	-	94.9	93.8
Dissolved Manganese	mg/l	0.05	Reg 41	<b>0.252</b>	0.341
Dissolved Potassium	mg/l	None	-	4.19	5.11
Dissolved Selenium	mg/l	0.05	Reg 41	0.0024	0.00266
Dissolved Sodium	mg/l	None	-	156	224
Dissolved Strontium	mg/l	1.2	RSL	<b>2.96</b>	3.24
<b>WATER QUALITY</b>					
pH	s.u.	6-9	910-1	7.41	7.31
Specific Conductivity	µmhos/cm	None	-	2960	2,390
Total Dissolved Solids	mg/l	1.25 X background	910-1	1460	1,170
Total Phosphorous	mg/l	None	-	0.0770	0.389

**TABLE 1-1: ANALYTICAL SUMMARY**  
**GROUNDWATER MONITORING WELL SAMPLE RESULTS**

Parameter	Units	Standard	Source	60666-MH MW-5 Facility ID 766287	
				Initial	1
Date Sampled	-	-	-	05/06/20	08/18/20
<b>Aqueous</b>					
Delta 13C DIC ( $d^{13}C$ of DIC)	% per mil	None	-	-9.8	NA
Delta 18O H <sub>2</sub> O ( $d^{18}O$ of water)	% per mil	None	-	-13.43	NA
Delta D H <sub>2</sub> O (dD of water)	% per mil	None	-	-105.8	NA
<b>Gaseous</b>					
Argon (Ar)	MOL %	None	-	1.39	1.19
C <sub>6</sub> + (hexanes +)	MOL %	None	-	0.0006	0.0012
Carbon Dioxide (CO <sub>2</sub> )	MOL %	None	-	6.66	6.02
Carbon Monoxide (CO)	MOL %	None	-	ND	ND
Delta 13C C <sub>1</sub> ( $d^{13}C_1$ )	% per mil	None	-	NA	NA
Delta 13C C <sub>2</sub> ( $d^{13}C_2$ )	% per mil	None	-	NA	NA
Delta 13C C <sub>3</sub> ( $d^{13}C_3$ )	% per mil	None	-	NA	NA
Delta 13C CO <sub>2</sub> ( $d^{13}CO_2$ )	per mil VPDB	None	-	NA	NA
Delta 13C iC <sub>4</sub> ( $d^{13}iC_4$ )	per mil VPDB	None	-	NA	NA
Delta 13C nC <sub>4</sub> ( $d^{13}nC_4$ )	per mil VPDB	None	-	NA	NA
Delta D C <sub>1</sub> (dDC <sub>1</sub> )	% per mil	None	-	NA	NA
Ethane (C <sub>2</sub> )	MOL %	None	-	0.949	1.46
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	cc/L	None	-	0.25	0.38
Ethane, Dissolved (C <sub>2</sub> H <sub>6</sub> )	mg/L	None	-	0.31	0.48
Ethylene (C <sub>2</sub> H <sub>4</sub> )	MOL %	None	-	ND	ND
Helium (He)	MOL %	None	-	NA	NA
Helium Dilution Factor	Other	None	-	0.83	0.83
Hydrogen (H <sub>2</sub> )	MOL %	None	-	ND	ND
Isobutane (iC <sub>4</sub> )	MOL %	None	-	0.0238	0.0184
Isopentane (iC <sub>5</sub> )	MOL %	None	-	0.0006	0.0083
Methane (C <sub>1</sub> )	MOL %	None	-	11.83	17.38
Methane, Dissolved (CH <sub>4</sub> )	cc/L	None	-	2.8	4.2
Methane, Dissolved (CH <sub>4</sub> )	mg/L	None	-	1.9	2.8
n-Butane (nC <sub>4</sub> )	MOL %	None	-	0.0238	0.0154
Nitrogen (N <sub>2</sub> )	MOL %	None	-	72.58	64.77
n-Pentane (nC <sub>5</sub> )	MOL %	None	-	0.0046	ND
Oxygen (O <sub>2</sub> )	MOL %	None	-	6.31	8.96
Propane (C <sub>3</sub> )	MOL %	None	-	0.232	0.18
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	cc/L	None	-	0.056	0.044
Propane, Dissolved (C <sub>3</sub> H <sub>8</sub> )	mg/L	None	-	0.1	0.081
Propylene (C <sub>3</sub> H <sub>6</sub> )	MOL %	None	-	ND	ND

**TABLE 1-1: ANALYTICAL SUMMARY  
GROUNDWATER MONITORING WELL SAMPLE RESULTS**

**Notes:**

COGCC - Colorado Oil and Gas Conservation Commission

BART - Biological Activity Reaction Test

cfu/ml - colony forming units per millimeter

µg/l - micrograms per liter

Bolded concentrations exceed regulatory comparison value.

E - Analyte detection exceeds the upper level of the calibration range.

910-1 - Regulatory comparison value taken from concentration levels as presented in COGCC Table 910-1

Reg 41 - Regulatory comparison value taken from Colorado Department of Health and Environment,  
Water Quality Control Commission, Regulation 41, The Basic Standards for Ground Water.

< - Analyte was not detected above the laboratory detection limit.

RSL - Regulatory comparison value taken from EPA Regional Screening Levels, June 2015.

s.u. - standard units

µmhos/cm - micromhos per centimeter

MEK - Methyl Ethyl Ketone

ND - None of the analytes were detected above the laboratory detection limit.

NI - Compound Not Identified in Laboratory TIC Report

\* - Dissolved gas content measured greater than 1.0 ppm, therefore the sample was further analyzed for gas composition.

mg/l - milligrams per liter

NA - not analyzed

TPH - Total Petroleum Hydrocarbons

DRO - Diesel Range Organics

GRO - Gasoline Range Organics

EPA - Environmental Protection Agency

**TABLE 1-2 FIELD SUMMARY**  
**SOIL VAPOR MONITORING WELL SAMPLE RESULTS**

Probe ID	Sample Date	Units	Balance	CH <sub>4</sub>	CO <sub>2</sub>	O <sub>2</sub>	H <sub>2</sub> S	CO	PID
			%	%	%	%	ppm	ppm	ppm
SVP-1-5'	8/30/2019		96.3	3.6	0	0.1	NA	NA	6.3
	9/10/2019		80.7	0.2	5.2	13.9	0	0	30.5
	10/15/2019		80.6	0	2.1	17.3	0	1	0
	5/13/2020 <sup>1</sup>		83.6	5	11.4	0	0	0	NA
	8/17/2020		80.8	0	2.3	16.9	0	0	NA
SVP-1-30'	8/30/2019		81.1	8.1	10.8	0	NA	NA	5.3
	9/10/2019		68.5	18.9	12.6	0	0	0	68
	10/15/2019		57.3	29.6	13.1	0	0	1	5.3
	8/17/2020		74.3	11	14.7	0	0	0	NA
SVP-2-5'	8/30/2019		93.8	3.2	0	3	NA	NA	3.5
	9/10/2019		80.1	0.4	4.1	15.4	0	0	0
	10/15/2019		79.3	0	2.2	18.5	0	1	1.3
	5/13/2020 <sup>1</sup>		73.5	14.5	12	0	0	0	NA
	8/17/2020		82.6	0	11.5	5.9	0	0	NA
SVP-2-30'	8/30/2019		67.1	22.2	10.7	0	NA	NA	9.8
	9/10/2019		0	87.8	12.2	0	0	0	5.5
	10/15/2019		0	87.6	12.4	0	0	1	23.1
	8/17/2020		73.1	12	14.9	0	8	0	NA
SVP-3-5'	8/30/2019		92	8	0	0	NA	NA	19.2
	9/10/2019		79.4	0.4	4.8	15.4	0	0	416
	10/15/2019		78.4	0	2.3	19.3	0	1	2.3
	5/13/2020 <sup>1</sup>		24.9	64	11.1	0	6.5	0	NA
	8/17/2020		82.1	0	4.4	13.5	0	0	NA
SVP-3-30'	8/30/2019		39.7	51	9.3	0	NA	NA	59.1
	9/10/2019		0	89.4	10.2	0.4	0	0	782
	10/15/2019		0	89.2	10.8	0	1	2	39
	8/17/2020		2.4	84	13.6	0	5	0	NA
SVP-4-5'	8/30/2019		86	0.7	0	13.3	NA	NA	0.2
	9/10/2019		91.3	1.4	1.2	6.1	0	0	250
	10/15/2019		88.5	0	4.3	7.2	0	1	0.1
	5/13/2020 <sup>1</sup>		91.1	0.1	8.8	0	0	0	NA
	8/17/2020		82.1	0	16.5	1.4	0	0	NA
SVP-4-30'	8/30/2019		74.2	15.3	10.5	0	NA	NA	6.3
	9/10/2019		60.8	27.1	11.7	0.4	0	0	819
	10/15/2019		53.8	33.5	12.7	0	0	1	13
	8/17/2020		66.3	19	14.7	0	0	0	NA

Notes:

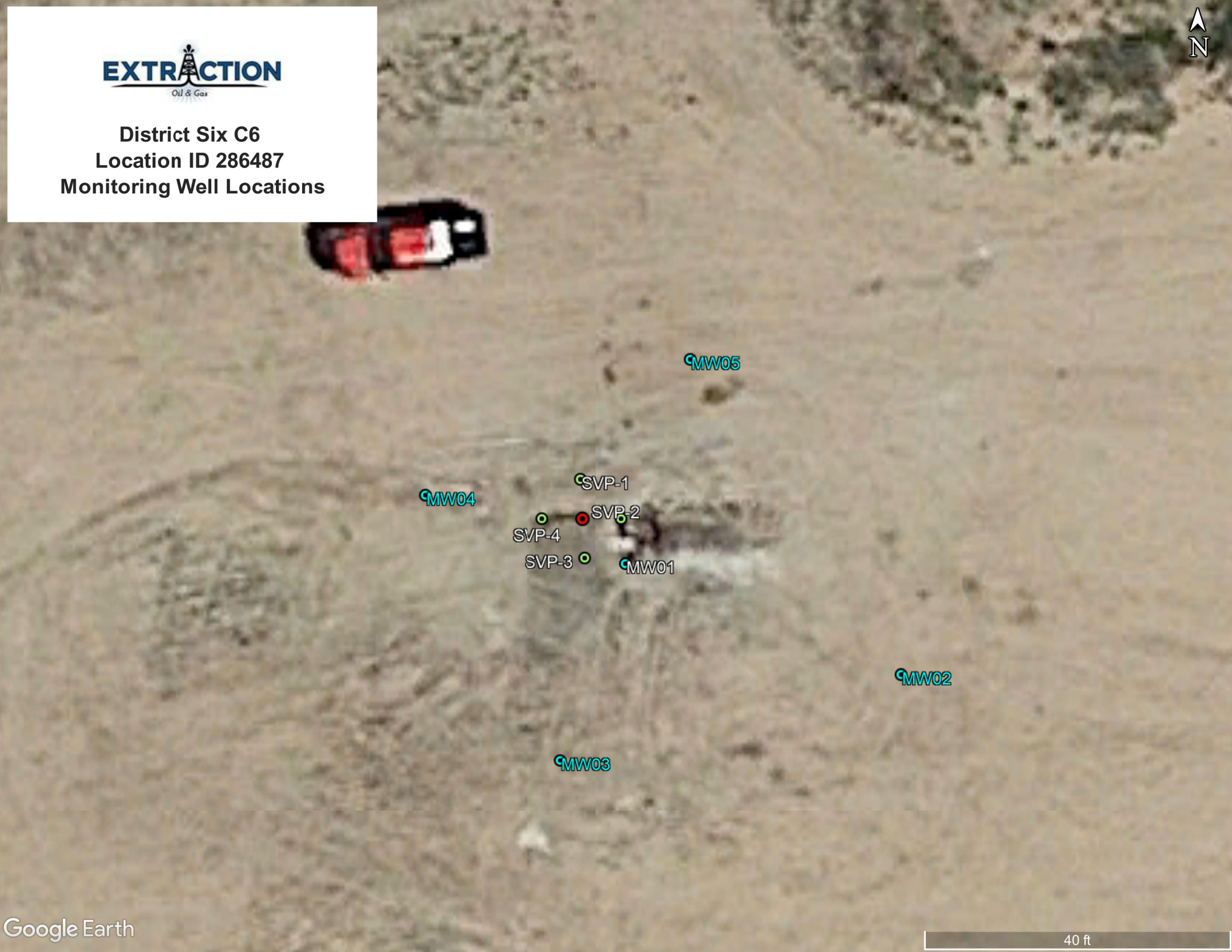
'Atmospheric readings collected from the top of casing



**ATTACHMENT A**  
**Groundwater Well Location Map**



District Six C6  
Location ID 286487  
Monitoring Well Locations



**ATTACHMENT B**

**Groundwater Well Permit Records**

# NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

Please type or print legibly in black or blue ink or file online, [dwrpermitsonline@state.co.us](http://dwrpermitsonline@state.co.us)

State of Colorado, Office of the State Engineer 1313 Sherman St, Room 821,  
Denver, CO 80203 Phone 303-866-3581 [www.water.state.co.us](http://www.water.state.co.us)

RECEIVED

AUG 23 2019

WATER RESOURCES  
STATE ENGINEER  
COLO

Well Owner Name(s): Extraction Oil and Gas, LLC

Address: 370 17th Street, Suite 5300, Denver, CO 80202

Phone: (970) 778-5956

Email: bford@extractionOG.com

Landowner's Name: Extraction Oil and Gas LLC

Please check one and complete as indicated including contact info:

☐ Water Well Driller Licensed in Colorado - Lic. No. \_\_\_\_\_

☐ Professional Engineer Registered in Colorado - Reg. No. \_\_\_\_\_

☐ Professional Geologist per C.R.S. 23-41-208(b)

☒ Other — anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company Maggie Graham/Apex Companies LLC

Address 1746 Cole Blvd, Suite 250, Building 21

City, State & Zip Lakewood, Colorado 80401

Phone (720) 501-5065

Email maggie.graham@apexc.com

Print Name: Maggie Graham

Signature or enter full name here: Maggie Graham

Location: Section 20

Township 5 ☒ N ☐ S, Range 65 ☐ E ☒ W, 6 PM

County: Weld

Subdivision: NENE

Lot: \_\_\_\_\_ Block: \_\_\_\_\_ Filing: \_\_\_\_\_

Site/Property Address 40.391325°, -104.681889°

GPS Location in UTM format if known:

Set GPS unit to true north, datum NAD83, and use meters for the distance units, ☐ Zone 12 or ☒ Zone 13.

Easting 526998.24 Northing 4471240.51

# of Monitoring Holes to be constructed in Section: 1

Estimated Depth 90 Ft., Aquifer Type III/II

Purpose of Monitoring Hole(s) Groundwater monitoring

Anticipated Date of Construction: 08/26/2019

Date Notice Submitted: 08/23/2019

(Must be at least 3 days prior to construction)

## ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE FOR OFFICE USE ONLY

Div. 6 WD 2 BAS \_\_\_\_\_ MD \_\_\_\_\_  
59993 - MH

PROCESSED BY [Signature]  
DATE ACKNOWLEDGED 8/23/2019

## CONDITIONS OF MONITORING HOLE ACKNOWLEDGEMENT

A COPY OF THE WRITTEN NOTICE OR ACKNOWLEDGEMENT SHALL BE AVAILABLE AT THE DRILLING SITE.

- 1) Notice was provided to the State Engineer at least 72 hours prior to construction of monitoring & observation hole(s).
- 2) Construction of the hole(s) must be completed within 90 days of the date notice was given to the State Engineer. Testing and/or pumping shall not exceed a total of 200 hours unless prior written approval is obtained from the State Engineer. Water diverted during testing must not be used for beneficial purposes. The owner of the hole(s) is responsible for obtaining permit(s) and complying with all rules and regulations pertaining to the discharge of fluids produced during testing.
- 3) All work must comply with the Water Well Construction Rules, 2 CCR 402-2. Standard permit application and work report forms are found on the DWR website at <http://www.water.state.co.us>. Well Construction and Yield Estimate Reports (GWS-31) must be completed for each hole drilled. The licensed contractor or authorized individual must submit the completed forms to this office within 60 days of monitoring hole completion. Aquifer testing information must be submitted on Well Yield Test Report (GWS-39).
- 4) Unless a well permit is obtained or variance approved, the hole(s) must be plugged and sealed within eighteen (18) months after construction. An Abandonment Report (GWS-09) must be submitted within 60 days of plugging & sealing. The above MH acknowledgement number, owner's structure name, and owner's name and address must be provided on all well permit application(s), well construction and abandonment reports.
- 5) A MONITORING HOLE CANNOT BE CONVERTED TO A PRODUCTION WATER WELL, except for purposes of remediation (recovery) or as a permanent dewatering system, if constructed in accordance with the Water Well Construction Rules and policies of the State Engineer.
- 6) IF HOLES WILL NOT BE CONSTRUCTED UNDER THIS NOTICE WITHIN 90 DAYS, PLEASE WRITE "NO HOLES CONSTRUCTED" ON A COPY OF THE ACKNOWLEDGED NOTICE WITH THE FILE NUMBER AND EMAIL TO THE DIVISION OF WATER RESOURCES AT [DWRpermitsonline@state.co.us](mailto:DWRpermitsonline@state.co.us).

THIS ACKNOWLEDGEMENT OF NOTICE DOES NOT INDICATE THAT WELL PERMIT(S) CAN BE APPROVED.

Incomplete forms or Notice provided less than 72 hours prior to well construction will not be acknowledged

STATE OF  
COLORADO

DWRPermitsOnline, DNR &lt;dnr\_dwrpermitsonline@state.co.us&gt;

**Notice of Intent to Construct Monitoring Hole - APEX Companies LLC - Greeley Directional location**

1 message

**Maggie Graham** <Maggie.Graham@apexcos.com>

Fri, Aug 23, 2019 at 1:10 PM

To: "dwrpermitsonline@state.co.us" &lt;dwrpermitsonline@state.co.us&gt;

Cc: Denver Remediation &lt;DenverRemediation@apexcos.onmicrosoft.com&gt;, Kevin Ambrose &lt;Kevin.Ambrose@apexcos.com&gt;, Maggie Graham &lt;Maggie.Graham@apexcos.com&gt;

Good Afternoon,

Please find attached a Notice of Intent to construct 1 (one) Monitoring Hole at the location referenced within.

Kind Regards,

Maggie Graham

RECEIVED

AUG 23 2019

WATER RESOURCES  
STATE ENGINEER  
COLO

Maggie Graham

Sr Project Manager

1746 Cole Blvd Bldg 21, Ste 250

Lakewood, CO 80401



O) 720-501-5065

Add me to your contact list!

**WorkSafe**  
Apex, Energy Safety, Water Safety Personnel



<b>WELL CONSTRUCTION AND YIELD ESTIMATE REPORT</b>				For Office Use Only		
<b>Form No.</b> GWS-31  <b>Date:</b> 02/2017		State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 <a href="http://www.water.state.co.us">www.water.state.co.us</a> and <a href="mailto:dwrpermitsonline@state.co.us">dwrpermitsonline@state.co.us</a>			<div style="font-size: large; color: blue; margin-bottom: 10px;">RECEIVED</div> <div style="font-size: x-large; color: blue; margin-bottom: 10px;">OCT 18 2019</div> <div style="color: blue; font-weight: bold; font-size: small;">WATER RESOURCES STATE ENGINEER COLO</div>	
<b>1. Well Permit Number:</b> 59993-MH <b>Receipt Number:</b>						
<b>2. Owner's Well Designation:</b> MW-1						
<b>3. Well Owner Name:</b> Extraction Oil and Gas, LLC						
<b>4. Well Location Street Address:</b> <del>20 29th Street, Greeley, CO 80631</del>						
<b>5. As Built GPS Well Location (required):</b> <input type="checkbox"/> Zone 12 <input checked="" type="checkbox"/> Zone 13 Easting: 526998.2 Northing: 4471240.51						
<b>6. Legal Well Location:</b> NE 1/4, NE 1/4, Sec., 20 Twp. 5 <input checked="" type="checkbox"/> N or S <input type="checkbox"/> , Range 65 <input type="checkbox"/> E or W <input checked="" type="checkbox"/> , 6 P.M. County: Weld Subdivision: _____, Lot _____, Block _____, Filing (Unit) _____						
<b>7. Ground Surface Elevation:</b> 4672 feet <b>Date Completed:</b> 08/28/2019 <b>Drilling Method:</b> Hollow Stem Auger						
<b>8. Completed Aquifer Name :</b> Unnamed Type III/II <b>Total Depth:</b> 85 feet <b>Depth Completed:</b> 85 feet						
<b>9. Advance Notification:</b> Was Notification Required Prior to Construction? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No, Date Notification Given: 08/23/2019						
<b>10. Aquifer Type:</b> <input type="checkbox"/> Type I (One Confining Layer) <input type="checkbox"/> Type I (Multiple Confining Layers) <input type="checkbox"/> Laramie-Fox Hills (Check one) <input type="checkbox"/> Type II (Not overlain by Type III) <input checked="" type="checkbox"/> Type II (Overlain by Type III) <input type="checkbox"/> Type III (alluvial/colluvial)						
<b>11. Geologic Log:</b>				<b>12. Hole Diameter (in.)</b>		
Depth	Type	Grain Size	Color	Water Loc.	From (ft) To (ft)	
0' - 3'	Silty Sand	fg	Bwn.		0 85	
3' - 8'	Sandy Clay	vfg - fg	Bwn.			
8' - 18'	Silty Sand	vfg - mg	Grey Bwn.			
18' - 30'	Sand	fg - cg	Yellow Bwn.	28' (Perch)		
30' - 39'	Clay	vfg	Grey			
39' - 48'	Sand	fg	Bwn.	40' (Stable)		
48' - 50'	Sandy Clay	vfg - fg	Bwn.			
50' - 70'	Sand	fg - mg	Bwn.			
70' - 80'	Sand	fg - cg	Bwn.			
80' - 85'	Clay	vfg - fg	Bwn.			
85'	NR/Bedrock					
<b>Remarks:</b>				<b>13. Plain Casing</b>		
				OD (in) Kind Wall Size (in) From (ft) To (ft) 2.375 Sch40PVC 0.328 0 45		
				<b>Perforated Casing</b> Screen Slot Size (in): 0.010		
				OD (in) Kind Wall Size (in) From (ft) To (ft) 2.375 Sch40PVC 0.328 45 85		
				<b>14. Filter Pack:</b>		
				Material Sand Size 10-20 Interval 43 - 85		
				<b>15. Packer Placement:</b>		
				Type _____ Depth _____		
				<b>16. Grouting Record</b>		
				Material Amount Density Interval Method Cement Grout 800 lbs Grout 0 - 40 Tremie Pipe		
<b>17. Disinfection:</b> Type N/A Amt. Used _____						
<b>18. Well Yield Estimate Data:</b> <input type="checkbox"/> Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report						
Well Yield Estimate Method: N/A						
Static Level: 38.51				Estimated Yield (gpm) N/A		
Date/Time measured: 10/15/19, 9:50 am				Estimate Length (hrs) N/A		
<b>Remarks:</b>						
<p>19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402.2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.</p>						
Company Name: Apex Companies, LLC		Email: kevin.ambrose@apexc.com		Phone w/area code: (925) 596-1862		
				License Number: CA-PG# 9617		
Mailing Address: 1746 Cole Blvd, Suite 250, Lakewood, CO 80401						
Sign (or enter name if filing online)  Kevin Ambrose		Print Name and Title Kevin Ambrose, Project Geologist			Date: 10/16/2019	

[illegible]

[illegible]



[illegible]

Form No. GWS-31  02/2017		WELL CONSTRUCTION AND YIELD ESTIMATE REPORT State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 <a href="http://www.water.state.co.us">www.water.state.co.us</a> and <a href="mailto:dwrpermitsonline@state.co.us">dwrpermitsonline@state.co.us</a>						For Office Use Only	
1. Well Permit Number: 60666-MH Receipt Number:									
2. Owner's Well Designation: MW-5									
3. Well Owner Name: Extraction Oil and Gas, LLC									
4. Well Location Street Address: 20 29th Street, Greeley, CO 90631									
5. As Built GPS Well Location (required): <input type="checkbox"/> Zone 12 <input checked="" type="checkbox"/> Zone 13 Easting: 527004.9 Northing: 4471248.52									
6. Legal Well Location: NE 1/4, NE 1/4, Sec., 20 Twp. 5 N or S , Range 65 E or W , 6 P.M.									
County: Weld Subdivision: _____, Lot _____, Block _____, Filing (Unit) _____									
7. Ground Surface Elevation: 4672 feet Date Completed: 04/30/2020 Drilling Method: Hollow Stem Auger									
8. Completed Aquifer Name : Unnamed Type III/II Total Depth: 85 feet Depth Completed: 85 feet									
9. Advance Notification: Was Notification Required Prior to Construction? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No, Date Notification Given: 04/07/2020									
10. Aquifer Type: <input type="checkbox"/> Type I (One Confining Layer) <input type="checkbox"/> Type I (Multiple Confining Layers) <input type="checkbox"/> Laramie-Fox Hills (Check one) <input type="checkbox"/> Type II (Not overlain by Type III) <input checked="" type="checkbox"/> Type II (Overlain by Type III) <input type="checkbox"/> Type III (alluvial/colluvial)									
11. Geologic Log:					12. Hole Diameter (in.) From (ft) To (ft) 8 0 85				
Depth	Type	Grain Size	Color	Water Loc.					
0 - 11	ML	fg	Bwn.						
11 - 20	SM	fg	Bwn.						
20 - 32	SP	fg - cg	Bwn.		13. Plain Casing				
32 - 50	ML	vfg - fg	Grey	40	OD (in)	Kind	Wall Size (in)	From (ft) To (ft)	
50 - 51.5	SP-SM	fg	Bwn.		2.375	Sch40PVC	0.328	0 45	
60 - 61	ML	fg	Bwn.						
61 - 70	CL	vfg - fg	Bwn.						
70 - 71	SM	fg	Bwn.						
71 - 80	ML	fg	Bwn.		Perforated Casing Screen Slot Size (in): _____				
80 - 81	SM	fg - mg	Bwn.		OD (in)	Kind	Wall Size (in)	From (ft) To (ft)	
81 - 84	ML	fg	Bwn.		2.375	Sch40PVC	0.328	45 85	
84 - 85	CL	vfg	Grey						
					14. Filter Pack:				
					Material	Sand			
					Size	10-20			
					Interval	43-85			
					15. Packer Placement:				
					Type _____				
					Depth _____				
					16. Grouting Record				
					Material	Amount	Density	Interval	Method
					Cement Grout	800 lbs	Grout	0 - 40	Tremie Pipe
Remarks: v = very, f = fine, m = medium, c = coarse, g = grain, G = gravel, Bwn. = Brown									
17. Disinfection: Type N/A Amt. Used									
18. Well Yield Estimate Data: <input type="checkbox"/> Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report Well Yield Estimate Method: N/A									
Static Level: 39.51 Estimated Yield (gpm) N/A									
Date/Time measured: 5/6/20 Estimate Length (hrs) N/A									
Remarks:									
19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402.2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.									
Company Name: Apex Companies, LLC			Email: Kevin.Ambrose@apexc.com			Phone w/area code: (925) 596-1862		License Number: CA-PG# 9617	
Mailing Address: 1746 Cole Blvd., Suite 250, Lakewood, CO 80401									
Sign (or enter name if filing online) Kevin Ambrose				Print Name and Title Kevin Ambrose, Project Geologist				Date: 06/02/2020	

## **ATTACHMENT C**

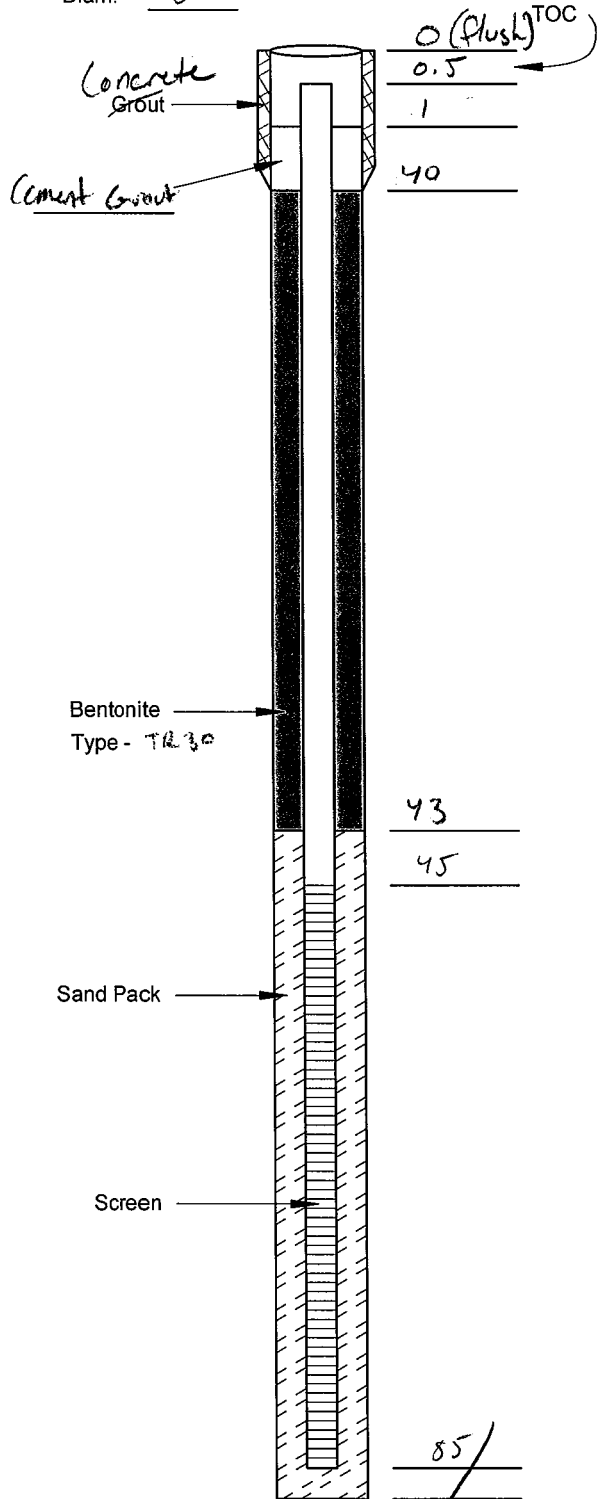
### **Groundwater Well Borehole and Completion Logs**



### Well Completion Detail

Street Box  
Diam. = 8"

Surveyed Dif.  
Btwn. GS and  
TOC



### WELL CONSTRUCTION LOG

Project 744,1864.01  
Number 332837A

Well  
Number MW-1

#### Drilling Summary

Total Depth of Hole: 85'  
Hole Diameter: 8"  
Drilling Company: Site Services Drilling LLC  
Driller: Jason A  
Rig Type: CME-75  
Bits: \_\_\_\_\_  
Geologist: Kevin Ambrose

#### Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>8/26</u>		<u>8/27</u>	
Well Completion:	<u>8/27</u>		<u>8/27</u>	
Grouting:	<u>8/28</u>		<u>8/28</u>	

#### Depth to Water (Below TOC)

Depth: 38.51 Date: 10/15/19 Time: 9:50

#### Well Construction Materials

	Grout	Seals	Filter
Quantity:	<u>800 lbs</u>	<u>100 lbs</u>	<u>750 lbs</u>
Type:	<u>Portland</u>	<u>Bent. Pellets</u>	<u>10-20 Sand</u>

	Screen
Size:	<u>2" Sch 40</u>
Area/Ft.:	<u>0.16 sq ft</u>
Inside Diam.:	<u>2"</u>

	Config.:
Comp.:	<u>PVC</u>
Outside Diam.:	<u>2.3"</u>

#### Comments

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Total Depth from TOC = 85'

PROJECT NAME AND SITE ADDRESS: 40.391323, -104.681859		BORING/WELL ID: MW-1
BORING LOCATION (AT SITE): Greeley Directional, DCCG 7'SE PROJECT NO.:		
SUBCONTRACTOR AND EQUIPMENT: CASE LOGGED BY: K Ambrose		
SAMPLING METHOD: Split Spoon	MONITORING DEVICE: Mini Rae 3000 PID	
START DATE/ (TIME): 4/11/19	FINISH DATE/ (TIME):	
FIRST WATER (BGS):	STABILIZED WATER LEVEL (BGS):	
SURFACE ELEVATION:	CASING TOP ELEVATION:	
TOTAL WELL DEPTH(S):	BORING DIAMETER AND DEPTH: 8" HSA (60)	
CASING DIAMETER(S):	SCREEN INTERVAL(S):	SLOT (IN):
ANNULUS MATERIAL:		
REVIEWED BY:		

[illegible]



PROJECT NAME AND SITE ADDRESS:

Greeley Directional

BORING LOCATION (AT SITE):

PROJECT NO.:

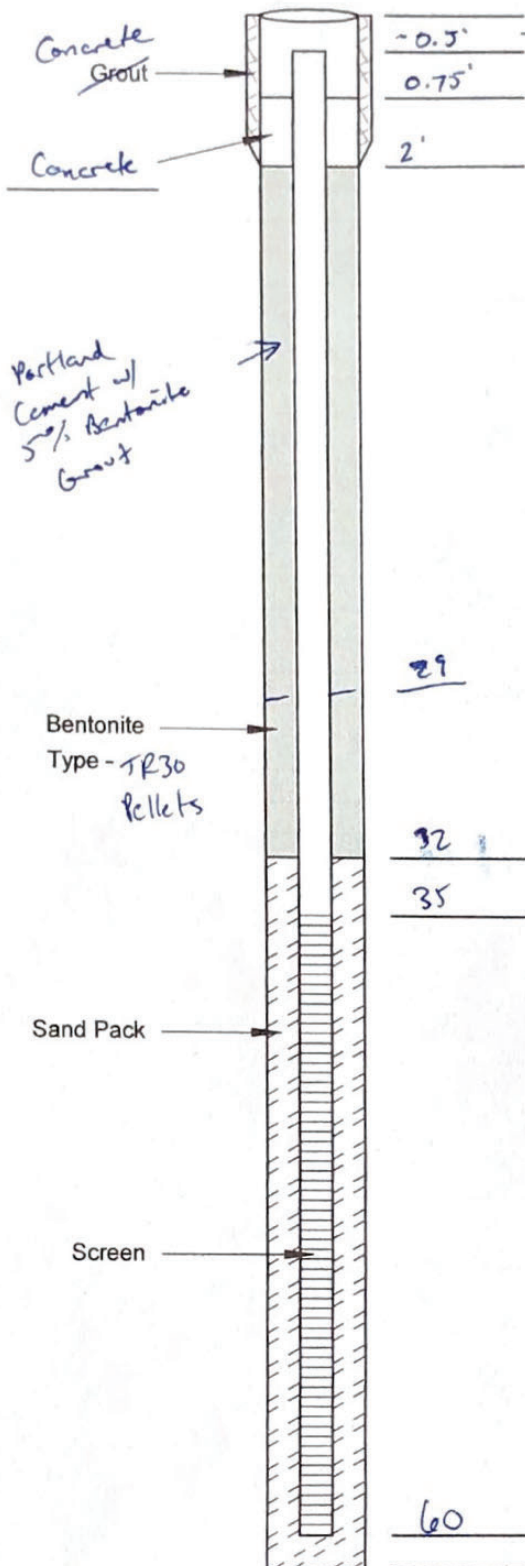
TIME	SAMPLE INTERVAL	BLOW COUNTS	PID (ppmV)	DEPTH	USCS LITHOLOGY	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES APPROXIMATE UNLESS STATED OTHERWISE	WELL CONST.
1230	2 5 6 7	3.5		38 38.5 40	CL SM	brown clay, stiff, medium plasticity, slight he odor c 38-38.5 w/ black streaks, trace (5-10% fine sand), wet + driller notes water on side of sampler & can hear it coming into borehole. Pull augers 10' to allow water to enter, take lunch, & check stabilized data	20
1355	2 6 13 17	0.4		48 52 50	CL SM	fine sand, brown, wet, m. dense saturated, brown, m. stiff, m. plasticity, 10-20% fine sand saturated, brown, fine sand, m. dense	25
1440	2 10 15 20	2.4		58 60	SP	saturated, dense, fine med sand w/ 5% coarse gravel stabilized water c 37.70 1530 - auger gets stuck c ~65' due to heaving sands	30
1540	6 12 14	2.4		70 72	SP	med-coarse sand w/ 20% coarse gravel, saturated, brown, m. dense fine sand (1/4") in shoe, m. dense, saturated, brown	35
915	1 5 8 10	6.3		80 82	SM CL	saturated, fine sand, m. dense, brown stiff, saturated, brown, medium plasticity clay, trace fine sand	40
						@ 85' - drillers encounter bedrock @ 85'. Stop drilling & call in to client & project managers. Wait for water to stabilize, to collect multiple readings c 59.5' bgs. Set well screen c 75 to 85' bgs (20' above & below assumed breach c 65')	45



### Well Completion Detail

Street Box  
Diam. = 8"

Surveyed Dif.  
Btwn. GS and  
TOC



\* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = 60'

### WELL CONSTRUCTION LOG

Project 744.1708.01  
Number 220487

Well  
Number MW02

### Drilling Summary

Total Depth of Hole: 60'  
Hole Diameter: 8"  
Drilling Company: Cascade Environmental  
Driller: Robbie Gildea  
Rig Type: B-59 Hollow Stem Auger  
Bits: 8" diameter, 5' auger flights  
Geologist: Kevin Ambrose

### Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>4/30/20</u>		<u>4/30/20</u>	
Well Completion:	<u>5/5/20</u>			
Grouting:			<u>5/5/20</u>	

### Depth to Water (Below TOC)

Depth: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

### Well Construction Materials

	Grout	Seals	Filter
Quantity:	<u>2-29</u>	<u>29-32</u>	<u>32-60</u>
Type:	<u>Portland w/ Bent. Grout</u>	<u>TP30 Bent</u>	<u>10/20 Sand</u>

Screen	
Size:	<u>Sch. 40</u>
Area/Ft.:	<u>0.16 5 1/8"</u>
Inside Diam.:	<u>2"</u>
Config.:	
Comp.:	<u>PVC</u>
Outside Diam.:	<u>2.3"</u>

### Comments

Drilling stopped at 60' bgs due to presence of methane gas in borehole. After the explosive atmosphere remained for several days, the borehole was completed w/ a well at 60' instead of attempting advancement to 85'.





Boring Location Sketch

## SOIL BORING LOG

Project Number Boring Number Sheet

MW02

1 of 1



Project District Six CB Investigation

Location Greeley Directional Pad

Drilling Method &amp; Equipment B-55 HSA Rig, 8" OD auger

Drilling Contractor Cascade, Robbie Gildea

Date 4/21/20, clear 6"

Start 4/20/20, 1300

Finish

Logger L. Ambrose

Depth Below Surface	Sample			Standard Penetration Test Results 6"/6"/6"/6"	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
10	10-12	1330	66%	2/4/4	(10, 90, 10, 0) brown, moist, fine sand, trace med sand, loose	SP-SM	N	0	
20	20-22	1345	50%	9/18/20	(20, 80, 0, 0) brown w/ lt grey pulverized gravel, fine-coarse sand, fine gravel, damp, dense	SP	N	0	
30	30-32	1415	50%	5/5/5	(5, 90, 5, 0) brown, damp, loose, fine-c sand trace # gravel	SP	N	0	
					(0, 20, 50, 30) greenish grey w/ brown mottling, moist, soft, fine sand, med. plasticity	ML	N	0	
40	40-42	1430	75%	4/7/9	SAP, wet	ML	N	0	
50	50-52	1450	100%	7/12/12	(0, 60, 40, 0) m. dense, lt brown, wet, fine sand	SM	N	0	
60		1530			* Gurgling/boiling sound, gassy odor, 6 times from augers when drillers reach 60'. Stop work to collect gas readings & see if gas action dissipates.				
70									
80									
85									

push point box

gravel

29 bent.

32

10/20 Sand

Readings from auger

4-gas alarm, 20-25% LEL

PID ~ 15-20 ppm

TD = 60'

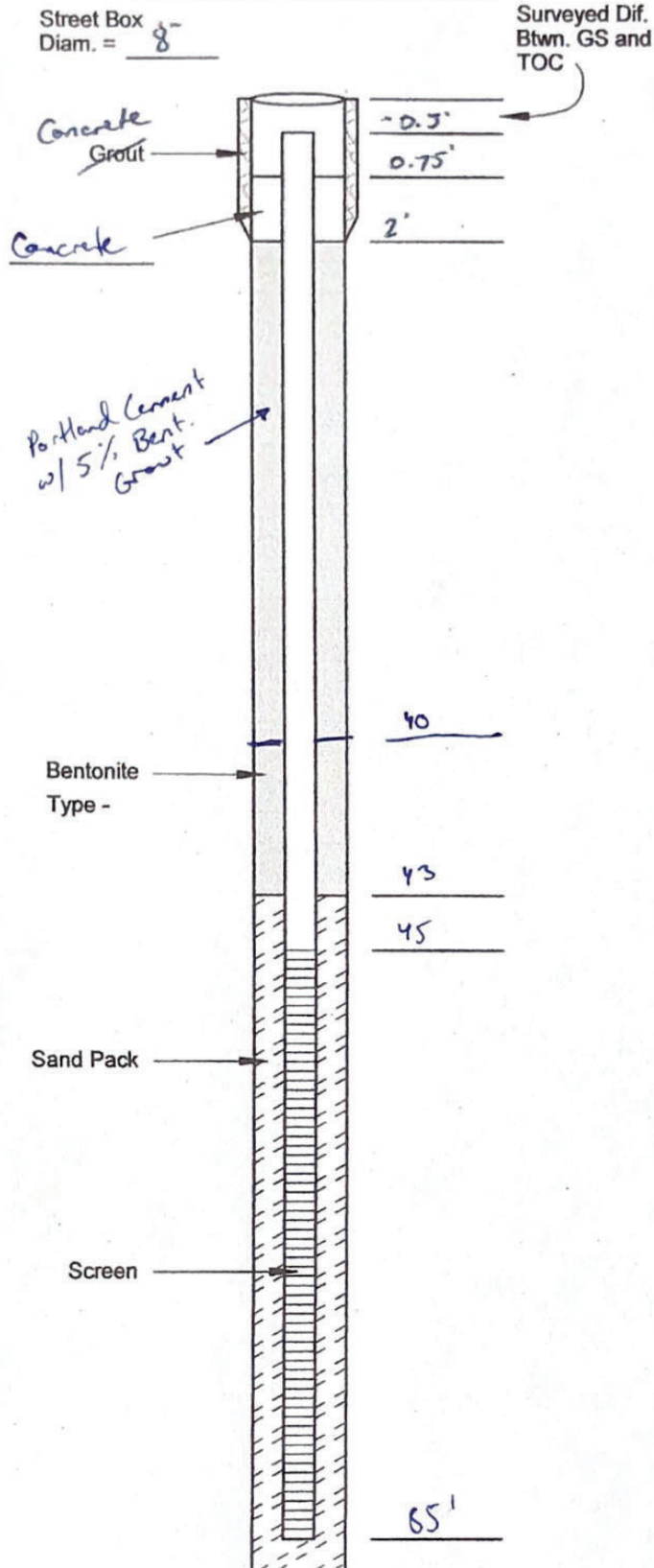
Installed 2" Screen, 10-20 sand w/ 0.010" slot 35'-60'





## WELL CONSTRUCTION LOG

### Well Completion Detail



\* Measuring Point is Below Ground Surface (bgs)

Project Number 744.1703.01  
286487

Well Number MW03

### Drilling Summary

Total Depth of Hole: 85'  
Hole Diameter: 8"  
Drilling Company: Cascade Environmental  
Driller: Robbie Gildea  
Rig Type: B-59 Hollow Stem Auger  
Bits: 8" diameter, 5' auger flights  
Geologist: Kevin Ambrose

### Time Log

	Start Date	Start Time	Finish Date	Finish Time
Drilling:	<u>4/21/20</u>		<u>4/22/20</u>	
Well Completion:	<u>4/22/20</u>			
Grouting:			<u>4/23/20</u>	

### Depth to Water (Below TOC)

Stabilized  
Depth: ~39' Date: \_\_\_\_\_ Time: \_\_\_\_\_

### Well Construction Materials

	Grout	Seals	Filter
Quantity:	<u>2-40</u>	<u>40-43</u>	<u>43-85</u>
Type:	<u>Portland Cement w/ Bent</u>	<u>1830 Bent.</u>	<u>10/20 Sand</u>

	Screen
Size:	<u>Sch. 40</u>
Area/Ft.:	<u>0.16 5 1/4"</u>
Inside Diam.:	<u>2"</u>
Config.:	
Comp.:	<u>PVC</u>
Outside Diam.:	<u>2.3"</u>

### Comments

Total Depth from TOC = 85'



4/18 5:45



## Boring Location Sketch

## SOIL BORING LOG

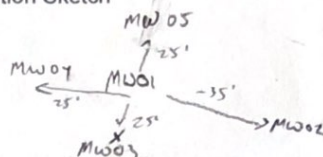
Project Number

Boring Number

Sheet

MW03

1 of 1



Project District Six CG

Location Greeley Dir. Pad

Drilling Method &amp; Equipment HydroVac, B-59, HSA w/ 8" Drill Contractor Cascade Drilling, Robbie Gilden

Date 4/21/20

Water Level ~45-50' bgs

Start 4/21/20, 000

Finish 4/23/20,

Logger K. Ambrose

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description		Symbol of USCS Log	Staining	PID Readings (ppm)	Well ID, Const. Reading, Diagram
	Interval	Depth/Time	Recovery		USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor					
		4/21			hydrovac to 6' bgs x 10" wide for clearance. m. dense, lt brown sand, dry, no significant odor or staining		SP	N	0	
10	10-12	1145	100%	3/5/5	(0, 95, 5, 0) lt brown, dry, m. dense		SP	N	10 : 0 10.5 : 0 11 : 0 11.5 : 0	
					grades into fine sand					
20	20-22	1205	50%	5/8/9	(0, 40, 40, 0) lt brown, dry, dense		SM			
					(10, 90, 0, 0) fine to coarse sand, fine gravel, lt brown, damp, m. dense		SP	N	20 : 0 20.5 : 0 21 : 0 21.5 : 0	
30	30-32	1330	75%	8/8/8	(0, 70, 30, 0) fine sand, brown, wet, trace med sand, med dense, grades into		SM	N	30 : 0 30.5 : 0 31 : 0 31.5 : 0	
					(0, 30, 40, 20) fine sand, brown, wet, med. plasticity, v. stiff		ML			
40	40-42	1405	100%	5/8/13	(0, 20, 40, 40) fine sand, lt grey, damp, med. plast		ML	N	40 : 0 40.5 : 0 41 : 0 41.5 : 0	
					(0, 40, 50, 10) fine sand, lt grey w/ brown mottling, damp, low plasticity		ML			
50	50-52	1505	66%	10/11/10	(0, 40, 50, 10) yellowish brown, saturated, fine sand, low plasticity, stiff		ML	N	50 : 6 50.5 : 0 51 : 0 51.5 : 0	
					(0, 70, 30, 0) y. brown, saturated, m. dense, fine sand		SM			
60	60-62	1616	80%	13/8/5	(10, 80, 10, 0) greenish grey, saturated, mostly fine to med sand, fine gravel, trace coarse sand		SM	N	60 : 0 60.5 : 0 61 : 0 61.5 : 0	
		4/22								
70	70-72	1020	66%	9/21/24	(0, 80, 20, 0) med. brown, saturated, fine gr sand, dense		SM	N	70 : 0 70.5 : 0 71 : 0 71.5 : 0	
					(5, 65, 30, 0) brown, wet, fine med sand, trace fine gravel, m. dense		SM			
80	80-82	1130	100%	7/11/13	(0, 40, 50, 10) brown, stiff, fine sand, low plasticity, wet		ML		80 : 0 80.5 : 0 81 : 0 81.5 : 0	
85	84-86	1230	100%		SPA (brown, wet)				84 : 0 84.5 : 0 85 : 0	
					(0, 70, 50, 30) greenish grey w/ black seam, hard, wet, no hc odor, med plasticity		ML			
Total Depth(s) = 85'				Soil Sample(s): No soil samples retained for lab analysis		Rationale: No staining or elevated PID readings		Additional Information:		

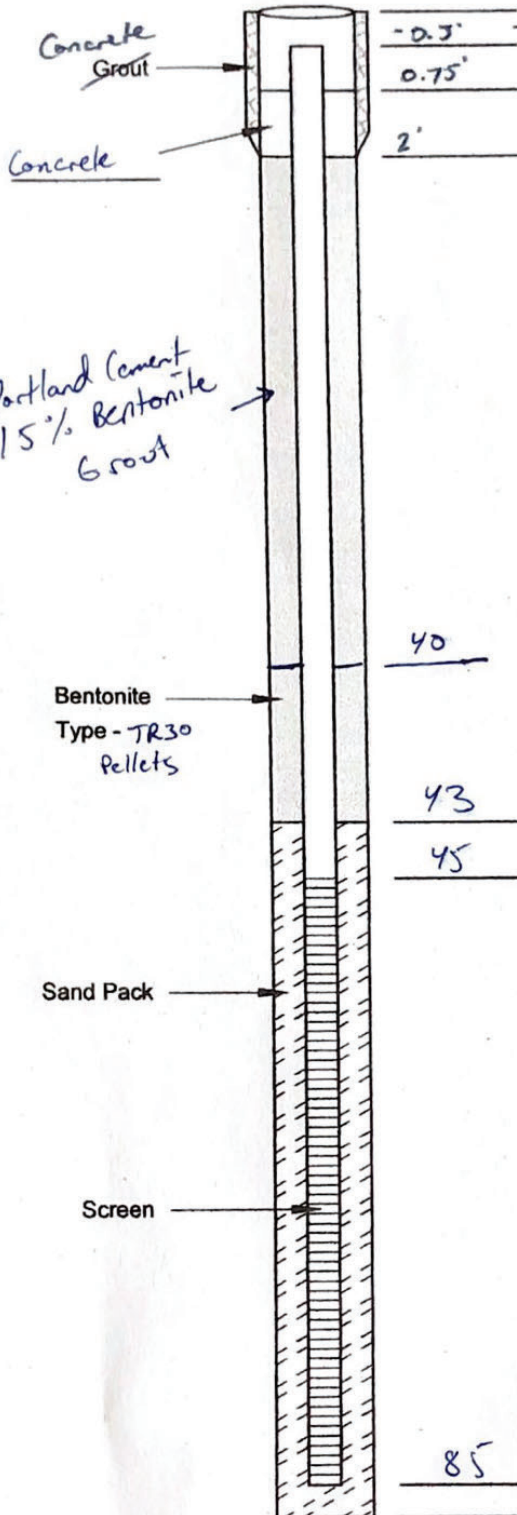




### Well Completion Detail

Street Box  
Diam. = 8"

Surveyed Dif.  
Btwn. GS and  
TOC



\* Measuring Point is Below Ground Surface (bgs)

### WELL CONSTRUCTION LOG

Project Number 744.1703.01  
286487

Well Number MW04

#### Drilling Summary

Total Depth of Hole: 85'  
Hole Diameter: 8"  
Drilling Company: Cascade Environmental  
Driller: Robbie Gildea  
Rig Type: B-59 Hollow Stem Auger  
Bits: 8" diameter, 5' auger slights  
Geologist: Kevin Ambrose

#### Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	4/23/20		4/24/20	
Well Completion:	4/24/20		4/27/20	
Grouting:	4/27/20		4/27/20	

#### Depth to Water (Below TOC)

stabilized  
Depth: ~39' Date: Time:

#### Well Construction Materials

	Grout	Seals	Filter
Quantity:	2-40	40-43	43-85
Type:	Portland/ Bent. Grout	TR30 Bent	10/20 Sand
	Screen		
Size:	Sch 40	Config.:	
Area/Ft.:	0.165 1/4	Comp.:	VC
Inside Diam.:	2"	Outside Diam.:	2.3"

#### Comments

Total Depth from TOC = 85'





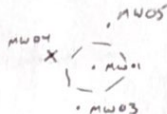
# Boring Location Sketch

## SOIL BORING LOG

Project Number Boring Number Sheet

MW04

1 of 1



Project District Six C6

Location Greeley Directional Pad

Drilling Method & Equipment HydroVac (G'), BSA 175A w/ 8" auger flights

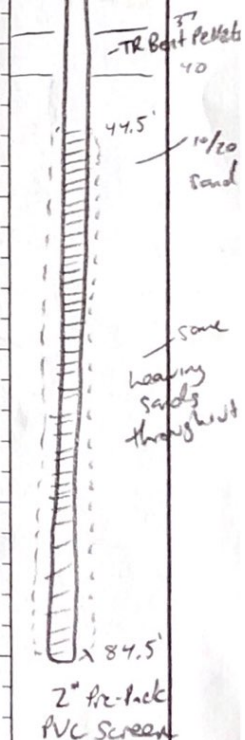
Drilling Contractor Cascade - Robbie Gildca

Date 4/21/20

Start 4/23/20, 1130

Finish Logger K Ambrose

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description	USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	Well Const.
	Interval	Depth/Time	Recovery							
10	10-12	1140	75%	4/7/9	Clear to ~5.5' bags using hydrovac & hand tools. Compacted gravelly sand & wood debris.	(0, 30, 70, 0) fine sand, brown w/ lt brown streaking, no plasticity, stiff, dry	ML	N	0 E 10	
20	20-22	1200	66%	6/13/14	(5, 70, 25, 0) fine sand w/ trace med/ coarse sand, trace fine gravel, brown, damp, m. dense	(0, 85, 5, 0) fine-coarse sand, lt brown, m. dense, moist, fine gravel	SM	N	0 E 11	
30	30-32	1325	75%	12/7/4	SAABone	(0, 30, 50, 20) greenish grey, low plasticity, fine gr. sand, wet	SP	N	0 E 20	
40	40-42	1350	100%	5/5/7	(0, 20, 50, 30) brown, wet, med plast. fine grain sand	(0, 60, 40, 0) brown, saturated, m. dense, fine gr. sand	ML	N	0 E 21	
50	50-52	1420	100%	5/8/11	(0, 60, 40, 0) brown, saturated, m. dense, fine gr. sand	(60, 30, 10, 0) brown, wet, fine-coarse sand, gravel, fine-coarse sand, dense	SM	N	0 E 22	
60	60-62	930	100%	6/29/37	2" layer of black silty sand, trace fine gravel, wet, no odor (organic?)	(0, 20, 30, 50) brown, wet, high plasticity, hard, fine sand	GP	N	0 E 30	
70	70-72	1030	100%	5/11/13	(0, 80, 20, 0) brown, saturated, fine gr. sand, m. dense, trace coarse gravel @ 71.5' (1 stone ~ 0.75")	(0, 80, 20, 0) brown, saturated, fine gr. sand, m. dense, trace coarse gravel @ 71.5' (1 stone ~ 0.75")	SM	N	0 E 31	
80	80-82	1130	100%	5/1-20	(0, 60, 40, 0) brown, saturated, dense	(0, 40, 60, 0) brown, saturated, fine gr. sand	SM	N	0 E 32	
85	85-87	1150	100%	7/11/13	(0, 40, 60, 0) brown, saturated, fine gr. sand	(0, 0, 30, 70) greyish brown, hard, wet	ML	N	0 E 40	
							CL	N	0 E 41	
								N	0 E 42	
								N	0 E 50	
								N	0 E 51	
								N	0 E 52	
								N	0 E 60	
								N	0 E black sm	
								N	0 E CL	
								N	0 E 70	
								N	0 E 71	
								N	0 E 72	
								N	0 E 80	
								N	0 E 81	
								N	0 E 85	
								N	0 E 86	

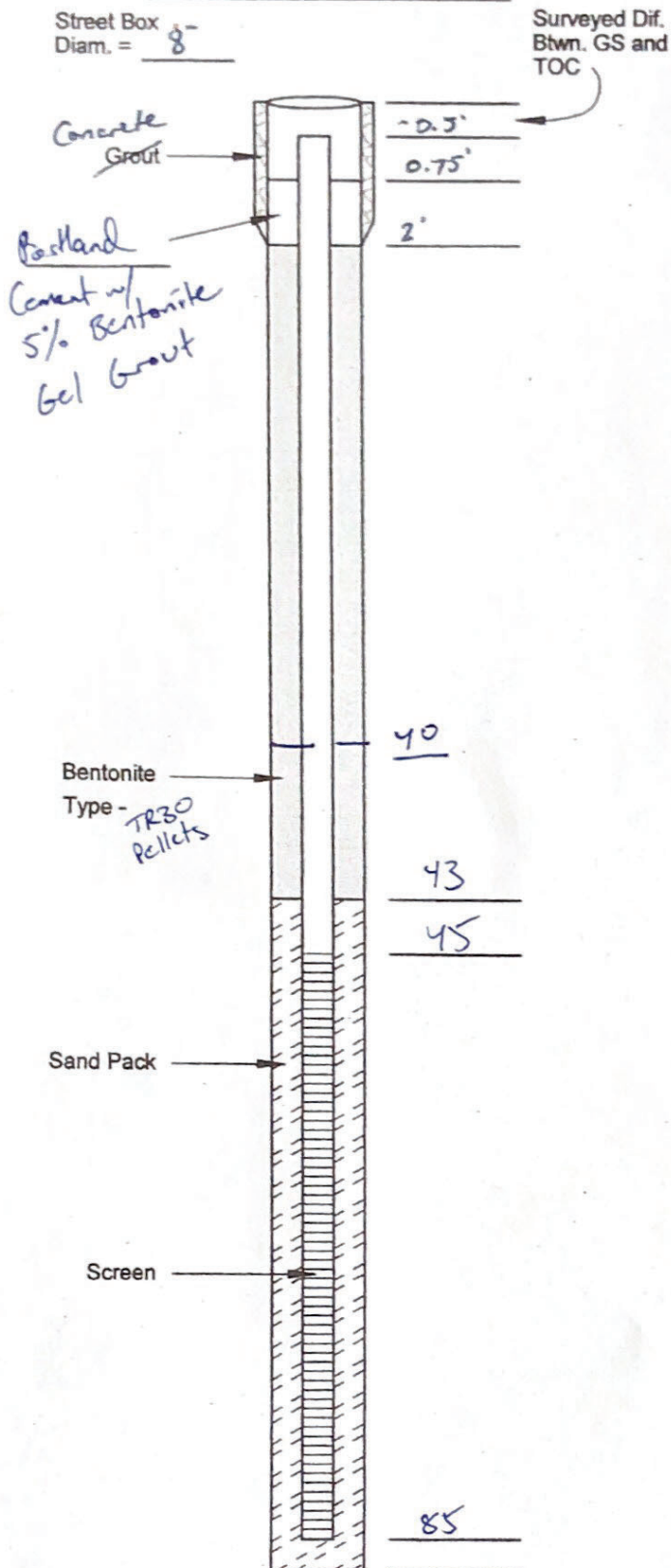


Total Depth(s) =	Soil Sample(s):	Rationale	Additional Information: (0.010'-3.14')
------------------	-----------------	-----------	--





## Well Completion Detail



\* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = 85'

## WELL CONSTRUCTION LOG

Project 744.1708.01  
Number 286487

Well  
Number MW05

### Drilling Summary

Total Depth of Hole: 85'  
Hole Diameter: 8"  
Drilling Company: Cascade Environmental  
Driller: Robbie Gildea  
Rig Type: B-59 Hollow Stem Auger  
Bits: 8" diameter, 5' auger flights  
Geologist: Kevin Ambrose

### Time Log

	Start Date	Time	Finish Date	Time
Drilling:	<u>4/27/20</u>		<u>4/28/20</u>	
Well Completion:	<u>4/28/20</u>			
Grouting:			<u>4/30/20</u>	

### Depth to Water (Below TOC)

Depth: ~45' Date: 4/27/20 first water, drilling  
~39' 4/30/20 stabilized water

### Well Construction Materials

	Grout	Seals	Filter
Quantity:	<u>2-40</u>	<u>40-43</u>	<u>43-85</u>
Type:	<u>Bent./Cement Grout</u>	<u>TR30 Bent.</u>	<u>10-20 Sand</u>
	Screen		
Size:	<u>2" Sch 40</u>	Config.:	
Area/Ft.:	<u>6.16 sq ft</u>	Comp.:	<u>PVC</u>
Inside Diam.:	<u>2"</u>	Outside Diam.:	<u>2.3"</u>

### Comments

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Boring Location Sketch

## SOIL BORING LOG

Project Number Boring Number Sheet  
MW05 1 of 1

Project District Six C6

Location Greeley Directional Pad

Drilling Method &amp; Equipment

Hydramac B-59 HSA w/ 8" OD  
6' auger flights

Drilling Contractor Cascade, Robbie Gildea

Date 4/21/20

Water Level

Start 4/27/20 12:00

Finish 4/30/20

Logger K. Ambrose

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description	USCS Log	Staining	PID Readings (ppm)	Well Const.
	Interval	Depth/Time	Recovery						
10	10-12	4/27 1305	80%	3/6/7	(0, 30, 70, 0) lt brown, dry, m. stiff, v. low/no plasticity, fine gr sand grades into	ML	N	0	
20	20-22	1330	66%	3/11/10	(0, 60, 40, 0) lt brown, m. dense, dry, fine gr sand	SM	N	0	
30	30-32	1405	66%	11/17/9	(0, 100, 0, 0) lt brown, fine - coarse sand, damp, m. dense	SP	N	0	
40	40-42	1430	100%	3/6/8	(0, 100, 0, 0) greenish brown from 30-30.5, yellowish brown 30.5-31.5, fine - coarse sand, wet, m. dense in shoe, 2" - dark grey low plasticity silt w/ fine gr sand, damp	SP	N	0	
50	50-52	1455	10%	4/7/7	(0, 20, 50, 30) greyish brown, med plasticity, moist, stiff	ML	N	0	
60	60-62	930	100%	8/28/33	Saturated yellowish brown fine sand, m. dense	SP-SM	N	0	
70	70-72	1035	100%	11/12/23	(0, 40, 60, 0) lt brown, fine sand, saturated, hard	ML	N	0	
80	80-82	1100	75%	5/6/9	(0, 20, 30, 50) lt brown, saturated, fine sand, hard, high plasticity	CL	N	0	
85	84-86	1200	100%	7/11/13	(0, 60, 40, 0), saturated, lt brown, m. dense/mush, fine gr sand	SM	N	0	
					(0, 40, 50, 10) wet, lt brown, hard, fine sand, low plasticity/smearing	ML	N	0	
					(0, 60, 30, 10) lt brown, saturated, loose, fine - med sand	SM	N	0	
					(0, 30, 50, 20) lt brown, wet, stiff, fine sand, low plasticity	ML	N	0	
					(0, 10, 40, 50) lt grey, wet, stiff, high plasticity	CL	N	0	

2" slot 40  
prepack  
0.075" slot  
screen  
44-84

10-20  
sand

8" borehole





## **ATTACHMENT D**

### **Groundwater Monitoring Well Gauging and Inferred Groundwater Flow Diagrams**





#### LEGEND

-  Groundwater Contour
-  Groundwater Flow Direction
-  Monitoring Well
-  Well Name and Groundwater Elevation

0 75'



Approximate Scale

Attachment E: Groundwater Monitoring Well Gauging  
and Inferred Groundwater Flow Diagram

District Six C6 - Greeley Directional  
NENE 20 5N65W, Weld County, CO

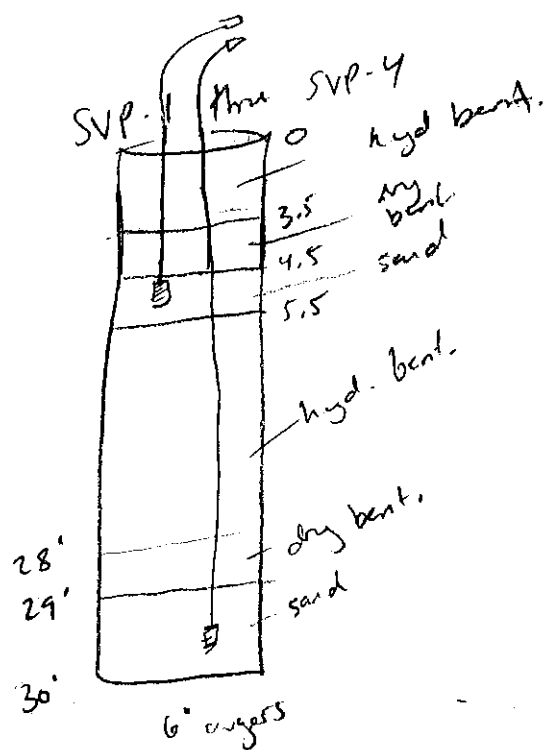
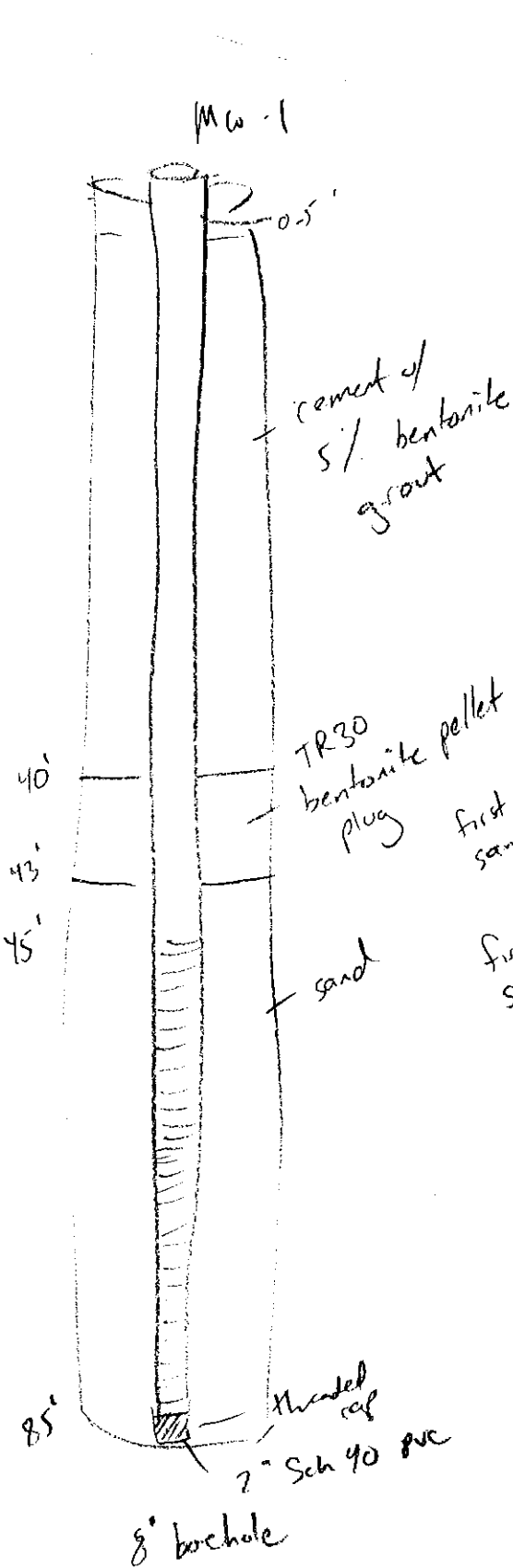
Apex Job No. 744.1708.01

DATE - 08/04/2020 (JDG)  
FILE - 744.1708.01 F2.dc



## **ATTACHMENT E**

### **Soil Vapor Monitoring Probe Construction Diagram**



first water on  
samples (~38'-40')

first saturated  
sample = 48'-50' run

water in borehole  
9/24 @ 1530 = 37.7' (current  
70' auger depth)

water in borehole  
8/27 @ 1130 = 59.5' (auger depth  
95' [bedrock])

stabilized water in  
well  
9/30 @ 900 = 37.64

**ATTACHMENT F**

**2020 Q3 Groundwater Laboratory Reports**

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground\_Water/GWA\_District\_Six\_C6

Work Order # 2008179

Enclosed are the results of analyses for samples received by Summit Scientific on 08/19/20 15:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_59993_MH_MW_1	2008179-01	Water	08/19/20 13:31	08/19/20 15:50

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.*

$S_2$ 

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

<b>Client:</b>	Extraction Oil and Gas (XOG)	<b>Report to:</b> Apex Companies, LLC	<b>Project Manager:</b>	Heather Shideman
<b>Address:</b>	2234 117th Ave, Ste 106		<b>E-Mail:</b>	Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com
<b>City/State/Zip:</b>	Greeley, CO 80634		<b>cc:</b>	jcarlisle@extractionog.com
<b>Phone:</b>	(970) 576-3446		<b>Project Name:</b>	Ground_Water/GWA_District_Six_C6
<b>Sampler Name:</b>	Kade MacDougall		<b>Project No.:</b> Alloc-421 930, 88	<b>Facility ID</b> 762176

ID		Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions				
						HCl	HNO3	None	Other (Specify)	Ground Water	Soil	Air-Canister #	Other (Specify)	COGCC 609	No BART											
1	GW_59993_MH_MW_1		20/5/19	1331						X				X	X											Sample Frequency: Q3
	NENE_20_5N_65W																									
	Temperature, field:		16.7	°C																						
	pH, field:		2.39	s.u.																						
	Conductivity, field:		2508	uS/cm																						
	ORP, field:		-279.3	mV																						
	Dissolved Oxygen, field:		1.36	mg/L																						
	Turbidity, field:		68.4	NTU																						
Relinquished by:			Date/Time:		Received by:			Date/Time:			Turn Around Time				(Check)				Notes:							
			08-19-20 15:50		[Signature] 08-19-20			1550			Same Day				72 hours											
Relinquished by:			Date/Time:		Received by:			Date/Time:			24 hours				X Standard											
											48 hours															
Relinquished by:			Date/Time:		Received by:			Date/Time:			Sample Integrity:				Temperature Upon Receipt:				3.4							
											Intact:				Yes No											



# Sample Receipt Checklist

S2 Work Order 2008179

Client: Apex/ XOG

Client Project ID: Ground\_Water/GWA\_District-Six-CL

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

☒ ☐ ☐ ☐ ☐

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

Temp (°C)	3.4
-----------	-----

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> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH, anions
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	HNO3 H2SO4
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional Comments (if any):

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

MP

Custodian Printed Name or Initials

Signature of Custodian

8/19/20

Date/Time



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**GW\_59993\_MH\_MW\_1**  
**NENE\_20\_5N\_65W**  
**2008179-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.12	0.0010	mg/L	1	2008222	08/20/20	08/21/20	EPA 8260B	
Toluene	0.0054	0.0010	"	"	"	"	"	"	
Ethylbenzene	0.0092	0.0010	"	"	"	"	"	"	
m,p-Xylene	0.031	0.0020	"	"	"	"	"	"	
o-Xylene	0.0073	0.0010	"	"	"	"	"	"	
Xylenes (total)	ND	0.0020	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.94	0.050	"	"	"	"	"	"	

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		88.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	0.100	mg/L	1	2008216	08/20/20	08/20/20	EPA 8015M	

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		108 %	44.8-129		"	"	"	"	

**Dissolved Gases by RSK-175**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methane	9.0	1.0	mg/L	100	2008223	08/20/20	08/24/20	RSK-175 mod	

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**GW\_59993\_MH\_MW\_1**  
**NENE\_20\_5N\_65W**  
**2008179-01 (Water)**

**Summit Scientific**

**Dissolved Gases by RSK-175**

Ethane	5.0	1.0	mg/L	100	2008223	08/20/20	08/24/20	RSK-175 mod
Propane	3.5	0.10	"	10	"	"	"	"

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Ethene		102 %	70-130		"	"	"	"	

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	170000	50.0	ug/l	1	2008252	08/25/20	08/25/20	EPA 200.8	
Iron	ND	10.0	"	"	"	"	"	"	
Magnesium	91400	50.0	"	"	"	"	"	"	
Manganese	1510	1.00	"	"	"	"	"	"	
Potassium	6690	50.0	"	"	"	"	"	"	
Sodium	203000	50.0	"	"	"	"	"	"	
Barium	85.3	1.00	"	"	"	"	"	"	
Boron	166	10.0	"	"	"	"	"	"	
Selenium	ND	1.00	"	"	"	"	"	"	
Strontium	2470	10.0	"	"	"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	4.37	0.200	mg/L	1	2008205	08/19/20	08/19/20	EPA 300.0	
Chloride	366	10.0	"	100	"	"	"	"	
Fluoride	0.358	0.200	"	1	"	"	"	"	
Sulfate	113	30.0	"	100	"	"	"	"	
Nitrate as N	ND	0.100	"	1	"	"	"	"	
Nitrite as N	ND	0.100	"	"	"	"	"	"	
Nitrate/Nitrite as N	ND	0.200	"	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**GW\_59993\_MH\_MW\_1**  
**NENE\_20\_5N\_65W**  
**2008179-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Total Alkalinity</b>	<b>210</b>	10.0	mg/L as CaCO3	1	2008191	08/20/20	08/24/20	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
<b>Bicarbonate</b>	<b>210</b>	10.0	"	"	"	"	"	"	

**Conventional Chemistry Parameters by APHA/EPA Methods**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Phosphorus - Total	ND	0.0500	mg/L	1	2008240	08/24/20	08/26/20	SM4500-P-E	

**Specific Conductance by SM2510B**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Specific Conductance (EC)</b>	<b>2420</b>	1.00	umhos/cm	1	2008213	08/20/20	08/20/20	SM2510B	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Total Dissolved Solids</b>	<b>1200</b>	10.0	mg/L	1	2008214	08/20/20	08/20/20	SM2540C	

**pH by SM4500**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>7.39</b>	1.00	pH Units	1	2008219	08/19/20	08/20/20	SM4500-H+ B	

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370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**GW\_59993\_MH\_MW\_1**  
**NENE\_20\_5N\_65W**  
**2008179-01 (Water)**

**Summit Scientific**

**Field Data**

Date Sampled: **08/19/20 13:31**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Specific Conductance (EC)</b>	<b>2508.0</b>			uS/cm	1	2008208	08/19/20	08/19/20	Field Method	
<b>Temperature</b>	<b>16.70</b>			Degrees C	"	"	"	"	"	
<b>Turbidity</b>	<b>68.4</b>			NTU	"	"	"	"	"	
<b>Oxidation/Reduction Potential</b>	<b>-279.3</b>			mv	"	"	"	"	"	
<b>Dissolved Oxygen</b>	<b>1.36</b>			mg/L	"	"	"	"	"	
<b>pH</b>	<b>7.39</b>			SU	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

## 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 2008222 - EPA 5030 Water MS

##### Blank (2008222-BLK1)

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	ND	0.0010	mg/L							
Toluene	ND	0.0010	"							
Ethylbenzene	ND	0.0010	"							
m,p-Xylene	ND	0.0020	"							
o-Xylene	ND	0.0010	"							
Xylenes (total)	ND	0.0020	"							
Gasoline Range Hydrocarbons	ND	0.050	"							
Surrogate: 1,2-Dichloroethane-d4	0.0140		"	0.0133		105	23-173			
Surrogate: Toluene-d8	0.0133		"	0.0133		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0135		"	0.0133		101	21-167			

##### LCS (2008222-BS1)

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	0.0412	0.0010	mg/L	0.0500		82.3	51-132			
Toluene	0.0424	0.0010	"	0.0500		84.8	51-138			
Ethylbenzene	0.0482	0.0010	"	0.0500		96.4	58-146			
m,p-Xylene	0.0847	0.0020	"	0.100		84.7	57-144			
o-Xylene	0.0436	0.0010	"	0.0500		87.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	0.0139		"	0.0133		104	23-173			
Surrogate: Toluene-d8	0.0135		"	0.0133		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		99.2	21-167			

##### Matrix Spike (2008222-MS1)

Source: 2008171-01

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	0.0642	0.0010	mg/L	0.0500	0.0436	41.2	34-141			
Toluene	0.0454	0.0010	"	0.0500	ND	90.8	27-151			
Ethylbenzene	0.0539	0.0010	"	0.0500	0.00103	106	29-160			
m,p-Xylene	0.0943	0.0020	"	0.100	0.00276	91.5	20-166			
o-Xylene	0.0476	0.0010	"	0.0500	ND	95.3	33-159			
Surrogate: 1,2-Dichloroethane-d4	0.0126		"	0.0133		94.5	23-173			
Surrogate: Toluene-d8	0.0132		"	0.0133		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		99.2	21-167			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**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 2008222 - EPA 5030 Water MS**

Matrix Spike Dup (2008222-MSD1)		Source: 2008171-01			Prepared: 08/20/20 Analyzed: 08/21/20					
Benzene	0.0615	0.0010	mg/L	0.0500	0.0436	35.8	34-141	4.33	32	
Toluene	0.0472	0.0010	"	0.0500	ND	94.5	27-151	4.00	25	
Ethylbenzene	0.0566	0.0010	"	0.0500	0.00103	111	29-160	4.84	50	
m,p-Xylene	0.0991	0.0020	"	0.100	0.00276	96.3	20-166	4.94	36	
o-Xylene	0.0496	0.0010	"	0.0500	ND	99.2	33-159	3.99	26	
Surrogate: 1,2-Dichloroethane-d4	0.0124		"	0.0133		93.1	23-173			
Surrogate: Toluene-d8	0.0133		"	0.0133		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		98.9	21-167			

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Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**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 2008216 - EPA 3520B**

**Blank (2008216-BLK1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) ND 0.100 mg/L

Surrogate: o-Terphenyl 0.0283 " 0.0250 113 44.8-129

**LCS (2008216-BS1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 1.02 0.100 mg/L 1.00 102 70-130

Surrogate: o-Terphenyl 0.0289 " 0.0250 116 44.8-129

**LCS Dup (2008216-BSD1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 0.946 0.100 mg/L 1.00 94.6 70-130 7.72 200

Surrogate: o-Terphenyl 0.0274 " 0.0250 109 44.8-129

Summit Scientific

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Denver CO, 80202

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Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**Dissolved Gases by RSK-175 - Quality Control**  
**Summit Scientific**

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

**Batch 2008223 - GC**

**Blank (2008223-BLK1)**

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	ND	0.010	mg/L							
Ethane	ND	0.010	"							
Propane	ND	0.010	"							
Surrogate: Ethene	0.0471		"	0.0364		129	70-130			

**LCS (2008223-BS1)**

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	0.034	0.010	mg/L	0.0428		79.0	70-130			
Ethane	0.098	0.010	"	0.0798		122	70-130			
Propane	0.14	0.010	"	0.139		104	70-130			
Surrogate: Ethene	0.0911		"	0.0728		125	70-130			

**Duplicate (2008223-DUP1)**

Source: 2008153-01

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	1.2	0.10	mg/L		1.3			14.0	30	
Ethane	0.31	0.010	"		0.39			21.9	30	
Propane	0.056	0.010	"		0.067			17.2	30	
Surrogate: Ethene	0.0429		"	0.0364		118	70-130			

**Matrix Spike (2008223-MS1)**

Source: 2008153-01

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	1.2	0.10	mg/L	0.0428	1.3	NR	70-130			QM-05
Ethane	0.39	0.010	"	0.0798	0.39	1.88	70-130			QM-05
Propane	0.19	0.010	"	0.139	0.067	90.8	70-130			
Surrogate: Ethene	0.0895		"	0.0728		123	70-130			

Summit Scientific

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Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

## Dissolved Metals by EPA Method 200.8 - Quality Control

### Summit Scientific

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

#### Batch 2008252 - EPA 200.8

##### Blank (2008252-BLK1)

Prepared & Analyzed: 08/25/20

Calcium	ND	50.0	ug/l
Iron	ND	10.0	"
Magnesium	ND	50.0	"
Manganese	ND	1.00	"
Potassium	ND	50.0	"
Sodium	ND	50.0	"
Barium	ND	1.00	"
Boron	ND	10.0	"
Selenium	ND	1.00	"
Strontium	ND	10.0	"

##### LCS (2008252-BS1)

Prepared & Analyzed: 08/25/20

Calcium	5350	50.0	ug/l	5000	107	85-115
Iron	5450	10.0	"	5000	109	85-115
Magnesium	5500	50.0	"	5000	110	85-115
Manganese	477	1.00	"	500	95.4	85-115
Potassium	5510	50.0	"	5000	110	85-115
Sodium	5490	50.0	"	5000	110	85-115
Barium	449	1.00	"	500	89.9	85-115
Boron	2490	10.0	"	2500	99.7	85-115
Selenium	52.4	1.00	"	50.0	105	85-115
Strontium	463	10.0	"	500	92.7	85-115

##### Duplicate (2008252-DUP1)

Source: 2008211-01

Prepared & Analyzed: 08/25/20

Calcium	98800	50.0	ug/l	99700	0.935	20
Iron	1530	10.0	"	1280	17.9	20
Magnesium	21100	50.0	"	20500	3.05	20
Manganese	356	1.00	"	356	0.185	20
Potassium	11300	50.0	"	11300	0.348	20
Sodium	83100	50.0	"	81000	2.57	20
Barium	285	1.00	"	279	2.03	20
Boron	45.6	10.0	"	51.7	12.4	20
Selenium	1.48	1.00	"	1.68	12.5	20
Strontium	1060	10.0	"	1060	0.850	20

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Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

### Dissolved Metals by EPA Method 200.8 - Quality Control

#### Summit Scientific

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

#### Batch 2008252 - EPA 200.8

Matrix Spike (2008252-MS1)		Source: 2008211-01			Prepared & Analyzed: 08/25/20						
Calcium	98600	50.0	ug/l	5000	99700	NR	70-130				QM-02
Iron	4810	10.0	"	5000	1280	70.6	70-130				
Magnesium	24500	50.0	"	5000	20500	79.8	70-130				
Manganese	774	1.00	"	500	356	83.6	70-130				
Potassium	15000	50.0	"	5000	11300	74.5	70-130				
Sodium	84700	50.0	"	5000	81000	74.1	70-130				
Barium	687	1.00	"	500	279	81.4	70-130				
Boron	2610	10.0	"	2500	51.7	102	70-130				
Selenium	42.9	1.00	"	50.0	1.68	82.5	70-130				
Strontium	1430	10.0	"	500	1060	75.7	70-130				

Matrix Spike Dup (2008252-MSD1)		Source: 2008211-01			Prepared & Analyzed: 08/25/20						
Calcium	102000	50.0	ug/l	5000	99700	35.4	70-130	2.89	25		QM-02
Iron	4830	10.0	"	5000	1280	71.0	70-130	0.435	25		
Magnesium	24600	50.0	"	5000	20500	81.1	70-130	0.254	25		
Manganese	852	1.00	"	500	356	99.2	70-130	9.62	25		
Potassium	15000	50.0	"	5000	11300	74.9	70-130	0.131	25		
Sodium	84600	50.0	"	5000	81000	72.0	70-130	0.122	25		
Barium	768	1.00	"	500	279	97.7	70-130	11.2	25		
Boron	2480	10.0	"	2500	51.7	97.3	70-130	4.91	25		
Selenium	49.4	1.00	"	50.0	1.68	95.4	70-130	13.9	25		
Strontium	1570	10.0	"	500	1060	103	70-130	9.06	25		

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370 17th Street Suite 5300  
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Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

## 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 2008205 - General Preparation

##### Blank (2008205-BLK1)

Prepared & Analyzed: 08/19/20

Bromide	ND	0.200	mg/L
Chloride	ND	0.100	"
Fluoride	ND	0.200	"
Sulfate	ND	0.300	"
Nitrate as N	ND	0.100	"
Nitrite as N	ND	0.100	"
Nitrate/Nitrite as N	ND	0.200	"

##### LCS (2008205-BS1)

Prepared & Analyzed: 08/19/20

Bromide	9.17	0.200	mg/L	10.0	91.7	90-110
Chloride	3.07	0.100	"	3.00	102	90-110
Fluoride	2.10	0.200	"	2.00	105	90-110
Sulfate	15.6	0.300	"	15.0	104	90-110
Nitrate as N	2.93	0.100	"	3.00	97.5	90-110
Nitrite as N	2.98	0.100	"	3.00	99.4	90-110

##### Duplicate (2008205-DUP1)

Source: 2008179-01

Prepared & Analyzed: 08/19/20

Bromide	4.42	0.200	mg/L	4.37	1.09	20	
Chloride	1690	0.100	"	366	129	20	QM-02
Fluoride	0.349	0.200	"	0.358	2.55	20	
Sulfate	160	0.300	"	113	33.9	20	QM-02
Nitrate as N	ND	0.100	"	ND		20	
Nitrite as N	ND	0.100	"	ND		20	
Nitrate/Nitrite as N	ND	0.200	"	ND		20	

##### Matrix Spike (2008205-MS1)

Source: 2008179-01

Prepared & Analyzed: 08/19/20

Bromide	12.9	0.200	mg/L	10.0	4.37	84.9	80-120	
Chloride	1310	0.100	"	3.00	366	NR	80-120	QM-02
Fluoride	1.96	0.200	"	2.00	0.358	80.2	80-120	
Sulfate	237	0.300	"	15.0	113	823	80-120	QM-02
Nitrate as N	2.90	0.100	"	3.00	ND	96.8	80-120	
Nitrite as N	2.87	0.100	"	3.00	ND	95.5	80-120	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

## Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

### Summit Scientific

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

#### Batch 2008191 - General Preparation

##### Blank (2008191-BLK1)

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	ND	10.0	mg/L as CaCO3
Carbonate	ND	10.0	"
Bicarbonate	ND	10.0	"

##### LCS (2008191-BS1)

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	100	10.0	mg/L as CaCO3	100	100	80-120
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##### Duplicate (2008191-DUP1)

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	330	10.0	mg/L as CaCO3	330	0.00	20
Carbonate	ND	10.0	"	ND		20
Bicarbonate	330	10.0	"	330	0.00	20

##### Matrix Spike (2008191-MS1)

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130
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##### Matrix Spike Dup (2008191-MSD1)

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130	0.00	20
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Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
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Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008240 - General Preparation**

**Blank (2008240-BLK1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total ND 0.0500 mg/L

**LCS (2008240-BS1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.07 0.0500 mg/L 1.00 107 80-120

**Duplicate (2008240-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 0.0500 0.0500 mg/L 0.0490 2.02 20

**Matrix Spike (2008240-MS1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.00 0.0500 mg/L 1.00 0.0490 95.3 70-130

**Matrix Spike Dup (2008240-MSD1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.02 0.0500 mg/L 1.00 0.0490 97.6 70-130 2.27 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**Specific Conductance by SM2510B - Quality Control**  
**Summit Scientific**

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

**Batch 2008213 - General Preparation**

**Blank (2008213-BLK1)**

Prepared & Analyzed: 08/20/20

Specific Conductance (EC) ND 1.00 umhos/cm

**Duplicate (2008213-DUP1)**

**Source: 2008153-01**

Prepared & Analyzed: 08/20/20

Specific Conductance (EC) 2390 1.00 umhos/cm 2390 0.0838 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**Total Dissolved Solids by SM2540C - Quality Control**  
**Summit Scientific**

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

**Batch 2008214 - General Preparation**

**Blank (2008214-BLK1)**

Prepared & Analyzed: 08/20/20

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (2008214-DUP1)**

**Source: 2008153-01**

Prepared & Analyzed: 08/20/20

Total Dissolved Solids ND 10.0 mg/L 1170 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

**pH by SM4500 - Quality Control**  
**Summit Scientific**

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

**Batch 2008219 - General Preparation**

**LCS (2008219-BS1)**

Prepared: 08/19/20 Analyzed: 08/20/20

pH	9.16	1.00	pH Units	9.18	99.8	90-110
----	------	------	----------	------	------	--------

**Duplicate (2008219-DUP1)**

**Source: 2008168-01**

Prepared: 08/19/20 Analyzed: 08/20/20

pH	6.95	1.00	pH Units	7.02	1.00	20
----	------	------	----------	------	------	----

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:50

### Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip\_Blank/GWA\_District\_Six\_C6

Work Order # 2008180

Enclosed are the results of analyses for samples received by Summit Scientific on 08/19/20 15:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury

President



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:53

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_59993_MH_MW_1_Trip_Blank	2008180-01	Water	08/19/20 13:31	08/19/20 15:50

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>

2008180

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310 ♦ 303-374-5933

Page 1 of 1

<b>Client:</b>	Extraction Oil and Gas (XOG)	<b>Report to:</b>	Apex Companies, LLC	<b>Project Manager:</b>	Heather Shideman
<b>Address:</b>	2234 117th Ave, Ste 106	<b>E-Mail:</b>	Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com		
<b>City/State/Zip:</b>	Greeley, CO 80634	<b>cc:</b>	jcarlisle@extractionog.com		
<b>Phone:</b>	(970) 576-3446	<b>Project Name:</b>	Trip_Blank/GWA_District_Six_C6		
<b>Sampler Name:</b>	Kade MacDougall	<b>Project No.:</b>	ALLOC-421	<b>Facility ID</b>	762176

ID	Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions		
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister Serial #	Other (Specify)	BTEX						
1	GW_59993_MH_MW_1_Trip_Blank	20/08/19	1331	2					X					X					Sample Frequency: Q3
Relinquished by: <i>K Mac</i>		Date/Time: 15:50		Received by: <i>[Signature]</i>		Date/Time: 08-19-20 15:50		Turn Around Time (Check)				Notes:							
Relinquished by:		Date/Time:		Received by:		Date/Time:		Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/>											
								24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>											
								48 hours <input type="checkbox"/>											
Relinquished by:		Date/Time:		Received by:		Date/Time:		Sample Integrity:											
								Temperature Upon Receipt: 3.4											
								Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No											



# Sample Receipt Checklist

S2 Work Order 2008180

Client: Apex/ XOG

Client Project ID: Trip\_Blank/GWA District Six - CG

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

☒ ☐ ☐ ☐ ☐

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

Temp (°C)	3.4
-----------	-----

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> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<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.

MP

Custodian Printed Name or Initials



Signature of Custodian

8/19/20

Date/Time



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:53

### GW\_59993\_MH\_MW\_1\_Trip\_Blank

2008180-01 (Water)

Summit Scientific

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

Date Sampled: 08/19/20 13:31

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2008222	08/20/20	08/20/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
m,p-Xylene	ND	2.0		"	"	"	"	"	"	
o-Xylene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: 08/19/20 13:31

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		103 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		82.8 %		21-167		"	"	"	"	

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:53

## 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 2008222 - EPA 5030 Water MS

##### Blank (2008222-BLK1)

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3		105	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167			

##### LCS (2008222-BS1)

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	41.2	1.0	ug/l	50.0		82.3	51-132			
Toluene	42.4	1.0	"	50.0		84.8	51-138			
Ethylbenzene	48.2	1.0	"	50.0		96.4	58-146			
m,p-Xylene	84.7	2.0	"	100		84.7	57-144			
o-Xylene	43.6	1.0	"	50.0		87.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.3		104	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.2	21-167			

##### Matrix Spike (2008222-MS1)

Source: 2008171-01

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	64.2	1.0	ug/l	50.0	43.6	41.2	34-141			
Toluene	45.4	1.0	"	50.0	ND	90.8	27-151			
Ethylbenzene	53.9	1.0	"	50.0	1.03	106	29-160			
m,p-Xylene	94.3	2.0	"	100	2.76	91.5	20-166			
o-Xylene	47.6	1.0	"	50.0	ND	95.3	33-159			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.5	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.2	21-167			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:53

## 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 2008222 - EPA 5030 Water MS

Matrix Spike Dup (2008222-MSD1)	Source: 2008171-01			Prepared: 08/20/20 Analyzed: 08/21/20						
Benzene	61.5	1.0	ug/l	50.0	43.6	35.8	34-141	4.33	32	
Toluene	47.2	1.0	"	50.0	ND	94.5	27-151	4.00	25	
Ethylbenzene	56.6	1.0	"	50.0	1.03	111	29-160	4.84	50	
m,p-Xylene	99.1	2.0	"	100	2.76	96.3	20-166	4.94	36	
o-Xylene	49.6	1.0	"	50.0	ND	99.2	33-159	3.99	26	
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.3		93.1	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.9	21-167			

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:53

### 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

Lab #: 769109 Job #: 45659 IS-99230 Co. Job#:

Sample Name: GW\_59993\_MH\_MW\_1 Co. Lab#:

Company: Extraction Oil and Gas

API/Well:

Container: IsoFlask

Field/Site Name: Ground\_Water/GWA\_District\_Six\_C6

Location: NENE\_20\_5N\_65W

Formation/Depth: Q3

Sampling Point: 762176

Date Sampled: 8/19/2020 13:31 Date Received: 8/21/2020 Date Reported: 10/08/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide -----	nd					
Helium -----	na					
Hydrogen -----	nd					
Argon -----	0.280					
Oxygen -----	2.16					
Nitrogen -----	22.64					
Carbon Dioxide -----	1.91					
Methane -----	58.57	-47.11	-238.4		42	28
Ethane -----	10.01	-31.97			7.6	9.5
Ethylene -----	nd					
Propane -----	3.44	-27.70			2.5	4.6
Propylene -----	nd					
Iso-butane -----	0.317	-30.3				
N-butane -----	0.518	-25.9				
Iso-pentane -----	0.0785	-27.6				
N-pentane -----	0.0428	-26.1				
Hexanes + -----	0.0344					

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.62

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

ALLC\OC\_421

Butane and pentane carbon isotope data obtained online via GC-C-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground\_Water/GWA\_District\_Six\_C6

Work Order # 2008177

Enclosed are the results of analyses for samples received by Summit Scientific on 08/19/20 15:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_60666_MH_MW_2	2008177-01	Water	08/19/20 10:59	08/19/20 15:50

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.*



$S_z$ 

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

<b>Client:</b>	Extraction Oil and Gas (XOG)	<b>Report to:</b> Apex Companies, LLC	<b>Project Manager:</b>	Heather Shideman
<b>Address:</b>	2234 117th Ave, Ste 106		<b>E-Mail:</b>	Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com
<b>City/State/Zip:</b>	Greeley, CO 80634		<b>cc:</b>	jcarlisle@extractionog.com
<b>Phone:</b>	(970) 576-3446		<b>Project Name:</b>	Ground_Water/GWA_District_Six_C6
<b>Sampler Name:</b>	Kade MacDougall		<b>Project No.:</b> Alloc-421 930, 88	<b>Facility ID</b>

ID		Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions				
						HCl	HNO3	None	Other (Specify)	Ground Water	Soil	Air-Canister #	Other (Specify)	COGCC 609	No BART											
1	GW_60666_MH_MW_2		20/08/14	1059						X				X	X											Sample Frequency: Q3
	NENE_20_5N_65W																									
	Temperature, field:		18.4	°C																						
	pH, field:		7.25	s.u.																						
	Conductivity, field:		1101	uS/cm																						
	ORP, field:		289.9	mV																						
	Dissolved Oxygen, field:		2.47	mg/L																						
	Turbidity, field:		89.5	NTU																						
Relinquished by:			Date/Time:		Received by:									Date/Time:		Turn Around Time (Check)								Notes:		
1/10/14			20/08/19/ 1550		<del>1/10/14</del> 08-19.20									15:50		Same Day _____ 72 hours										
Relinquished by:			Date/Time:		Received by:									Date/Time:		____ 24 hours ____ X Standard										
																____ 48 hours ____										
Relinquished by:			Date/Time:		Received by:									Date/Time:		Sample Integrity:										
																Temperature Upon Receipt: 3.4										
																Intact: Yes No										

# Sample Receipt Checklist

S2 Work Order 2008177

Client: Apex/ XOG Client Project ID: Ground\_Water/GWA District-Six-CL6

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

☒ ☐ ☐ ☐ ☐

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

Temp (°C)	3.4
-----------	-----

Thermometer ID: 61857155-K

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

Additional Comments (if any):

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

MP

Custodian Printed Name or Initials

Signature of Custodian

8/19/20

Date/Time



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**GW\_60666\_MH\_MW\_2**  
**NENE\_20\_5N\_65W**  
**2008177-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0010	mg/L	1	2008222	08/20/20	08/21/20	EPA 8260B	
Toluene	ND	0.0010	"	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	"	
m,p-Xylene	ND	0.0020	"	"	"	"	"	"	
o-Xylene	ND	0.0010	"	"	"	"	"	"	
Xylenes (total)	ND	0.0020	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.050	"	"	"	"	"	"	

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.3 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	0.100	mg/L	1	2008216	08/20/20	08/20/20	EPA 8015M	

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	44.8-129		"	"	"	"	

**Dissolved Gases by RSK-175**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**GW\_60666\_MH\_MW\_2**  
**NENE\_20\_5N\_65W**  
**2008177-01 (Water)**

**Summit Scientific**

**Dissolved Gases by RSK-175**

Methane	ND	0.010	mg/L	1	2008223	08/20/20	08/24/20	RSK-175 mod
Ethane	ND	0.010	"	"	"	"	"	"
Propane	ND	0.010	"	"	"	"	"	"

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Ethene		105 %	70-130		"	"	"	"	

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	94500	50.0	ug/l	1	2008252	08/25/20	08/25/20	EPA 200.8	
Iron	ND	10.0	"	"	"	"	"	"	
Magnesium	45100	50.0	"	"	"	"	"	"	
Manganese	ND	1.00	"	"	"	"	"	"	
Potassium	3970	50.0	"	"	"	"	"	"	
Sodium	82400	50.0	"	"	"	"	"	"	
Barium	39.7	1.00	"	"	"	"	"	"	
Boron	206	10.0	"	"	"	"	"	"	
Selenium	7.43	1.00	"	"	"	"	"	"	
Strontium	1250	10.0	"	"	"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	0.252	0.200	mg/L	1	2008205	08/19/20	08/19/20	EPA 300.0	
Chloride	26.6	1.00	"	10	"	"	"	"	
Fluoride	0.292	0.200	"	1	"	"	"	"	
Sulfate	89.5	3.00	"	10	"	"	"	"	
Nitrate as N	8.76	0.100	"	1	"	"	"	"	
Nitrite as N	0.114	0.100	"	"	"	"	"	"	
Nitrate/Nitrite as N	8.88	0.200	"	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**GW\_60666\_MH\_MW\_2**  
**NENE\_20\_5N\_65W**  
**2008177-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

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

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Alkalinity</b>	<b>340</b>	10.0	mg/L as CaCO3	1	2008191	08/20/20	08/24/20	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
<b>Bicarbonate</b>	<b>340</b>	10.0	"	"	"	"	"	"	

**Conventional Chemistry Parameters by APHA/EPA Methods**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Phosphorus - Total	ND	0.0500	mg/L	1	2008240	08/24/20	08/26/20	SM4500-P-E	

**Specific Conductance by SM2510B**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>1050</b>	1.00	umhos/cm	1	2008213	08/20/20	08/20/20	SM2510B	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>517</b>	10.0	mg/L	1	2008214	08/20/20	08/20/20	SM2540C	

**pH by SM4500**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**GW\_60666\_MH\_MW\_2**  
**NENE\_20\_5N\_65W**  
**2008177-01 (Water)**

**Summit Scientific**

**pH by SM4500**

<b>pH</b>	<b>7.41</b>	1.00	pH Units	1	2008219	08/19/20	08/20/20	SM4500-H+ B
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**Field Data**

Date Sampled: **08/19/20 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	1101.0			uS/cm	1	2008207	08/19/20	08/19/20	Field Method	
Temperature	18.40			Degrees C	"	"	"	"	"	
Turbidity	89.5			NTU	"	"	"	"	"	
Oxidation/Reduction Potential	289.9			mv	"	"	"	"	"	
Dissolved Oxygen	2.47			mg/L	"	"	"	"	"	
pH	7.25			SU	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

## 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 2008222 - EPA 5030 Water MS

##### Blank (2008222-BLK1)

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	ND	0.0010	mg/L							
Toluene	ND	0.0010	"							
Ethylbenzene	ND	0.0010	"							
m,p-Xylene	ND	0.0020	"							
o-Xylene	ND	0.0010	"							
Xylenes (total)	ND	0.0020	"							
Gasoline Range Hydrocarbons	ND	0.050	"							
Surrogate: 1,2-Dichloroethane-d4	0.0140		"	0.0133		105	23-173			
Surrogate: Toluene-d8	0.0133		"	0.0133		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0135		"	0.0133		101	21-167			

##### LCS (2008222-BS1)

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	0.0412	0.0010	mg/L	0.0500		82.3	51-132			
Toluene	0.0424	0.0010	"	0.0500		84.8	51-138			
Ethylbenzene	0.0482	0.0010	"	0.0500		96.4	58-146			
m,p-Xylene	0.0847	0.0020	"	0.100		84.7	57-144			
o-Xylene	0.0436	0.0010	"	0.0500		87.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	0.0139		"	0.0133		104	23-173			
Surrogate: Toluene-d8	0.0135		"	0.0133		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		99.2	21-167			

##### Matrix Spike (2008222-MS1)

Source: 2008171-01

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	0.0642	0.0010	mg/L	0.0500	0.0436	41.2	34-141			
Toluene	0.0454	0.0010	"	0.0500	ND	90.8	27-151			
Ethylbenzene	0.0539	0.0010	"	0.0500	0.00103	106	29-160			
m,p-Xylene	0.0943	0.0020	"	0.100	0.00276	91.5	20-166			
o-Xylene	0.0476	0.0010	"	0.0500	ND	95.3	33-159			
Surrogate: 1,2-Dichloroethane-d4	0.0126		"	0.0133		94.5	23-173			
Surrogate: Toluene-d8	0.0132		"	0.0133		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		99.2	21-167			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**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 2008222 - EPA 5030 Water MS**

Matrix Spike Dup (2008222-MSD1)		Source: 2008171-01			Prepared: 08/20/20 Analyzed: 08/21/20					
Benzene	0.0615	0.0010	mg/L	0.0500	0.0436	35.8	34-141	4.33	32	
Toluene	0.0472	0.0010	"	0.0500	ND	94.5	27-151	4.00	25	
Ethylbenzene	0.0566	0.0010	"	0.0500	0.00103	111	29-160	4.84	50	
m,p-Xylene	0.0991	0.0020	"	0.100	0.00276	96.3	20-166	4.94	36	
o-Xylene	0.0496	0.0010	"	0.0500	ND	99.2	33-159	3.99	26	
Surrogate: 1,2-Dichloroethane-d4	0.0124		"	0.0133		93.1	23-173			
Surrogate: Toluene-d8	0.0133		"	0.0133		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		98.9	21-167			

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**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 2008216 - EPA 3520B**

**Blank (2008216-BLK1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) ND 0.100 mg/L

Surrogate: o-Terphenyl 0.0283 " 0.0250 113 44.8-129

**LCS (2008216-BS1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 1.02 0.100 mg/L 1.00 102 70-130

Surrogate: o-Terphenyl 0.0289 " 0.0250 116 44.8-129

**LCS Dup (2008216-BSD1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 0.946 0.100 mg/L 1.00 94.6 70-130 7.72 200

Surrogate: o-Terphenyl 0.0274 " 0.0250 109 44.8-129

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**Dissolved Gases by RSK-175 - Quality Control**  
**Summit Scientific**

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

**Batch 2008223 - GC**

**Blank (2008223-BLK1)**

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	ND	0.010	mg/L							
Ethane	ND	0.010	"							
Propane	ND	0.010	"							
Surrogate: Ethene	0.0471		"	0.0364		129	70-130			

**LCS (2008223-BS1)**

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	0.034	0.010	mg/L	0.0428		79.0	70-130			
Ethane	0.098	0.010	"	0.0798		122	70-130			
Propane	0.14	0.010	"	0.139		104	70-130			
Surrogate: Ethene	0.0911		"	0.0728		125	70-130			

**Duplicate (2008223-DUP1)**

Source: 2008153-01

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	1.2	0.10	mg/L		1.3			14.0	30	
Ethane	0.31	0.010	"		0.39			21.9	30	
Propane	0.056	0.010	"		0.067			17.2	30	
Surrogate: Ethene	0.0429		"	0.0364		118	70-130			

**Matrix Spike (2008223-MS1)**

Source: 2008153-01

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	1.2	0.10	mg/L	0.0428	1.3	NR	70-130			QM-05
Ethane	0.39	0.010	"	0.0798	0.39	1.88	70-130			QM-05
Propane	0.19	0.010	"	0.139	0.067	90.8	70-130			
Surrogate: Ethene	0.0895		"	0.0728		123	70-130			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**Dissolved Metals by EPA Method 200.8 - Quality Control**  
**Summit Scientific**

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

**Batch 2008252 - EPA 200.8**

**Blank (2008252-BLK1)**

Prepared & Analyzed: 08/25/20

Calcium	ND	50.0	ug/l
Iron	ND	10.0	"
Magnesium	ND	50.0	"
Manganese	ND	1.00	"
Potassium	ND	50.0	"
Sodium	ND	50.0	"
Barium	ND	1.00	"
Boron	ND	10.0	"
Selenium	ND	1.00	"
Strontium	ND	10.0	"

**LCS (2008252-BS1)**

Prepared & Analyzed: 08/25/20

Calcium	5350	50.0	ug/l	5000	107	85-115
Iron	5450	10.0	"	5000	109	85-115
Magnesium	5500	50.0	"	5000	110	85-115
Manganese	477	1.00	"	500	95.4	85-115
Potassium	5510	50.0	"	5000	110	85-115
Sodium	5490	50.0	"	5000	110	85-115
Barium	449	1.00	"	500	89.9	85-115
Boron	2490	10.0	"	2500	99.7	85-115
Selenium	52.4	1.00	"	50.0	105	85-115
Strontium	463	10.0	"	500	92.7	85-115

**Duplicate (2008252-DUP1)**

Source: 2008211-01

Prepared & Analyzed: 08/25/20

Calcium	98800	50.0	ug/l	99700	0.935	20
Iron	1530	10.0	"	1280	17.9	20
Magnesium	21100	50.0	"	20500	3.05	20
Manganese	356	1.00	"	356	0.185	20
Potassium	11300	50.0	"	11300	0.348	20
Sodium	83100	50.0	"	81000	2.57	20
Barium	285	1.00	"	279	2.03	20
Boron	45.6	10.0	"	51.7	12.4	20
Selenium	1.48	1.00	"	1.68	12.5	20
Strontium	1060	10.0	"	1060	0.850	20

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370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

### Dissolved Metals by EPA Method 200.8 - Quality Control

#### Summit Scientific

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

#### Batch 2008252 - EPA 200.8

Matrix Spike (2008252-MS1)		Source: 2008211-01			Prepared & Analyzed: 08/25/20					
Calcium	98600	50.0	ug/l	5000	99700	NR	70-130			QM-02
Iron	4810	10.0	"	5000	1280	70.6	70-130			
Magnesium	24500	50.0	"	5000	20500	79.8	70-130			
Manganese	774	1.00	"	500	356	83.6	70-130			
Potassium	15000	50.0	"	5000	11300	74.5	70-130			
Sodium	84700	50.0	"	5000	81000	74.1	70-130			
Barium	687	1.00	"	500	279	81.4	70-130			
Boron	2610	10.0	"	2500	51.7	102	70-130			
Selenium	42.9	1.00	"	50.0	1.68	82.5	70-130			
Strontium	1430	10.0	"	500	1060	75.7	70-130			

Matrix Spike Dup (2008252-MSD1)		Source: 2008211-01			Prepared & Analyzed: 08/25/20					
Calcium	102000	50.0	ug/l	5000	99700	35.4	70-130	2.89	25	QM-02
Iron	4830	10.0	"	5000	1280	71.0	70-130	0.435	25	
Magnesium	24600	50.0	"	5000	20500	81.1	70-130	0.254	25	
Manganese	852	1.00	"	500	356	99.2	70-130	9.62	25	
Potassium	15000	50.0	"	5000	11300	74.9	70-130	0.131	25	
Sodium	84600	50.0	"	5000	81000	72.0	70-130	0.122	25	
Barium	768	1.00	"	500	279	97.7	70-130	11.2	25	
Boron	2480	10.0	"	2500	51.7	97.3	70-130	4.91	25	
Selenium	49.4	1.00	"	50.0	1.68	95.4	70-130	13.9	25	
Strontium	1570	10.0	"	500	1060	103	70-130	9.06	25	

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**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 2008205 - General Preparation**

**Blank (2008205-BLK1)**

Prepared & Analyzed: 08/19/20

Bromide	ND	0.200	mg/L
Chloride	ND	0.100	"
Fluoride	ND	0.200	"
Sulfate	ND	0.300	"
Nitrate as N	ND	0.100	"
Nitrite as N	ND	0.100	"
Nitrate/Nitrite as N	ND	0.200	"

**LCS (2008205-BS1)**

Prepared & Analyzed: 08/19/20

Bromide	9.17	0.200	mg/L	10.0	91.7	90-110
Chloride	3.07	0.100	"	3.00	102	90-110
Fluoride	2.10	0.200	"	2.00	105	90-110
Sulfate	15.6	0.300	"	15.0	104	90-110
Nitrate as N	2.93	0.100	"	3.00	97.5	90-110
Nitrite as N	2.98	0.100	"	3.00	99.4	90-110

**Duplicate (2008205-DUP1)**

Source: 2008179-01

Prepared & Analyzed: 08/19/20

Bromide	4.42	0.200	mg/L	4.37	1.09	20	
Chloride	1690	0.100	"	366	129	20	QM-02
Fluoride	0.349	0.200	"	0.358	2.55	20	
Sulfate	160	0.300	"	113	33.9	20	QM-02
Nitrate as N	ND	0.100	"	ND		20	
Nitrite as N	ND	0.100	"	ND		20	
Nitrate/Nitrite as N	ND	0.200	"	ND		20	

**Matrix Spike (2008205-MS1)**

Source: 2008179-01

Prepared & Analyzed: 08/19/20

Bromide	12.9	0.200	mg/L	10.0	4.37	84.9	80-120	
Chloride	1310	0.100	"	3.00	366	NR	80-120	QM-02
Fluoride	1.96	0.200	"	2.00	0.358	80.2	80-120	
Sulfate	237	0.300	"	15.0	113	823	80-120	QM-02
Nitrate as N	2.90	0.100	"	3.00	ND	96.8	80-120	
Nitrite as N	2.87	0.100	"	3.00	ND	95.5	80-120	

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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008191 - General Preparation**

**Blank (2008191-BLK1)**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	ND	10.0	mg/L as CaCO3
Carbonate	ND	10.0	"
Bicarbonate	ND	10.0	"

**LCS (2008191-BS1)**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	100	10.0	mg/L as CaCO3	100	100	80-120
------------------	-----	------	------------------	-----	-----	--------

**Duplicate (2008191-DUP1)**

**Source: 2008140-01**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	330	10.0	mg/L as CaCO3	330	0.00	20
Carbonate	ND	10.0	"	ND		20
Bicarbonate	330	10.0	"	330	0.00	20

**Matrix Spike (2008191-MS1)**

**Source: 2008140-01**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130
------------------	-----	------	------------------	-----	-----	------	--------

**Matrix Spike Dup (2008191-MSD1)**

**Source: 2008140-01**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130	0.00	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.*





Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008240 - General Preparation**

**Blank (2008240-BLK1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total ND 0.0500 mg/L

**LCS (2008240-BS1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.07 0.0500 mg/L 1.00 107 80-120

**Duplicate (2008240-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 0.0500 0.0500 mg/L 0.0490 2.02 20

**Matrix Spike (2008240-MS1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.00 0.0500 mg/L 1.00 0.0490 95.3 70-130

**Matrix Spike Dup (2008240-MSD1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.02 0.0500 mg/L 1.00 0.0490 97.6 70-130 2.27 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**Specific Conductance by SM2510B - Quality Control**  
**Summit Scientific**

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

**Batch 2008213 - General Preparation**

**Blank (2008213-BLK1)**

Prepared & Analyzed: 08/20/20

Specific Conductance (EC) ND 1.00 umhos/cm

**Duplicate (2008213-DUP1)**

**Source: 2008153-01**

Prepared & Analyzed: 08/20/20

Specific Conductance (EC) 2390 1.00 umhos/cm 2390 0.0838 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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

### Total Dissolved Solids by SM2540C - Quality Control

#### Summit Scientific

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

#### Batch 2008214 - General Preparation

##### Blank (2008214-BLK1)

Prepared & Analyzed: 08/20/20

Total Dissolved Solids ND 10.0 mg/L

##### Duplicate (2008214-DUP1)

Source: 2008153-01

Prepared & Analyzed: 08/20/20

Total Dissolved Solids ND 10.0 mg/L 1170 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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

**pH by SM4500 - Quality Control**  
**Summit Scientific**

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

**Batch 2008219 - General Preparation**

**LCS (2008219-BS1)**

Prepared: 08/19/20 Analyzed: 08/20/20

pH	9.16	1.00	pH Units	9.18	99.8	90-110
----	------	------	----------	------	------	--------

**Duplicate (2008219-DUP1)**

**Source: 2008168-01**

Prepared: 08/19/20 Analyzed: 08/20/20

pH	6.95	1.00	pH Units	7.02	1.00	20
----	------	------	----------	------	------	----

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:46

### Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip\_Blank/GWA\_District\_Six\_C6

Work Order # 2008178

Enclosed are the results of analyses for samples received by Summit Scientific on 08/19/20 15:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President





Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:48

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_60666_MH_MW_2_Trip_Blank	2008178-01	Water	08/19/20 10:59	08/19/20 15:50

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.*

$S_2$ 

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310 ♦ 303-374-5933

Page 1 of 1

Relinquished by: <u>147</u>	Date/Time: <u>22/08/19/1550</u>	Received by: <u>[Signature]</u>	Date/Time: <u>08-19-20 15:50</u>	<b>Turn Around Time</b> (Check) Same Day <u>    </u> 72 hours <u>    </u> 24 hours <u>    </u> Standard <u>X</u> 48 hours <u>    </u>	<b>Notes:</b>
Relinquished by:	Date/Time:	Received by:	Date/Time:	<b>Sample Integrity:</b> Temperature Upon Receipt: <u>3.4</u> Intact: <u>(Yes)</u> No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		

# Sample Receipt Checklist

S2 Work Order 2008178

Client: Apex/ XOG Client Project ID: Trip\_Blank/GWA~District-Six-CL6

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

☒ ☐ ☐ ☐ ☐

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

Temp (°C)	3.4
-----------	-----

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> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<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.

MP

Custodian Printed Name or Initials



Signature of Custodian

8/19/20

Date/Time



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:48

## GW\_60666\_MH\_MW\_2\_Trip\_Blank

2008178-01 (Water)

Summit Scientific

### Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 08/19/20 10:59

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2008222	08/20/20	08/20/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
m,p-Xylene	ND	2.0		"	"	"	"	"	"	
o-Xylene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: 08/19/20 10:59

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		103 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.3 %		21-167		"	"	"	"	

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:48

## 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 2008222 - EPA 5030 Water MS

##### Blank (2008222-BLK1)

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3		105	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167			

##### LCS (2008222-BS1)

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	41.2	1.0	ug/l	50.0		82.3	51-132			
Toluene	42.4	1.0	"	50.0		84.8	51-138			
Ethylbenzene	48.2	1.0	"	50.0		96.4	58-146			
m,p-Xylene	84.7	2.0	"	100		84.7	57-144			
o-Xylene	43.6	1.0	"	50.0		87.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.3		104	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.2	21-167			

##### Matrix Spike (2008222-MS1)

Source: 2008171-01

Prepared: 08/20/20 Analyzed: 08/21/20

Benzene	64.2	1.0	ug/l	50.0	43.6	41.2	34-141			
Toluene	45.4	1.0	"	50.0	ND	90.8	27-151			
Ethylbenzene	53.9	1.0	"	50.0	1.03	106	29-160			
m,p-Xylene	94.3	2.0	"	100	2.76	91.5	20-166			
o-Xylene	47.6	1.0	"	50.0	ND	95.3	33-159			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.5	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.2	21-167			

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**

08/26/20 12:48

## 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 2008222 - EPA 5030 Water MS

Matrix Spike Dup (2008222-MSD1)	Source: 2008171-01			Prepared: 08/20/20 Analyzed: 08/21/20						
Benzene	61.5	1.0	ug/l	50.0	43.6	35.8	34-141	4.33	32	
Toluene	47.2	1.0	"	50.0	ND	94.5	27-151	4.00	25	
Ethylbenzene	56.6	1.0	"	50.0	1.03	111	29-160	4.84	50	
m,p-Xylene	99.1	2.0	"	100	2.76	96.3	20-166	4.94	36	
o-Xylene	49.6	1.0	"	50.0	ND	99.2	33-159	3.99	26	
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.3		93.1	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.9	21-167			

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 12:48

### Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference



# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 25, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground\_Water/GWA\_District\_Six\_C6

Work Order # 2008140

Enclosed are the results of analyses for samples received by Summit Scientific on 08/17/20 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 Premier".

Muri Premier For Paul Shrewsbury

President



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_60666_MH_MW_3	2008140-01	Water	08/17/20 13:39	08/17/20 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

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

<b>Client:</b>	Extraction Oil and Gas (XOG)	<b>Report to:</b> Apex Companies, LLC	<b>Project Manager:</b>	Heather Shideman
<b>Address:</b>	2234 117th Ave, Ste 106		<b>E-Mail:</b>	Rochelle.Carlsle@apexcos.com, Heather.Shideman@apexcos.com
<b>City/State/Zip:</b>	Greeley, CO 80634		<b>cc:</b>	jcarlsle@extractionog.com
<b>Phone:</b>	(970) 576-3446		<b>Project Name:</b>	Ground_Water/GWA_District_Six_C6
<b>Sampler Name:</b>	Kade MacDougall		<b>Project No.:</b> Alloc-421 930, 88	<b>Facility ID</b>

ID	Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions					
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Ground Water	Soil	Air-Canister #	Other (Specify)	COGCC 609	No BART												
1	GW_60666_MH_MW_3 NENE_20_5N_65W	20/08/17	1339						X				X	X												Sample Frequency: Q3
	Temperature, field:	15.4	°C																							
	pH, field:	7.29	s.u.																							
	Conductivity, field:	1139	uS/cm																							
	ORP, field:	227.4	mV																							
	Dissolved Oxygen, field:	2.08	mg/L																							
	Turbidity, field:	44.9	NTU																							
Relinquished by:		Date/Time:		Received by:		Date/Time:		Turn Around Time		(Check)		Notes:														
		20/08/17 1520				08/17/2020 1520		Same Day _____		72 hours _____																
Relinquished by:		Date/Time:		Received by:		Date/Time:		____ 24 hours ____ X ____		Standard																
								____ 48 hours ____																		
Relinquished by:		Date/Time:		Received by:		Date/Time:		Sample Integrity:		4.3																
								Temperature Upon Receipt:																		
								Intact: Yes No																		

# Sample Receipt Checklist

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

Client: Apex Companies Client Project ID: GLWA DISTRICT - G, C6

Shipped Via: ☒ H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

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

Temp (°C) 4.3

Thermometer ID: 61857155-K

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

Custodian Printed Name or Initials ET

Signature of Custodian [Signature]

Date/Time 08/17/2020



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**GW\_60666\_MH\_MW\_3**  
**NENE\_20\_5N\_65W**  
**2008140-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0010	mg/L	1	2008195	08/19/20	08/20/20	EPA 8260B	
Toluene	ND	0.0010	"	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	"	
m,p-Xylene	ND	0.0020	"	"	"	"	"	"	
o-Xylene	ND	0.0010	"	"	"	"	"	"	
Xylenes (total)	ND	0.0020	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.050	"	"	"	"	"	"	

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.1 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	0.100	mg/L	1	2008216	08/20/20	08/20/20	EPA 8015M	

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		96.1 %	44.8-129		"	"	"	"	

**Dissolved Gases by RSK-175**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**GW\_60666\_MH\_MW\_3**  
**NENE\_20\_5N\_65W**

**2008140-01 (Water)**

**Summit Scientific**

**Dissolved Gases by RSK-175**

Methane	0.14	0.010	mg/L	1	2008206	08/19/20	08/20/20	RSK-175 mod
Ethane	0.056	0.010	"	"	"	"	"	"
Propane	ND	0.010	"	"	"	"	"	"

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Ethene		109 %	70-130		"	"	"	"	

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	123000	50.0	ug/l	1	2008201	08/19/20	08/19/20	EPA 200.8	
Iron	225	10.0	"	"	"	"	"	"	
Magnesium	52000	50.0	"	"	"	"	"	"	
Manganese	390	1.00	"	"	"	"	"	"	
Potassium	5310	50.0	"	"	"	"	"	"	
Sodium	82800	50.0	"	"	"	"	"	"	
Barium	86.7	1.00	"	"	"	"	"	"	
Boron	216	10.0	"	"	"	"	"	"	
Selenium	2.10	1.00	"	"	"	"	"	"	
Strontium	1620	10.0	"	"	"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	0.378	0.200	mg/L	1	2008175	08/18/20	08/18/20	EPA 300.0	
Chloride	41.5	2.00	"	20	"	"	"	"	
Fluoride	0.485	0.200	"	1	"	"	"	"	
Sulfate	84.5	6.00	"	20	"	"	"	"	
Nitrate as N	9.53	0.100	"	1	"	"	"	"	
Nitrite as N	ND	0.100	"	"	"	"	"	"	
Nitrate/Nitrite as N	9.53	0.200	"	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**GW\_60666\_MH\_MW\_3**  
**NENE\_20\_5N\_65W**  
**2008140-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

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

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Alkalinity</b>	<b>330</b>	10.0	mg/L as CaCO3	1	2008191	08/20/20	08/24/20	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
<b>Bicarbonate</b>	<b>330</b>	10.0	"	"	"	"	"	"	

**Conventional Chemistry Parameters by APHA/EPA Methods**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Phosphorus - Total	ND	0.0500	mg/L	1	2008240	08/24/20	08/24/20	SM4500-P-E	

**Specific Conductance by SM2510B**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>1110</b>	1.00	umhos/cm	1	2008190	08/19/20	08/19/20	SM2510B	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>547</b>	10.0	mg/L	1	2008189	08/19/20	08/19/20	SM2540C	

**pH by SM4500**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**GW\_60666\_MH\_MW\_3**

**NENE\_20\_5N\_65W**

**2008140-01 (Water)**

**Summit Scientific**

**pH by SM4500**

<b>pH</b>	<b>7.28</b>	1.00	pH Units	1	2008181	08/17/20	08/18/20	SM4500-H+ B
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**Field Data**

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Specific Conductance (EC)	1139		uS/cm	1	2008246	08/17/20	08/17/20	Field Method	
Temperature	15.4		Degrees C	"	"	"	"	"	
Turbidity	44.9		NTU	"	"	"	"	"	
Oxidation/Reduction Potential	227.4		mv	"	"	"	"	"	
Dissolved Oxygen	2.08		mg/L	"	"	"	"	"	
pH	7.29		SU	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

## 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 2008195 - EPA 5030 Water MS

##### Blank (2008195-BLK1)

Prepared & Analyzed: 08/19/20

Benzene	ND	0.0010	mg/L							
Toluene	ND	0.0010	"							
Ethylbenzene	ND	0.0010	"							
m,p-Xylene	ND	0.0020	"							
o-Xylene	ND	0.0010	"							
Xylenes (total)	ND	0.0020	"							
Gasoline Range Hydrocarbons	ND	0.050	"							
Surrogate: 1,2-Dichloroethane-d4	0.0137		"	0.0133		103	23-173			
Surrogate: Toluene-d8	0.0129		"	0.0133		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0114		"	0.0133		85.3	21-167			

##### LCS (2008195-BS1)

Prepared & Analyzed: 08/19/20

Benzene	0.0338	0.0010	mg/L	0.0333		101	51-132			
Toluene	0.0343	0.0010	"	0.0333		103	51-138			
Ethylbenzene	0.0372	0.0010	"	0.0333		112	58-146			
m,p-Xylene	0.0751	0.0020	"	0.0667		113	57-144			
o-Xylene	0.0359	0.0010	"	0.0333		108	53-146			
Surrogate: 1,2-Dichloroethane-d4	0.0142		"	0.0133		107	23-173			
Surrogate: Toluene-d8	0.0132		"	0.0133		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0120		"	0.0133		90.2	21-167			

##### Matrix Spike (2008195-MS1)

Source: 2008136-01

Prepared & Analyzed: 08/19/20

Benzene	0.0338	0.0010	mg/L	0.0333	ND	102	34-141			
Toluene	0.0350	0.0010	"	0.0333	ND	105	27-151			
Ethylbenzene	0.0373	0.0010	"	0.0333	ND	112	29-160			
m,p-Xylene	0.0763	0.0020	"	0.0667	ND	114	20-166			
o-Xylene	0.0361	0.0010	"	0.0333	ND	108	33-159			
Surrogate: 1,2-Dichloroethane-d4	0.0142		"	0.0133		107	23-173			
Surrogate: Toluene-d8	0.0129		"	0.0133		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0120		"	0.0133		90.1	21-167			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**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 2008195 - EPA 5030 Water MS**

Matrix Spike Dup (2008195-MSD1)		Source: 2008136-01			Prepared & Analyzed: 08/19/20					
Benzene	0.0342	0.0010	mg/L	0.0333	ND	103	34-141	0.970	32	
Toluene	0.0344	0.0010	"	0.0333	ND	103	27-151	1.56	25	
Ethylbenzene	0.0373	0.0010	"	0.0333	ND	112	29-160	0.0804	50	
m,p-Xylene	0.0756	0.0020	"	0.0667	ND	113	20-166	0.935	36	
o-Xylene	0.0361	0.0010	"	0.0333	ND	108	33-159	0.00	26	
Surrogate: 1,2-Dichloroethane-d4	0.0146		"	0.0133		109	23-173			
Surrogate: Toluene-d8	0.0129		"	0.0133		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0121		"	0.0133		90.5	21-167			

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370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**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 2008216 - EPA 3520B**

**Blank (2008216-BLK1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) ND 0.100 mg/L

Surrogate: o-Terphenyl 0.0283 " 0.0250 113 44.8-129

**LCS (2008216-BS1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 1.02 0.100 mg/L 1.00 102 70-130

Surrogate: o-Terphenyl 0.0289 " 0.0250 116 44.8-129

**LCS Dup (2008216-BS1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 0.946 0.100 mg/L 1.00 94.6 70-130 7.72 200

Surrogate: o-Terphenyl 0.0274 " 0.0250 109 44.8-129

Summit Scientific

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370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**Dissolved Gases by RSK-175 - Quality Control**  
**Summit Scientific**

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

**Batch 2008206 - GC**

**Blank (2008206-BLK1)**

Prepared: 08/19/20 Analyzed: 08/20/20

Methane	ND	0.010	mg/L							
Ethane	ND	0.010	"							
Propane	ND	0.010	"							
Surrogate: Ethene	0.0468		"	0.0364		129	70-130			

**LCS (2008206-BS1)**

Prepared: 08/19/20 Analyzed: 08/20/20

Methane	0.036	0.010	mg/L	0.0428		83.2	70-130			
Ethane	0.10	0.010	"	0.0798		127	70-130			
Propane	0.15	0.010	"	0.139		108	70-130			
Surrogate: Ethene	0.0887		"	0.0728		122	70-130			

**Duplicate (2008206-DUP1)**

Source: 2008172-01

Prepared: 08/19/20 Analyzed: 08/20/20

Methane	2.3	1.0	mg/L		2.2			1.79	30	
Ethane	1.0	0.10	"		1.2			9.28	30	
Propane	0.68	0.10	"		0.75			10.0	30	
Surrogate: Ethene	0.0410		"	0.0364		113	70-130			

**Matrix Spike (2008206-MS1)**

Source: 2008172-01

Prepared: 08/19/20 Analyzed: 08/20/20

**QM-02**

Methane	2.7	1.0	mg/L	0.0428	2.2	NR	70-130			
Ethane	1.2	1.0	"	0.0798	1.2	60.1	70-130			
Propane	0.77	1.0	"	0.139	0.75	12.2	70-130			S-03
Surrogate: Ethene	0.103		"	0.0728		141	70-130			

Summit Scientific

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Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

## Dissolved Metals by EPA Method 200.8 - Quality Control

### Summit Scientific

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

#### Batch 2008201 - EPA 200.8

##### Blank (2008201-BLK1)

Prepared & Analyzed: 08/19/20

Calcium	ND	50.0	ug/l
Iron	ND	10.0	"
Magnesium	ND	50.0	"
Manganese	ND	1.00	"
Potassium	ND	50.0	"
Sodium	ND	50.0	"
Barium	ND	1.00	"
Boron	ND	10.0	"
Selenium	ND	1.00	"
Strontium	ND	10.0	"

##### LCS (2008201-BS1)

Prepared & Analyzed: 08/19/20

Calcium	5740	50.0	ug/l	5000	115	85-115
Iron	5290	10.0	"	5000	106	85-115
Magnesium	5010	50.0	"	5000	100	85-115
Manganese	529	1.00	"	500	106	85-115
Potassium	5770	50.0	"	5000	115	85-115
Sodium	5510	50.0	"	5000	110	85-115
Barium	517	1.00	"	500	103	85-115
Boron	2690	10.0	"	2500	108	85-115
Selenium	51.9	1.00	"	50.0	104	85-115
Strontium	535	10.0	"	500	107	85-115

##### Duplicate (2008201-DUP1)

Source: 2008140-01

Prepared & Analyzed: 08/19/20

Calcium	121000	50.0	ug/l	123000	1.48	20
Iron	229	10.0	"	225	2.00	20
Magnesium	51500	50.0	"	52000	0.876	20
Manganese	385	1.00	"	390	1.27	20
Potassium	5310	50.0	"	5310	0.0231	20
Sodium	81200	50.0	"	82800	1.99	20
Barium	85.0	1.00	"	86.7	1.98	20
Boron	203	10.0	"	216	5.94	20
Selenium	1.74	1.00	"	2.10	18.9	20
Strontium	1640	10.0	"	1620	1.35	20

Summit Scientific

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**Reported:**  
08/25/20 10:05

**Dissolved Metals by EPA Method 200.8 - Quality Control**  
**Summit Scientific**

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

**Batch 2008201 - EPA 200.8**

Matrix Spike (2008201-MS1)			Source: 2008140-01		Prepared & Analyzed: 08/19/20					
Calcium	113000	50.0	ug/l	5000	123000	NR	70-130			QR-04
Iron	5260	10.0	"	5000	225	101	70-130			
Magnesium	52200	50.0	"	5000	52000	3.30	70-130			QR-04
Manganese	877	1.00	"	500	390	97.3	70-130			
Potassium	10300	50.0	"	5000	5310	101	70-130			
Sodium	78800	50.0	"	5000	82800	NR	70-130			QR-04
Barium	596	1.00	"	500	86.7	102	70-130			
Boron	2660	10.0	"	2500	216	97.9	70-130			
Selenium	53.2	1.00	"	50.0	2.10	102	70-130			
Strontium	2000	10.0	"	500	1620	75.5	70-130			

Matrix Spike Dup (2008201-MSD1)			Source: 2008140-01		Prepared & Analyzed: 08/19/20					
Calcium	126000	50.0	ug/l	5000	123000	57.9	70-130	10.9	25	QR-04
Iron	5380	10.0	"	5000	225	103	70-130	2.25	25	
Magnesium	56800	50.0	"	5000	52000	95.6	70-130	8.48	25	
Manganese	916	1.00	"	500	390	105	70-130	4.37	25	
Potassium	10800	50.0	"	5000	5310	109	70-130	4.12	25	
Sodium	86700	50.0	"	5000	82800	77.6	70-130	9.52	25	
Barium	617	1.00	"	500	86.7	106	70-130	3.50	25	
Boron	2740	10.0	"	2500	216	101	70-130	2.99	25	
Selenium	52.0	1.00	"	50.0	2.10	99.8	70-130	2.22	25	
Strontium	2180	10.0	"	500	1620	111	70-130	8.51	25	

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Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**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 2008175 - General Preparation**

**Blank (2008175-BLK1)**

Prepared & Analyzed: 08/18/20

Bromide	ND	0.200	mg/L
Chloride	ND	0.100	"
Fluoride	ND	0.200	"
Sulfate	ND	0.300	"
Nitrate as N	ND	0.100	"
Nitrite as N	ND	0.100	"
Nitrate/Nitrite as N	ND	0.200	"

**LCS (2008175-BS1)**

Prepared & Analyzed: 08/18/20

Bromide	10.6	0.200	mg/L	10.0	106	90-110
Chloride	3.22	0.100	"	3.00	107	90-110
Fluoride	2.20	0.200	"	2.00	110	90-110
Sulfate	16.2	0.300	"	15.0	108	90-110
Nitrate as N	3.23	0.100	"	3.00	108	90-110
Nitrite as N	3.10	0.100	"	3.00	103	90-110

**Duplicate (2008175-DUP1)**

Source: 2008140-01

Prepared & Analyzed: 08/18/20

Bromide	0.362	0.200	mg/L	0.378	4.32	20	
Chloride	92.2	0.100	"	41.5	75.8	20	QM-02
Fluoride	0.470	0.200	"	0.485	3.14	20	
Sulfate	170	0.300	"	84.5	67.0	20	QM-02
Nitrate as N	9.42	0.100	"	9.53	1.12	20	
Nitrite as N	ND	0.100	"	ND		20	
Nitrate/Nitrite as N	ND	0.200	"	9.53		20	

**Matrix Spike (2008175-MS1)**

Source: 2008140-01

Prepared & Analyzed: 08/18/20

Bromide	8.58	0.200	mg/L	10.0	0.378	82.0	80-120	
Chloride	86.9	0.100	"	3.00	41.5	NR	80-120	QM-02
Fluoride	2.87	0.200	"	2.00	0.485	119	80-120	
Sulfate	178	0.300	"	15.0	84.5	623	80-120	QM-02
Nitrate as N	12.7	0.100	"	3.00	9.53	104	80-120	
Nitrite as N	2.43	0.100	"	3.00	ND	81.1	80-120	

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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

## Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

### Summit Scientific

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

#### Batch 2008191 - General Preparation

##### Blank (2008191-BLK1)

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	ND	10.0	mg/L as CaCO3
Carbonate	ND	10.0	"
Bicarbonate	ND	10.0	"

##### LCS (2008191-BS1)

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	100	10.0	mg/L as CaCO3	100	100	80-120
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##### Duplicate (2008191-DUP1)

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	330	10.0	mg/L as CaCO3	330	0.00	20
Carbonate	ND	10.0	"	ND		20
Bicarbonate	330	10.0	"	330	0.00	20

##### Matrix Spike (2008191-MS1)

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130
------------------	-----	------	------------------	-----	-----	------	--------

##### Matrix Spike Dup (2008191-MSD1)

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130	0.00	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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008240 - General Preparation**

**Blank (2008240-BLK1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total ND 0.0500 mg/L

**LCS (2008240-BS1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.07 0.0500 mg/L 1.00 107 80-120

**Duplicate (2008240-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 0.0500 0.0500 mg/L 0.0490 2.02 20

**Matrix Spike (2008240-MS1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.00 0.0500 mg/L 1.00 0.0490 95.3 70-130

**Matrix Spike Dup (2008240-MSD1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.02 0.0500 mg/L 1.00 0.0490 97.6 70-130 2.27 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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**Specific Conductance by SM2510B - Quality Control**  
**Summit Scientific**

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

**Batch 2008190 - General Preparation**

**Blank (2008190-BLK1)**

Prepared & Analyzed: 08/19/20

Specific Conductance (EC) ND 1.00 umhos/cm

**Duplicate (2008190-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/19/20

Specific Conductance (EC) 1110 1.00 umhos/cm 1110 0.450 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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**Total Dissolved Solids by SM2540C - Quality Control**  
**Summit Scientific**

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

**Batch 2008189 - General Preparation**

**Blank (2008189-BLK1)**

Prepared & Analyzed: 08/19/20

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (2008189-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/19/20

Total Dissolved Solids 548 10.0 mg/L 547 0.0548 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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

**pH by SM4500 - Quality Control**  
**Summit Scientific**

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

**Batch 2008181 - General Preparation**

**LCS (2008181-BS1)**

Prepared: 08/17/20 Analyzed: 08/18/20

pH	9.06	1.00	pH Units	9.18	98.7	90-110
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**Duplicate (2008181-DUP1)**

**Source: 2008139-01**

Prepared: 08/17/20 Analyzed: 08/18/20

pH	7.09	1.00	pH Units	7.05	0.566	20
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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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/25/20 10:05

### Notes and Definitions

S-03	The surrogate recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
QR-04	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 24, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip\_Blank/GWA\_District\_Six\_C6

Work Order #2008136

Enclosed are the results of analyses for samples received by Summit Scientific on 08/17/20 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 cursive and reads "Muri Premier".

Muri Premier For Paul Shrewsbury  
President





Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/24/20 15:51

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_60666_MH_MW_3_Trip_Blank	2008136-01	Water	08/17/20 13:39	08/17/20 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.*

2008136

Page 1 of 1

ID		Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister Serial #	Other (Specify)	BTEX	Analysis Requested						Special Instructions
1	GW_60666_MH_MW_3_Trip_Blank	20/08/17	1339	2						X				X							Sample Frequency: Q3
Relinquished by:		Date/Time:		Received by:		Date/Time:		Turn Around Time (Check)				Notes:									
		20/08/17 1520				08/17/2020 1520		Same Day _____ 72 hours _____													
Relinquished by:		Date/Time:		Received by:		Date/Time:		24 hours _____ Standard <u>X</u>													
								48 hours _____													
Relinquished by:		Date/Time:		Received by:		Date/Time:		Sample Integrity:													
								Temperature Upon Receipt: <u>4.3</u>													
								Intact: Yes No													

# Sample Receipt Checklist

S2 Work Order 2008136

Client: Apex Companies Client Project ID: Trip Blank / GWA District - 6-C6

Shipped Via: ☒ H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: \_\_\_\_\_

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

Temp (°C) 4.3

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> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<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.

Custodian Printed Name or Initials EE

Signature of Custodian [Signature]

Date/Time 08/17/2020



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6  
Project Number: ALLOC-421  
Project Manager: Heather Shideman

**Reported:**  
08/24/20 15:51

**GW\_60666\_MH\_MW\_3\_Trip\_Blank**  
**2008136-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	2008195	08/19/20	08/20/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
m,p-Xylene	ND	2.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/17/20 13:39**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.0 %	21-167		"	"	"	"	

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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6  
Project Number: ALLOC-421  
Project Manager: Heather Shideman

**Reported:**  
08/24/20 15:51

## 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 2008195 - EPA 5030 Water MS

##### Blank (2008195-BLK1)

Prepared & Analyzed: 08/19/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.3		103	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	11.4		"	13.3		85.3	21-167			

##### LCS (2008195-BS1)

Prepared & Analyzed: 08/19/20

Benzene	33.8	1.0	ug/l	33.3		101	51-132			
Toluene	34.3	1.0	"	33.3		103	51-138			
Ethylbenzene	37.2	1.0	"	33.3		112	58-146			
m,p-Xylene	75.1	2.0	"	66.7		113	57-144			
o-Xylene	35.9	1.0	"	33.3		108	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.2	21-167			

##### Matrix Spike (2008195-MS1)

Source: 2008136-01

Prepared & Analyzed: 08/19/20

Benzene	33.8	1.0	ug/l	33.3	ND	102	34-141			
Toluene	35.0	1.0	"	33.3	ND	105	27-151			
Ethylbenzene	37.3	1.0	"	33.3	ND	112	29-160			
m,p-Xylene	76.3	2.0	"	66.7	ND	114	20-166			
o-Xylene	36.1	1.0	"	33.3	ND	108	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.1	21-167			

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6  
Project Number: ALLOC-421  
Project Manager: Heather Shideman

**Reported:**  
08/24/20 15:51

**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 2008195 - EPA 5030 Water MS**

**Matrix Spike Dup (2008195-MSD1)**

**Source: 2008136-01**

Prepared & Analyzed: 08/19/20

Benzene	34.2	1.0	ug/l	33.3	ND	103	34-141	0.970	32	
Toluene	34.4	1.0	"	33.3	ND	103	27-151	1.56	25	
Ethylbenzene	37.3	1.0	"	33.3	ND	112	29-160	0.0804	50	
m,p-Xylene	75.6	2.0	"	66.7	ND	113	20-166	0.935	36	
o-Xylene	36.1	1.0	"	33.3	ND	108	33-159	0.00	26	
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		109	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		90.5	21-167			

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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/24/20 15:51

### Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground\_Water/GWA\_District\_Six\_C6

Work Order # 2008155

Enclosed are the results of analyses for samples received by Summit Scientific on 08/18/20 15:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President





Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_60666_MH_MW_4	2008155-01	Water	08/18/20 13:53	08/18/20 15:40

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.*

## 2008155

Page 1 of 1

Sample Number		Date/Time Collected		Preservative				Matrix				Analysis Requested								Special Instructions						
ID	Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	HCl	HNO <sub>3</sub>	None	Other (Specify)	Ground Water	Soil	Air-Canister #	Other (Specify)	COGCC 609	No BART												
1	GW_60666_MH_MW_4 NENE_20_5N_65W	20/6/18	1353						X				X	X											Sample Frequency: Q3	
	Temperature, field:	77.0	°C																							
	pH, field:	7.42	s.u.																							
	Conductivity, field:	1093	uS/cm																							
	ORP, field:	-97.3	mV																							
	Dissolved Oxygen, field:	0.40	mg/L																							
	Turbidity, field:	18.5	NTU																							
Relinquished by:		Date/Time:		Received by:				Date/Time:				Turn Around Time (Check)								Notes:						
		20/6/18/ 1540						08-18-20 15:40				Same Day _____ 72 hours ____ 24 hours ____ X Standard ____ 48 hours ____														
Relinquished by:		Date/Time:		Received by:				Date/Time:				Sample Integrity:														
												Temperature Upon Receipt: 1.1														
Relinquished by:		Date/Time:		Received by:				Date/Time:				Intact: Yes No														

2008155

## Sample Receipt Checklist

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

Client: XOG Client Project ID: Ground Water (GWA) District 6  
C6

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

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

Temp (°C)	1.1
-----------	-----

Thermometer ID: 61857155-K

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

Murip.  
Custodian Printed Name or Initials

[Signature]  
Signature of Custodian

08-18-20  
Date/Time



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**GW\_60666\_MH\_MW\_4**  
**NENE\_20\_5N\_65W**  
**2008155-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.0041</b>	0.0010	mg/L	1	2008195	08/19/20	08/20/20	EPA 8260B	
Toluene	ND	0.0010	"	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	"	
m,p-Xylene	ND	0.0020	"	"	"	"	"	"	
o-Xylene	ND	0.0010	"	"	"	"	"	"	
Xylenes (total)	ND	0.0020	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>0.50</b>	0.050	"	"	"	"	"	"	

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.0 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	0.100	mg/L	1	2008216	08/20/20	08/20/20	EPA 8015M	

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	44.8-129		"	"	"	"	

**Dissolved Gases by RSK-175**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**GW\_60666\_MH\_MW\_4**  
**NENE\_20\_5N\_65W**  
**2008155-01 (Water)**

**Summit Scientific**

**Dissolved Gases by RSK-175**

Methane	6.3	1.0	mg/L	100	2008223	08/20/20	08/21/20	RSK-175 mod
Ethane	3.2	1.0	"	"	"	"	"	"
Propane	2.0	0.10	"	10	"	"	"	"

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Ethene		143 %	70-130		"	"	"	"	S-06

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	104000	50.0	ug/l	1	2008201	08/19/20	08/19/20	EPA 200.8	
Iron	51.2	10.0	"	"	"	"	"	"	
Magnesium	46200	50.0	"	"	"	"	"	"	
Manganese	795	1.00	"	"	"	"	"	"	
Potassium	3060	50.0	"	"	"	"	"	"	
Sodium	106000	50.0	"	"	"	"	"	"	
Barium	41.8	1.00	"	"	"	"	"	"	
Boron	259	10.0	"	"	"	"	"	"	
Selenium	ND	1.00	"	"	"	"	"	"	
Strontium	1410	10.0	"	"	"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	0.498	0.200	mg/L	1	2008175	08/19/20	08/19/20	EPA 300.0	
Chloride	40.0	1.00	"	10	"	"	"	"	
Fluoride	0.335	0.200	"	1	"	"	"	"	
Sulfate	115	3.00	"	10	"	"	"	"	
Nitrate as N	ND	0.100	"	1	"	"	"	"	
Nitrite as N	ND	0.100	"	"	"	"	"	"	
Nitrate/Nitrite as N	ND	0.200	"	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**GW\_60666\_MH\_MW\_4**  
**NENE\_20\_5N\_65W**  
**2008155-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

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

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Alkalinity</b>	<b>310</b>	10.0	mg/L as CaCO3	1	2008191	08/20/20	08/24/20	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
<b>Bicarbonate</b>	<b>310</b>	10.0	"	"	"	"	"	"	

**Conventional Chemistry Parameters by APHA/EPA Methods**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Phosphorus - Total	ND	0.0500	mg/L	1	2008240	08/24/20	08/24/20	SM4500-P-E	

**Specific Conductance by SM2510B**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>1050</b>	1.00	umhos/cm	1	2008190	08/19/20	08/19/20	SM2510B	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>518</b>	10.0	mg/L	1	2008189	08/19/20	08/19/20	SM2540C	

**pH by SM4500**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Extraction Oil&Gas  
370 17th Street Suite 5300  
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Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**GW\_60666\_MH\_MW\_4**  
**NENE\_20\_5N\_65W**  
**2008155-01 (Water)**

**Summit Scientific**

**pH by SM4500**

<b>pH</b>	<b>7.26</b>	1.00	pH Units	1	2008217	08/18/20	08/20/20	SM4500-H+ B
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**Field Data**

Date Sampled: **08/18/20 13:53**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Specific Conductance (EC)	1093.0		uS/cm	1	2008183	08/18/20	08/18/20	Field Method	
Temperature	17.00		Degrees C	"	"	"	"	"	
Turbidity	18.5		NTU	"	"	"	"	"	
Oxidation/Reduction Potential	-97.30		mv	"	"	"	"	"	
Dissolved Oxygen	0.400		mg/L	"	"	"	"	"	
pH	7.42		SU	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

## 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 2008195 - EPA 5030 Water MS

##### Blank (2008195-BLK1)

Prepared & Analyzed: 08/19/20

Benzene	ND	0.0010	mg/L							
Toluene	ND	0.0010	"							
Ethylbenzene	ND	0.0010	"							
m,p-Xylene	ND	0.0020	"							
o-Xylene	ND	0.0010	"							
Xylenes (total)	ND	0.0020	"							
Gasoline Range Hydrocarbons	ND	0.050	"							
Surrogate: 1,2-Dichloroethane-d4	0.0137		"	0.0133		103	23-173			
Surrogate: Toluene-d8	0.0129		"	0.0133		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0114		"	0.0133		85.3	21-167			

##### LCS (2008195-BS1)

Prepared & Analyzed: 08/19/20

Benzene	0.0338	0.0010	mg/L	0.0333		101	51-132			
Toluene	0.0343	0.0010	"	0.0333		103	51-138			
Ethylbenzene	0.0372	0.0010	"	0.0333		112	58-146			
m,p-Xylene	0.0751	0.0020	"	0.0667		113	57-144			
o-Xylene	0.0359	0.0010	"	0.0333		108	53-146			
Surrogate: 1,2-Dichloroethane-d4	0.0142		"	0.0133		107	23-173			
Surrogate: Toluene-d8	0.0132		"	0.0133		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0120		"	0.0133		90.2	21-167			

##### Matrix Spike (2008195-MS1)

Source: 2008136-01

Prepared & Analyzed: 08/19/20

Benzene	0.0338	0.0010	mg/L	0.0333	ND	102	34-141			
Toluene	0.0350	0.0010	"	0.0333	ND	105	27-151			
Ethylbenzene	0.0373	0.0010	"	0.0333	ND	112	29-160			
m,p-Xylene	0.0763	0.0020	"	0.0667	ND	114	20-166			
o-Xylene	0.0361	0.0010	"	0.0333	ND	108	33-159			
Surrogate: 1,2-Dichloroethane-d4	0.0142		"	0.0133		107	23-173			
Surrogate: Toluene-d8	0.0129		"	0.0133		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0120		"	0.0133		90.1	21-167			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**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 2008195 - EPA 5030 Water MS**

Matrix Spike Dup (2008195-MSD1)		Source: 2008136-01			Prepared & Analyzed: 08/19/20					
Benzene	0.0342	0.0010	mg/L	0.0333	ND	103	34-141	0.970	32	
Toluene	0.0344	0.0010	"	0.0333	ND	103	27-151	1.56	25	
Ethylbenzene	0.0373	0.0010	"	0.0333	ND	112	29-160	0.0804	50	
m,p-Xylene	0.0756	0.0020	"	0.0667	ND	113	20-166	0.935	36	
o-Xylene	0.0361	0.0010	"	0.0333	ND	108	33-159	0.00	26	
Surrogate: 1,2-Dichloroethane-d4	0.0146		"	0.0133		109	23-173			
Surrogate: Toluene-d8	0.0129		"	0.0133		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0121		"	0.0133		90.5	21-167			

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370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**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 2008216 - EPA 3520B**

**Blank (2008216-BLK1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) ND 0.100 mg/L

Surrogate: o-Terphenyl 0.0283 " 0.0250 113 44.8-129

**LCS (2008216-BS1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 1.02 0.100 mg/L 1.00 102 70-130

Surrogate: o-Terphenyl 0.0289 " 0.0250 116 44.8-129

**LCS Dup (2008216-BSD1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 0.946 0.100 mg/L 1.00 94.6 70-130 7.72 200

Surrogate: o-Terphenyl 0.0274 " 0.0250 109 44.8-129

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Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**Dissolved Gases by RSK-175 - Quality Control**  
**Summit Scientific**

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

**Batch 2008223 - GC**

**Blank (2008223-BLK1)**

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	ND	0.010	mg/L							
Ethane	ND	0.010	"							
Propane	ND	0.010	"							
Surrogate: Ethene	0.0471		"	0.0364		129	70-130			

**LCS (2008223-BS1)**

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	0.034	0.010	mg/L	0.0428		79.0	70-130			
Ethane	0.098	0.010	"	0.0798		122	70-130			
Propane	0.14	0.010	"	0.139		104	70-130			
Surrogate: Ethene	0.0911		"	0.0728		125	70-130			

**Duplicate (2008223-DUP1)**

Source: 2008153-01

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	1.2	0.10	mg/L		1.3			14.0	30	
Ethane	0.31	0.010	"		0.39			21.9	30	
Propane	0.056	0.010	"		0.067			17.2	30	
Surrogate: Ethene	0.0429		"	0.0364		118	70-130			

**Matrix Spike (2008223-MS1)**

Source: 2008153-01

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	1.2	0.10	mg/L	0.0428	1.3	NR	70-130			QM-05
Ethane	0.39	0.010	"	0.0798	0.39	1.88	70-130			QM-05
Propane	0.19	0.010	"	0.139	0.067	90.8	70-130			
Surrogate: Ethene	0.0895		"	0.0728		123	70-130			

Summit Scientific

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Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**

08/26/20 10:19

## Dissolved Metals by EPA Method 200.8 - Quality Control

### Summit Scientific

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

#### Batch 2008201 - EPA 200.8

##### Blank (2008201-BLK1)

Prepared & Analyzed: 08/19/20

Calcium	ND	50.0	ug/l
Iron	ND	10.0	"
Magnesium	ND	50.0	"
Manganese	ND	1.00	"
Potassium	ND	50.0	"
Sodium	ND	50.0	"
Barium	ND	1.00	"
Boron	ND	10.0	"
Selenium	ND	1.00	"
Strontium	ND	10.0	"

##### LCS (2008201-BS1)

Prepared & Analyzed: 08/19/20

Calcium	5740	50.0	ug/l	5000	115	85-115
Iron	5290	10.0	"	5000	106	85-115
Magnesium	5010	50.0	"	5000	100	85-115
Manganese	529	1.00	"	500	106	85-115
Potassium	5770	50.0	"	5000	115	85-115
Sodium	5510	50.0	"	5000	110	85-115
Barium	517	1.00	"	500	103	85-115
Boron	2690	10.0	"	2500	108	85-115
Selenium	51.9	1.00	"	50.0	104	85-115
Strontium	535	10.0	"	500	107	85-115

##### Duplicate (2008201-DUP1)

Source: 2008140-01

Prepared & Analyzed: 08/19/20

Calcium	121000	50.0	ug/l	123000	1.48	20
Iron	229	10.0	"	225	2.00	20
Magnesium	51500	50.0	"	52000	0.876	20
Manganese	385	1.00	"	390	1.27	20
Potassium	5310	50.0	"	5310	0.0231	20
Sodium	81200	50.0	"	82800	1.99	20
Barium	85.0	1.00	"	86.7	1.98	20
Boron	203	10.0	"	216	5.94	20
Selenium	1.74	1.00	"	2.10	18.9	20
Strontium	1640	10.0	"	1620	1.35	20

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Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

## Dissolved Metals by EPA Method 200.8 - Quality Control

### Summit Scientific

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

#### Batch 2008201 - EPA 200.8

Matrix Spike (2008201-MS1)			Source: 2008140-01		Prepared & Analyzed: 08/19/20					
Calcium	113000	50.0	ug/l	5000	123000	NR	70-130			QR-04
Iron	5260	10.0	"	5000	225	101	70-130			
Magnesium	52200	50.0	"	5000	52000	3.30	70-130			QR-04
Manganese	877	1.00	"	500	390	97.3	70-130			
Potassium	10300	50.0	"	5000	5310	101	70-130			
Sodium	78800	50.0	"	5000	82800	NR	70-130			QR-04
Barium	596	1.00	"	500	86.7	102	70-130			
Boron	2660	10.0	"	2500	216	97.9	70-130			
Selenium	53.2	1.00	"	50.0	2.10	102	70-130			
Strontium	2000	10.0	"	500	1620	75.5	70-130			

Matrix Spike Dup (2008201-MSD1)			Source: 2008140-01		Prepared & Analyzed: 08/19/20					
Calcium	126000	50.0	ug/l	5000	123000	57.9	70-130	10.9	25	QR-04
Iron	5380	10.0	"	5000	225	103	70-130	2.25	25	
Magnesium	56800	50.0	"	5000	52000	95.6	70-130	8.48	25	
Manganese	916	1.00	"	500	390	105	70-130	4.37	25	
Potassium	10800	50.0	"	5000	5310	109	70-130	4.12	25	
Sodium	86700	50.0	"	5000	82800	77.6	70-130	9.52	25	
Barium	617	1.00	"	500	86.7	106	70-130	3.50	25	
Boron	2740	10.0	"	2500	216	101	70-130	2.99	25	
Selenium	52.0	1.00	"	50.0	2.10	99.8	70-130	2.22	25	
Strontium	2180	10.0	"	500	1620	111	70-130	8.51	25	

Summit Scientific

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Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**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 2008175 - General Preparation**

**Blank (2008175-BLK1)**

Prepared & Analyzed: 08/18/20

Bromide	ND	0.200	mg/L
Chloride	ND	0.100	"
Fluoride	ND	0.200	"
Sulfate	ND	0.300	"
Nitrate as N	ND	0.100	"
Nitrite as N	ND	0.100	"
Nitrate/Nitrite as N	ND	0.200	"

**LCS (2008175-BS1)**

Prepared & Analyzed: 08/18/20

Bromide	10.6	0.200	mg/L	10.0	106	90-110
Chloride	3.22	0.100	"	3.00	107	90-110
Fluoride	2.20	0.200	"	2.00	110	90-110
Sulfate	16.2	0.300	"	15.0	108	90-110
Nitrate as N	3.23	0.100	"	3.00	108	90-110
Nitrite as N	3.10	0.100	"	3.00	103	90-110

**Duplicate (2008175-DUP1)**

Source: 2008140-01

Prepared & Analyzed: 08/18/20

Bromide	0.362	0.200	mg/L	0.378	4.32	20	
Chloride	92.2	0.100	"	41.5	75.8	20	QM-02
Fluoride	0.470	0.200	"	0.485	3.14	20	
Sulfate	170	0.300	"	84.5	67.0	20	QM-02
Nitrate as N	9.42	0.100	"	9.53	1.12	20	
Nitrite as N	ND	0.100	"	ND		20	
Nitrate/Nitrite as N	ND	0.200	"	9.53		20	

**Matrix Spike (2008175-MS1)**

Source: 2008140-01

Prepared & Analyzed: 08/18/20

Bromide	8.58	0.200	mg/L	10.0	0.378	82.0	80-120	
Chloride	86.9	0.100	"	3.00	41.5	NR	80-120	QM-02
Fluoride	2.87	0.200	"	2.00	0.485	119	80-120	
Sulfate	178	0.300	"	15.0	84.5	623	80-120	QM-02
Nitrate as N	12.7	0.100	"	3.00	9.53	104	80-120	
Nitrite as N	2.43	0.100	"	3.00	ND	81.1	80-120	

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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008191 - General Preparation**

**Blank (2008191-BLK1)**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	ND	10.0	mg/L as CaCO3
Carbonate	ND	10.0	"
Bicarbonate	ND	10.0	"

**LCS (2008191-BS1)**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	100	10.0	mg/L as CaCO3	100	100	80-120
------------------	-----	------	------------------	-----	-----	--------

**Duplicate (2008191-DUP1)**

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	330	10.0	mg/L as CaCO3	330	0.00	20
Carbonate	ND	10.0	"	ND		20
Bicarbonate	330	10.0	"	330	0.00	20

**Matrix Spike (2008191-MS1)**

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130
------------------	-----	------	------------------	-----	-----	------	--------

**Matrix Spike Dup (2008191-MSD1)**

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130	0.00	20
------------------	-----	------	------------------	-----	-----	------	--------	------	----

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008240 - General Preparation**

**Blank (2008240-BLK1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total ND 0.0500 mg/L

**LCS (2008240-BS1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.07 0.0500 mg/L 1.00 107 80-120

**Duplicate (2008240-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 0.0500 0.0500 mg/L 0.0490 2.02 20

**Matrix Spike (2008240-MS1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.00 0.0500 mg/L 1.00 0.0490 95.3 70-130

**Matrix Spike Dup (2008240-MSD1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.02 0.0500 mg/L 1.00 0.0490 97.6 70-130 2.27 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.*





Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**Specific Conductance by SM2510B - Quality Control**  
**Summit Scientific**

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

**Batch 2008190 - General Preparation**

**Blank (2008190-BLK1)**

Prepared & Analyzed: 08/19/20

Specific Conductance (EC) ND 1.00 umhos/cm

**Duplicate (2008190-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/19/20

Specific Conductance (EC) 1110 1.00 umhos/cm 1110 0.450 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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**Total Dissolved Solids by SM2540C - Quality Control**  
**Summit Scientific**

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

**Batch 2008189 - General Preparation**

**Blank (2008189-BLK1)**

Prepared & Analyzed: 08/19/20

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (2008189-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/19/20

Total Dissolved Solids 548 10.0 mg/L 547 0.0548 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

**pH by SM4500 - Quality Control**  
**Summit Scientific**

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

**Batch 2008217 - General Preparation**

**LCS (2008217-BS1)**

Prepared: 08/18/20 Analyzed: 08/20/20

pH	9.15	1.00	pH Units	9.18	99.7	90-110
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**Duplicate (2008217-DUP1)**

**Source: 2008149-01**

Prepared: 08/18/20 Analyzed: 08/20/20

pH	7.49	1.00	pH Units	7.36	1.75	20
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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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:19

### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interferences.
QR-04	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Lab #: 769108 Job #: 45659 IS-99230 Co. Job#:

Sample Name: GW\_60666\_MH\_MW\_4 Co. Lab#:

Company: Extraction Oil and Gas

API/Well:

Container: IsoFlask

Field/Site Name: Ground\_Water/GWA\_District\_Six\_C6

Location: NENE\_20\_5N\_65W

Formation/Depth: Q3

Sampling Point:

Date Sampled: 8/18/2020 13:53 Date Received: 8/21/2020 Date Reported: 10/08/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide -----	nd					
Helium -----	na					
Hydrogen -----	nd					
Argon -----	0.429					
Oxygen -----	9.05					
Nitrogen -----	37.10					
Carbon Dioxide -----	3.22					
Methane -----	41.47	-47.37	-230.2		32	21
Ethane -----	6.30	-31.97			5.1	6.5
Ethylene -----	nd					
Propane -----	1.90	-27.19			1.5	2.7
Propylene -----	nd					
Iso-butane -----	0.203	-30.5				
N-butane -----	0.252	-25.3				
Iso-pentane -----	0.0507	-27.6				
N-pentane -----	0.0141	-25.3				
Hexanes + -----	0.0108					

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.60

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

ALLC\OC\_421

Butane and pentane carbon isotope data obtained online via GC-C-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip\_Blank/GWA\_District\_Six\_C6

Work Order # 2008156

Enclosed are the results of analyses for samples received by Summit Scientific on 08/18/20 15:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421 Fac ID 762176

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:21

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_60666_MH_MW_4_Trip_Blank	2008156-01	Water	08/18/20 13:53	08/18/20 15:40

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.*

$S_2$ 

303-277-9310 ♦ 303-374-5933

Page 1 of 1

<b>Client:</b>	Extraction Oil and Gas (XOG)	<b>Report to:</b> Apex Companies, LLC	<b>Project Manager:</b>	Heather Shideman
<b>Address:</b>	2234 117th Ave, Ste 106		<b>E-Mail:</b>	Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com
<b>City/State/Zip:</b>	Greeley, CO 80634		<b>cc:</b>	jcarlisle@extractionog.com
<b>Phone:</b>	(970) 576-3446		<b>Project Name:</b>	Trip_Blank/GWA_District_Six_C6
<b>Sampler Name:</b>	Kade MacDougall		<b>Project No.:</b>	ALLOC-421
			<b>Facility ID</b>	762176

Sample Number				Date/Time				Preservative				Matrix				Analysis Requested				Special Instructions	
ID	Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister Serial #	Other (Specify)	BTEX								
1	GW_60666_MH_MW_4_Trip_Blank	29/08/18	1353	2					X				X						Sample Frequency: Q3		
Relinquished by:		Date/Time:		Received by:		Date/Time:		Turn Around Time (Check)				Notes:									
		29/08/18 / 1540				08-18-20 15:40		Same Day ____ 72 hours ____													
Relinquished by:		Date/Time:		Received by:		Date/Time:		24 hours ____ Standard <u>X</u>													
								48 hours ____													
Relinquished by:		Date/Time:		Received by:		Date/Time:		Sample Integrity:													
								Temperature Upon Receipt: <u>1.1</u>													
								Intact: <u>Yes</u> No													



2008156

## Sample Receipt Checklist

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

Client: XOGClient Project ID: Trip Blank / District 6 CLShipped Via: ☒ H.D. ☐ P.U. ☐ FedEx ☐ UPS ☐ USPS ☐ Other \_\_\_\_\_ Airbill #: \_\_\_\_\_Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_  
(Describe)

Temp (°C)	1.1
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<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.Muri P.  
Custodian Printed Name or Initials[Signature]  
Signature of Custodian08-18-20  
Date/Time



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6  
Project Number: ALLOC-421 Fac ID 762176  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:21

### GW\_60666\_MH\_MW\_4\_Trip\_Blank

2008156-01 (Water)

Summit Scientific

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

Date Sampled: 08/18/20 13:53

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	2008195	08/19/20	08/20/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
m,p-Xylene	ND	2.0	"	"	"	"	"	"	
o-Xylene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: 08/18/20 13:53

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		81.8 %	21-167		"	"	"	"	

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421 Fac ID 762176

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:21

## 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 2008195 - EPA 5030 Water MS

##### Blank (2008195-BLK1)

Prepared & Analyzed: 08/19/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.3		103	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	11.4		"	13.3		85.3	21-167			

##### LCS (2008195-BS1)

Prepared & Analyzed: 08/19/20

Benzene	33.8	1.0	ug/l	33.3		101	51-132			
Toluene	34.3	1.0	"	33.3		103	51-138			
Ethylbenzene	37.2	1.0	"	33.3		112	58-146			
m,p-Xylene	75.1	2.0	"	66.7		113	57-144			
o-Xylene	35.9	1.0	"	33.3		108	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.2	21-167			

##### Matrix Spike (2008195-MS1)

Source: 2008136-01

Prepared & Analyzed: 08/19/20

Benzene	33.8	1.0	ug/l	33.3	ND	102	34-141			
Toluene	35.0	1.0	"	33.3	ND	105	27-151			
Ethylbenzene	37.3	1.0	"	33.3	ND	112	29-160			
m,p-Xylene	76.3	2.0	"	66.7	ND	114	20-166			
o-Xylene	36.1	1.0	"	33.3	ND	108	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.1	21-167			

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6  
Project Number: ALLOC-421 Fac ID 762176  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:21

**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 2008195 - EPA 5030 Water MS**

Matrix Spike Dup (2008195-MSD1)	Source: 2008136-01			Prepared & Analyzed: 08/19/20						
Benzene	34.2	1.0	ug/l	33.3	ND	103	34-141	0.970	32	
Toluene	34.4	1.0	"	33.3	ND	103	27-151	1.56	25	
Ethylbenzene	37.3	1.0	"	33.3	ND	112	29-160	0.0804	50	
m,p-Xylene	75.6	2.0	"	66.7	ND	113	20-166	0.935	36	
o-Xylene	36.1	1.0	"	33.3	ND	108	33-159	0.00	26	
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		109	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		90.5	21-167			

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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421 Fac ID 762176  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:21

### Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground\_Water/GWA\_District\_Six\_C6

Work Order # 2008153

Enclosed are the results of analyses for samples received by Summit Scientific on 08/18/20 13:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_60666_MH_MW_5	2008153-01	Water	08/18/20 12:17	08/18/20 13:40

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.*

$S_2$ 

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

<b>Client:</b>	Extraction Oil and Gas (XOG)	<b>Report to:</b> Apex Companies, LLC	<b>Project Manager:</b>	Heather Shideman
<b>Address:</b>	2234 117th Ave, Ste 106		<b>E-Mail:</b>	Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com
<b>City/State/Zip:</b>	Greeley, CO 80634		<b>cc:</b>	jcarlisle@extractionog.com
<b>Phone:</b>	(970) 576-3446		<b>Project Name:</b>	Ground_Water/GWA_District_Six_C6
<b>Sampler Name:</b>	Kade MacDougall		<b>Project No.:</b> Alloc-421 930, 88	<b>Facility ID</b>

[illegible]



2008153

## Sample Receipt Checklist

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

Client: LOG

Client Project ID: \_\_\_\_\_

Ground Water / GWA  
District 6-26Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_☒ ☐ ☐ ☐ ☐Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_  
(Describe)

Temp (°C)	<u>1.1</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> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, anions</u>
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>HNO<sub>3</sub></u> <u>H<sub>2</sub>SO<sub>4</sub></u>
Note the type of preservative in the Comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.Muri P.  
Custodian Printed Name or Initials[Signature]  
Signature of Custodian8-18-20  
Date/Time



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**GW\_60666\_MH\_MW\_5**  
**NENE\_20\_5N\_65W**  
**2008153-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0010	mg/L	1	2008204	08/19/20	08/20/20	EPA 8260B	
Toluene	ND	0.0010	"	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	"	
m,p-Xylene	ND	0.0020	"	"	"	"	"	"	
o-Xylene	ND	0.0010	"	"	"	"	"	"	
Xylenes (total)	ND	0.0020	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.050	"	"	"	"	"	"	

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.9 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	<b>0.464</b>	0.100	mg/L	1	2008216	08/20/20	08/20/20	EPA 8015M	

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		106 %	44.8-129		"	"	"	"	

**Dissolved Gases by RSK-175**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**GW\_60666\_MH\_MW\_5**  
**NENE\_20\_5N\_65W**  
**2008153-01 (Water)**

**Summit Scientific**

**Dissolved Gases by RSK-175**

Methane	1.3	0.10	mg/L	10	2008223	08/20/20	08/21/20	RSK-175 mod	
Ethane	0.39	0.10	"	"	"	"	"	"	
Propane	ND	0.10	"	"	"	"	"	"	R-01

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Ethene		146 %	70-130		"	"	"	"	S-02

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	230000	50.0	ug/l	1	2008201	08/19/20	08/19/20	EPA 200.8	
Iron	44.3	10.0	"	"	"	"	"	"	
Magnesium	93800	50.0	"	"	"	"	"	"	
Manganese	341	1.00	"	"	"	"	"	"	
Potassium	5110	50.0	"	"	"	"	"	"	
Sodium	224000	50.0	"	"	"	"	"	"	
Barium	50.4	1.00	"	"	"	"	"	"	
Boron	209	10.0	"	"	"	"	"	"	
Selenium	2.66	1.00	"	"	"	"	"	"	
Strontium	3240	10.0	"	"	"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	3.71	0.200	mg/L	1	2008175	08/19/20	08/19/20	EPA 300.0	
Chloride	330	10.0	"	100	"	"	"	"	
Fluoride	0.307	0.200	"	1	"	"	"	"	
Sulfate	141	30.0	"	100	"	"	"	"	
Nitrate as N	4.87	0.100	"	1	"	"	"	"	
Nitrite as N	ND	0.100	"	"	"	"	"	"	
Nitrate/Nitrite as N	4.87	0.200	"	"	"	"	"	"	

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**GW\_60666\_MH\_MW\_5**  
**NENE\_20\_5N\_65W**  
**2008153-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

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

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Alkalinity</b>	<b>220</b>	10.0	mg/L as CaCO3	1	2008191	08/20/20	08/24/20	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
<b>Bicarbonate</b>	<b>220</b>	10.0	"	"	"	"	"	"	

**Conventional Chemistry Parameters by APHA/EPA Methods**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Phosphorus - Total</b>	<b>0.389</b>	0.0500	mg/L	1	2008240	08/24/20	08/24/20	SM4500-P-E	

**Specific Conductance by SM2510B**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>2390</b>	1.00	umhos/cm	1	2008213	08/20/20	08/20/20	SM2510B	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>1170</b>	10.0	mg/L	1	2008214	08/20/20	08/20/20	SM2540C	

**pH by SM4500**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

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Project Number: Alloc 421 930.88  
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**Reported:**  
08/26/20 10:12

**GW\_60666\_MH\_MW\_5**  
**NENE\_20\_5N\_65W**  
**2008153-01 (Water)**

**Summit Scientific**

**pH by SM4500**

<b>pH</b>	<b>7.31</b>	1.00	pH Units	1	2008217	08/18/20	08/20/20	SM4500-H+ B
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**Field Data**

Date Sampled: **08/18/20 12:17**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	2470.0			uS/cm	1	2008197	08/18/20	08/18/20	Field Method	
Temperature	15.70			Degrees C	"	"	"	"	"	
Turbidity	9.05			NTU	"	"	"	"	"	
Oxidation/Reduction Potential	75.70			mv	"	"	"	"	"	
Dissolved Oxygen	0.930			mg/L	"	"	"	"	"	
pH	7.46			SU	"	"	"	"	"	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

## 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 2008204 - EPA 5030 Water MS

##### Blank (2008204-BLK1)

Prepared & Analyzed: 08/19/20

Benzene	ND	0.0010	mg/L							
Toluene	ND	0.0010	"							
Ethylbenzene	ND	0.0010	"							
m,p-Xylene	ND	0.0020	"							
o-Xylene	ND	0.0010	"							
Xylenes (total)	ND	0.0020	"							
Gasoline Range Hydrocarbons	ND	0.050	"							
Surrogate: 1,2-Dichloroethane-d4	0.0136		"	0.0133		102	23-173			
Surrogate: Toluene-d8	0.0133		"	0.0133		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0134		"	0.0133		101	21-167			

##### LCS (2008204-BS1)

Prepared & Analyzed: 08/19/20

Benzene	0.0410	0.0010	mg/L	0.0500		82.1	51-132			
Toluene	0.0428	0.0010	"	0.0500		85.6	51-138			
Ethylbenzene	0.0517	0.0010	"	0.0500		103	58-146			
m,p-Xylene	0.0911	0.0020	"	0.100		91.1	57-144			
o-Xylene	0.0453	0.0010	"	0.0500		90.6	53-146			
Surrogate: 1,2-Dichloroethane-d4	0.0134		"	0.0133		100	23-173			
Surrogate: Toluene-d8	0.0132		"	0.0133		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0133		"	0.0133		99.8	21-167			

##### Matrix Spike (2008204-MS1)

Source: 2008142-02

Prepared & Analyzed: 08/19/20

Benzene	0.0440	0.0010	mg/L	0.0500	ND	88.0	34-141			
Toluene	0.0462	0.0010	"	0.0500	ND	92.4	27-151			
Ethylbenzene	0.0569	0.0010	"	0.0500	ND	114	29-160			
m,p-Xylene	0.0998	0.0020	"	0.100	ND	99.8	20-166			
o-Xylene	0.0489	0.0010	"	0.0500	ND	97.8	33-159			
Surrogate: 1,2-Dichloroethane-d4	0.0122		"	0.0133		91.8	23-173			
Surrogate: Toluene-d8	0.0132		"	0.0133		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0131		"	0.0133		98.1	21-167			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**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 2008204 - EPA 5030 Water MS**

Matrix Spike Dup (2008204-MSD1)		Source: 2008142-02			Prepared & Analyzed: 08/19/20					
Benzene	0.0422	0.0010	mg/L	0.0500	ND	84.5	34-141	4.13	32	
Toluene	0.0440	0.0010	"	0.0500	ND	88.0	27-151	4.95	25	
Ethylbenzene	0.0530	0.0010	"	0.0500	ND	106	29-160	6.93	50	
m,p-Xylene	0.0937	0.0020	"	0.100	ND	93.7	20-166	6.34	36	
o-Xylene	0.0460	0.0010	"	0.0500	ND	92.0	33-159	6.11	26	
Surrogate: 1,2-Dichloroethane-d4	0.0125		"	0.0133		93.5	23-173			
Surrogate: Toluene-d8	0.0132		"	0.0133		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0128		"	0.0133		96.1	21-167			

Summit Scientific

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370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**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 2008216 - EPA 3520B**

**Blank (2008216-BLK1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) ND 0.100 mg/L

Surrogate: o-Terphenyl 0.0283 " 0.0250 113 44.8-129

**LCS (2008216-BS1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 1.02 0.100 mg/L 1.00 102 70-130

Surrogate: o-Terphenyl 0.0289 " 0.0250 116 44.8-129

**LCS Dup (2008216-BS1)**

Prepared & Analyzed: 08/20/20

C10-C28 (DRO) 0.946 0.100 mg/L 1.00 94.6 70-130 7.72 200

Surrogate: o-Terphenyl 0.0274 " 0.0250 109 44.8-129

Summit Scientific

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370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**Dissolved Gases by RSK-175 - Quality Control**  
**Summit Scientific**

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

**Batch 2008223 - GC**

**Blank (2008223-BLK1)**

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	ND	0.010	mg/L							
Ethane	ND	0.010	"							
Propane	ND	0.010	"							
Surrogate: Ethene	0.0471		"	0.0364		129	70-130			

**LCS (2008223-BS1)**

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	0.034	0.010	mg/L	0.0428		79.0	70-130			
Ethane	0.098	0.010	"	0.0798		122	70-130			
Propane	0.14	0.010	"	0.139		104	70-130			
Surrogate: Ethene	0.0911		"	0.0728		125	70-130			

**Duplicate (2008223-DUP1)**

Source: 2008153-01

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	1.2	0.10	mg/L		1.3			14.0	30	
Ethane	0.31	0.010	"		0.39			21.9	30	
Propane	0.056	0.010	"		0.067			17.2	30	
Surrogate: Ethene	0.0429		"	0.0364		118	70-130			

**Matrix Spike (2008223-MS1)**

Source: 2008153-01

Prepared: 08/20/20 Analyzed: 08/21/20

Methane	1.2	0.10	mg/L	0.0428	1.3	NR	70-130			QM-05
Ethane	0.39	0.010	"	0.0798	0.39	1.88	70-130			QM-05
Propane	0.19	0.010	"	0.139	0.067	90.8	70-130			
Surrogate: Ethene	0.0895		"	0.0728		123	70-130			

Summit Scientific

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Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

## Dissolved Metals by EPA Method 200.8 - Quality Control

### Summit Scientific

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

#### Batch 2008201 - EPA 200.8

##### Blank (2008201-BLK1)

Prepared & Analyzed: 08/19/20

Calcium	ND	50.0	ug/l
Iron	ND	10.0	"
Magnesium	ND	50.0	"
Manganese	ND	1.00	"
Potassium	ND	50.0	"
Sodium	ND	50.0	"
Barium	ND	1.00	"
Boron	ND	10.0	"
Selenium	ND	1.00	"
Strontium	ND	10.0	"

##### LCS (2008201-BS1)

Prepared & Analyzed: 08/19/20

Calcium	5740	50.0	ug/l	5000	115	85-115
Iron	5290	10.0	"	5000	106	85-115
Magnesium	5010	50.0	"	5000	100	85-115
Manganese	529	1.00	"	500	106	85-115
Potassium	5770	50.0	"	5000	115	85-115
Sodium	5510	50.0	"	5000	110	85-115
Barium	517	1.00	"	500	103	85-115
Boron	2690	10.0	"	2500	108	85-115
Selenium	51.9	1.00	"	50.0	104	85-115
Strontium	535	10.0	"	500	107	85-115

##### Duplicate (2008201-DUP1)

Source: 2008140-01

Prepared & Analyzed: 08/19/20

Calcium	121000	50.0	ug/l	123000	1.48	20
Iron	229	10.0	"	225	2.00	20
Magnesium	51500	50.0	"	52000	0.876	20
Manganese	385	1.00	"	390	1.27	20
Potassium	5310	50.0	"	5310	0.0231	20
Sodium	81200	50.0	"	82800	1.99	20
Barium	85.0	1.00	"	86.7	1.98	20
Boron	203	10.0	"	216	5.94	20
Selenium	1.74	1.00	"	2.10	18.9	20
Strontium	1640	10.0	"	1620	1.35	20

Summit Scientific

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Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**Dissolved Metals by EPA Method 200.8 - Quality Control**  
**Summit Scientific**

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

**Batch 2008201 - EPA 200.8**

Matrix Spike (2008201-MS1)		Source: 2008140-01			Prepared & Analyzed: 08/19/20					
Calcium	113000	50.0	ug/l	5000	123000	NR	70-130			QR-04
Iron	5260	10.0	"	5000	225	101	70-130			
Magnesium	52200	50.0	"	5000	52000	3.30	70-130			QR-04
Manganese	877	1.00	"	500	390	97.3	70-130			
Potassium	10300	50.0	"	5000	5310	101	70-130			
Sodium	78800	50.0	"	5000	82800	NR	70-130			QR-04
Barium	596	1.00	"	500	86.7	102	70-130			
Boron	2660	10.0	"	2500	216	97.9	70-130			
Selenium	53.2	1.00	"	50.0	2.10	102	70-130			
Strontium	2000	10.0	"	500	1620	75.5	70-130			

Matrix Spike Dup (2008201-MSD1)		Source: 2008140-01			Prepared & Analyzed: 08/19/20					
Calcium	126000	50.0	ug/l	5000	123000	57.9	70-130	10.9	25	QR-04
Iron	5380	10.0	"	5000	225	103	70-130	2.25	25	
Magnesium	56800	50.0	"	5000	52000	95.6	70-130	8.48	25	
Manganese	916	1.00	"	500	390	105	70-130	4.37	25	
Potassium	10800	50.0	"	5000	5310	109	70-130	4.12	25	
Sodium	86700	50.0	"	5000	82800	77.6	70-130	9.52	25	
Barium	617	1.00	"	500	86.7	106	70-130	3.50	25	
Boron	2740	10.0	"	2500	216	101	70-130	2.99	25	
Selenium	52.0	1.00	"	50.0	2.10	99.8	70-130	2.22	25	
Strontium	2180	10.0	"	500	1620	111	70-130	8.51	25	

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.*



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

## 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 2008175 - General Preparation

##### Blank (2008175-BLK1)

Prepared & Analyzed: 08/18/20

Bromide	ND	0.200	mg/L
Chloride	ND	0.100	"
Fluoride	ND	0.200	"
Sulfate	ND	0.300	"
Nitrate as N	ND	0.100	"
Nitrite as N	ND	0.100	"
Nitrate/Nitrite as N	ND	0.200	"

##### LCS (2008175-BS1)

Prepared & Analyzed: 08/18/20

Bromide	10.6	0.200	mg/L	10.0	106	90-110
Chloride	3.22	0.100	"	3.00	107	90-110
Fluoride	2.20	0.200	"	2.00	110	90-110
Sulfate	16.2	0.300	"	15.0	108	90-110
Nitrate as N	3.23	0.100	"	3.00	108	90-110
Nitrite as N	3.10	0.100	"	3.00	103	90-110

##### Duplicate (2008175-DUP1)

Source: 2008140-01

Prepared & Analyzed: 08/18/20

Bromide	0.362	0.200	mg/L	0.378	4.32	20	
Chloride	92.2	0.100	"	41.5	75.8	20	QM-02
Fluoride	0.470	0.200	"	0.485	3.14	20	
Sulfate	170	0.300	"	84.5	67.0	20	QM-02
Nitrate as N	9.42	0.100	"	9.53	1.12	20	
Nitrite as N	ND	0.100	"	ND		20	
Nitrate/Nitrite as N	ND	0.200	"	9.53		20	

##### Matrix Spike (2008175-MS1)

Source: 2008140-01

Prepared & Analyzed: 08/18/20

Bromide	8.58	0.200	mg/L	10.0	0.378	82.0	80-120	
Chloride	86.9	0.100	"	3.00	41.5	NR	80-120	QM-02
Fluoride	2.87	0.200	"	2.00	0.485	119	80-120	
Sulfate	178	0.300	"	15.0	84.5	623	80-120	QM-02
Nitrate as N	12.7	0.100	"	3.00	9.53	104	80-120	
Nitrite as N	2.43	0.100	"	3.00	ND	81.1	80-120	

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6  
Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008191 - General Preparation**

**Blank (2008191-BLK1)**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	ND	10.0	mg/L as CaCO3
Carbonate	ND	10.0	"
Bicarbonate	ND	10.0	"

**LCS (2008191-BS1)**

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	100	10.0	mg/L as CaCO3	100	100	80-120
------------------	-----	------	------------------	-----	-----	--------

**Duplicate (2008191-DUP1)**

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	330	10.0	mg/L as CaCO3	330	0.00	20
Carbonate	ND	10.0	"	ND		20
Bicarbonate	330	10.0	"	330	0.00	20

**Matrix Spike (2008191-MS1)**

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130
------------------	-----	------	------------------	-----	-----	------	--------

**Matrix Spike Dup (2008191-MSD1)**

Source: 2008140-01

Prepared: 08/20/20 Analyzed: 08/24/20

Total Alkalinity	420	10.0	mg/L as CaCO3	100	330	90.0	70-130	0.00	20
------------------	-----	------	------------------	-----	-----	------	--------	------	----

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008240 - General Preparation**

**Blank (2008240-BLK1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total ND 0.0500 mg/L

**LCS (2008240-BS1)**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.07 0.0500 mg/L 1.00 107 80-120

**Duplicate (2008240-DUP1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 0.0500 0.0500 mg/L 0.0490 2.02 20

**Matrix Spike (2008240-MS1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.00 0.0500 mg/L 1.00 0.0490 95.3 70-130

**Matrix Spike Dup (2008240-MSD1)**

**Source: 2008140-01**

Prepared & Analyzed: 08/24/20

Phosphorus - Total 1.02 0.0500 mg/L 1.00 0.0490 97.6 70-130 2.27 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**Specific Conductance by SM2510B - Quality Control**  
**Summit Scientific**

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

**Batch 2008213 - General Preparation**

**Blank (2008213-BLK1)**

Prepared & Analyzed: 08/20/20

Specific Conductance (EC) ND 1.00 umhos/cm

**Duplicate (2008213-DUP1)**

**Source: 2008153-01**

Prepared & Analyzed: 08/20/20

Specific Conductance (EC) 2390 1.00 umhos/cm 2390 0.0838 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**Total Dissolved Solids by SM2540C - Quality Control**  
**Summit Scientific**

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

**Batch 2008214 - General Preparation**

**Blank (2008214-BLK1)**

Prepared & Analyzed: 08/20/20

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (2008214-DUP1)**

**Source: 2008153-01**

Prepared & Analyzed: 08/20/20

Total Dissolved Solids ND 10.0 mg/L 1170 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

**pH by SM4500 - Quality Control**  
**Summit Scientific**

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

**Batch 2008217 - General Preparation**

**LCS (2008217-BS1)**

Prepared: 08/18/20 Analyzed: 08/20/20

pH	9.15	1.00	pH Units	9.18	99.7	90-110
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**Duplicate (2008217-DUP1)**

**Source: 2008149-01**

Prepared: 08/18/20 Analyzed: 08/20/20

pH	7.49	1.00	pH Units	7.36	1.75	20
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Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Ground\_Water/GWA\_District\_Six\_C6

Project Number: Alloc 421 930.88  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:12

### Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
QR-04	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Lab #: 769107 Job #: 45659 IS-99230 Co. Job#:

Sample Name: GW\_60666\_MH\_MW\_5 Co. Lab#:

Company: Extraction Oil and Gas

API/Well:

Container: IsoFlask

Field/Site Name: Ground\_Water/GWA\_District\_Six\_C6

Location: NENE\_20\_5N\_65W

Formation/Depth: Q3

Sampling Point:

Date Sampled: 8/18/2020 12:17 Date Received: 8/21/2020 Date Reported: 10/08/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide -----	nd					
Helium -----	na					
Hydrogen -----	nd					
Argon -----	1.19					
Oxygen -----	8.96					
Nitrogen -----	64.77					
Carbon Dioxide -----	6.02					
Methane -----	17.38	-47.06	-225.3		4.2	2.8
Ethane -----	1.46	-25.2			0.38	0.48
Ethylene -----	nd					
Propane -----	0.180	-27.4			0.044	0.081
Propylene -----	nd					
Iso-butane -----	0.0184					
N-butane -----	0.0154					
Iso-pentane -----	0.0083					
N-pentane -----	nd					
Hexanes + -----	0.0012					

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.83

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

ALLC\OC\_421

Ethane and propane carbon isotope data obtained online via GC-C-IRMS.

Insufficient butane and pentane concentrations for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 26, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip\_Blank/GWA\_District\_Six\_C6

Work Order # 2008154

Enclosed are the results of analyses for samples received by Summit Scientific on 08/18/20 15:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:17

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW_60666_MH_MW_5_Trip_Blank	2008154-01	Water	08/18/20 12:17	08/18/20 15:40

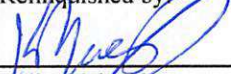
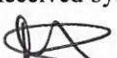
Summit Scientific

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## 2008154

303-277-9310 ♦ 303-374-5933

Page 1 of 1

Sampler Name: Kate MacDougall				Preservative				Matrix				Analysis Requested								Special Instructions
ID	Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister Serial #	Other (Specify)	BTEX							
1	GW_60666_MH_MW_5_Trip_Blank	20/08/18	1217	2					X				X							Sample Frequency: Q3
Relinquished by: 		Date/Time: 20/08/18 1540		Received by: 		Date/Time: 08-18-20 15:40		Turn Around Time (Check)				Notes:								
Relinquished by:		Date/Time:		Received by:		Date/Time:		Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/>												
								24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>												
								48 hours <input type="checkbox"/>												
Relinquished by:		Date/Time:		Received by:		Date/Time:		Sample Integrity:												
								Temperature Upon Receipt: 1.1												
								Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No												





Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:17

### GW\_60666\_MH\_MW\_5\_Trip\_Blank

2008154-01 (Water)

Summit Scientific

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

Date Sampled: 08/18/20 12:17

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2008195	08/19/20	08/20/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
m,p-Xylene	ND	2.0		"	"	"	"	"	"	
o-Xylene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: 08/18/20 12:17

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		102 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.6 %		21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:17

## 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 2008195 - EPA 5030 Water MS

##### Blank (2008195-BLK1)

Prepared & Analyzed: 08/19/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.3		103	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	11.4		"	13.3		85.3	21-167			

##### LCS (2008195-BS1)

Prepared & Analyzed: 08/19/20

Benzene	33.8	1.0	ug/l	33.3		101	51-132			
Toluene	34.3	1.0	"	33.3		103	51-138			
Ethylbenzene	37.2	1.0	"	33.3		112	58-146			
m,p-Xylene	75.1	2.0	"	66.7		113	57-144			
o-Xylene	35.9	1.0	"	33.3		108	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.2	21-167			

##### Matrix Spike (2008195-MS1)

Source: 2008136-01

Prepared & Analyzed: 08/19/20

Benzene	33.8	1.0	ug/l	33.3	ND	102	34-141			
Toluene	35.0	1.0	"	33.3	ND	105	27-151			
Ethylbenzene	37.3	1.0	"	33.3	ND	112	29-160			
m,p-Xylene	76.3	2.0	"	66.7	ND	114	20-166			
o-Xylene	36.1	1.0	"	33.3	ND	108	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.1	21-167			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421

Project Manager: Heather Shideman

**Reported:**

08/26/20 10:17

## 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 2008195 - EPA 5030 Water MS

##### Matrix Spike Dup (2008195-MSD1)

Source: 2008136-01

Prepared & Analyzed: 08/19/20

Benzene	34.2	1.0	ug/l	33.3	ND	103	34-141	0.970	32	
Toluene	34.4	1.0	"	33.3	ND	103	27-151	1.56	25	
Ethylbenzene	37.3	1.0	"	33.3	ND	112	29-160	0.0804	50	
m,p-Xylene	75.6	2.0	"	66.7	ND	113	20-166	0.935	36	
o-Xylene	36.1	1.0	"	33.3	ND	108	33-159	0.00	26	
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		109	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		90.5	21-167			

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.



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Trip\_Blank/GWA\_District\_Six\_C6

Project Number: ALLOC-421  
Project Manager: Heather Shideman

**Reported:**  
08/26/20 10:17

### 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

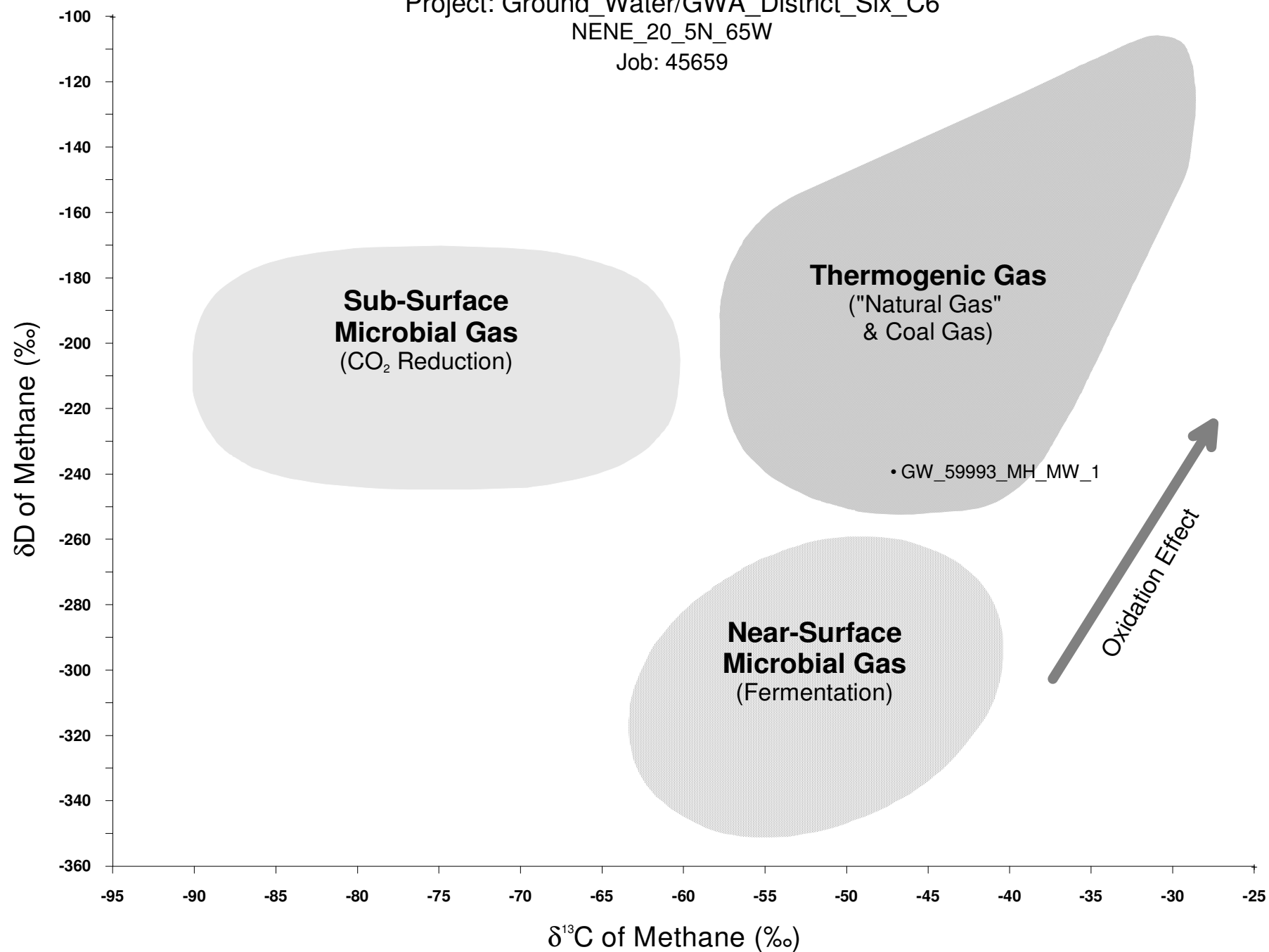
## **ATTACHMENT G**

### **Groundwater Isotope Ratio Plots**

Project: Ground\_Water/GWA\_District\_Six\_C6

NENE\_20\_5N\_65W

Job: 45659

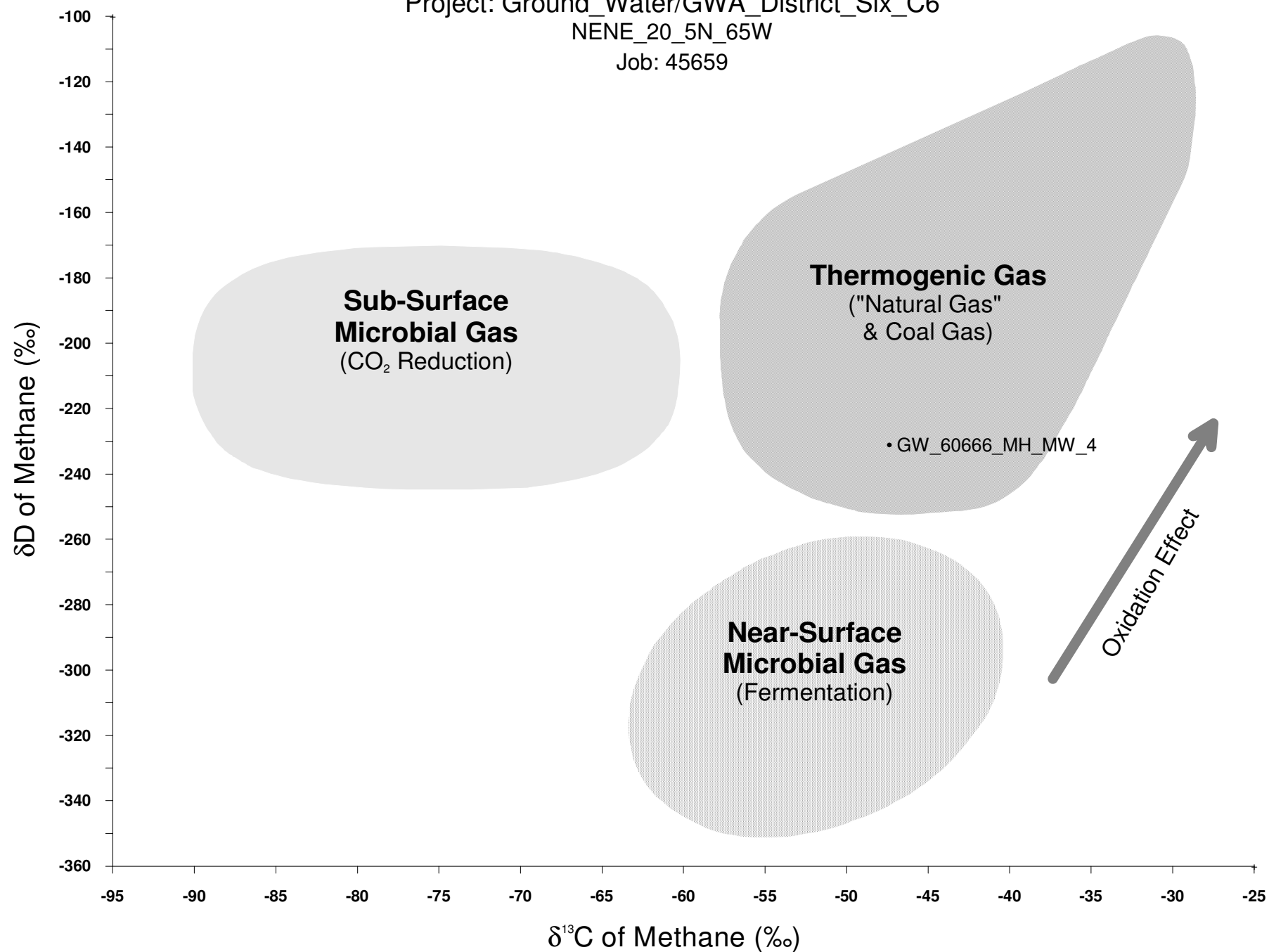


This plot is a visual representation of data and not intended to be an interpretation of results.

Project: Ground\_Water/GWA\_District\_Six\_C6

NENE\_20\_5N\_65W

Job: 45659

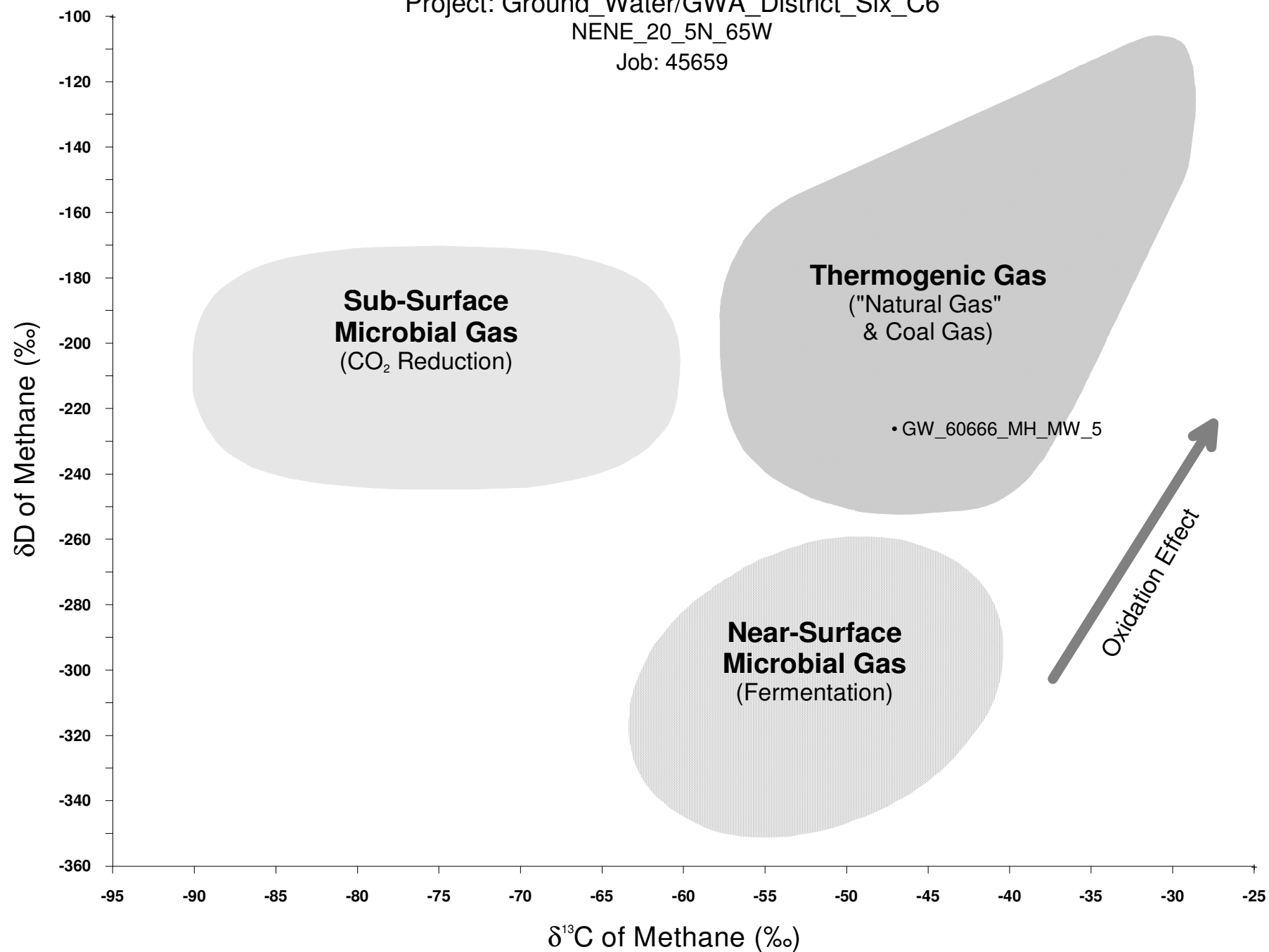


This plot is a visual representation of data and not intended to be an interpretation of results.

Project: Ground\_Water/GWA\_District\_Six\_C6

NENE\_20\_5N\_65W

Job: 45659



This plot is a visual representation of data and not intended to be an interpretation of results.