# Groundwater and Soil Vapor Sampling Results

**District Six C6**
**Facility ID 286487**
**NENE Section 20, Township 5 North, Range 65 West**

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**Preparation Date**
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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 fourth quarter (Q4) 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). Additionally, per the Site Investigation and Remediation Workplan (Form 27), document 402460091, three additional monitoring wells were installed and sample analyzed during the Q4 2020 in an attempt to determine vertical and lateral extent of impacts to groundwater and to obtain a point of compliance. 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 of 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 appears 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 were collected on October 17, 2019 and MW-2 through MW-5 were collected 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. Slight total petroleum hydrocarbons, gasoline range organics (GRO) and diesel range organics (DRO) detections are consistently seen in the MW-1. GRO has also been detected 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.

<u>Groundwater Isotopic Interpretation</u>

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, dilution, and oxidation 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 seen 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 less than five percent. Variations for d13C2 and d13C3 between the two samples are even lower (within two percent) 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 five-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 six-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 Well Installation and Development**

Per the Site Investigation and Remediation Workplan (Form 27), document 402460091, conditions of approval, Extraction installed and sample three additional monitoring wells during Q4 202 in an attempt

to determine vertical and lateral extent of impacts to groundwater and to obtain a point of compliance. Groundwater monitoring wells 61256-MH MW-6 (MW-6), 61256-MH MW-8 (MW-8), and 61256-MH MW-10 (MW-10) were installed between October 20, 2020 and November 9, 2020 up gradient of MW-5 and down gradient of MW-2 and MW-4. See **Attachment A** for a well location map.

MW-6, MW-8 and MW-10 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-8 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.

**Groundwater Well Elevation Survey**

During Q4, surface elevations were re-surveyed at a point at the top of the well casings on MW-1 through MW-5, and MW-8. Surface elevation surveys were not completed at the MW-6 or MW-10 due to on-site production activities that prevented access to the monitoring well casings. See **Attachment D** for monitoring well gauging and inferred groundwater flow diagrams.

Based on the updated groundwater elevation data, the flow direction is assumed to have shifted from a southwesterly to a more southeasterly direction. This shift in flow direction may be due to seasonal fluctuations and will be surveyed prior to the next sampling event to confirm the change.

**Groundwater Sampling Activities and Results**

Fourth quarter sampling of MW-1, MW-2, MW-3, MW-4, and MW-5 was completed between October 20 and 29, 2020. Newly installed MW-6, MW-8 and MW-10 were sampled on November 23, 2020. The water samples were collected in laboratory-supplied containers and submitted to Summit Scientific Inc. (Summit) in Golden, Colorado and IsoTech Laboratories, Inc. (IsoTech) in Champaign, Illinois, for analysis of the required water quality parameters. The results are listed in the attached Groundwater Monitoring Well Sample Results summary table, **Table 1-1**, and 2020 Q4 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.

Historically, the dissolved gas in the water was analyzed using a direct-fill volatile organic analysis (VOA) vial / RSK175 laboratory method; nevertheless, per document 402527906 and after MW-1 through MW-5 had been sampled for the quarter, the COGCC has required all future RSK175 samples to be collected using an in-line method. Water for dissolved gas analysis at the MW-6, MW-8, and MW-10 were collected and analyzed using the in-line method. The results are listed in the attached Groundwater Monitoring Well Sample Results summary table, **Table 1-1**, and 2020 Q4 Groundwater Laboratory Reports, **Attachment F**.

For data comparison purposes, the dissolved methane reported in the figures below was analyzed using the RSK175 method. Future quarterly reports will include both the in-line sample collection method results and RSK175 results.

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**.

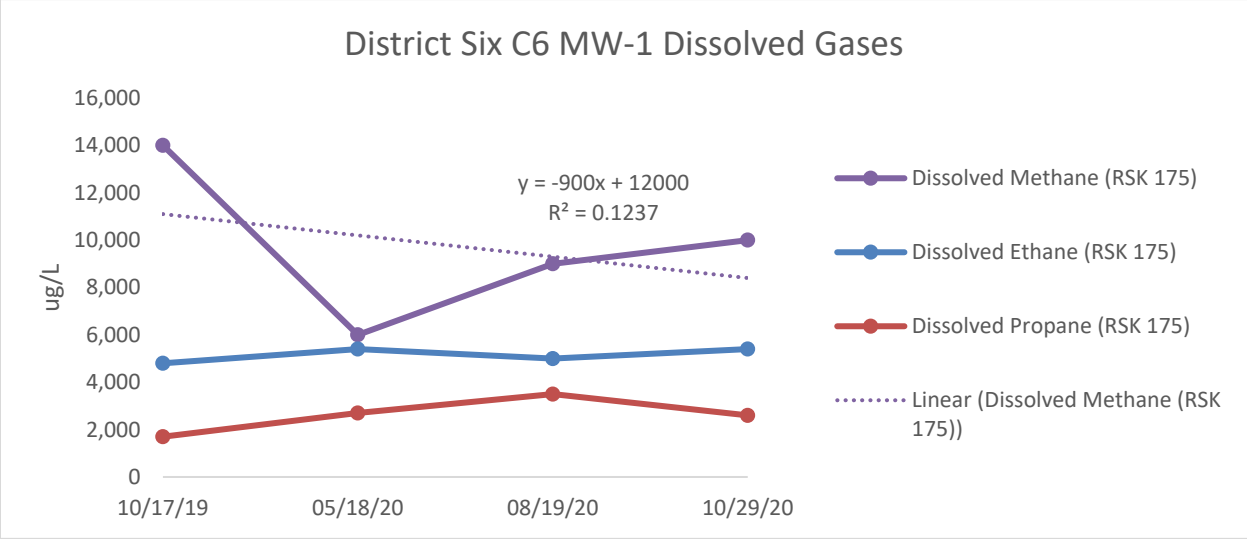


*Figure 1 District Six C6 MW-1 Dissolved Gases – RSK 175*

Methane levels at the MW-4 were the highest during Q4 2020 and the methane concentration has increased between the initial and subsequent sampling events, see **Figure 2**.

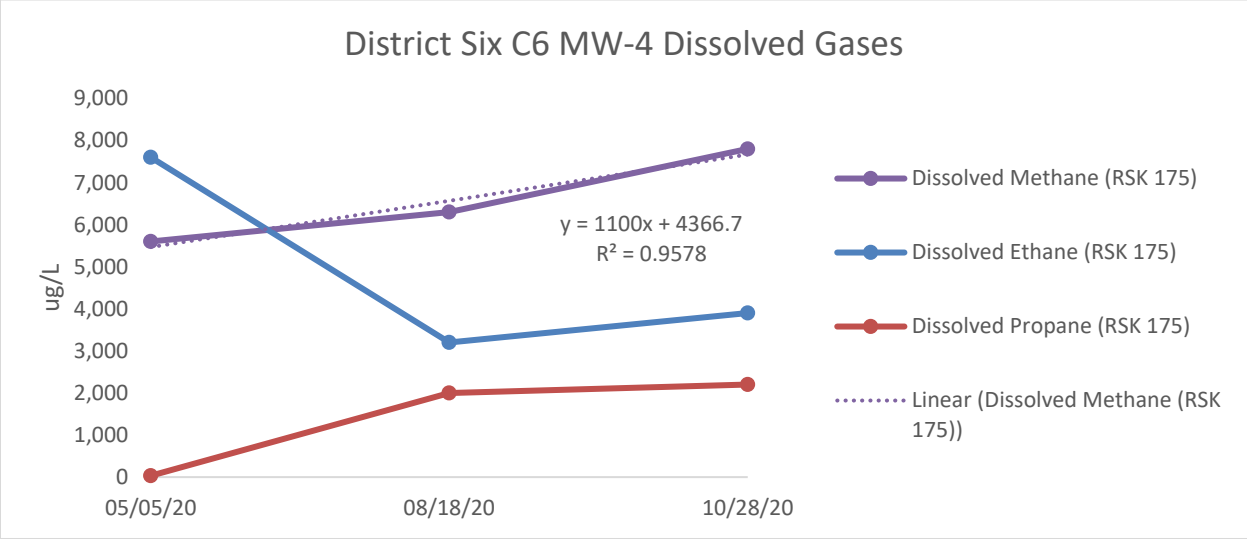


Figure 2 *District Six C6 MW-4 Dissolved Gases – RSK 175*

Methane levels at the MW-5 spiked during Q3 2020 but are currently showing an upward trend, see **Figure 3.**

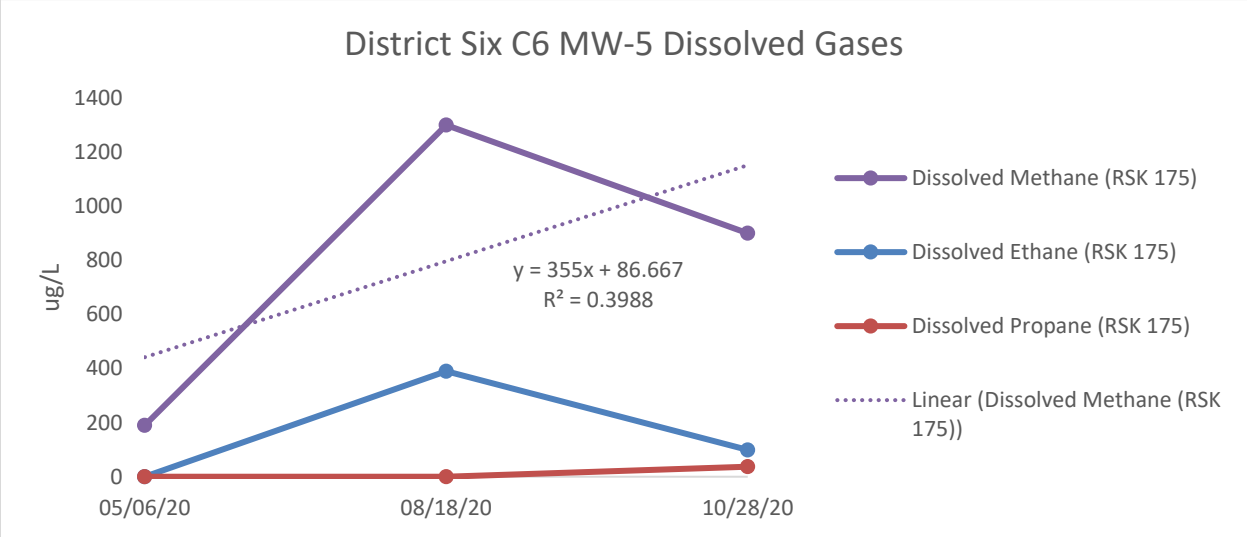


*Figure 3 District Six C6 MW-5 Dissolved Gases – RSK 175*

Groundwater Isotopic Interpretation

Additional stable isotope analysis of hydrocarbon gases C1 through C5 was analyzed of the dissolved gas during the latest sampling events. Isotopic analysis on the MW-1, MW-4, MW-5, MW-6, and MW-10 indicates 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, MW-3, or MW-8 to run the additional isotopic analysis.

The Q4 isotopic gas data from MW-1, MW-4, MW-5, MW-6 and MW-10 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 RKI Eagle 2 gas meter. The gas meter was equipped with methane ($CH_4$), hydrogen sulfide ($H_2S$), carbon monoxide (CO), and $O_2$ sensors. The field reported results are listed in the attached Soil Vapor Monitoring Point Field Results Summary table, **Table 1-2**.

**Plugging and Abandonment**

Production well District Six C6, API 05-123-24211 was successfully plugged and abandoned (P&A) by Ranger Energy Services. This P&A was accomplished via a workover rig between June 14, 2019 and July 11, 2019. Wellhead was cut and capped eight feet below ground surface on July 18, 2019. See **Attachment H** for the Daily Workover Activity Summary.

## RECOMMEDATIONS AND ADDITIONAL ACTIONS

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

Extraction would also like to propose a systematic review of regional groundwater data prior to drilling any additional monitoring wells in an attempt to better understand any underlying sources or regional areas of concern. Specifically, Extraction is proposing a review of:

1) readily available historical groundwater data;
2) USGS monitoring well data;
3) lithology cross sections; and
4) research into any known groundwater flow direction changes due to seasonal fluctuations.

Extraction would also like to expand the initial DWR water wells search from a one-quarter mile radius to a one-mile radius as part of an evaluation for inclusion in a one-time sampling event.

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 59993-MH MW-1 Facility ID 762176 | | | |
|---|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 | 3 |
| Date Sampled | - | - | - | 10/17/19 | 05/18/20 | 08/19/20 | 10/29/20 |
| **ALKALINITY AS CALCIUM CARBONATE - SM2320B** | | | | | | | |
| Total Alkalinity | mg/l | None | - | 260 | 260 | 210 | 280 |
| Bicarbonate | mg/l | None | - | 260 | 260 | 210 | 280 |
| Carbonate | mg/l | None | - | ND | ND | ND | ND |
| **BTEX - SW8260B** | | | | | | | |
| Benzene | µg/l | 5 | 910-1 | **160** | **460** | **120** | **290** |
| Toluene | µg/l | 560 | 910-1 | 58 | 51 | 5.4 | 25 |
| Ethylbenzene | µg/l | 700 | 910-1 | 40 | 49 | 9.2 | 54 |
| Xylenes (Total) | µg/l | 1,400 | 910-1 | 49 | 130 | ND | 8.2 |
| M+P-Xylene | µg/l | None | - | 40 | 110 | 31 | 73 |
| O-Xylene | µg/l | None | - | 49 | 22 | 7.3 | 8.3 |
| **TPH-DRO/GRO - SW8015M/SW8015** | | | | | | | |
| TPH - DRO | mg/l | None | - | ND | 0.227 | ND | 0.244 |
| TPH - GRO | mg/l | None | - | 0.67 | 1.3 | 0.94 | 1.5 |
| **DISSOLVED GASES** | | | | | | | |
| Dissolved Methane (RSK 175) | µg/l | None | - | 14,000 | 6,000 | 9,000 | 10,000 |
| Dissolved Ethane (RSK 175) | µg/l | None | - | 4,800 | 5,400 | 5,000 | 5,400 |
| Dissolved Propane (RSK 175) | µg/l | None | - | 1,700 | 2,700 | 3,500 | 2,600 |
| Dissolved Methane (DGS) | ppm | None | - | - | - | - | - |
| Dissolved Ethane (DGS) | ppm | None | - | - | - | - | - |
| Dissolved Propane (DGS) | ppm | None | - | - | - | - | - |
| **IONS - EPA 300.0** | | | | | | | |
| Bromide | mg/l | None | - | 9.64 | 7.63 | 4.37 | 0.983 |
| Chloride | mg/l | 250 | Reg 41 | **771** | **512** | **366** | 172 |
| Fluoride | mg/l | 4 | Reg 41 | 0.899 | 0.603 | 0.358 | 0.321 |
| Nitrate + Nitrite as N | mg/l | 10 | Reg 41 | 1.87 | 0.491 | ND | 0.102 |
| Nitrate as N | mg/l | 10 | Reg 41 | 1.87 | 0.491 | ND | 0.102 |
| Nitrite as N | mg/l | 1 | Reg 41 | ND | ND | ND | ND |
| Sulfate | mg/l | 250 | Reg 41 | 105 | 63.8 | 113 | 127 |
| **METALS EPA 200.8** | | | | | | | |
| Dissolved Barium | mg/l | 2 | Reg 41 | 0.125 | 0.153 | 0.0853 | 0.0607 |
| Dissolved Boron | mg/l | 0.4 | RSL | 0.0751 | 0.127 | 0.166 | 0.0961 |
| Dissolved Calcium | mg/l | None | - | 150 | 197 | 170 | 81.1 |
| Dissolved Iron | mg/l | 0.3 | Reg 41 | ND | 0.0508 | ND | 55.7 |
| Dissolved Magnesium | mg/l | None | - | 88.5 | 107 | 91.4 | 38.4 |
| Dissolved Manganese | mg/l | 0.05 | Reg 41 | **1.43** | **1.49** | **1.51** | 0.773 |
| Dissolved Potassium | mg/l | None | - | 3.88 | 4.91 | 6.69 | 2.78 |
| Dissolved Selenium | mg/l | 0.05 | Reg 41 | 0.00131 | ND | ND | ND |
| Dissolved Sodium | mg/l | None | - | 104 | 174 | 203 | 77 |
| Dissolved Strontium | mg/l | 1.2 | RSL | **1.9** | **2.53** | **2.47** | **0.959** |
| **WATER QUALITY** | | | | | | | |
| pH | s.u. | 6-9 | 910-1 | 7.25 | 8.09 | 7.39 | 7.92 |
| Specific Conductivity | µmhos/cm | None | - | 1,910 | 3,180 | 2,420 | 1,140 |
| Total Dissolved Solids | mg/l | 1.25 X background | 910-1 | 942 | 1,580 | 1,200 | 570 |
| Total Phosphorous | mg/l | None | - | 0.0940 | 0.222 | ND | ND |

## TABLE 1-1: ANALTYICAL SUMMARY
## GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 59993-MH MW-1 Facility ID 762176 | | | |
|---|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 | 3 |
| **Aqueous** | | | | | | | |
| Delta 13C DIC ($d^{13}C$ of DIC) | % per mil | None | - | NA | -17.6 | NA | -18.6 |
| Delta 18O H2O ($d^{18}O$ of water) | % per mil | None | - | NA | -13.8 | NA | -14.42 |
| Delta D H2O (dD of water) | % per mil | None | - | NA | -108.3 | NA | -111.7 |
| **Gaseous** | | | | | | | |
| Argon (Ar) | MOL % | None | - | 0.213 | 0.203 | 0.28 | 0.129 |
| $C_6$+ (hexanes +) | MOL % | None | - | 0.0324 | 0.044 | 0.0344 | 0.0649 |
| Carbon Dioxide ($CO_2$) | MOL % | None | - | 2.37 | 1.63 | 1.91 | 1.66 |
| Carbon Monoxide (CO) | MOL % | None | - | ND | ND | ND | ND |
| Delta 13C C1 ($d^{13}C_1$) | % per mil | None | - | NA | NA | NA | NA |
| Delta 13C C2 ($d^{13}C_2$) | % per mil | None | - | NA | NA | NA | NA |
| Delta 13C C3 ($d^{13}C_3$) | % per mil | None | - | NA | NA | NA | NA |
| Delta 13C CO2 ($d^{13}CO_2$) | per mil VPDB | None | - | NA | NA | NA | NA |
| Delta 13C iC4 ($d^{13}iC_4$) | per mil VPDB | None | - | NA | NA | NA | NA |
| Delta 13C nC4 ($d^{13}nC_4$) | per mil VPDB | None | - | NA | NA | NA | NA |
| Delta D C1 ($dDC_1$) | % per mil | None | - | NA | NA | NA | NA |
| Ethane ($C_2$) | MOL % | None | - | 10.19 | 11.86 | 10.01 | 12.44 |
| Ethane, Dissolved ($C_2H_6$) | cc/L | None | - | 8.4 | 7.5 | 7.6 | 7.5 |
| Ethane, Dissolved ($C_2H_6$) | mg/L | None | - | 10 | 9.4 | 9.5 | 9.4 |
| Ethylene ($C_2H_4$) | MOL % | None | - | ND | ND | ND | ND |
| Helium (He) | MOL % | None | - | NA | NA | NA | NA |
| Helium Dilution Factor | Other | None | - | 0.5 | 0.67 | 0.62 | 0.59 |
| Hydrogen ($H_2$) | MOL % | None | - | ND | ND | ND | ND |
| Isobutane ($iC_4$) | MOL % | None | - | 0.273 | 0.368 | 0.317 | 0.426 |
| Isopentane ($iC_5$) | MOL % | None | - | 0.0667 | 0.0883 | 0.0785 | 0.128 |
| Methane ($C_1$) | MOL % | None | - | 65.45 | 70.18 | 58.57 | 73.99 |
| Methane, Dissolved ($CH_4$) | cc/L | None | - | 50 | 42 | 42 | 41 |
| Methane, Dissolved ($CH_4$) | mg/L | None | - | 33 | 28 | 28 | 27 |
| n-Butane ($nC_4$) | MOL % | None | - | 0.326 | 0.647 | 0.518 | 0.808 |
| Nitrogen ($N_2$) | MOL % | None | - | 15.63 | 10.79 | 22.64 | 5.73 |
| n-Pentane ($nC_5$) | MOL % | None | - | 0.0404 | 0.0485 | 0.0428 | 0.0899 |
| Oxygen ($O_2$) | MOL % | None | - | 2.74 | ND | 2.16 | 0.12 |
| Propane ($C_3$) | MOL % | None | - | 2.67 | 4.14 | 3.44 | 4.41 |
| Propane, Dissolved ($C_3H_8$) | cc/L | None | - | 2.1 | 2.5 | 2.5 | 2.5 |
| Propane, Dissolved ($C_3H_8$) | mg/L | None | - | 3.8 | 4.6 | 4.6 | 4.6 |
| Propylene ($C_3H_6$) | MOL % | None | - | ND | ND | ND | ND |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 60666-MH MW-2 Facility ID 766284 | | |
|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 |
| Date Sampled | - | - | - | 05/19/20 | 08/19/20 | 10/28/20 |
| **ALKALINITY AS CALCIUM CARBONATE - SM2320B** | | | | | | |
| Total Alkalinity | mg/l | None | - | 280 | 340 | 310 |
| Bicarbonate | mg/l | None | - | 280 | 340 | 310 |
| Carbonate | mg/l | None | - | ND | ND | ND |
| **BTEX - SW8260B** | | | | | | |
| Benzene | µg/l | 5 | 910-1 | **ND** | ND | ND |
| Toluene | µg/l | 560 | 910-1 | ND | ND | ND |
| Ethylbenzene | µg/l | 700 | 910-1 | ND | ND | ND |
| Xylenes (Total) | µg/l | 1,400 | 910-1 | ND | ND | ND |
| M+P-Xylene | µg/l | None | - | 0.0038 | ND | ND |
| O-Xylene | µg/l | None | - | 0.013 | ND | ND |
| **TPH-DRO/GRO - SW8015M/SW8015** | | | | | | |
| TPH - DRO | mg/l | None | - | ND | ND | ND |
| TPH - GRO | mg/l | None | - | 0.17 | ND | ND |
| **DISSOLVED GASES** | | | | | | |
| Dissolved Methane (RSK 175) | µg/l | None | - | 2,300 | ND | ND |
| Dissolved Ethane (RSK 175) | µg/l | None | - | 1,400 | ND | ND |
| Dissolved Propane (RSK 175) | µg/l | None | - | ND | ND | ND |
| Dissolved Methane (DGS) | ppm | None | - | - | - | - |
| Dissolved Ethane (DGS) | ppm | None | - | - | - | - |
| Dissolved Propane (DGS) | ppm | None | - | - | - | - |
| **IONS - EPA 300.0** | | | | | | |
| Bromide | mg/l | None | - | 0.254 | 0.252 | 0.251 |
| Chloride | mg/l | 250 | Reg 41 | 26.4 | 26.6 | 71 |
| Fluoride | mg/l | 4 | Reg 41 | 0.383 | 0.292 | 0.343 |
| Nitrate + Nitrite as N | mg/l | 10 | Reg 41 | ND | 8.88 | 10.4 |
| Nitrate as N | mg/l | 10 | Reg 41 | ND | 8.76 | 10.4 |
| Nitrite as N | mg/l | 1 | Reg 41 | 0.112 | 0.114 | ND |
| Sulfate | mg/l | 250 | Reg 41 | 157 | 89.5 | 195 |
| **METALS EPA 200.8** | | | | | | |
| Dissolved Barium | mg/l | 2 | Reg 41 | 0.0388 | 0.0397 | 0.0307 |
| Dissolved Boron | mg/l | 0.4 | RSL | 0.202 | 0.206 | 0.176 |
| Dissolved Calcium | mg/l | None | - | 92.3 | 94.500 | 89.900 |
| Dissolved Iron | mg/l | 0.3 | Reg 41 | ND | ND | 11.7 |
| Dissolved Magnesium | mg/l | None | - | 38.9 | 45.1 | 39.4 |
| Dissolved Manganese | mg/l | 0.05 | Reg 41 | 0.165 | ND | 6.26 |
| Dissolved Potassium | mg/l | None | - | 4.58 | 3.97 | 2.97 |
| Dissolved Selenium | mg/l | 0.05 | Reg 41 | 0.00409 | 0.00743 | 0.00562 |
| Dissolved Sodium | mg/l | None | - | 97.5 | 82.4 | 71.7 |
| Dissolved Strontium | mg/l | 1.2 | RSL | **1.08** | 1.25 | 1.13 |
| **WATER QUALITY** | | | | | | |
| pH | s.u. | 6-9 | 910-1 | 7.47 | 7.41 | 7.4 |
| Specific Conductivity | µmhos/cm | None | - | 1220 | 1,050 | 1,200 |
| Total Dissolved Solids | mg/l | 1.25 X background | 910-1 | 602 | 517 | 591 |
| Total Phosphorous | mg/l | None | - | ND | ND | ND |



EXTRACTION Oil & Gas

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 60666-MH MW-2 Facility ID 766284 | | |
|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 |
| **Aqueous** | | | | | | |
| Delta 13C DIC ($d^{13}C$ of DIC) | % per mil | None | - | -13.4 | NA | -11.3 |
| Delta 18O H2O ($d^{18}O$ of water) | % per mil | None | - | -13.43 | NA | -13.08 |
| Delta D H2O (dD of water) | % per mil | None | - | -105.4 | NA | -102.4 |
| **Gaseous** | | | | | | |
| Argon (Ar) | MOL % | None | - | 0.817 | NA | NA |
| $C_6$+ (hexanes +) | MOL % | None | - | 0.0122 | NA | NA |
| Carbon Dioxide ($CO_2$) | MOL % | None | - | 0.7 | NA | NA |
| Carbon Monoxide (CO) | MOL % | None | - | ND | NA | NA |
| Delta 13C C1 ($d^{13}C_1$) | % per mil | None | - | NA | NA | NA |
| Delta 13C C2 ($d^{13}C_2$) | % per mil | None | - | NA | NA | NA |
| Delta 13C C3 ($d^{13}C_3$) | % per mil | None | - | NA | NA | NA |
| Delta 13C CO2 ($d^{13}CO_2$) | per mil VPDB | None | - | NA | NA | NA |
| Delta 13C iC4 ($d^{13}iC_4$) | per mil VPDB | None | - | NA | NA | NA |
| Delta 13C nC4 ($d^{13}nC_4$) | per mil VPDB | None | - | NA | NA | NA |
| Delta D C1 ($dDC_1$) | % per mil | None | - | NA | NA | NA |
| Ethane ($C_2$) | MOL % | None | - | 1.22 | NA | NA |
| Ethane, Dissolved ($C_2H_6$) | cc/L | None | - | 13 | NA | NA |
| Ethane, Dissolved ($C_2H_6$) | mg/L | None | - | 16 | NA | NA |
| Ethylene ($C_2H_4$) | MOL % | None | - | ND | NA | NA |
| Helium (He) | MOL % | None | - | 0.0109 | NA | NA |
| Helium Dilution Factor | Other | None | - | - | NA | NA |
| Hydrogen ($H_2$) | MOL % | None | - | ND | NA | NA |
| Isobutane ($iC_4$) | MOL % | None | - | 0.0561 | NA | NA |
| Isopentane ($iC_5$) | MOL % | None | - | 0.0212 | NA | NA |
| Methane ($C_1$) | MOL % | None | - | 9.1 | NA | NA |
| Methane, Dissolved ($CH_4$) | cc/L | None | - | 96 | NA | NA |
| Methane, Dissolved ($CH_4$) | mg/L | None | - | 64 | NA | NA |
| n-Butane ($nC_4$) | MOL % | None | - | 0.0984 | NA | NA |
| Nitrogen ($N_2$) | MOL % | None | - | 68.9 | NA | NA |
| n-Pentane ($nC_5$) | MOL % | None | - | 0.0134 | NA | NA |
| Oxygen ($O_2$) | MOL % | None | - | 18.59 | NA | NA |
| Propane ($C_3$) | MOL % | None | - | 0.457 | NA | NA |
| Propane, Dissolved ($C_3H_8$) | cc/L | None | - | 4.8 | NA | NA |
| Propane, Dissolved ($C_3H_8$) | mg/L | None | - | 8.9 | NA | NA |
| Propylene ($C_3H_6$) | MOL % | None | - | ND | NA | NA |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 60666-MH MW-3 Facility ID 766285 | | |
|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 |
| Date Sampled | - | - | - | 05/15/20 | 08/17/20 | 10/20/20 |
| **ALKALINITY AS CALCIUM CARBONATE - SM2320B** | | | | | | |
| Total Alkalinity | mg/l | None | - | 340 | 330 | 320 |
| Bicarbonate | mg/l | None | - | 340 | 330 | 320 |
| Carbonate | mg/l | None | - | ND | ND | ND |
| **BTEX - SW8260B** | | | | | | |
| Benzene | µg/l | 5 | 910-1 | ND | ND | ND |
| Toluene | µg/l | 560 | 910-1 | ND | ND | ND |
| Ethylbenzene | µg/l | 700 | 910-1 | ND | ND | ND |
| Xylenes (Total) | µg/l | 1,400 | 910-1 | ND | ND | ND |
| M+P-Xylene | µg/l | None | - | ND | ND | ND |
| O-Xylene | µg/l | None | - | ND | ND | ND |
| **TPH-DRO/GRO - SW8015M/SW8015** | | | | | | |
| TPH - DRO | mg/l | None | - | ND | ND | ND |
| TPH - GRO | mg/l | None | - | ND | ND | ND |
| **DISSOLVED GASES** | | | | | | |
| Dissolved Methane (RSK 175) | µg/l | None | - | ND | 140 | 28 |
| Dissolved Ethane (RSK 175) | µg/l | None | - | ND | 56 | ND |
| Dissolved Propane (RSK 175) | µg/l | None | - | ND | ND | ND |
| Dissolved Methane (DGS) | ppm | None | - | - | - | - |
| Dissolved Ethane (DGS) | ppm | None | - | - | - | - |
| Dissolved Propane (DGS) | ppm | None | - | - | - | - |
| **IONS - EPA 300.0** | | | | | | |
| Bromide | mg/l | None | - | 0.404 | 0.378 | 0.280 |
| Chloride | mg/l | 250 | Reg 41 | 47.9 | 41.5 | 97.0 |
| Fluoride | mg/l | 4 | Reg 41 | 0.637 | 0.485 | 0.270 |
| Nitrate + Nitrite as N | mg/l | 10 | Reg 41 | 9.62 | 9.53 | 8.56 |
| Nitrate as N | mg/l | 10 | Reg 41 | 9.62 | 9.53 | 8.56 |
| Nitrite as N | mg/l | 1 | Reg 41 | ND | ND | ND |
| Sulfate | mg/l | 250 | Reg 41 | 98.7 | 84.5 | 197 |
| **METALS EPA 200.8** | | | | | | |
| Dissolved Barium | mg/l | 2 | Reg 41 | 0.0753 | 0.0867 | 0.0611 |
| Dissolved Boron | mg/l | 0.4 | RSL | 0.167 | 0.216 | 0.157 |
| Dissolved Calcium | mg/l | None | - | 109 | 123 | 109 |
| Dissolved Iron | mg/l | 0.3 | Reg 41 | 0.0316 | 0.225 | ND |
| Dissolved Magnesium | mg/l | None | - | 45 | 52 | 44.8 |
| Dissolved Manganese | mg/l | 0.05 | Reg 41 | 0.327 | 0.39 | 0.26 |
| Dissolved Potassium | mg/l | None | - | 4.92 | 5.31 | 3.84 |
| Dissolved Selenium | mg/l | 0.05 | Reg 41 | 0.00246 | 0.0021 | 0.00181 |
| Dissolved Sodium | mg/l | None | - | 69.3 | 82.8 | 70.7 |
| Dissolved Strontium | mg/l | 1.2 | RSL | 1.27 | 1.62 | 1.33 |
| **WATER QUALITY** | | | | | | |
| pH | s.u. | 6-9 | 910-1 | 7.44 | 7.28 | 7.18 |
| Specific Conductivity | µmhos/cm | None | - | 1260 | 1110 | 1,310 |
| Total Dissolved Solids | mg/l | 1.25 X background | 910-1 | 609 | 547 | 655 |
| Total Phosphorous | mg/l | None | - | 0.0620 | ND | ND |



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## TABLE 1-1: ANALTYICAL SUMMARY
## GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 60666-MH MW-3 Facility ID 766285 | | |
|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 |
| **Aqueous** | | | | | | |
| Delta 13C DIC ($d^{13}C$ of DIC) | % per mil | None | - | -13.1 | NA | -12.8 |
| Delta 18O H2O ($d^{18}O$ of water) | % per mil | None | - | -13.21 | NA | -13.34 |
| Delta D H2O (dD of water) | % per mil | None | - | -102.9 | NA | -102.9 |
| **Gaseous** | | | | | | |
| Argon (Ar) | MOL % | None | - | NA | NA | NA |
| $C_6$+ (hexanes +) | MOL % | None | - | NA | NA | NA |
| Carbon Dioxide ($CO_2$) | MOL % | None | - | NA | NA | NA |
| Carbon Monoxide (CO) | MOL % | None | - | NA | NA | NA |
| Delta 13C C1 ($d^{13}C_1$) | % per mil | None | - | NA | NA | NA |
| Delta 13C C2 ($d^{13}C_2$) | % per mil | None | - | NA | NA | NA |
| Delta 13C C3 ($d^{13}C_3$) | % per mil | None | - | NA | NA | NA |
| Delta 13C CO2 ($d^{13}CO_2$) | per mil VPDB | None | - | NA | NA | NA |
| Delta 13C iC4 ($d^{13}iC_4$) | per mil VPDB | None | - | NA | NA | NA |
| Delta 13C nC4 ($d^{13}nC_4$) | per mil VPDB | None | - | NA | NA | NA |
| Delta D C1 ($dDC_1$) | % per mil | None | - | NA | NA | NA |
| Ethane ($C_2$) | MOL % | None | - | NA | NA | NA |
| Ethane, Dissolved ($C_2H_6$) | cc/L | None | - | NA | NA | NA |
| Ethane, Dissolved ($C_2H_6$) | mg/L | None | - | NA | NA | NA |
| Ethylene ($C_2H_4$) | MOL % | None | - | NA | NA | NA |
| Helium (He) | MOL % | None | - | NA | NA | NA |
| Helium Dilution Factor | Other | None | - | NA | NA | NA |
| Hydrogen ($H_2$) | MOL % | None | - | NA | NA | NA |
| Isobutane ($iC_4$) | MOL % | None | - | NA | NA | NA |
| Isopentane ($iC_5$) | MOL % | None | - | NA | NA | NA |
| Methane ($C_1$) | MOL % | None | - | NA | NA | NA |
| Methane, Dissolved ($CH_4$) | cc/L | None | - | NA | NA | NA |
| Methane, Dissolved ($CH_4$) | mg/L | None | - | NA | NA | NA |
| n-Butane ($nC_4$) | MOL % | None | - | NA | NA | NA |
| Nitrogen ($N_2$) | MOL % | None | - | NA | NA | NA |
| n-Pentane ($nC_5$) | MOL % | None | - | NA | NA | NA |
| Oxygen ($O_2$) | MOL % | None | - | NA | NA | NA |
| Propane ($C_3$) | MOL % | None | - | NA | NA | NA |
| Propane, Dissolved ($C_3H_8$) | cc/L | None | - | NA | NA | NA |
| Propane, Dissolved ($C_3H_8$) | mg/L | None | - | NA | NA | NA |
| Propylene ($C_3H_6$) | MOL % | None | - | NA | NA | NA |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 60666-MH MW-4 Facility ID 766286 | | |
|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 |
| Date Sampled | - | - | - | 05/05/20 | 08/18/20 | 10/28/20 |
| **ALKALINITY AS CALCIUM CARBONATE - SM2320B** | | | | | | |
| Total Alkalinity | mg/l | None | - | 280 | 310 | 310 |
| Bicarbonate | mg/l | None | - | 280 | 310 | 310 |
| Carbonate | mg/l | None | - | ND | ND | ND |
| **BTEX - SW8260B** | | | | | | |
| Benzene | µg/l | 5 | 910-1 | **ND** | ND | 3.7 |
| Toluene | µg/l | 560 | 910-1 | **ND** | ND | ND |
| Ethylbenzene | µg/l | 700 | 910-1 | **ND** | ND | ND |
| Xylenes (Total) | µg/l | 1,400 | 910-1 | 3.3 | ND | ND |
| M+P-Xylene | µg/l | None | - | ND | ND | ND |
| O-Xylene | µg/l | None | - | 3.3 | ND | ND |
| **TPH-DRO/GRO - SW8015M/SW8015** | | | | | | |
| TPH - DRO | mg/l | None | - | ND | ND | ND |
| TPH - GRO | mg/l | None | - | 0.067 | 0.5 | 0.18 |
| **DISSOLVED GASES** | | | | | | |
| Dissolved Methane (RSK 175) | µg/l | None | - | 5,600 | 6,300 | 7,800 |
| Dissolved Ethane (RSK 175) | µg/l | None | - | 7,600 | 3,200 | 3,900 |
| Dissolved Propane (RSK 175) | µg/l | None | - | 33 | 2,000 | 2,200 |
| Dissolved Methane (DGS) | ppm | None | - | - | - | - |
| Dissolved Ethane (DGS) | ppm | None | - | - | - | - |
| Dissolved Propane (DGS) | ppm | None | - | - | - | - |
| **IONS - EPA 300.0** | | | | | | |
| Bromide | mg/l | None | - | 0.872 | 0.498 | 0.815 |
| Chloride | mg/l | 250 | Reg 41 | 72.1 | 40 | 119 |
| Fluoride | mg/l | 4 | Reg 41 | 0.9 | 0.335 | 0.395 |
| Nitrate + Nitrite as N | mg/l | 10 | Reg 41 | 3.65 | ND | ND |
| Nitrate as N | mg/l | 10 | Reg 41 | 3.54 | ND | ND |
| Nitrite as N | mg/l | 1 | Reg 41 | 0.114 | ND | ND |
| Sulfate | mg/l | 250 | Reg 41 | **282** | 115 | 229 |
| **METALS EPA 200.8** | | | | | | |
| Dissolved Barium | mg/l | 2 | Reg 41 | 0.043 | 0.0418 | 0.0285 |
| Dissolved Boron | mg/l | 0.4 | RSL | 0.221 | 0.259 | 0.196 |
| Dissolved Calcium | mg/l | None | - | 93.2 | 104 | 93.9 |
| Dissolved Iron | mg/l | 0.3 | Reg 41 | 0.017 | 0.0512 | 0.0476 |
| Dissolved Magnesium | mg/l | None | - | 38.9 | 46.2 | 41.9 |
| Dissolved Manganese | mg/l | 0.05 | Reg 41 | **0.253** | 0.795 | 0.748 |
| Dissolved Potassium | mg/l | None | - | 2.47 | 3.06 | 2.33 |
| Dissolved Selenium | mg/l | 0.05 | Reg 41 | ND | ND | ND |
| Dissolved Sodium | mg/l | None | - | 86.4 | 106 | 94.4 |
| Dissolved Strontium | mg/l | 1.2 | RSL | **1.19** | 1.41 | 1.17 |
| **WATER QUALITY** | | | | | | |
| pH | s.u. | 6-9 | 910-1 | 7.69 | 7.26 | 7.39 |
| Specific Conductivity | µmhos/cm | None | - | 1220 | 1050 | 1,280 |
| Total Dissolved Solids | mg/l | 1.25 X background | 910-1 | 608 | 518 | 951 |
| Total Phosphorous | mg/l | None | - | ND | ND | ND |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 60666-MH MW-4 Facility ID 766286 | | |
|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 |
| **Aqueous** | | | | | | |
| Delta 13C DIC ($d^{13}C$ of DIC) | % per mil | None | - | -11.1 | NA | -13.5 |
| Delta 18O H2O ($d^{18}O$ of water) | % per mil | None | - | -13.69 | NA | -13.76 |
| Delta D H2O (dD of water) | % per mil | None | - | -107.4 | NA | -108 |
| **Gaseous** | | | | | | |
| Argon (Ar) | MOL % | None | - | 0.392 | 0.429 | 0.19 |
| $C_6$+ (hexanes +) | MOL % | None | - | 0.0168 | 0.0108 | 0.0195 |
| Carbon Dioxide ($CO_2$) | MOL % | None | - | 3.8 | 3.22 | 3.52 |
| Carbon Monoxide (CO) | MOL % | None | - | ND | ND | ND |
| Delta 13C C1 ($d^{13}C_1$) | % per mil | None | - | NA | NA | NA |
| Delta 13C C2 ($d^{13}C_2$) | % per mil | None | - | NA | NA | NA |
| Delta 13C C3 ($d^{13}C_3$) | % per mil | None | - | NA | NA | NA |
| Delta 13C CO2 ($d^{13}CO_2$) | per mil VPDB | None | - | NA | NA | NA |
| Delta 13C iC4 ($d^{13}iC_4$) | per mil VPDB | None | - | NA | NA | NA |
| Delta 13C nC4 ($d^{13}nC_4$) | per mil VPDB | None | - | NA | NA | NA |
| Delta D C1 ($dDC_1$) | % per mil | None | - | NA | NA | NA |
| Ethane ($C_2$) | MOL % | None | - | 8.79 | 6.3 | 10.97 |
| Ethane, Dissolved ($C_2H_6$) | cc/L | None | - | 4.2 | 5.1 | 5.4 |
| Ethane, Dissolved ($C_2H_6$) | mg/L | None | - | 5.3 | 6.5 | 6.7 |
| Ethylene ($C_2H_4$) | MOL % | None | - | ND | ND | ND |
| Helium (He) | MOL % | None | - | NA | NA | NA |
| Helium Dilution Factor | Other | None | - | 0.72 | 0.6 | 0.64 |
| Hydrogen ($H_2$) | MOL % | None | - | ND | ND | ND |
| Isobutane ($iC_4$) | MOL % | None | - | 0.297 | 0.203 | 0.351 |
| Isopentane ($iC_5$) | MOL % | None | - | 0.0686 | 0.0507 | 0.0937 |
| Methane ($C_1$) | MOL % | None | - | 62.02 | 41.47 | 70.6 |
| Methane, Dissolved ($CH_4$) | cc/L | None | - | 28 | 32 | 32 |
| Methane, Dissolved ($CH_4$) | mg/L | None | - | 19 | 21 | 21 |
| n-Butane ($nC_4$) | MOL % | None | - | 0.391 | 0.252 | 0.396 |
| Nitrogen ($N_2$) | MOL % | None | - | 20.17 | 37.1 | 10.8 |
| n-Pentane ($nC_5$) | MOL % | None | - | 0.0272 | 0.0141 | 0.031 |
| Oxygen ($O_2$) | MOL % | None | - | 1.49 | 9.05 | 0.19 |
| Propane ($C_3$) | MOL % | None | - | 2.54 | 1.9 | 2.84 |
| Propane, Dissolved ($C_3H_8$) | cc/L | None | - | 1.2 | 1.5 | 1.3 |
| Propane, Dissolved ($C_3H_8$) | mg/L | None | - | 2.1 | 2.7 | 2.4 |
| Propylene ($C_3H_6$) | MOL % | None | - | ND | ND | ND |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 60666-MH MW-5 Facility ID 766287 | | |
|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 |
| Date Sampled | - | - | - | 05/06/20 | 08/18/20 | 10/28/20 |
| **ALKALINITY AS CALCIUM CARBONATE - SM2320B** | | | | | | |
| Total Alkalinity | mg/l | None | - | 230 | 220 | 240 |
| Bicarbonate | mg/l | None | - | 230 | 220 | 240 |
| Carbonate | mg/l | None | - | ND | ND | ND |
| **BTEX - SW8260B** | | | | | | |
| Benzene | µg/l | 5 | 910-1 | ND | ND | ND |
| Toluene | µg/l | 560 | 910-1 | ND | ND | ND |
| Ethylbenzene | µg/l | 700 | 910-1 | ND | ND | ND |
| Xylenes (Total) | µg/l | 1,400 | 910-1 | ND | ND | ND |
| M+P-Xylene | µg/l | None | - | ND | ND | ND |
| O-Xylene | µg/l | None | - | ND | ND | ND |
| **TPH-DRO/GRO - SW8015M/SW8015** | | | | | | |
| TPH - DRO | mg/l | None | - | ND | 0.464 | ND |
| TPH - GRO | mg/l | None | - | ND | ND | ND |
| **DISSOLVED GASES** | | | | | | |
| Dissolved Methane (RSK 175) | µg/l | None | - | 190 | 1,300 | 900 |
| Dissolved Ethane (RSK 175) | µg/l | None | - | ND | 390 | 99 |
| Dissolved Propane (RSK 175) | µg/l | None | - | ND | ND | 37 |
| Dissolved Methane (DGS) | ppm | None | - | - | - | - |
| Dissolved Ethane (DGS) | ppm | None | - | - | - | - |
| Dissolved Propane (DGS) | ppm | None | - | - | - | - |
| **IONS - EPA 300.0** | | | | | | |
| Bromide | mg/l | None | - | 8.38 | 3.71 | 314 |
| Chloride | mg/l | 250 | Reg 41 | **740** | 330 | 4.95 |
| Fluoride | mg/l | 4 | Reg 41 | 0.678 | 0.307 | 0.360 |
| Nitrate + Nitrite as N | mg/l | 10 | Reg 41 | 8.47 | 4.87 | 5.35 |
| Nitrate as N | mg/l | 10 | Reg 41 | 8.47 | 4.87 | 5.35 |
| Nitrite as N | mg/l | 1 | Reg 41 | ND | ND | ND |
| Sulfate | mg/l | 250 | Reg 41 | 216 | 141 | 280 |
| **METALS EPA 200.8** | | | | | | |
| Dissolved Barium | mg/l | 2 | Reg 41 | 0.0641 | 0.0504 | 0.0409 |
| Dissolved Boron | mg/l | 0.4 | RSL | 0.181 | 0.209 | 0.181 |
| Dissolved Calcium | mg/l | None | - | 227 | 230.000 | 187.000 |
| Dissolved Iron | mg/l | 0.3 | Reg 41 | ND | 0.0443 | 0.024 |
| Dissolved Magnesium | mg/l | None | - | 94.9 | 93.8 | 67.5 |
| Dissolved Manganese | mg/l | 0.05 | Reg 41 | **0.252** | 0.341 | 0.236 |
| Dissolved Potassium | mg/l | None | - | 4.19 | 5.11 | 3.71 |
| Dissolved Selenium | mg/l | 0.05 | Reg 41 | 0.0024 | 0.00266 | 0.00303 |
| Dissolved Sodium | mg/l | None | - | 156 | 224 | 170 |
| Dissolved Strontium | mg/l | 1.2 | RSL | **2.96** | 3.24 | 2.46 |
| **WATER QUALITY** | | | | | | |
| pH | s.u. | 6-9 | 910-1 | 7.41 | 7.31 | 7.30 |
| Specific Conductivity | µmhos/cm | None | - | 2960 | 2,390 | 2,350 |
| Total Dissolved Solids | mg/l | 1.25 X background | 910-1 | 1460 | 1,170 | 1,180 |
| Total Phosphorous | mg/l | None | - | 0.0770 | 0.389 | ND |



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# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 60666-MH MW-5 Facility ID 766287 | | |
|---|---|---|---|---|---|---|
| | | | | Initial | 1 | 2 |
| Date Sampled | - | - | - | 05/06/20 | 08/18/20 | 10/28/20 |
| **Aqueous** | | | | | | |
| Delta 13C DIC ($d^{13}C$ of DIC) | % per mil | None | - | -9.8 | NA | -10.7 |
| Delta 18O H2O ($d^{18}O$ of water) | % per mil | None | - | -13.43 | NA | -13.47 |
| Delta D H2O (dD of water) | % per mil | None | - | -105.8 | NA | -106 |
| **Gaseous** | | | | | | |
| Argon (Ar) | MOL % | None | - | 1.39 | 1.19 | 1.24 |
| $C_6$+ (hexanes +) | MOL % | None | - | 0.0006 | 0.0012 | 0.0057 |
| Carbon Dioxide ($CO_2$) | MOL % | None | - | 6.66 | 6.02 | 5.88 |
| Carbon Monoxide (CO) | MOL % | None | - | ND | ND | ND |
| Delta 13C C1 ($d^{13}C_1$) | % per mil | None | - | NA | NA | NA |
| Delta 13C C2 ($d^{13}C_2$) | % per mil | None | - | NA | NA | NA |
| Delta 13C C3 ($d^{13}C_3$) | % per mil | None | - | NA | NA | NA |
| Delta 13C CO2 ($d^{13}CO_2$) | per mil VPDB | None | - | NA | NA | NA |
| Delta 13C iC4 ($d^{13}iC_4$) | per mil VPDB | None | - | NA | NA | NA |
| Delta 13C nC4 ($d^{13}nC_4$) | per mil VPDB | None | - | NA | NA | NA |
| Delta D C1 ($dDC_1$) | % per mil | None | - | NA | NA | NA |
| Ethane ($C_2$) | MOL % | None | - | 0.949 | 1.46 | 1.92 |
| Ethane, Dissolved ($C_2H_6$) | cc/L | None | - | 0.25 | 0.38 | 0.57 |
| Ethane, Dissolved ($C_2H_6$) | mg/L | None | - | 0.31 | 0.48 | 0.72 |
| Ethylene ($C_2H_4$) | MOL % | None | - | ND | ND | 0.0005 |
| Helium (He) | MOL % | None | - | NA | NA | NA |
| Helium Dilution Factor | Other | None | - | 0.83 | 0.83 | 0.81 |
| Hydrogen ($H_2$) | MOL % | None | - | ND | ND | ND |
| Isobutane ($iC_4$) | MOL % | None | - | 0.0238 | 0.0184 | 0.0535 |
| Isopentane ($iC_5$) | MOL % | None | - | 0.0006 | 0.0083 | 0.001 |
| Methane ($C_1$) | MOL % | None | - | 11.83 | 17.38 | 18.73 |
| Methane, Dissolved ($CH_4$) | cc/L | None | - | 2.8 | 4.2 | 5.2 |
| Methane, Dissolved ($CH_4$) | mg/L | None | - | 1.9 | 2.8 | 3.5 |
| n-Butane ($nC_4$) | MOL % | None | - | 0.0238 | 0.0154 | 0.101 |
| Nitrogen ($N_2$) | MOL % | None | - | 72.58 | 64.77 | 60.71 |
| n-Pentane ($nC_5$) | MOL % | None | - | 0.0046 | ND | 0.0062 |
| Oxygen ($O_2$) | MOL % | None | - | 6.31 | 8.96 | 10.85 |
| Propane ($C_3$) | MOL % | None | - | 0.232 | 0.18 | 0.506 |
| Propane, Dissolved ($C_3H_8$) | cc/L | None | - | 0.056 | 0.044 | 0.14 |
| Propane, Dissolved ($C_3H_8$) | mg/L | None | - | 0.1 | 0.081 | 0.26 |
| Propylene ($C_3H_6$) | MOL % | None | - | ND | ND | ND |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 61256-MH MW-6 |
|---|---|---|---|---|
| | | | | Initial |
| Date Sampled | - | - | - | 11/23/20 |
| **ALKALINITY AS CALCIUM CARBONATE - SM2320B** | | | | |
| Total Alkalinity | mg/l | None | - | 210 |
| Bicarbonate | mg/l | None | - | 210 |
| Carbonate | mg/l | None | - | ND |
| **BTEX - SW8260B** | | | | |
| Benzene | µg/l | 5 | 910-1 | ND |
| Toluene | µg/l | 560 | 910-1 | ND |
| Ethylbenzene | µg/l | 700 | 910-1 | ND |
| Xylenes (Total) | µg/l | 1,400 | 910-1 | ND |
| M+P-Xylene | µg/l | None | - | ND |
| O-Xylene | µg/l | None | - | ND |
| **TPH-DRO/GRO - SW8015M/SW8015** | | | | |
| TPH - DRO | mg/l | None | - | ND |
| TPH - GRO | mg/l | None | - | ND |
| **DISSOLVED GASES** | | | | |
| Dissolved Methane (RSK 175) | µg/l | None | - | - |
| Dissolved Ethane (RSK 175) | µg/l | None | - | - |
| Dissolved Propane (RSK 175) | µg/l | None | - | - |
| Dissolved Methane (DGS) | ppm | None | - | 2.6 |
| Dissolved Ethane (DGS) | ppm | None | - | 0.53 |
| Dissolved Propane (DGS) | ppm | None | - | 0.089 |
| **IONS - EPA 300.0** | | | | |
| Bromide | mg/l | None | - | ND |
| Chloride | mg/l | 250 | Reg 41 | 15.2 |
| Fluoride | mg/l | 4 | Reg 41 | 0.284 |
| Nitrate + Nitrite as N | mg/l | 10 | Reg 41 | 3.76 |
| Nitrate as N | mg/l | 10 | Reg 41 | 3.38 |
| Nitrite as N | mg/l | 1 | Reg 41 | 0.375 |
| Sulfate | mg/l | 250 | Reg 41 | 88.1 |
| **METALS EPA 200.8** | | | | |
| Dissolved Barium | mg/l | 2 | Reg 41 | 0.0653 |
| Dissolved Boron | mg/l | 0.4 | RSL | 0.102 |
| Dissolved Calcium | mg/l | None | - | 54.000 |
| Dissolved Iron | mg/l | 0.3 | Reg 41 | 0.0387 |
| Dissolved Magnesium | mg/l | None | - | 23.4 |
| Dissolved Manganese | mg/l | 0.05 | Reg 41 | 0.0719 |
| Dissolved Potassium | mg/l | None | - | 2.17 |
| Dissolved Selenium | mg/l | 0.05 | Reg 41 | ND |
| Dissolved Sodium | mg/l | None | - | 39.9 |
| Dissolved Strontium | mg/l | 1.2 | RSL | 0.759 |
| **WATER QUALITY** | | | | |
| pH | s.u. | 6-9 | 910-1 | 7.50 |
| Specific Conductivity | µmhos/cm | None | - | 860 |
| Total Dissolved Solids | mg/l | 1.25 X background | 910-1 | 423 |
| Total Phosphorous | mg/l | None | - | ND |



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## TABLE 1-1: ANALTYICAL SUMMARY
## GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 61256-MH MW-6 |
|---|---|---|---|---|
| | | | | Initial |
| Date Sampled | - | - | - | 11/23/20 |
| **Aqueous** | | | | |
| Delta 13C DIC ($d^{13}C$ of DIC) | % per mil | None | - | -10.8 |
| Delta 18O H2O ($d^{18}O$ of water) | % per mil | None | - | -14.48 |
| Delta D H2O (dD of water) | % per mil | None | - | -112.1 |
| **Gaseous** | | | | |
| Argon (Ar) | MOL % | None | - | NA |
| $C_6$+ (hexanes +) | MOL % | None | - | NA |
| Carbon Dioxide ($CO_2$) | MOL % | None | - | NA |
| Carbon Monoxide (CO) | MOL % | None | - | NA |
| Delta 13C C1 ($d^{13}C_1$) | % per mil | None | - | NA |
| Delta 13C C2 ($d^{13}C_2$) | % per mil | None | - | NA |
| Delta 13C C3 ($d^{13}C_3$) | % per mil | None | - | NA |
| Delta 13C CO2 ($d^{13}CO_2$) | per mil VPDB | None | - | NA |
| Delta 13C iC4 ($d^{13}iC_4$) | per mil VPDB | None | - | NA |
| Delta 13C nC4 ($d^{13}nC_4$) | per mil VPDB | None | - | NA |
| Delta D C1 ($dDC_1$) | % per mil | None | - | NA |
| Ethane ($C_2$) | MOL % | None | - | NA |
| Ethane, Dissolved ($C_2H_6$) | cc/L | None | - | 0.42 |
| Ethane, Dissolved ($C_2H_6$) | mg/L | None | - | 0.53 |
| Ethylene ($C_2H_4$) | MOL % | None | - | NA |
| Helium (He) | MOL % | None | - | NA |
| Helium Dilution Factor | Other | None | - | NA |
| Hydrogen ($H_2$) | MOL % | None | - | NA |
| Isobutane ($iC_4$) | MOL % | None | - | NA |
| Isopentane ($iC_5$) | MOL % | None | - | NA |
| Methane ($C_1$) | MOL % | None | - | 15.27 |
| Methane, Dissolved ($CH_4$) | cc/L | None | - | 4.2 |
| Methane, Dissolved ($CH_4$) | mg/L | None | - | 2.8 |
| n-Butane ($nC_4$) | MOL % | None | - | NA |
| Nitrogen ($N_2$) | MOL % | None | - | NA |
| n-Pentane ($nC_5$) | MOL % | None | - | NA |
| Oxygen ($O_2$) | MOL % | None | - | NA |
| Propane ($C_3$) | MOL % | None | - | 0.167 |
| Propane, Dissolved ($C_3H_8$) | cc/L | None | - | 0.048 |
| Propane, Dissolved ($C_3H_8$) | mg/L | None | - | 0.087 |
| Propylene ($C_3H_6$) | MOL % | None | - | NA |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 61256-MH MW-8 |
|---|---|---|---|---|
| | | | | Initial |
| Date Sampled | - | - | - | 11/23/20 |
| **ALKALINITY AS CALCIUM CARBONATE - SM2320B** | | | | |
| Total Alkalinity | mg/l | None | - | 290 |
| Bicarbonate | mg/l | None | - | 290 |
| Carbonate | mg/l | None | - | ND |
| **BTEX - SW8260B** | | | | |
| Benzene | µg/l | 5 | 910-1 | ND |
| Toluene | µg/l | 560 | 910-1 | ND |
| Ethylbenzene | µg/l | 700 | 910-1 | ND |
| Xylenes (Total) | µg/l | 1,400 | 910-1 | ND |
| M+P-Xylene | µg/l | None | - | ND |
| O-Xylene | µg/l | None | - | ND |
| **TPH-DRO/GRO - SW8015M/SW8015** | | | | |
| TPH - DRO | mg/l | None | - | ND |
| TPH - GRO | mg/l | None | - | ND |
| **DISSOLVED GASES** | | | | |
| Dissolved Methane (RSK 175) | µg/l | None | - | - |
| Dissolved Ethane (RSK 175) | µg/l | None | - | - |
| Dissolved Propane (RSK 175) | µg/l | None | - | - |
| Dissolved Methane (DGS) | ppm | None | - | 0.012 |
| Dissolved Ethane (DGS) | ppm | None | - | 0.0013 |
| Dissolved Propane (DGS) | ppm | None | - | 0.00040 |
| **IONS - EPA 300.0** | | | | |
| Bromide | mg/l | None | - | 0.345 |
| Chloride | mg/l | 250 | Reg 41 | 34.8 |
| Fluoride | mg/l | 4 | Reg 41 | 0.220 |
| Nitrate + Nitrite as N | mg/l | 10 | Reg 41 | 6.34 |
| Nitrate as N | mg/l | 10 | Reg 41 | 6.34 |
| Nitrite as N | mg/l | 1 | Reg 41 | ND |
| Sulfate | mg/l | 250 | Reg 41 | 70.2 |
| **METALS EPA 200.8** | | | | |
| Dissolved Barium | mg/l | 2 | Reg 41 | 0.0672 |
| Dissolved Boron | mg/l | 0.4 | RSL | 0.193 |
| Dissolved Calcium | mg/l | None | - | 81.800 |
| Dissolved Iron | mg/l | 0.3 | Reg 41 | 0.0201 |
| Dissolved Magnesium | mg/l | None | - | 36.9 |
| Dissolved Manganese | mg/l | 0.05 | Reg 41 | 0.215 |
| Dissolved Potassium | mg/l | None | - | 3.42 |
| Dissolved Selenium | mg/l | 0.05 | Reg 41 | 0.00268 |
| Dissolved Sodium | mg/l | None | - | 80.8 |
| Dissolved Strontium | mg/l | 1.2 | RSL | 1.17 |
| **WATER QUALITY** | | | | |
| pH | s.u. | 6-9 | 910-1 | 7.36 |
| Specific Conductivity | µmhos/cm | None | - | 1,350 |
| Total Dissolved Solids | mg/l | 1.25 X background | 910-1 | 670 |
| Total Phosphorous | mg/l | None | - | ND |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 61256-MH MW-8 |
|---|---|---|---|---|
| | | | | Initial |
| Date Sampled | - | - | - | 11/23/20 |
| **Aqueous** | | | | |
| Delta 13C DIC ($d^{13}C$ of DIC) | % per mil | None | - | -11.3 |
| Delta 18O H2O ($d^{18}O$ of water) | % per mil | None | - | -13.66 |
| Delta D H2O (dD of water) | % per mil | None | - | -107.2 |
| **Gaseous** | | | | |
| Argon (Ar) | MOL % | None | - | NA |
| $C_6$+ (hexanes +) | MOL % | None | - | NA |
| Carbon Dioxide ($CO_2$) | MOL % | None | - | NA |
| Carbon Monoxide (CO) | MOL % | None | - | NA |
| Delta 13C C1 ($d^{13}C_1$) | % per mil | None | - | NA |
| Delta 13C C2 ($d^{13}C_2$) | % per mil | None | - | NA |
| Delta 13C C3 ($d^{13}C_3$) | % per mil | None | - | NA |
| Delta 13C CO2 ($d^{13}CO_2$) | per mil VPDB | None | - | NA |
| Delta 13C iC4 ($d^{13}iC_4$) | per mil VPDB | None | - | NA |
| Delta 13C nC4 ($d^{13}nC_4$) | per mil VPDB | None | - | NA |
| Delta D C1 ($dDC_1$) | % per mil | None | - | NA |
| Ethane ($C_2$) | MOL % | None | - | NA |
| Ethane, Dissolved ($C_2H_6$) | cc/L | None | - | 0.0011 |
| Ethane, Dissolved ($C_2H_6$) | mg/L | None | - | 0.0013 |
| Ethylene ($C_2H_4$) | MOL % | None | - | NA |
| Helium (He) | MOL % | None | - | NA |
| Helium Dilution Factor | Other | None | - | NA |
| Hydrogen ($H_2$) | MOL % | None | - | NA |
| Isobutane ($iC_4$) | MOL % | None | - | NA |
| Isopentane ($iC_5$) | MOL % | None | - | NA |
| Methane ($C_1$) | MOL % | None | - | NA |
| Methane, Dissolved ($CH_4$) | cc/L | None | - | 0.018 |
| Methane, Dissolved ($CH_4$) | mg/L | None | - | 0.012 |
| n-Butane ($nC_4$) | MOL % | None | - | NA |
| Nitrogen ($N_2$) | MOL % | None | - | NA |
| n-Pentane ($nC_5$) | MOL % | None | - | NA |
| Oxygen ($O_2$) | MOL % | None | - | NA |
| Propane ($C_3$) | MOL % | None | - | NA |
| Propane, Dissolved ($C_3H_8$) | cc/L | None | - | 0.00022 |
| Propane, Dissolved ($C_3H_8$) | mg/L | None | - | 0.0004 |
| Propylene ($C_3H_6$) | MOL % | None | - | NA |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 61256-MH MW-10 |
|---|---|---|---|---|
| | | | | Initial |
| Date Sampled | - | - | - | 11/23/20 |
| **ALKALINITY AS CALCIUM CARBONATE - SM2320B** | | | | |
| Total Alkalinity | mg/l | None | - | 275 |
| Bicarbonate | mg/l | None | - | 275 |
| Carbonate | mg/l | None | - | ND |
| **BTEX - SW8260B** | | | | |
| Benzene | µg/l | 5 | 910-1 | ND |
| Toluene | µg/l | 560 | 910-1 | ND |
| Ethylbenzene | µg/l | 700 | 910-1 | ND |
| Xylenes (Total) | µg/l | 1,400 | 910-1 | ND |
| M+P-Xylene | µg/l | None | - | ND |
| O-Xylene | µg/l | None | - | ND |
| **TPH-DRO/GRO - SW8015M/SW8015** | | | | |
| TPH - DRO | mg/l | None | - | ND |
| TPH - GRO | mg/l | None | - | ND |
| **DISSOLVED GASES** | | | | |
| Dissolved Methane (RSK 175) | µg/l | None | - | - |
| Dissolved Ethane (RSK 175) | µg/l | None | - | - |
| Dissolved Propane (RSK 175) | µg/l | None | - | - |
| Dissolved Methane (DGS) | ppm | None | - | 2.1 |
| Dissolved Ethane (DGS) | ppm | None | - | 0.52 |
| Dissolved Propane (DGS) | ppm | None | - | 0.10 |
| **IONS - EPA 300.0** | | | | |
| Bromide | mg/l | None | - | 0.240 |
| Chloride | mg/l | 250 | Reg 41 | 31.3 |
| Fluoride | mg/l | 4 | Reg 41 | 0.283 |
| Nitrate + Nitrite as N | mg/l | 10 | Reg 41 | 5.59 |
| Nitrate as N | mg/l | 10 | Reg 41 | 5.53 |
| Nitrite as N | mg/l | 1 | Reg 41 | ND |
| Sulfate | mg/l | 250 | Reg 41 | 112 |
| **METALS EPA 200.8** | | | | |
| Dissolved Barium | mg/l | 2 | Reg 41 | 0.0523 |
| Dissolved Boron | mg/l | 0.4 | RSL | 0.185 |
| Dissolved Calcium | mg/l | None | - | 70.300 |
| Dissolved Iron | mg/l | 0.3 | Reg 41 | ND |
| Dissolved Magnesium | mg/l | None | - | 29.7 |
| Dissolved Manganese | mg/l | 0.05 | Reg 41 | 0.0244 |
| Dissolved Potassium | mg/l | None | - | 3.19 |
| Dissolved Selenium | mg/l | 0.05 | Reg 41 | 0.00225 |
| Dissolved Sodium | mg/l | None | - | 64.7 |
| Dissolved Strontium | mg/l | 1.2 | RSL | 1.03 |
| **WATER QUALITY** | | | | |
| pH | s.u. | 6-9 | 910-1 | 7.36 |
| Specific Conductivity | µmhos/cm | None | - | 1,150 |
| Total Dissolved Solids | mg/l | 1.25 X background | 910-1 | 571 |
| Total Phosphorous | mg/l | None | - | ND |

# TABLE 1-1: ANALTYICAL SUMMARY
# GROUNDWATER MONITORING WELL SAMPLE RESULTS

| Parameter | Units | Standard | Source | 61256-MH MW-10 |
|---|---|---|---|---|
| | | | | Initial |
| Date Sampled | - | - | - | 11/23/20 |
| **Aqueous** | | | | |
| Delta 13C DIC ($d^{13}C$ of DIC) | % per mil | None | - | -11 |
| Delta 18O H2O ($d^{18}O$ of water) | % per mil | None | - | -13.71 |
| Delta D H2O (dD of water) | % per mil | None | - | -107 |
| **Gaseous** | | | | |
| Argon (Ar) | MOL % | None | - | NA |
| $C_6$+ (hexanes +) | MOL % | None | - | NA |
| Carbon Dioxide ($CO_2$) | MOL % | None | - | NA |
| Carbon Monoxide (CO) | MOL % | None | - | NA |
| Delta 13C C1 ($d^{13}C_1$) | % per mil | None | - | NA |
| Delta 13C C2 ($d^{13}C_2$) | % per mil | None | - | NA |
| Delta 13C C3 ($d^{13}C_3$) | % per mil | None | - | NA |
| Delta 13C CO2 ($d^{13}CO_2$) | per mil VPDB | None | - | NA |
| Delta 13C iC4 ($d^{13}iC_4$) | per mil VPDB | None | - | NA |
| Delta 13C nC4 ($d^{13}nC_4$) | per mil VPDB | None | - | NA |
| Delta D C1 ($dDC_1$) | % per mil | None | - | NA |
| Ethane ($C_2$) | MOL % | None | - | 1.32 |
| Ethane, Dissolved ($C_2H_6$) | cc/L | None | - | 0.44 |
| Ethane, Dissolved ($C_2H_6$) | mg/L | None | - | 0.54 |
| Ethylene ($C_2H_4$) | MOL % | None | - | NA |
| Helium (He) | MOL % | None | - | NA |
| Helium Dilution Factor | Other | None | - | NA |
| Hydrogen ($H_2$) | MOL % | None | - | NA |
| Isobutane ($iC_4$) | MOL % | None | - | NA |
| Isopentane ($iC_5$) | MOL % | None | - | NA |
| Methane ($C_1$) | MOL % | None | - | 11.75 |
| Methane, Dissolved ($CH_4$) | cc/L | None | - | 3.5 |
| Methane, Dissolved ($CH_4$) | mg/L | None | - | 2.3 |
| n-Butane ($nC_4$) | MOL % | None | - | NA |
| Nitrogen ($N_2$) | MOL % | None | - | NA |
| n-Pentane ($nC_5$) | MOL % | None | - | NA |
| Oxygen ($O_2$) | MOL % | None | - | NA |
| Propane ($C_3$) | MOL % | None | - | 0.185 |
| Propane, Dissolved ($C_3H_8$) | cc/L | None | - | 0.056 |
| Propane, Dissolved ($C_3H_8$) | mg/L | None | - | 0.10 |
| Propylene ($C_3H_6$) | MOL % | None | - | NA |

## TABLE 1-1: ANALTYICAL 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 | $CH_4$ | $CO_2$ | $O_2$ | $H_2S$ | 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[1] | | 83.6 | 5 | 11.4 | 0 | 0 | 0 | NA |
| | 8/17/2020 | | 80.8 | 0 | 2.3 | 16.9 | 0 | 0 | NA |
| | 10/27/2020 | | 78.8 | 2 | 2 | 17.2 | 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 |
| | 10/27/2020 | | 69.8 | 16 | 14.2 | 0 | 6 | 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[1] | | 73.5 | 14.5 | 12 | 0 | 0 | 0 | NA |
| | 8/17/2020 | | 82.6 | 0 | 11.5 | 5.9 | 0 | 0 | NA |
| | 10/27/2020 | | 83.7 | 1 | 5.9 | 9.4 | 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 |
| | 10/27/2020 | | 46.2 | 39.5 | 14.3 | 0 | 5 | 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[1] | | 24.9 | 64 | 11.1 | 0 | 6.5 | 0 | NA |
| | 8/17/2020 | | 82.1 | 0 | 4.4 | 13.5 | 0 | 0 | NA |
| | 10/27/2020 | | 86.1 | 2 | 3.9 | 8 | 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 |
| | 10/27/2020 | | -12.5 | 100 | 12.5 | 0 | 3.5 | 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[1] | | 91.1 | 0.1 | 8.8 | 0 | 0 | 0 | NA |
| | 8/17/2020 | | 82.1 | 0 | 16.5 | 1.4 | 0 | 0 | NA |
| | 10/27/2020 | | 85.9 | 2 | 7.7 | 4.4 | 0 | 0 | NA |



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

| Probe ID | Sample Date | Units | Balance | $CH_4$ | $CO_2$ | $O_2$ | $H_2S$ | CO | PID |
|---|---|---|---|---|---|---|---|---|---|
| | | | % | % | % | % | ppm | ppm | ppm |
| 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 |
| | 10/27/2020 | | 65.5 | 20 | 14.5 | 0 | 0 | 0 | NA |

Notes:
'Atmospheric readings collected from the top of casing

**Attachment A**

**Groundwater Well Location Map**


**Attachment A: Well Location Map**

**District Six C6 - Location ID 473512**
**NENE 20 5N65W, Weld County, CO**

**Apex Job No. 744.1708.01**

**DATE - 01/15/2021 (JDG)**
**FILE - 744.1708.01 AA.dc**

APEX

**Attachment B**

**Groundwater Well Permit Records**

GWS-51
02/2017

# 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

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

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@apexcos.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

59993 - MH

DIV. 1 WD 2 BAS _____ MD _____

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.**

**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 <dnr_dwrpermitsonline@state.co.us>

# 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" <dwrpermitsonline@state.co.us>
Cc: Denver Remediation <DenverRemediation@apexcos.onmicrosoft.com>, Kevin Ambrose <Kevin.Ambrose@apexcos.com>, Maggie Graham <Maggie.Graham@apexcos.com>

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

APEX
apexcos.com

O) 720-501-5065

Add me to your contact list!

WorkSafe

| Form No. GWS-31 02/2017 | **WELL CONSTRUCTION AND YIELD ESTIMATE REPORT**<br>State of Colorado, Office of the State Engineer<br>1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581<br>www.water.state.co.us and dwrpermitsonline@state.co.us | For Office Use Only<br>RECEIVED<br>OCT 18 2019<br>WATER RESOURCES STATE ENGINEER COLO |
|---|---|---|

**1. Well Permit Number:** 59993-MH **Receipt Number:**

**2. Owner's Well Designation:** MW-1

**3. Well Owner Name:** Extraction Oil and Gas, LLC

**4. Well Location Street Address:** ~~20 29th Street, Greeley, CO 80631~~

**5. As Built GPS Well Location (required):** ☐ Zone 12 ☒ Zone 13 Easting: 526998.2 Northing: 4471240.51

**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:** 08/28/2019 **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? ☒ Yes ☐ No, Date Notification Given: 08/23/2019

**10. Aquifer Type:** (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☒ Type II (Overlain by Type III) ☐ Type III (alluvial/colluvial)

**11. Geologic Log:**

| Depth | Type | Grain Size | Color | Water Loc. |
|---|---|---|---|---|
| 0' - 3' | Silty Sand | fg | Bwn. | |
| 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 | | | |

**12. Hole Diameter (in.)**

| | From (ft) | To (ft) |
|---|---|---|
| 8 | 0 | 85 |

**13. Plain Casing**

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 0 | 45 |

**Perforated Casing** Screen Slot Size (in): 0.010

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 45 | 85 |

**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:**

**17. Disinfection:** Type N/A Amt. Used

**18. Well Yield Estimate Data:** ☐ 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

Date/Time measured: 10/15/19, 9:50 am

Estimated Yield (gpm) N/A

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: | Email: | Phone w/area code: | License Number: |
|---|---|---|---|
| Apex Companies, LLC | kevin.ambrose@apexcos.com | (925) 596-1862 | CA-PG# 9617 |

Mailing Address: 1746 Cole Blvd, Suite 250, Lakewood, CO 80401

| Sign (or enter name if filing online) | Print Name and Title | Date: |
|---|---|---|
| Kevin Ambrose | Kevin Ambrose, Project Geologist | 10/16/2019 |

| Form No. GWS-31 02/2017 | **WELL CONSTRUCTION AND YIELD ESTIMATE REPORT**<br>State of Colorado, Office of the State Engineer<br>1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581<br>www.water.state.co.us and dwrpermitsonline@state.co.us | For Office Use Only |
|---|---|---|

**1. Well Permit Number:** 60666-MH **Receipt Number:**

**2. Owner's Well Designation:** MW-2

**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):** ☐ Zone 12 ☒ Zone 13 Easting: 527013.3 Northing: 4471236.01

**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:** 05/05/2020 **Drilling Method:** Hollow Stem Auger

**8. Completed Aquifer Name :** Unnamed Type III/II **Total Depth:** 60 feet **Depth Completed:** 60 feet

**9. Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 04/07/2020

**10. Aquifer Type:** (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☒ Type II (Overlain by Type III) ☐ Type III (alluvial/colluvial)

**11. Geologic Log:**

| Depth | Type | Grain Size | Color | Water Loc. |
|---|---|---|---|---|
| 0 - 20 | SP-SM | vfg - mg | Bwn. | |
| 20 - 31 | SP | fg - cg, G | Bwn., Gray | |
| 31 - 50 | ML | fg | Green, Gray | 40 |
| 50 - 60 | SM | fg | Light Bwn. | |

**12. Hole Diameter (in.)**

| | From (ft) | To (ft) |
|---|---|---|
| 8 | 0 | 60 |

**13. Plain Casing**

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 0 | 35 |

**Perforated Casing** Screen Slot Size (in): _____

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 35 | 60 |

**14. Filter Pack:**
Material: Sand
Size: 10-20
Interval: 32-60

**15. Packer Placement:**
Type: _____
Depth: _____

**16. Grouting Record**

| Material | Amount | Density | Interval | Method |
|---|---|---|---|---|
| Cement Grout | 580 lbs | Grout | 0 - 29 | 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:** ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report

Well Yield Estimate Method: N/A

Static Level: 38.03

Date/Time measured: 5/14/20

Estimated Yield (gpm) N/A

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: | Email: | Phone w/area code: | License Number: |
|---|---|---|---|
| Apex Companies, LLC | Kevin.Ambrose@apexcos.com | (925) 596-1862 | CA-PG# 9617 |

Mailing Address: 1746 Cole Blvd, Suite 250, Lakewood, CO 80401

| Sign (or enter name if filing online) | Print Name and Title | Date: |
|---|---|---|
| Kevin Ambrose | Kevin Ambrose, Project Geologist | 06/02/2020 |

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
www.water.state.co.us and dwrpermitsonline@state.co.us

For Office Use Only

**1. Well Permit Number:** 60666-MH **Receipt Number:**

**2. Owner's Well Designation:** MW-3

**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):** ☐ Zone 12 ☒ Zone 13 Easting: 526999.8 Northing: 4471232.63

**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:** 04/23/2020 **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? ☒ Yes ☐ No, Date Notification Given: 04/07/2020

**10. Aquifer Type:** (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☒ Type II (Overlain by Type III) ☐ Type III (alluvial/colluvial)

**11. Geologic Log:**

| Depth | Type | Grain Size | Color | Water Loc. |
|---|---|---|---|---|
| 0 - 11 | SP | fg | Light Bwn. | |
| 11 - 20 | SM | vfg - fg | Light Bwn. | |
| 20 - 30 | SP | fg - cg, G | Light Bwn. | |
| 30 - 31 | SM | fg - mg | Bwn. | |
| 31 - 51 | ML | fg | Gray | 40 |
| 51 - 60 | SM | fg | Bwn. | |
| 60 - 70 | SP-SM | fg - cg, G | Gley | |
| 70 - 81.5 | SM | fg | Bwn. | |
| 81.5 - 85 | ML | fg | Gley | |

**12. Hole Diameter (in.)**

| | From (ft) | To (ft) |
|---|---|---|
| 8 | 0 | 85 |

**13. Plain Casing**

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 0 | 45 |

**Perforated Casing** Screen Slot Size (in): _____

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 45 | 85 |

**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, Gley = Greenish-Gray

**17. Disinfection:** Type N/A Amt. Used

**18. Well Yield Estimate Data:** ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report
Well Yield Estimate Method: N/A
Static Level: 39.76
Date/Time measured: 5/6/20
Estimated Yield (gpm) N/A
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: | Email: | Phone w/area code: | License Number: |
|---|---|---|---|
| Apex Companies, LLC | Kevin.Ambrose@apexcos.com | (925) 596-1862 | CA-PG# 9617 |

Mailing Address: 1746 Cole Blvd., Suite 250, Lakewood, CO 80401

| Sign (or enter name if filing online) | Print Name and Title | Date: |
|---|---|---|
| Kevin Ambrose | Kevin Ambrose, Project Geologist | 06/02/2020 |

| Form No. GWS-31 02/2017 | **WELL CONSTRUCTION AND YIELD ESTIMATE REPORT**<br>State of Colorado, Office of the State Engineer<br>1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581<br>www.water.state.co.us and dwrpermitsonline@state.co.us | For Office Use Only |
|---|---|---|

**1. Well Permit Number:** 60666-MH **Receipt Number:**

**2. Owner's Well Designation:** MW-4

**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):** ☐ Zone 12 ☒ Zone 13 Easting: 526994.4 Northing: 4471243.04

**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:** 04/27/2020 **Drilling Method:** Hollow Stem Auger

**8. Completed Aquifer Name :** Unnamed Type III/II **Total Depth:** 87 feet **Depth Completed:** 85 feet

**9. Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 04/07/2020

**10. Aquifer Type:** (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☒ Type II (Overlain by Type III) ☐ Type III (alluvial/colluvial)

**11. Geologic Log:**

| Depth | Type | Grain Size | Color | Water Loc. |
|---|---|---|---|---|
| 0 - 11 | ML | fg | Bwn. | |
| 11 - 20 | SM | fg - cg, G | Bwn. | |
| 20 - 31 | SP | fg - cg | Bwn. | |
| 31 - 50 | ML | fg | Gley | 40 |
| 50 - 60 | SM | fg | Bwn. | |
| 60 - 61 | GP | fg - cg, G | Bwn. | |
| 61 - 70 | CL | vfg | Bwn. | |
| 70 - 80 | SM | fg - cg, G | Bwn. | |
| 80 - 85 | ML | vfg | Bwn. | |
| 85 - 87 | CL | vfg | Bwn. | |

**12. Hole Diameter (in.)**

| | From (ft) | To (ft) |
|---|---|---|
| 8 | 0 | 85 |

**13. Plain Casing**

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 0 | 45 |

**Perforated Casing** Screen Slot Size (in): _____

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 45 | 85 |

**14. Filter Pack:**
Material: Sand
Size: 10-20
Interval: 43-87

**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, Gley - Greenish-Gray

**17. Disinfection:** Type N/A Amt. Used

**18. Well Yield Estimate Data:** ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report

Well Yield Estimate Method: N/A

Static Level: 39.90

Date/Time measured: 5/5/20

Estimated Yield (gpm) N/A

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: | Email: | Phone w/area code: | License Number: |
|---|---|---|---|
| Apex Companies, LLC | Kevin.Ambrose@apexcos.com | (925) 596-1862 | CA-PG# 9617 |

Mailing Address: 1746 Cole Blvd., Suite 250, Lakewood, CO 80401

| Sign (or enter name if filing online) | Print Name and Title | Date: |
|---|---|---|
| Kevin Ambrose | Kevin Ambrose, Project Geologist | 06/02/2020 |

| Form No. GWS-31 02/2017 | **WELL CONSTRUCTION AND YIELD ESTIMATE REPORT**<br>State of Colorado, Office of the State Engineer<br>1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581<br>www.water.state.co.us and dwrpermitsonline@state.co.us | 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):** ☐ Zone 12 ☒ 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? ☒ Yes ☐ No, Date Notification Given: 04/07/2020

**10. Aquifer Type:** (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☒ Type II (Overlain by Type III) ☐ Type III (alluvial/colluvial)

**11. Geologic Log:**

| Depth | Type | Grain Size | Color | Water Loc. |
|---|---|---|---|---|
| 0 - 11 | ML | fg | Bwn. | |
| 11 - 20 | SM | fg | Bwn. | |
| 20 - 32 | SP | fg - cg | Bwn. | |
| 32 - 50 | ML | vfg - fg | Grey | 40 |
| 50 - 51.5 | SP-SM | fg | Bwn. | |
| 60 - 61 | ML | fg | Bwn. | |
| 61 - 70 | CL | vfg - fg | Bwn. | |
| 70 - 71 | SM | fg | Bwn. | |
| 71 - 80 | ML | fg | Bwn. | |
| 80 - 81 | SM | fg - mg | Bwn. | |
| 81 - 84 | ML | fg | Bwn. | |
| 84 - 85 | CL | vfg | Grey | |

**12. Hole Diameter (in.)**

| | From (ft) | To (ft) |
|---|---|---|
| 8 | 0 | 85 |

**13. Plain Casing**

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 0 | 45 |

**Perforated Casing** Screen Slot Size (in): _____

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 45 | 85 |

**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:** ☐ 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: | Email: | Phone w/area code: | License Number: |
|---|---|---|---|
| Apex Companies, LLC | Kevin.Ambrose@apexcos.com | (925) 596-1862 | CA-PG# 9617 |

Mailing Address: 1746 Cole Blvd., Suite 250, Lakewood, CO 80401

| Sign (or enter name if filing online) | Print Name and Title | Date: |
|---|---|---|
| Kevin Ambrose | Kevin Ambrose, Project Geologist | 06/02/2020 |

GWS-51
02/2017

# 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

State of Colorado, Office of the State Engineer 1313 Sherman St, Room 821, Denver, CO 80203 Phone 303-866-3581 dwr.colorado.gov

RCVD DWR
10/01/2020

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

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

**Phone:** (970) 576-3446

**Email:** jcarlisle@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 Ryan Finley

Address 1746 Cole Blvd, Suite 250, Building 21

City, State & Zip Lakewood, Colorado 80401

Phone (303) 907-0635

Email Ryan.Finley@apexcos.com

**Print Name:** Ryan Finley

**Signature or enter full name here:** Ryan Finley

**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:** 3

**Estimated Depth** 85 **Ft., Aquifer** Type III/II

**Purpose of Monitoring Hole(s)** Groundwater Monitoring

**Anticipated Date of Construction:** 10/19/2020

**Date Notice Submitted:** 09/30/2020

(Must be at least 3 days prior to construction)

ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE

FOR OFFICE USE ONLY

61256 - MH

PROCESSED BY _____

DIV. 1 WD 2 BAS _____ MD _____

DATE ACKNOWLEDGED 10/02/2020

## 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 dwr.colorado.gov. **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.**

**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

## Mike Ruiz

**From:** erica.gutierrez@state.co.us on behalf of DWR - DNR, Permitsonline <dnr_dwrpermitsonline@state.co.us>
**Sent:** Wednesday, January 27, 2021 3:42 PM
**To:** Mike Ruiz
**Subject:** [EXT] Re: Extraction Oil & Gas District Six MW-6, MW-8, MW-10 GWS-31 forms

**CAUTION**

**Thank you for your submission. These forms do not require payment of a fee.**

**Check status of permit applications / updates to well permits at:** https://dwr.state.co.us/tools/WellPermits

...
**DWR Permits Online**

P 303.866.3581x0
DWRPermitsOnline@state.co.us | dwr.colorado.gov

On Wed, Jan 27, 2021 at 3:20 PM Mike Ruiz <Mike.Ruiz@apexcos.com> wrote:

> Hello DWR reviewer,
>
> Please accept the following GWS-31 forms on behalf of Extraction Oil & Gas, LLC for recently installed monitoring wells at District Six. Attached to this email are Well Construction and Yield Estimate Reports for Permit #: 61256-MH (MW-6, MW-8, and MW-10).
>
> Please let us know if you have any questions or require additional information.
>
> Thank you,

-Michael Ruiz

**Mike Ruiz**
Scientist 2
**Apex Companies, LLC**
347 Sinclair St
Gillette, WY 82718
M) 307-274-6386
Add me to your contact list!

***ENR* Top 30 All-Environmental Firm**

| Form No. GWS-31 02/2017 | **WELL CONSTRUCTION AND YIELD ESTIMATE REPORT**<br>State of Colorado, Office of the State Engineer<br>1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581<br>dwr.colorado.gov and dwrpermitsonline@state.co.us | For Office Use Only |
|---|---|---|

**1. Well Permit Number:** 61256-MH **Receipt Number:**

**2. Owner's Well Designation:** MW-6

**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):** ☐ Zone 12 ☒ Zone 13 Easting: 526978.0 Northing: 4471235

**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:** 11/09/2020 **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? ☒ Yes ☐ No, Date Notification Given: 09/30/2020

**10. Aquifer Type:** (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☒ Type II (Overlain by Type III) ☐ Type III (alluvial/colluvial)

**11. Geologic Log:**

| Depth | Type | Grain Size | Color | Water Loc. |
|---|---|---|---|---|
| 0'-10' | Not Logged | | | |
| 10'-20' | SM | vf-c | lght. bwn. | |
| 20'-30' | SW | vf-vc | lght. bwn. | |
| 30'-40' | SW | m-vcu | lght. bwn. | 37' |
| 40'-50' | SW/SC | m-vcu | bwn. | |
| 50'-60' | SM/SC | vf-mu | bwn. | |
| 60'-70' | SM | vf-c | bwn. | |
| 70'-80' | SM/SC | vf-cu | bwn. | |
| 80'-85' | SM/SC | vf-c | lght. bwn. | |

**12. Hole Diameter (in.)**

| | From (ft) | To (ft) |
|---|---|---|
| 8 1/4 | 0 | 85 |

**13. Plain Casing**

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 0' | 45' |

**Perforated Casing** Screen Slot Size (in): 0.010

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 45' | 85' |

**14. Filter Pack:**
Material: Sand
Size: 10-20
Interval: 85'-43'

**15. Packer Placement:**
Type: _____
Depth: _____

**16. Grouting Record**

| Material | Amount | Density | Interval | Method |
|---|---|---|---|---|
| Portland Cement | 11 bg | Grout | 40'-2' | Tremie Pipe |

**Remarks:**

**17. Disinfection:** Type N/A Amt. Used N/A

**18. Well Yield Estimate Data:** ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report

Well Yield Estimate Method: N/A

Static Level: 39.18 Feet

Date/Time measured: 11/23/2020 @ 13:26

Estimated Yield (gpm) N/A

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: | Email: | Phone w/area code: | License Number: |
|---|---|---|---|
| Apex Companies, LLC | mike.ruiz@apexcos.com | (307) 274-6386 | |

Mailing Address: 347 Sinclair St., Gillette, WY, 82718

| Sign (or enter name if filing online) | Print Name and Title | Date: |
|---|---|---|
| Michael Ruiz | Michael Ruiz, Scientist 2 | 01/26/2021 |

| Form No. GWS-31 02/2017 | **WELL CONSTRUCTION AND YIELD ESTIMATE REPORT**<br>State of Colorado, Office of the State Engineer<br>1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581<br>dwr.colorado.gov and dwrpermitsonline@state.co.us | For Office Use Only |
|---|---|---|

**1. Well Permit Number:** 61256-MH **Receipt Number:**

**2. Owner's Well Designation:** MW-8

**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):** ☐ Zone 12 ☒ Zone 13 Easting: 527027.0 Northing: 4471258

**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:** 10/20/2020 **Drilling Method:** Hollow Stem Auger

**8. Completed Aquifer Name :** Unnamed Type III/II **Total Depth:** 95 feet **Depth Completed:** 90 feet

**9. Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 09/30/2020

**10. Aquifer Type:** (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☒ Type II (Overlain by Type III) ☐ Type III (alluvial/colluvial)

**11. Geologic Log:**

| Depth | Type | Grain Size | Color | Water Loc. |
|---|---|---|---|---|
| 0-10 | Not logged | | | |
| 10'-20' | GM/GC | vfg-mg | Bwn. | |
| 20'-30' | SM/GM | vfg-mg | Bwn. | |
| 30'-40' | SC | vfg-mg | Bwn. | |
| 40'-50' | SM | vfg-fg | Bwn. | |
| 50'-60' | SM/SC | vfg-mg | Bwn. | |
| 60'-70' | SM/SC | vfg-mg | Bwn. | |
| 70'-80' | SM/SC | vfg-mg | Bwn. | |
| 80'-85' | SM/SC | vfg-mg | Bwn. | |
| 85'-95' | SM/SC | vfg-mg | Bwn. | |

**12. Hole Diameter (in.)**

| | From (ft) | To (ft) |
|---|---|---|
| 8 1/4 | 0 | 95 |

**13. Plain Casing**

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 0 | 50 |

**Perforated Casing** Screen Slot Size (in): 0.010

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 50 | 90 |

**14. Filter Pack:**
Material: Sand
Size: 10-20
Interval: 50-90

**15. Packer Placement:**
Type: _____
Depth: _____

**16. Grouting Record**

| Material | Amount | Density | Interval | Method |
|---|---|---|---|---|
| Portland Cement | 10 bg | Grout | 0-48 | Tremie Pipe |

**Remarks:**

**17. Disinfection:** Type N/A Amt. Used N/A

**18. Well Yield Estimate Data:** ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report

Well Yield Estimate Method: N/A

Static Level: 38.97 Feet

Date/Time measured: 11/23/2020 @ 10:01

Estimated Yield (gpm) N/A

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: | Email: | Phone w/area code: | License Number: |
|---|---|---|---|
| Apex Companies, LLC | mike.ruiz@apexcos.com | (307) 274-6386 | |

Mailing Address: 347 Sinclair St., Gillette, WY, 82718

| Sign (or enter name if filing online) | Print Name and Title | Date: |
|---|---|---|
| Michael Ruiz | Michael Ruiz, Scientist 2 | 01/26/2021 |

| Form No. GWS-31 02/2017 | **WELL CONSTRUCTION AND YIELD ESTIMATE REPORT**<br>State of Colorado, Office of the State Engineer<br>1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581<br>dwr.colorado.gov and dwrpermitsonline@state.co.us | For Office Use Only |
|---|---|---|

**1. Well Permit Number:** 61256-MH **Receipt Number:**

**2. Owner's Well Designation:** MW-10

**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):** ☐ Zone 12 ☒ Zone 13 Easting: 526991.0 Northing: 4471229

**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:** 10/20/2020 **Drilling Method:** Hollow Stem Auger

**8. Completed Aquifer Name :** Unamed Type III/II **Total Depth:** 85 feet **Depth Completed:** 79.5 feet

**9. Advance Notification:** Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 09/30/2020

**10. Aquifer Type:** (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☒ Type II (Overlain by Type III) ☐ Type III (alluvial/colluvial)

**11. Geologic Log:**

| Depth | Type | Grain Size | Color | Water Loc. |
|---|---|---|---|---|
| 0'-6' | Not Logged | Hydrovac'd | | |
| 6'-20' | Silty Sand | vfg-mg | Bwn. | |
| 20'-30' | Sand/Silt | vfg-cg | Bwn. | |
| 30'-40' | Silt/Clay | vfg-fg | Bwn. | |
| 40'-50' | Silt/Clay | vfg-fg | Tan | |
| 50'-85' | Sand/Silt | vfg-fg | | |

**12. Hole Diameter (in.)**

| | From (ft) | To (ft) |
|---|---|---|
| 8 1/4 | 0 | 85 |

**13. Plain Casing**

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 0 | 39 |

**Perforated Casing** Screen Slot Size (in): _____

| OD (in) | Kind | Wall Size (in) | From (ft) | To (ft) |
|---|---|---|---|---|
| 2.375 | Sch40PVC | 0.328 | 39 | 79 |

**14. Filter Pack:**
Material: Sand
Size: 10-20
Interval: 39-79

**15. Packer Placement:**
Type: _____
Depth: _____

**16. Grouting Record**

| Material | Amount | Density | Interval | Method |
|---|---|---|---|---|
| Portland Cement | 11 bg | Grout | 0-35 | |

**Remarks:**

**17. Disinfection:** Type N/A Amt. Used N/A

**18. Well Yield Estimate Data:** ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report

Well Yield Estimate Method: N/A

Static Level: 38.91 Feet

Date/Time measured: 11/23/2020 @ 11:49

Estimated Yield (gpm) N/A

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: | Email: | Phone w/area code: | License Number: |
|---|---|---|---|
| Apex Companies, LLC | mike.ruiz@apexcos.com | (307) 274-6386 | |

Mailing Address: 347 Sinclair St. Gillette, WY 82718

| Sign (or enter name if filing online) | Print Name and Title | Date: |
|---|---|---|
| Michael Ruiz | Michael Ruiz, Scientist 2 | 01/26/2021 |

**Attachment C**

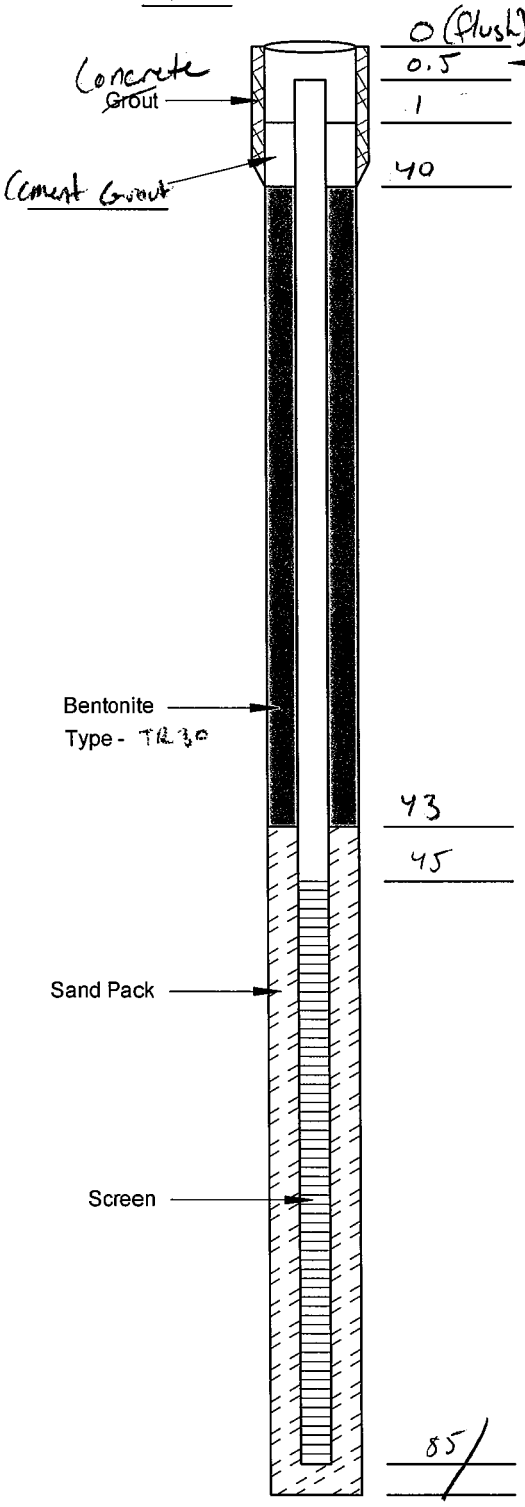
**Groundwater Well Borehole and Completion Logs**

APEX

## Well Completion Detail

Street Box Diam. = 8"

Surveyed Dif. Btwn. GS and TOC




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = 85'

# WELL CONSTRUCTION LOG

Project Number 744.1804.01 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 Date | Start Time | Finish Date | Finish Time |
|---|---|---|---|---|
| Drilling: | 8/26 | | 8/27 | |
| Well Completion: | 8/27 | | 8/27 | |
| Grouting: | 8/28 | | 8/28 | |

## Depth to Water (Below TOC)

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

## Well Construction Materials

| | Grout | Seals | Filter |
|---|---|---|---|
| Quantity: | 800 lbs | 100 lbs | 750 lbs |
| Type: | Portland | Bent. Pellets | 10-20 Sand |

| Screen | | | |
|---|---|---|---|
| Size: | 2" Sch 40 | Config.: | |
| Area/Ft.: | 0.16 gal/ft | Comp.: | PVC |
| Inside Diam.: | 2" | Outside Diam.: | 2.3" |

## Comments

**The Source Group, Inc.** a division of Apex Companies, LLC

| | |
|---|---|
| PROJECT NAME AND SITE ADDRESS: 40.391363, -104.681859 | BORING/WELL ID: MW-1 |
| BORING LOCATION (AT SITE): Greeley Directional, D6C6 7'SE | PROJECT NO.: |
| SUBCONTRACTOR AND EQUIPMENT: CMT | LOGGED BY: K Ambrose |
| SAMPLING METHOD: Split Spoon | MONITORING DEVICE: Mini Rae 2000 PID Isobutylene |
| START DATE/ (TIME): 9/16/19 | 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 (00) |
| CASING DIAMETER(S): | SCREEN INTERVAL(S): SLOT (IN): |
| ANNULUS MATERIAL: | |
| REVIEWED BY: | |

Length of Sample Recovery → / ← Sample Interval
Sample Packaged for Potential Analysis → ■

| 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. |
|---|---|---|---|---|---|---|---|
| | | | | +2 | | | |
| | | | | 0 | | Clear w/ air knife to 8' bgs (10" dia) | |
| | | | | | SM | Compacted sand & gravel w/ silt brown, dry, dense | |
| | | | | | CL | Sandy clay w/ gravel brown, dry hard | |
| | | | | 5 | | | 5 |
| 1105 | | 2 3 7 11 | 0.8 | 10 | SM | 50% fine sand, 30% silt, 20% clay, greyish brown, medium dense, moist, trace med-coarse sand, trace v fine gravel | 10 |
| | | 2 12 19 25 | | 15 | SP | 90% fine-coarse sand, 10% fine gravel, yellowish brown, wet, (mostly coarse) med. dense; 100% fine sand, wet, yellowish brown, dense | 15 |
| | | 9 27 21 11 | | 18 | SP | wet, fine-coarse sand, 5% gravel, greyish brown, dense w/ grey/black right before clay interface (~ 2.5" thick) sand (slight hc odor) | |
| | | | | 20 | CL | grey, hard clay, wet, medium plasticity | 20 |

**The Source Group, Inc.** a division of Apex Companies, LLC

BORING/WELL ID: MW-1

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 40 | CL SM | brown clay, stiff, medium plasticity, slight hc odor @ 38-38.5 w/ black streaks, trace (5-10% fine sand), wet<br>* 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 dtw | |
| 1355 | | 2 6 13 17 | 6.4 | 48 50 | SM SP SM | fine sand, brown, wet, m. dense<br>Saturated, brown, m. stiff, m. plasticity, 10-20% fine sand<br>Saturated, brown, fine sand, m dense | |
| 1440 | | 2 10 15 20 | 2.4 | 58 60 | SP | Saturated, dense, fine-med sand w/ 5% coarse gravel<br>stabilized water @ 37.70<br>1530 - auger gets stuck @ ~65' due to heaving sands | |
| 1540 | | 6 12 14 | 2.4 | 70 72 | SP | med-coarse sand w/ 20% coarse gravel, saturated, brown, m dense<br>fine sand (4") in shoe, m dense, saturated, brown | |
| 915 | | 1 5 8 10 | 6.3 | 80 82 | SM CL | Saturated, fine sand, m dense, brown<br>stiff, saturated, brown, medium plasticity clay, trace fine sand | |
| | | | | | | @ 85' drillers encounter bedrock @ 85'. Stop drilling & call in to client & project manager. Wait for water to stabilize & collect multiple readings @ 59.5' bgs. Set well screen @ 45 to 85' bgs (20' above & below assumed breach @ 65') | |

Page 2 of ___

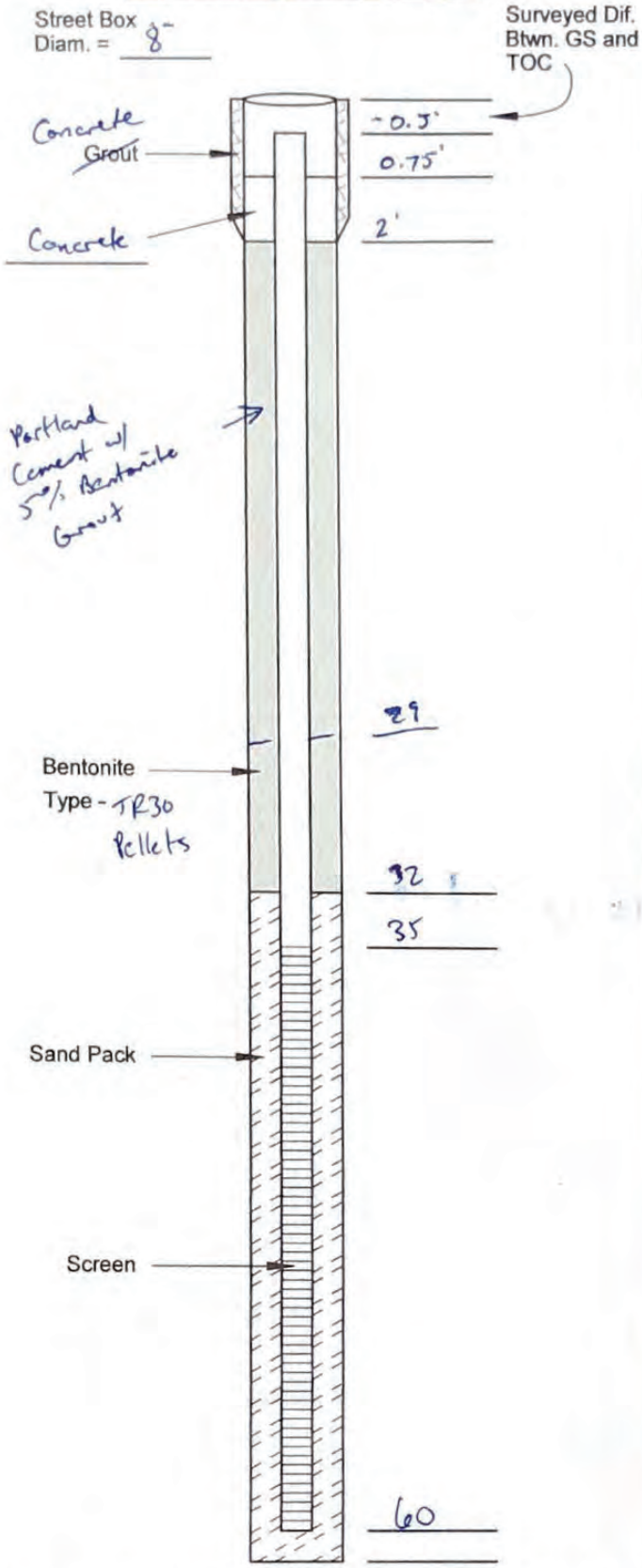
APEX

# WELL CONSTRUCTION LOG

Project Number 744.1708.01 286487

Well Number MW02

## Well Completion Detail




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = 60'

## 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 Date | Start Time | Finish Date | Finish Time |
|---|---|---|---|---|
| Drilling: | 4/30/20 | | 4/30/20 | |
| Well Completion: | 5/5/20 | | | |
| Grouting: | | | 5/5/20 | |

## Depth to Water (Below TOC)

Depth: Date: Time:

## Well Construction Materials

| | Grout | Seals | Filter |
|---|---|---|---|
| Quantity: | 2-29 | 29-32 | 32-60 |
| Type: | Portland w/ Bent. Grout | TR30 Bent | 10/20 Sand |

| Screen | | | |
|---|---|---|---|
| Size: | Sch. 40 | Config.: | |
| Area/Ft.: | 0.16 $ft^2/ft$ | Comp.: | PVC |
| Inside Diam.: | 2" | Outside Diam.: | 2.3" |

## Comments

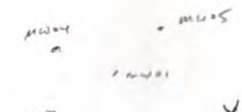
Drilling stopped at 60' bgs due to presence of methane gas in borehole. After the explosive atmosphere remained for several days, the borehole was completed w/ a well at 60' instead of attempting advancement to 85'.

# SOIL BORING LOG

APEX

| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW02 | 1 of 1 |

Boring Location Sketch



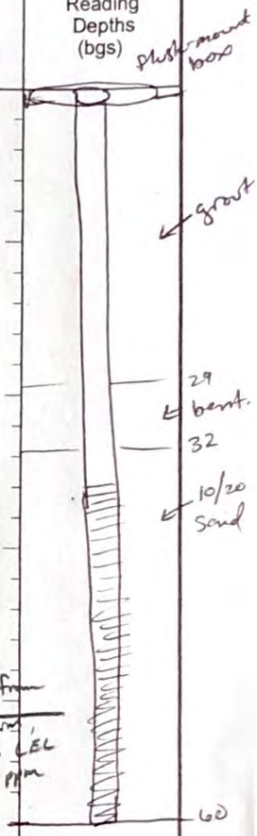

Project: District Six C6 Investigation  Location: Greeley Directional Pad

Drilling Method & Equipment: B-59 HSA Rig, 8" OD auger flights  Drilling Contractor: Cascade, Robbie Gildea

Date: 4/21/20, clear 60°  Water Level: ____  Start: 4/20/20, 1300  Finish: ____  Logger: K. Ambrose

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) |
|---|---|---|---|---|---|---|---|---|
| 10 | 10-12 | 1330 | 66% | 2/4/4 | (0, 90, 10, 0) brown, moist, fine sand, trace med sand, loose | SP-SM | N | 0<br>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<br>0 |
| | | | | | (5, 90, 5, 0) brown, damp, loose, fine-c sand trace # gravel | SP | N | 0 |
| 30 | 30-32 | 1415 | 50% | 5/5/5 (20 30 5) | (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 | SAA, wet | ML | N | 0<br>0<br>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, & fumes from augers when drillers reach 60'. Stop work to collect gas readings & see if gas action dissipates. | | | Readings from augers: 4-gas alarm, 20-25% LEL, PID ≈ 15-20 ppm |
| 70 | | | | | | | | |
| 80 | | | | | | | | |
| 85 | | | | | | | | |

PID Reading Depths (bgs)




TD = 60'

Prepacked 2" screen, 10-20 sand w/ 0.010" slot 35-60'

Total Depth(s) =

Soil Sample(s):

Rationale

Additional Information:

APEX

# WELL CONSTRUCTION LOG

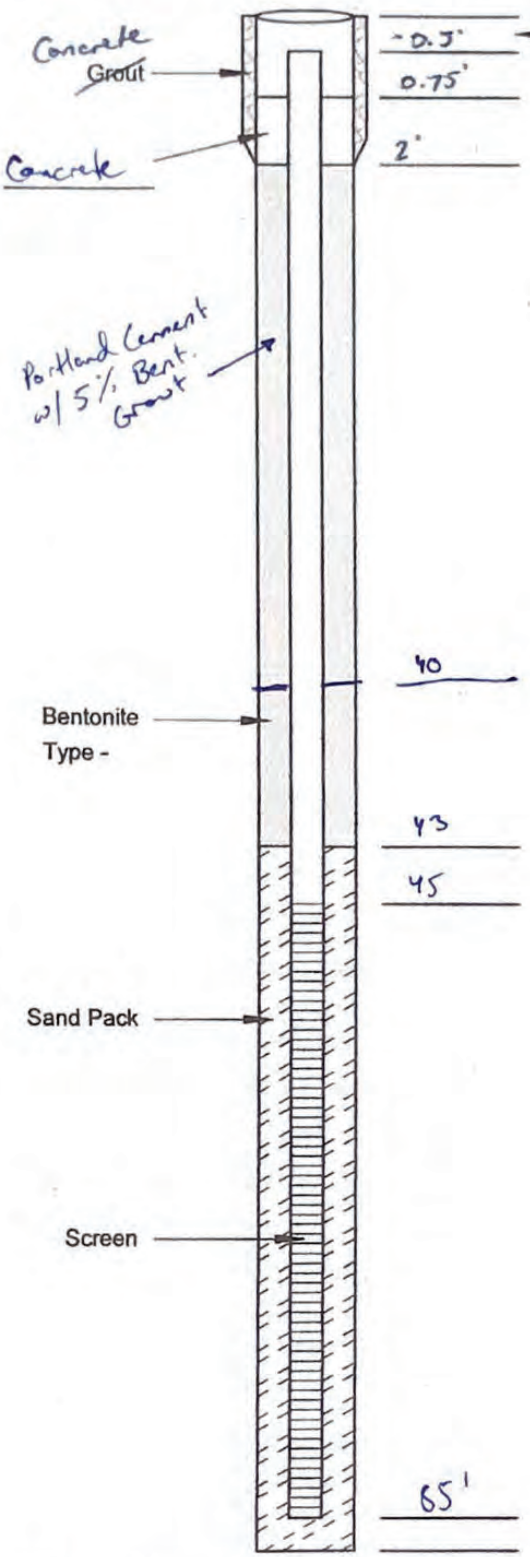
Project Number 744.1708.01 286487

Well Number MW03

## Well Completion Detail

Street Box Diam. = 8"

Surveyed Dif. Btwn. GS and TOC




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = 85'

## 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: | 4/21/20 | | 4/22/20 | |
| Well Completion: | 4/22/20 | | | |
| Grouting: | | | 4/23/20 | |

## 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 Cement w/ Bent | TR30 Bent. | 10/20 Sand |

| Screen | | | |
|---|---|---|---|
| Size: | Sch. 40 | Config.: | |
| Area/Ft.: | 0.16 in²/ft | Comp.: | PVC |
| Inside Diam.: | 2" | Outside Diam.: | 2.3" |

## Comments

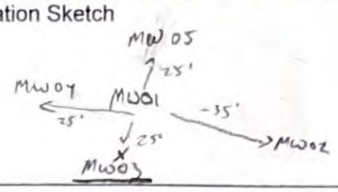
4/23 5:45

# SOIL BORING LOG

APEX

| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW03 | 1 of 1 |

Boring Location Sketch



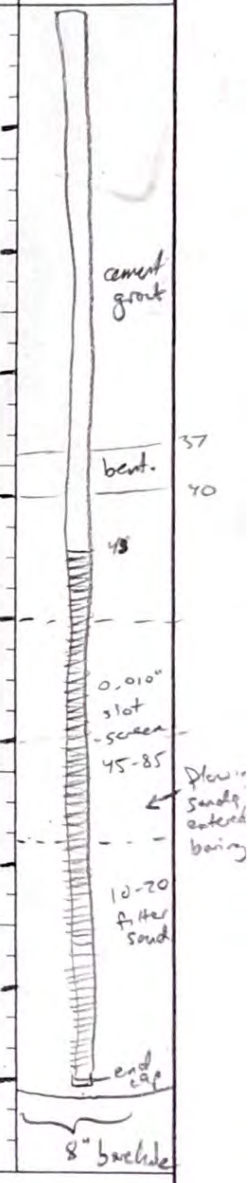

Project District Six CG — Location Greeley Dir. Pad

Drilling Method & Equipment HydroVac, B-59 HSA w/ 8" bit — Drilling Contractor Cascade Drilling, Robbie Gildea

Date 4/21/20 — Water Level ~45-50' bgs — Start 4/21/20, 1000 — Finish 4/23/20, — Logger K. Ambrose

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) |
|---|---|---|---|---|---|---|---|---|
| | | 4/21 | | | hydrovac to 6' bgs x 10" wide for clearance. m. dense, lt brown sand, dry, no signs of odor or staining | SP | N | 0 |
| 10 | 10-12 | 1145 | 100% | 3/5/5 | (0, 95, 5, 0) lt brn, dry, m. dense ↓ grades into fine sand | SP | N | 10: 0; 10.5: 0; 11: 0; 11.5: 0; 10 |
| | | | | | (0, 60, 40, 0) lt brn, dry, m. dense | SM | | |
| 20 | 20-22 | 1205 | 50% | 5/8/9 | (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; 20 |
| 30 | 30-32 | 1330 | 75% | 8/8/8 | (0, 70, 30, 0) fine sand, brownish, wet, trace med sand, med dense, grades into | SM | N | 30: 0; 30.5: 0; 31: 0; 31.5: 0; 30 |
| | | | | | (0, 30, 40, 20) fine sand, grayish brown, wet, med. plasticity, v. stiff | ML | N | |
| 40 | 40-42 | 1405 | 100% | 5/8/13 | (0, 20, 40, 40) fine sand, lt gray, damp, med. plast ↓ | ML | N | 40: 0; 40.5: 0; 41: 0; 41.5; 40 |
| | | | | | (0, 40, 50, 10) fine sand, lt gray 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; 51: 0; 51.5; 50 |
| | | | | | (0, 70, 30, 0) y. brown, saturated, m. dense, fine sand | SM | N | |
| 60 | 60-62 | 1616 | 80% | 13/8/5 | (10, 80, 10, 0) greenish gray, saturated, mostly fine to med sand, fine gravel, trace coarse sand | SP-SM | N | 60: 0; 60.5; 61: 0; 61.5; 60 |
| | | 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; 71: 0; 71.5; 70 |
| 80 | 80-82 | 1130 | 100% | 7/11/13 | (5, 65, 30, 0) brown, wet, fine-med sand, trace fine gravel, m. dense, | SM | | 80: 0; 80.5; 81: 0; 81.5; 80 |
| | | | | | (0, 40, 50, 10) brown, stiff, fine sand, low plasticity, wet | ML | | |
| 85 | 84-86 | 1230 | 100% | | SAA (brown, wet) | | | 84: 0; 84.5; 85: 0; 85 |
| | | | | | (0, 20, 50, 30) greenish gray w/ black seam, hard, wet, no he odor, med plasticity | ML | | |

Well Construction Diagram




Total Depth(s) = 85'

Soil Sample(s): No soil samples retained for lab analysis

Rationale: No staining or elevated PID readings

Additional Information:

APEX

# WELL CONSTRUCTION LOG

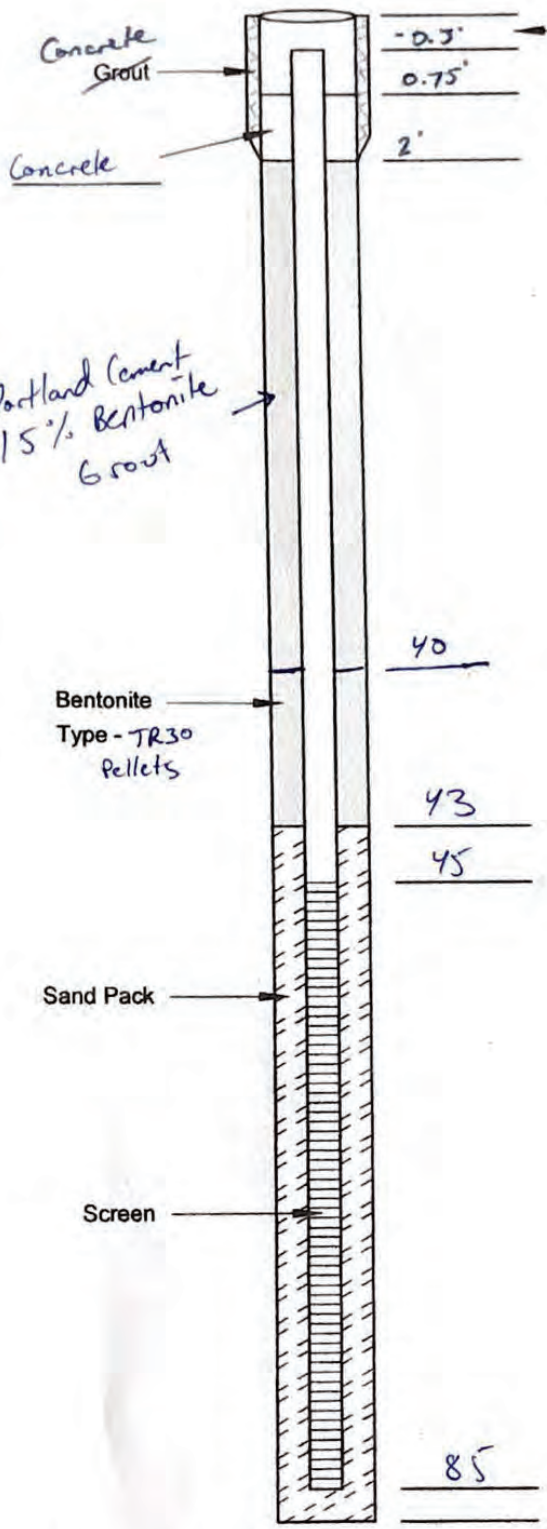
Project Number 744.1703.01 286487

Well Number MW04

## Well Completion Detail

Street Box Diam. = 8"

Surveyed Dif. Btwn. GS and TOC




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = 85'

## 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: | 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.: | 0.16 $5^{-1}/_{4}$ | Comp.: | PVC |
| Inside Diam.: | 2" | Outside Diam.: | 2.3" |

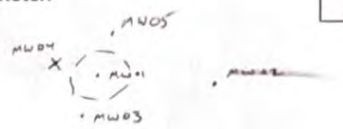
## Comments

# SOIL BORING LOG

APEX

| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW04 | 1 of 1 |

Boring Location Sketch




Project: District Six CG — Location: Greeley Directional Pad

Drilling Method & Equipment: Hydrovac (6") - cleaning, B59 HSA w/ 8" auger flights — Drilling Contractor: Cascade : Robbie Gildea

Date: 4/21/20 — Water Level: 6' — Start: 4/23/20, 1130 — Finish: — Logger: K Ambrose

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) | Well Const. |
|---|---|---|---|---|---|---|---|---|---|
| | | 4/23 | | | Clear to ~5.5' bgs using hydrovac & hand tools. Compacted gravelly sand & wood debris. | | | | |
| 10 | 10-12 | 1140 | 75% | 4/7/9 | 10 (0,30,70,0) fine sand, brown w/ lt brown streaking, no plasticity, stiff, dry | ML | N | @ e 10 | |
| | | | | | 10.5 ↓ grades into | SM | N | @ e 11 | |
| | | | | | 11.5 (5,70,25,0) fine sand w/ trace med/coarse sand, trace fine gravel, brown, damp, m. dense | | | | |
| 20 | 20-22 | 1200 | 66% | 6/13/14 | (0,85,5,0) fine-coarse sand, lt brown, m. dense, moist, fine gravel | SP | N | o e 20 | |
| | | | | | | | | o e 21 | |
| | | | | | | | | o e 22 | |
| 30 | 30-32 | 1325 | 75% | 12/7/4 | 30 ↓ SA Above | SP | N | o e 30 | |
| | | | | | 31 (0,30,50,20) greenish grey, low plasticity, fine gr. sand, wet | ML | N | o e 31 | |
| | | | | | | | | o e 32 | TR Bent Pellets 37 |
| 40 | 40-42 | 1350 | 100% | 5/5/7 | (0,20,50,30) brown, wet, med plast., fine grain sand | ML | N | o e 40 | 40 |
| | | | | | | | | o e 41 | 44.5' 10/20 Sand |
| | | | | | | | | o e 42 | |
| 50 | 50-52 | 1420 | 100% | 5/8/11 | (0,60,40,0) brown, saturated, m. dense, fine gr. sand | SM | N | o e 50 | |
| | | | | | | | | o e 51 | |
| | | 4/24 | | | | | | | |
| 60 | 60-62 | 930 | 100% | 6/29/37 | (60,30,10,0) brown, wet, fine-coarse sanded gravel, fine-coarse sand, dense | GP | N | o e 52 | |
| | | | | | 61 2" layer of black silty sand, trace fine gravel, wet, no odor (organic?) | SM | Y | o e 60 o e black sm | |
| | | | | | 62 (0,20,30,50) brown, wet, high plasticity, hard, fine sand | CL | N | o e CL | Some Loosing sands throughout |
| 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") | SM | N | o e 70 | |
| | | | | | | | | o e 71 | |
| | | | | | | | | o e 72 | |
| 80 | 80-82 | 1130 | 100% | 5/1-/20 | (0,60,40,0) brown, saturated, dense | SM | N | o e 80 | |
| | | | | | | | | o e 81 | |
| 85 | 85-87 | 1150 | 100% | 7/11/13 | 85 (0,40,60,0) brown, saturated, fine gr sand | ML | N | o e 85 | 84.5' |
| | | | | | 86 (0,0,30,70) greyish brown, hard, wet | CL | N | o e 86 | 2" Pre-Pack PVC Screen (0.010"-slot) |
| | | | | | 87 | | | | |

Total Depth(s) =

Soil Sample(s):

Rationale

Additional Information:

APEX

# WELL CONSTRUCTION LOG

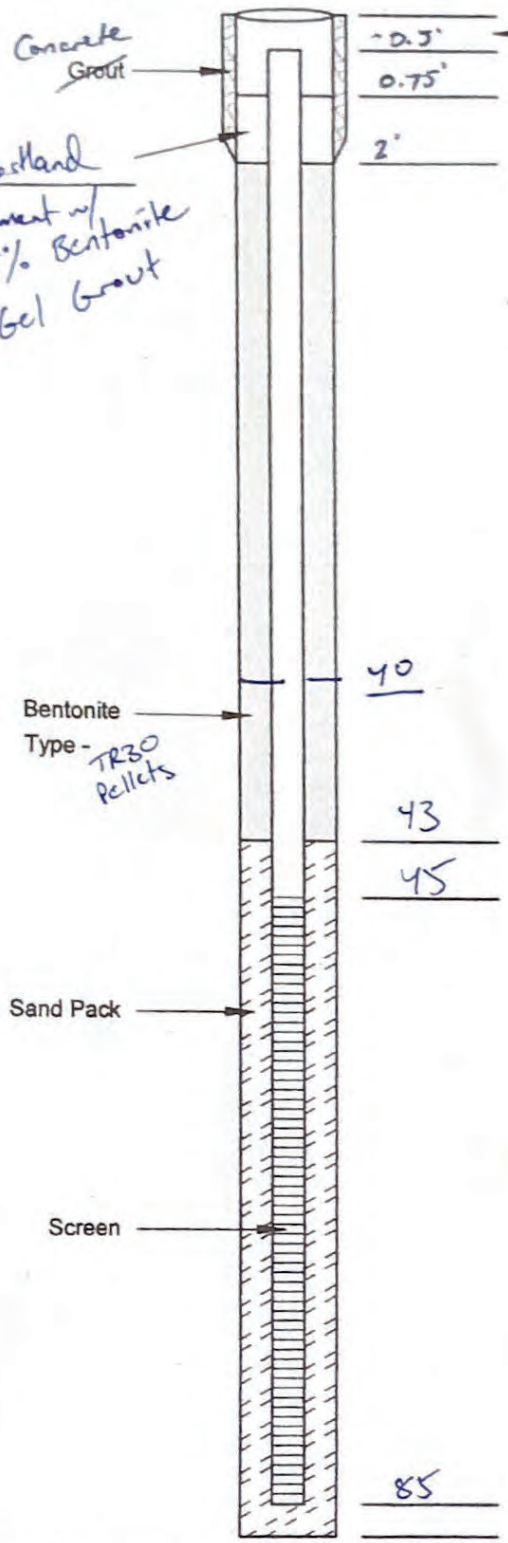
Project Number 744.1708.01 286487

Well Number MW05

## Well Completion Detail

Street Box Diam. = 8"

Surveyed Dif. Btwn. GS and TOC




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = 85'

## 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: | 4/27/20 | | 4/28/20 | |
| Well Completion: | 4/28/20 | | | |
| Grouting: | | | 4/30/20 | |

## Depth to Water (Below TOC)

Depth: ~45' Date: 4/27/20 Time: first water, drilling

~39' 4/30/20 stabilized water

## Well Construction Materials

| | Grout | Seals | Filter |
|---|---|---|---|
| Quantity: | 2-40 | 40-43 | 43-85 |
| Type: | Bent./Cement Grout | TR30 Bent. | 10-20 Sand |

Screen

| | | | |
|---|---|---|---|
| Size: | 2" Sch 40 | Config.: | |
| Area/Ft.: | 6.16 gal/ft | Comp.: | PVC |
| Inside Diam.: | 2" | Outside Diam.: | 2.3" |

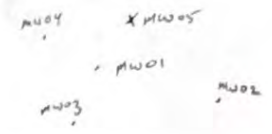
## Comments

# SOIL BORING LOG

APEX

| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW05 | 1 of 1 |

Boring Location Sketch



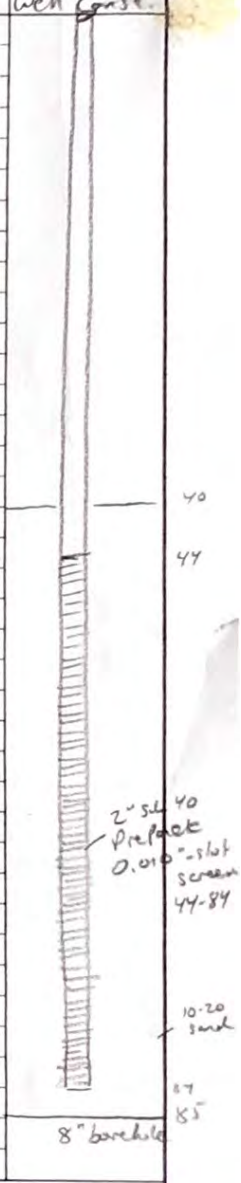

Project: District Six C6 — Location: Greeley Directional Pad

Drilling Method & Equipment: Hydrovac 6', B-59 HSA w/ 8"-OD auger flights — Drilling Contractor: Cascade, Robbie Gildea

Date: 4/21/20 clear 6° — Water Level: — Start: 4/27/20 12:00 — Finish: 4/30/20 — Logger: K Ambrose

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) |
|---|---|---|---|---|---|---|---|---|
| | | 4/27 | | | | | | |
| 10 | 10-12 | 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 |
| | | | | | (0,60,40,0) lt brown, m. dense, dry, fine gr sand | SM | N | 0 |
| 20 | 20-22 | 1330 | 66% | 3/11/10 | (0,100,0,0) lt brown, fine-coarse sand, damp, m. dense | SP | N | 0 |
| 30 | 30-32 | 1405 | 66% | 11/17/9 | (0,100,0,0) greenish brown from 30-30.5, yellowish brown 30.5-31.5, fine-coarse sand, wet, m. dense | SP | N | 0 |
| | | | | | in shoe, 2" - dark grey low plasticity silt w/ fine gr sand, damp | ML | N | 0 |
| 40 | 40-42 | 1430 | 100% | 3/6/8 | (0,20,50,30) greyish brown, med plasticity, moist, stiff | ML | N | 0 |
| 50 | 50-52 | 1455 | 10% | 4/7/7 | Saturated yellowish brown fine sand, m. dense | SP-SM | N | 0 |
| | | 4/28 | | | (0,40,60,0) lt brown, fine sand, saturated, hard grades into | ML | N | 0 |
| 60 | 60-62 | 930 | 100% | 8/28/33 | (0,20,30,50) lt brown, saturated, fine sand, v. hard, high plasticity | CL | N | 0 |
| 70 | 70-72 | 1035 | 100% | 11/12/23 | (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 |
| 80 | 80-82 | 1100 | 75% | 5/6/9 | (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 |
| 85 | 84-86 | 1200 | 100% | 7/11/13 | (0,10,40,50) lt grey, wet, stiff, high plasticity | CL | N | 0 |

Well Const.




Total Depth(s) = 85'

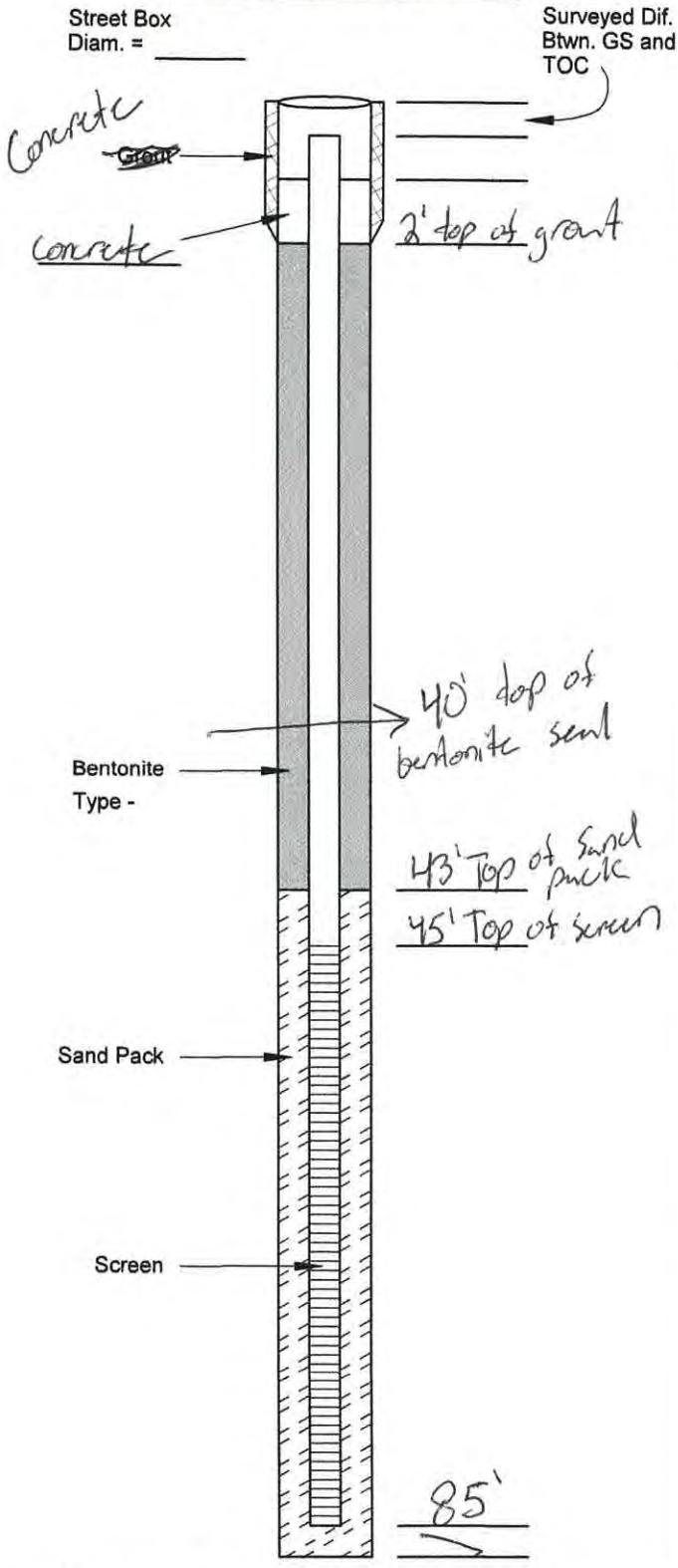
Soil Sample(s):

Rationale

Additional Information: Flush mount well box (8") set in 2' x 2' concrete pad

APEX

## Well Completion Detail




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

## WELL CONSTRUCTION LOG

Project Number 744.1708.01 286487

Well Number MW-06

### Drilling Summary

Total Depth of Hole: 85'
Hole Diameter: 8 1/4"
Drilling Company: Cascade Environmental
Driller: Robbie Gilden
Rig Type: B-59 Hollow Stem Auger
Bits: 8 1/4" D, 5' flights
Geologist: Kirk MacDougall

### Time Log

| | Start Date | Start Time | Finish Date | Finish Time |
|---|---|---|---|---|
| Drilling: | 11/09 | 0927 | 11/09 | 1258 |
| Well Completion: | 11/09 | 1258 | | |
| Grouting: | | | | |

### Depth to Water (Below TOC)

Depth: _____ Date: _____ Time: _____

### Well Construction Materials

| | Grout | Seals | Filter |
|---|---|---|---|
| Quantity: | 2'-40' | 40'-43' | 43'-85' |
| Type: | Neat cement Portland mix | chipped 3/8 bentonite | #20 washed silica |

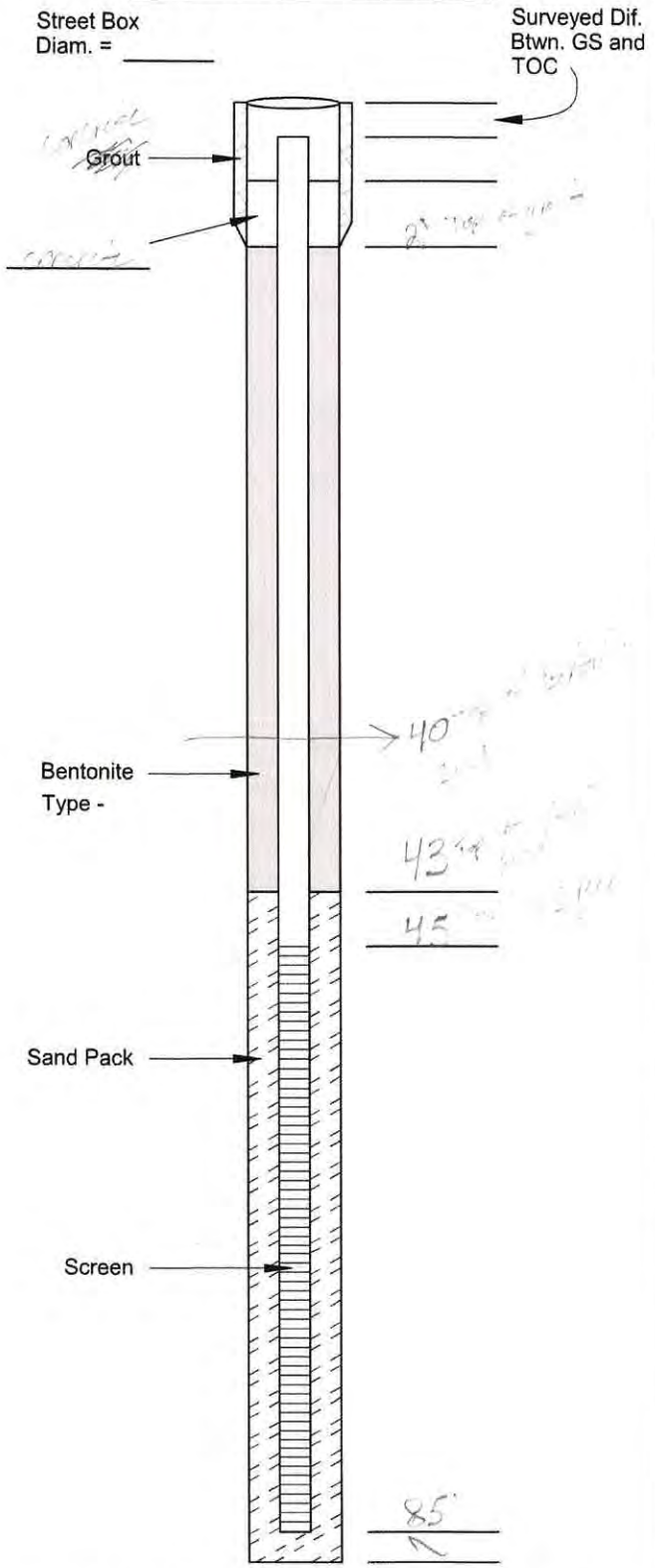
| | Screen | | |
|---|---|---|---|
| Size: | 40' | Config.: | |
| Area/Ft.: | | Comp.: | PVC |
| Inside Diam.: | 2" | Outside Diam.: | 2.3" |

### Comments

• 40-ft pre-packed screen used from 85-45'.

APEX

## Well Completion Detail




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

# WELL CONSTRUCTION LOG

Project Number 744.1708.01 286487

Well Number MW-06

## Drilling Summary

Total Depth of Hole: 85'
Hole Diameter: 8¼"
Drilling Company: Cascade Environmental
Driller: Robbie Gilden
Rig Type: B-59 Hollow Stem Auger
Bits: 8¼" D, 5' flight 5
Geologist: Kaila MacDougall

## Time Log

| | Start Date | Start Time | Finish Date | Finish Time |
|---|---|---|---|---|
| Drilling: | 11/09 | 0927 | 11/09 | 1258 |
| Well Completion: | | | | |
| Grouting: | | | | |

## Depth to Water (Below TOC)

Depth: _____ Date: _____ Time: _____

## Well Construction Materials

| | Grout | Seals | Filter |
|---|---|---|---|
| Quantity: | 2-40' | 40-43' | 43-85' |
| Type: | sand & cement mix portland | chipped 3/8 med Bentonite | 10/20 washed silica |

| | Screen | | |
|---|---|---|---|
| Size: | 40' | Config.: | |
| Area/Ft.: | | Comp.: | PVC |
| Inside Diam.: | 2" | Outside Diam.: | 2.3" |

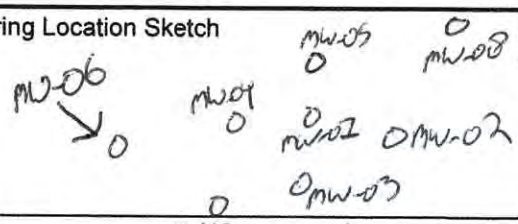
## Comments

40' perforated screen installed from 85'-45'

APEX

# SOIL BORING LOG

Boring Location Sketch




| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW-06 | 1 of 2 |

Project: District 6 C6 Location: Greater Directional Pad, X06

Drilling Method & Equipment: B59 HSA, 8¼" D x 5' L Drilling Contractor: Cascade, Robbie Eilden

Date: 20/11/09 Water Level: Start: 0927 Finish: 1258 Logger: Kade MacDougall

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0-6 hydro-vac for utility | | | | |
| 10' | 10-12 | 0937 | 2.0' | 3/6/9 | 10-12 light brown, poorly sorted sediments w/ trace amounts pea gravel. Sub-rounded, vf-c. Fining downwards w/ light clay intermixed @ 11.5. Crumbly, no plasticity. Dry | SM | no | 0.0<br>0.0<br>0.0 | 10'<br>11'<br>12' |
| 20' | 20-22 | 0958 | 1.4' | 1/3/8 | 20-22 light brown w/ poorly sorted sediments ranging from vf-c. Light amounts of clay present @ 20', coarsening down to vc w/ pea gravel @ 22'. Low plasticity, Dry, sub-rounded | | | | |
| 30' | 30-32 | 1024 | 1.6' | 3/14/21 | 30-32 Light brown w/ poorly sorted sediments ranging from m-vcu w/ pea gravel, no plasticity, low-dense, sub-rounded, sub-angular quartz grns, Dry, loose. Moist sediment encountered @ 37' | SW | no | 0.0<br>0.0<br>0.0 | 20'<br>21'<br>22' |
| 40' | 40-42 | 1052 | 1.8' | 4/3/4 | 40-42' Brown to light grey. 40-41' sed poorly sorted, m-vcu w/ pea gravel. No plasticity, low-dense, sharp contact @ 41' to m-vf w/ mod amounts clay, mod plasticity + density, planar laminate w/ oxidized silt lense. Sub-rounded, moist. | | | | |
| 50' | 50-52 | 1114 | 2.1' | 4/5/10 | 50-52 light brown, wet, poorly sorted silts and sands, vf-m, sub-rounded w/ mod clay. Mod dense, low-mod plasticity. | SW<br>↓<br>SC | no | 0.0<br>0.0<br>0.0 | 30'<br>31'<br>32' |
| 60' | | | | | | | | | 40'<br>41'<br>42' |
| 70' | | | | | | | | | |
| 80' | | | | | | | no | 50'-0.0<br>51'-0.0<br>52'-0.0 | 50'<br>51'<br>52' |
| 85' | | | | | | | | | |

Total Depth(s) = 85'

Soil Sample(s): No soil samples taken due to no PID detect, odor or staining

Rationale

Additional Information: Hydro-vac 0-6' for utility clearance. Flowing sands 50-85'

APEX

**SOIL BORING LOG**

Boring Location Sketch: See page 1

| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW-06 | 2 of 2 |

N

Project: District 6 C6 Location: Greeley Directional Pad, X06

Drilling Method & Equipment: B59 HSA Drilling Contractor: Cascade, Robbie Gilchrist

Date: 2/11/09 Water Level: Start: 0927 Finish: 1258 Logger: Kade MacDougall

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | -No core samples after 52' due to flowing sands. Log trending from augered sediments. | | | | |
| 60 | 60' | | NA | NA | 60' Brown, Moist/wet, poorly sorted vf-c w/ light clay, sub-rounded, mod dense, low plasticity, | SM/SC | no | 0.0 | 60' |
| 70 | 70' | | NA | NA | 70' Brown, Moist, Poorly sorted vf-c w/ light intermixed clay and trace fine gravel, low plasticity, mod dense, sub-rounded. | SM | no | 0.0 | 70' |
| 80 | 80' | | NA | NA | 80'/85' | SM/SC | no | 0.0 | 80' |
| 85 | 85' | 1258 | NA | NA | light brown, highly saturated/flowing sands w/ vf-c sand. Slick feel suggesting entrained clays. | SM/SC | no | 0.0 | 85' |

Total Depth(s) = 85'

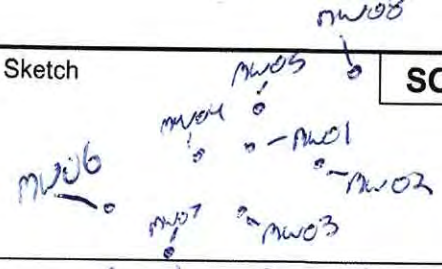
Soil Sample(s): No samples taken due to no PID, staining or odor Rationale

Additional Information: No core spans after 50' due to flowing sands.

APEX

# SOIL BORING LOG

Boring Location Sketch




| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW-06 | 1 of 2 |

Project: District 6 CG

Location: Greeley Directional Rd, XOG

Drilling Method & Equipment: BSG HSA, 8" D x 5' L

Drilling Contractor: Cascade, Robbie, Gilbert

Date: 20/11/09 Water Level: Start: 0927 Finish: 1258 Logger: Kaila McGregor

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10-12' | 0937 | 2.0' | 3/6/9 | 10-12. Light brown poorly sorted sands and silts w/ light amounts of gravel, moist, vf-c. Fmin. clumps of light clay. Non-reactive to HCl. No plasticity/crumbly. | SM | No | 10-0.0<br>11-0.0<br>12-0.0 | 10'<br>11'<br>12' |
| 20 | 20-22' | 0958 | 1.4' | 1/3/8 | 20-22. light brown-brown w/ poorly sorted sediments ranging from vf-c. light amounts of clay present. Fmin. clumps to VG and gravel @22'. low plasticity. Dry-sub-rounded | SW | No | 20-0.0<br>21-0.0<br>22-0.0 | 20'<br>21'<br>22' |
| 30 | 30-32' | 1024 | 1.6' | 3/11/21 | | | | | |
| 40 | 40-42' | 1052 | 1.8' | 11/3/4 | 30-32. light brown-brown w/ poorly sorted sediments ranging from vf-vc w/ fine gravel. Dry, low plasticity, dense to ranged w/ sediments. Non-reactive to HCl. Loose. | SW | No | 30-0.0<br>31-0.0<br>32-0.0 | 30'<br>31'<br>32' |
| 50 | 50-52' | 1114 | 2.0' | 5/5/8 | Moist sediments brought to surface by auger @ 1037. 40-41. Brown-light gray. 40'-41' sediments poorly sorted, moist w/ fine to med gravel. No plasticity, dense. 41' Strong contact zone to vf w/ med amounts clays, med plasticity, dense. Planar laminated/mottled silt lense. Sub-rounded grains. Moist. | SW<br>↓<br>SC | No | 40-0.0<br>41-0.0<br>42-0.0 | |
| 60 | | | | | | | No | 50-0.0<br>51-0.0<br>52-0.0 | |
| 70 | | | | | | | | | |
| 80 | | | | | 50-52. light brown. Moist. Poorly sorted silts and sand vf-Mu, sub-rounded w/ med amounts clays. Med density, low-med plasticity. | SC | | | |
| 85 | | | | | No spoon core following 52'. Log from augered sediment. | | | | |

Total Depth(s) = 85 ft

Soil Sample(s): -no soil samples taken.

Rationale: No staining, odor or PID readings were found

Additional Information: Hydro-vac stop for utility clearance

APEX

Boring Location Sketch

**SOIL BORING LOG**

| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW-06 | 2 of 2 |

N

Project District 6 C6 Location Greeley Directional pad

Drilling Method & Equipment B59 HSA, 8"D x 5'L Drilling Contractor Cascade, Robbie Gilchrist

Date 20/11/09 Water Level _____ Start 0927 Finish 1258 Logger Kyle McDougall

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | No spoon core following 52', Log from augered sediments | Sr/Sc | no | | |
| 60 | 60' | | NA | NA | 60' Brown Pl-t/wet Poorly sort | | | 60'-0.0 | 60' |
| 70 | 70' | | NA | NA | | | no | 70'-0.0 | 70' |
| 80 | 80' | | NA | NA | | | no | 80'-0.0 | 80' |
| 85 | 85' | | NA | NA | | | | 85'-0.0 | 85' |
| 90 | | | | | | | | | |

Total Depth(s) = 85ft

Soil Sample(s): No samples were taken

No Staining Rationale: Water and no PID readings were found

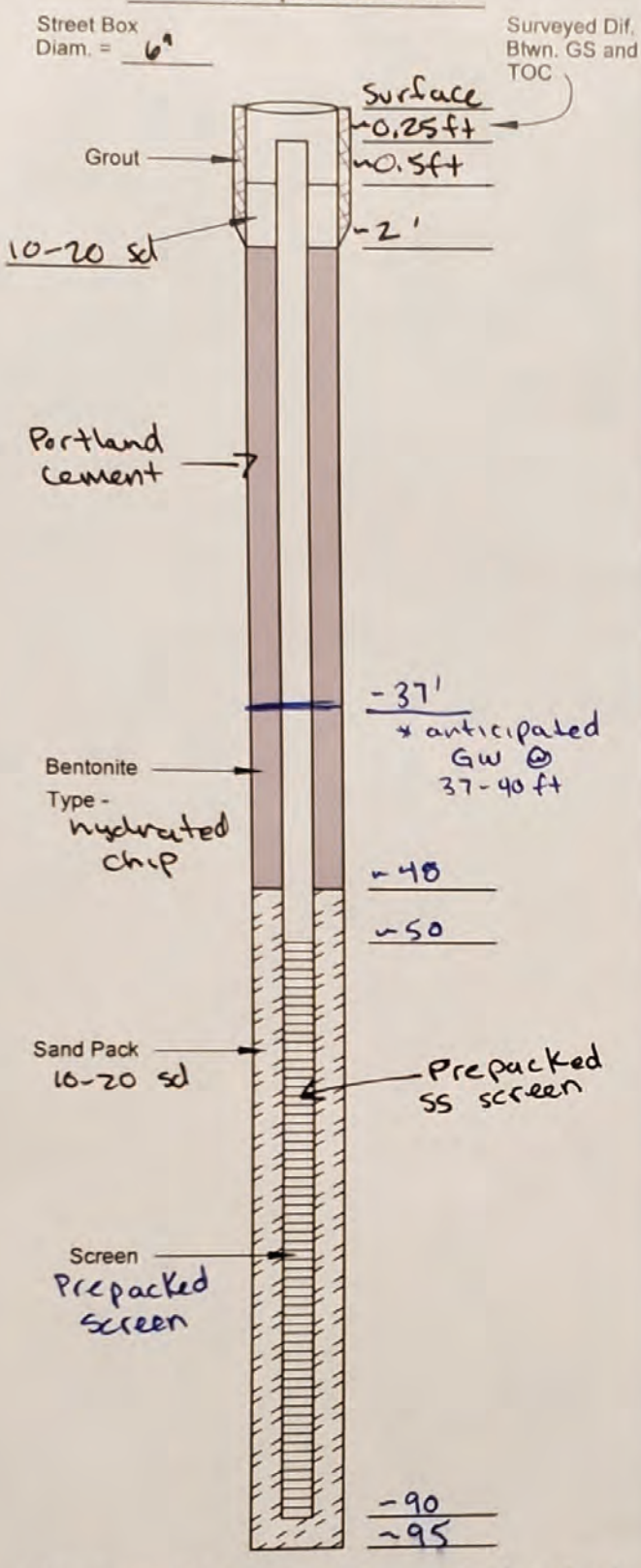
Additional Information: Sands 50-85' w/ poor recovery to surface

APEX

# WELL CONSTRUCTION LOG

| Project Number | District Six C6 | Well Number | MW08 |
|---|---|---|---|

## Well Completion Detail




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

## Drilling Summary

Total Depth of Hole: ~95ft BGS
Hole Diameter: 8 1/4"
Drilling Company: Cascade
Driller: Miles
Rig Type: Hollow stem auger
Bits: 8 1/4", 5ft flights
Geologist: Ryan Finley

## Time Log

| | Start Date | Start Time | Finish Date | Finish Time |
|---|---|---|---|---|
| Drilling: | 10/19/20 | 1115 | 10/19/20 | 1455 |
| Well Completion: | 10/20/20 | 0855 | 10/20/20 | 1212 |
| Grouting: | 11/9/20 | | 11/10/20 | 1645 |

## Depth to Water (Below TOC)

Depth: _____ Date: _____ Time: _____

## Well Construction Materials

| | Grout | Seals | Filter |
|---|---|---|---|
| Quantity: | 10 bg | 4 bg | 28 bg |
| Type: | Quikrete | Bent chip | 10-20 sd |

Screen

| | | | |
|---|---|---|---|
| Size: | 40 ft | Config.: | Sch 40 |
| Area/Ft.: | 10 slot | Comp.: | PVC |
| Inside Diam.: | 2.047 | Outside Diam.: | 2.375 |

## Comments

well was drilled to 85ft. Driller ~~may have~~ lost count + drilled to 95ft. Casing was sinking @ TD, 105ft of casing initially installed. Casing brought back to ~~90ft~~ 85ft + left overnight. on 10/20/20, casing dropped to 90ft + stayed. well set @ 90ft

APEX

Boring Location Sketch

# SOIL BORING LOG

| Project Number | Boring Number | Sheet |
|---|---|---|
| 286487 | MW08 | 1 of 3 |

N

Project 744.1708.01 - 286487 Location District Six C6

Drilling Method & Equipment Hollow stem Auger Drilling Contractor Cascade, Miles (driller)

Date 10/19/20 Water Level ~38ft Start 1115 Finish 1455 Logger R. Finley

| Depth Below Surface | Sample: Interval | Sample: Depth/Time | Sample: Recovery | 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) |
|---|---|---|---|---|---|---|---|---|---|
| 3 | | | | | Hydrovac potholing to 6ft BGS for utility clearance | GM SM | N | | |
| 6 | | | | | | | | | |
| 9 | | | | | 10ft med brwn gravelly silty sd + clay sd. vfg-mg sd. >60% mg-cg gravel up to 1/4" dia. moist. No plastic w/ areas of low plastic. No odor/stn | GM GC | N | 0.8 | 10 |
| 12 | | | | | | | | | |
| 15 | | | | | | GM | N | 1.2 | 20 |
| | | | | | 20ft med brwn gravelly silty sd. vfg-mg. >50% mg-cg sd. up to 1/4" dia. No plastic, low cohesive. moist. No odor/stn. | SM GM | N | 2.3 | 30 |
| 30 | | | | | | | | | |
| | | | | | 30ft med brwn silty sd. w/ some gravel 5-10%. vfg-mg sd. grav up to 1/4" angular gravel, rounded sd. No plastic. moist. No odor/stn. | SC | N | 2.9 | 40 |
| 45 | | | | | | | | | |
| | | | | | 40ft med brwn - L. grey clay sd. vfg-fg. med-high plastic. low dense. moist - satur. slight unknown odor NOT HC. No stain. | SM | N | 2.7 | 50 |
| 60 | | | | | | SM SC | N | 3.1 | 60 |
| | | | | | 50ft. M. brwn - olive gr/grn silty sd. vfg-mg. Low plastic Tr. clay. very loose. v. low dense saturated SA. No odor/stn | SM SC | N | 2.6 | 70 |
| 75 | | | | | | | | | |
| | | | | | 60ft Same as above very saturated - soupy | SM SC | N | 3.9 | 80 |
| | | | | | 70ft Same as above flowing sd. | SM SC | N | 2.2 | 85 |
| 90 | | | | | 80ft Same as above flowing sd | | | | |
| | | | | | 85ft same as above flowing sd | | | | |
| | | | | | * All samples collected off auger flights every 10ft No sampler split spoon used. No hammer counts | | | | |

Total Depth(s) = ~95ft **

Soil Sample(s): Ø

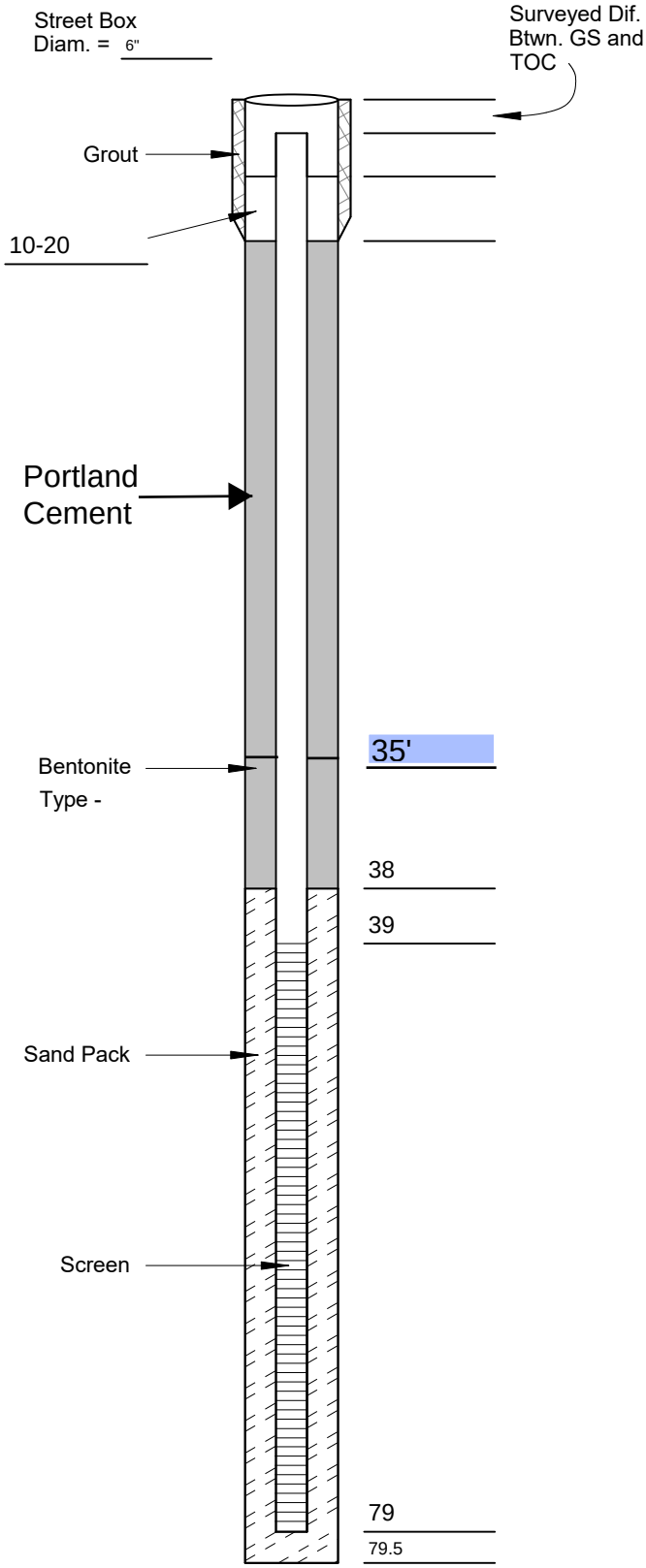
Rationale: No Suspected impacts

Additional Information: ** Driller lost count of depth + drilled to 95ft. depth listed above may not be accurate

# WELL CONSTRUCTION LOG

Project Number: District Six | Well Number: MW10

## Well Completion Detail




* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

## Drilling Summary

Total Depth of Hole: 85'
Hole Diameter: 8 1/4"
Drilling Company: Cascade
Driller:
Rig Type: Hollow Stem Auger
Bits: Standard
Geologist: Jason Grubb

## Time Log

| | Start Date | Start Time | Finish Date | Finish Time |
|---|---|---|---|---|
| Drilling: | 10/22 | 10:00 | 10/22 | 14:50 |
| Well Completion: | 10/22 | 14:50 | 10/22 | 16:30 |
| Grouting: | | | | |

## Depth to Water (Below TOC)

Depth: _____ Date: _____ Time: _____

## Well Construction Materials

| | Grout | Seals | Filter |
|---|---|---|---|
| Quantity: | | | |
| Type: | | | |

Screen

| | | | |
|---|---|---|---|
| Size: | 40 ft | Config.: | Sch 40 |
| Area/Ft.: | 10 slot | Comp.: | PVC |
| Inside Diam.: | 2.047 | Outside Diam.: | 2.375 |

## Comments

Well was drilled to 85', but flowing sands pushed into auger at 79.5'. Prepack screen was set. Driller knocked out plug and removed auger and boring filled to 55' with flowing sands. Sand pack set from 55' to 38'. Three foot bentonite plug set.

APEX

Boring Location Sketch

**SOIL BORING LOG**

| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW07 | 1 of 2 |

N

MW-10

Project: District 6 Location: Greely, CO

Drilling Method & Equipment: HSA Drilling Contractor: Cascade

Date: 10/20/20 Water Level: Start: 10:00 Finish: 14:50 Logger: JDG

| Depth Below Surface | Sample Interval | Sample Depth/Time | Sample Recovery | 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) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Hydrovac to 6 ft bgs No utilities | | | | |
| 10 | | 10:28 | 50% | 7/7/9 | Brown, very fine to medium silty sand. Low density. Moist. No odor or staining. | MLS | | 0.0 | 12' |
| 20 | | 11:10 | 50% | 14/14/21 | Brown, very fine to coarse sand with some silts (<25%) slightly moist. No odor or staining. | SW | | 0.0 | 22' |
| 30 | | 11:24 | 80% | 4/5/6 | Dark brown w/dark tan layers, silt/clay with medium to high plasticity. Moist. No odor or staining. | ML/CL | | 0.0 | 32' |
| 40 | | 13:03 | 60% | 6/10/12 | Tan, silt/clay with some very fine sands (<10%). High plasticity. Saturated. No odor or staining. | ML/CL | | 0.0 | 42' |
| 50 | | | | | At 45' the center rod sunk to 48' and became stuck. Removed auger and rod and used plug to advance boring for well placement. | | | | |
| 60 | | | | | Cuttings consisted of very fine sands with silt. | | | | |
| 70 | | | | | | | | | |

Total Depth(s) = 85'

Soil Sample(s):

Rationale

Additional Information: Stepped out from original location of MW07

APEX

Boring Location Sketch

# SOIL BORING LOG

| Project Number | Boring Number | Sheet |
|---|---|---|
| | MW07 | 2 of 2 |

N

MW-10

Project: District 6 Location: Greeley, CO

Drilling Method & Equipment: HSA Drilling Contractor: Cascade

Date: 10/20/20 Water Level: Start: 10:00 Finish: 14:50 Logger: JDG

| Depth Below Surface | Sample: Interval | Sample: Depth/ Time | Sample: Recovery | 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) |
|---|---|---|---|---|---|---|---|---|---|
| 80 | | | | | Flowing sands in auger to 79.5' | | | | |
| 90 | | | | | 85' Bottom of boring | | | | |

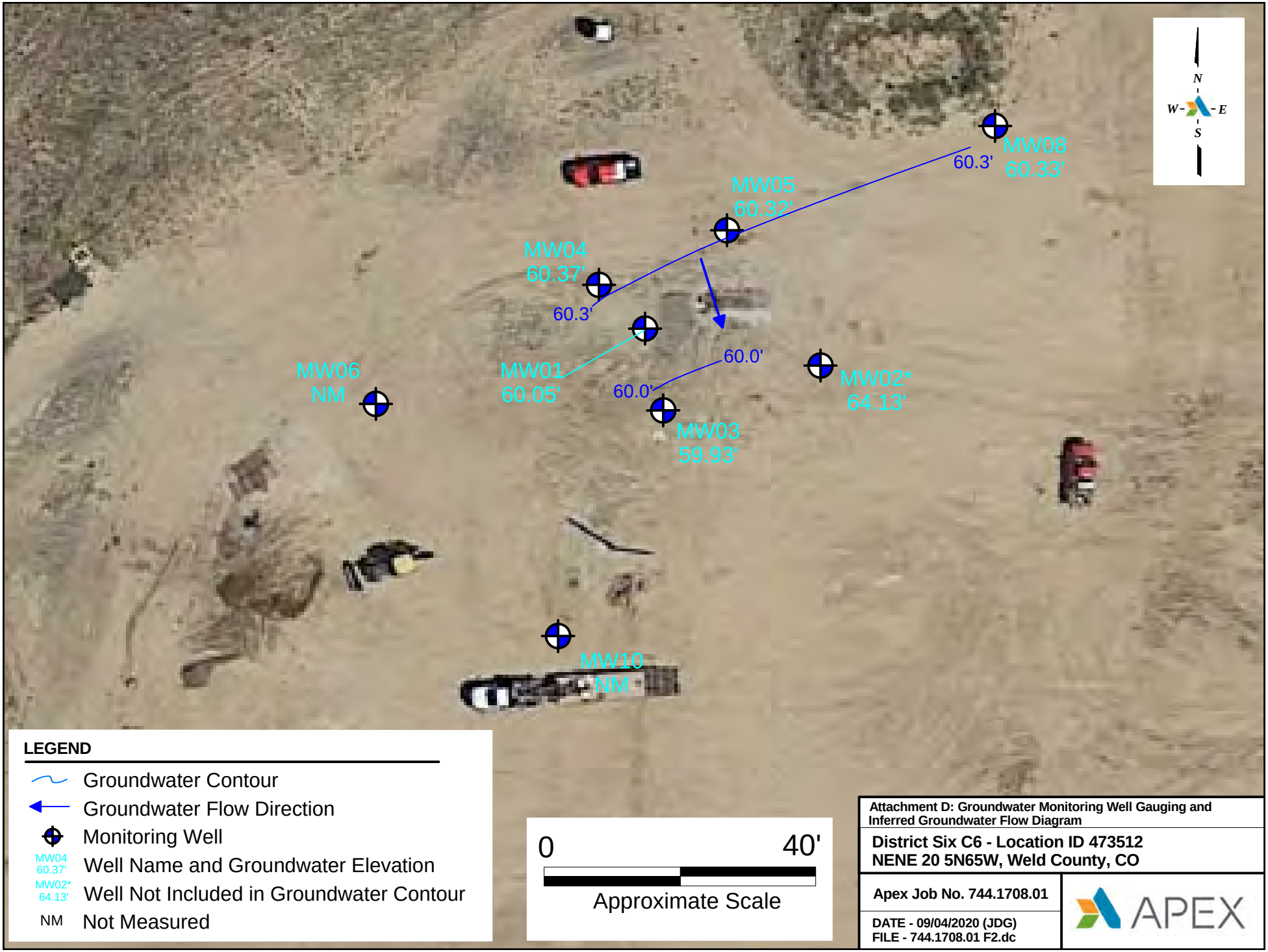
Total Depth(s) =

Soil Sample(s): Rationale

Additional Information:

**Attachment D**

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




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

**District Six C6 - Location ID 473512**
**NENE 20 5N65W, Weld County, CO**

**Apex Job No. 744.1708.01**

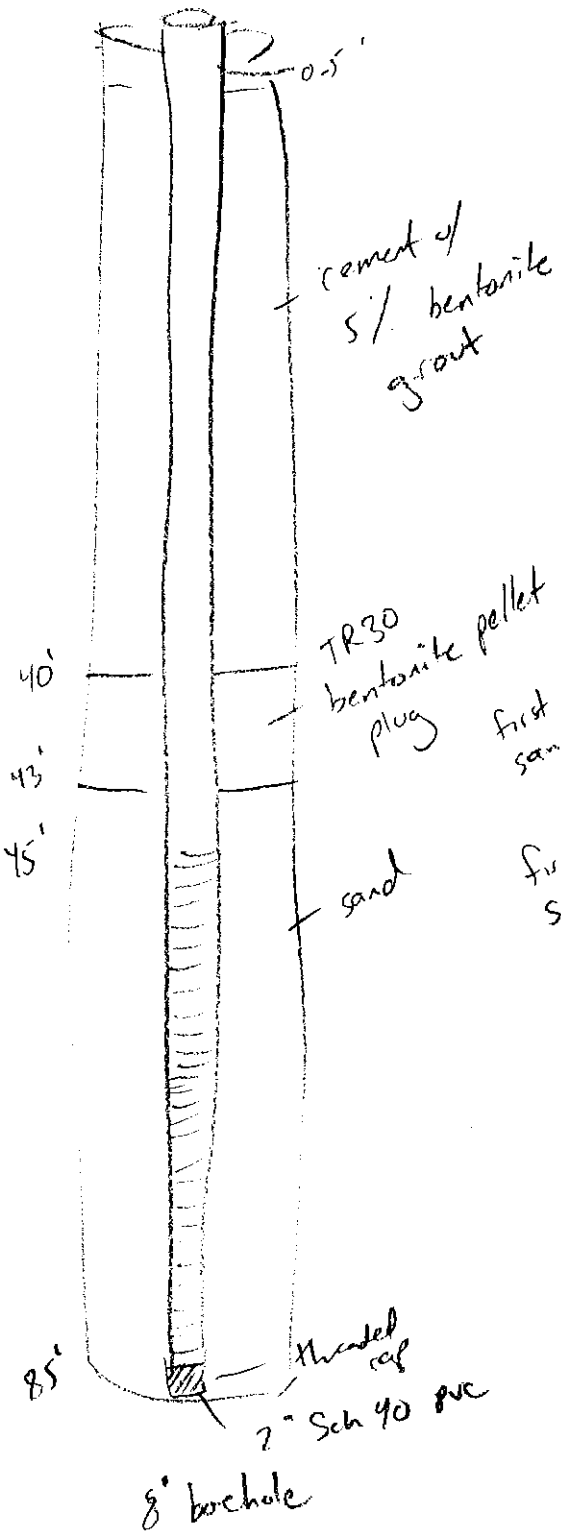
**DATE - 09/04/2020 (JDG)**
**FILE - 744.1708.01 F2.dc**

APEX

**Attachment E**

**Soil Vapor Monitoring Probe Construction Diagram**

MW-1




first water on samples (~38-40')

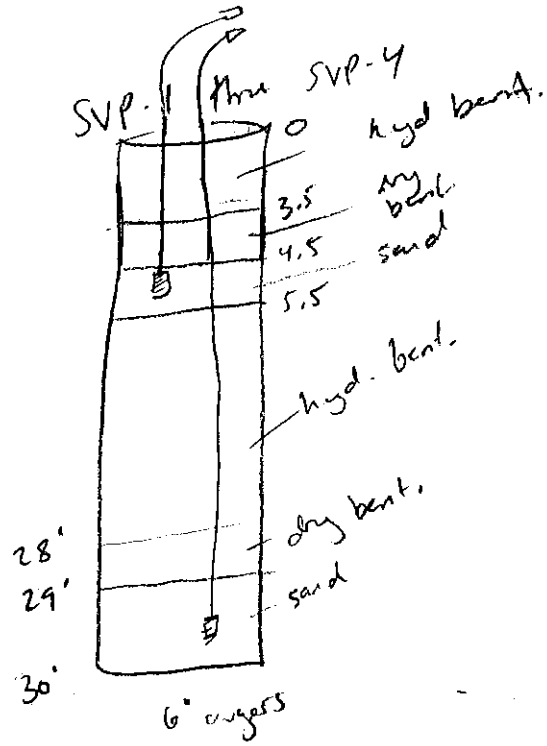
first saturated sample = 48-50' run

water in borehole 9/26 @ 1530 = 37.7' (current auger depth 70')

water in borehole 8/27 @ 1130 = 59.5' (auger depth 85' [bedrock])

stablized water in well 9/30 @ 900 = 37.64

SVP-1 thru SVP-4



**Attachment F**

**2020 Q4 Groundwater Laboratory Reports**

# Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 05, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground_Water/GWA_District_Six_C6

Work Order # 2010369

Enclosed are the results of analyses for samples received by Summit Scientific on 10/29/20 14:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | | |
|---|---|---|---|
| Extraction Oil&Gas | Project: | Ground_Water/GWA_District_Six_C6 | |
| 370 17th Street Suite 5300 | Project Number: | Alloc 421 930.88 | **Reported:** |
| Denver CO, 80202 | Project Manager: | Heather Shideman | 11/05/20 12:31 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_59993_MH_MW_1 | 2010369-01 | Water | 10/29/20 12:30 | 10/29/20 14:45 |

Summit Scientific

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

# Summit Scientific

S2

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



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

| | | | | | Preservative | | | | Matrix | | | | Analysis Requested | | | | | | | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | Field ID / Point of Collection | Date Sampled | Time Sampled | # of containers | HCl | HNO3 | None | Other (Specify) | Ground Water | Soil | Air-Canister # | Other (Specify) | COGCC 609 | No BART | | | | | | |
| 1 | GW_59993_MH_MW_1 | 20/10/29 | 1230 | | | | | | X | | | | X | X | | | | | | Sample Frequency: |
| | NENE_20_5N_65W | | | | | | | | | | | | | | | | | | | Q4 |
| | | | | | | | | | | | | | | | | | | | | |
| | Temperature, field: | 14.7 | °C | | | | | | | | | | | | | | | | | |
| | pH, field: | 7.70 | s.u. | | | | | | | | | | | | | | | | | |
| | Conductivity, field: | 883 | uS/cm | | | | | | | | | | | | | | | | | |
| | ORP, field: | -297.9 | mV | | | | | | | | | | | | | | | | | |
| | Dissolved Oxygen, field: | 0.24 | mg/L | | | | | | | | | | | | | | | | | |
| | Turbidity, field: | 92.5 | NTU | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| | 20/10/29/1445 | | 10/29/2020 1445 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours
___ 24 hours _X_ Standard
___ 48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 4.5
Intact: (Yes) No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: Apex/XOG Client Project ID: GWA District Six 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) | 4.5 |
|---|---|

Thermometer ID: 61857155-K

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

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

| **Custodian Printed Name or Initials** | **Signature of Custodian** | 10/29/2020 **Date/Time** |
|---|---|---|

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:31 |

## GW_59993_MH_MW_1

NENE_20_5N_65W

**2010369-01 (Water)**

**Summit Scientific**

### Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Benzene** | **0.29** | 0.010 | mg/L | 10 | BDK0001 | 11/02/20 | 11/03/20 | EPA 8260B | |
| **Toluene** | **0.025** | 0.0010 | " | 1 | " | " | " | " | |
| **Ethylbenzene** | **0.054** | 0.0010 | " | " | " | " | " | " | |
| **m,p-Xylene** | **0.073** | 0.0020 | " | " | " | " | " | " | |
| **o-Xylene** | **0.0083** | 0.0010 | " | " | " | " | " | " | |
| **Xylenes (total)** | **0.082** | 0.0020 | " | " | " | " | " | " | |
| **Gasoline Range Hydrocarbons** | **1.5** | 0.050 | " | " | " | " | " | " | |

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *119 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *107 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *94.6 %* | *21-167* | | " | " | " | " | |

### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **C10-C28 (DRO)** | **0.244** | 0.100 | mg/L | 1 | BDK0026 | 11/03/20 | 11/04/20 | EPA 8015M | |

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: o-Terphenyl* | | *76.0 %* | *44.8-129* | | " | " | " | " | |

### Dissolved Gases by RSK-175

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Methane** | **10** | 1.0 | mg/L | 100 | BDJ0401 | 10/30/20 | 11/02/20 | 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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:31 |

**GW_59993_MH_MW_1**
NENE_20_5N_65W
**2010369-01 (Water)**

**Summit Scientific**

## Dissolved Gases by RSK-175

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Ethane** | **5.4** | 1.0 | mg/L | 100 | BDJ0401 | 10/30/20 | 11/02/20 | RSK-175 mod |
| **Propane** | **2.6** | 1.0 | " | " | " | " | " | " |

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: Ethene* | | *75.0 %* | *70-130* | | " | " | " | " | |

## Dissolved Metals by EPA Method 200.8

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Calcium** | **81100** | 50.0 | ug/l | 1 | BDJ0398 | 10/30/20 | 10/30/20 | EPA 200.8 | |
| **Iron** | **55.7** | 10.0 | " | " | " | " | " | " | |
| **Magnesium** | **38400** | 50.0 | " | " | " | " | " | " | |
| **Manganese** | **773** | 1.00 | " | " | " | " | " | " | |
| **Potassium** | **2780** | 50.0 | " | " | " | " | " | " | |
| **Sodium** | **77000** | 50.0 | " | " | " | " | " | " | |
| **Barium** | **60.7** | 1.00 | " | " | " | " | " | " | |
| **Boron** | **96.1** | 10.0 | " | " | " | " | " | " | |
| Selenium | ND | 1.00 | " | " | " | " | " | " | |
| **Strontium** | **959** | 10.0 | " | " | " | " | " | " | |

## Anions by EPA Method 300.0

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Bromide** | **0.983** | 0.200 | mg/L | 1 | BDJ0380 | 10/29/20 | 10/30/20 | EPA 300.0 | |
| **Chloride** | **172** | 5.00 | " | 50 | " | " | " | " | |
| **Fluoride** | **0.321** | 0.200 | " | 1 | " | " | " | " | |
| **Sulfate** | **127** | 15.0 | " | 50 | " | " | " | " | |
| **Nitrate as N** | **0.102** | 0.100 | " | 1 | " | " | " | " | |
| Nitrite as N | ND | 0.100 | " | " | " | " | " | " | |
| **Nitrate/Nitrite as N** | **0.102** | 0.100 | " | " | " | " | " | " | |



*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.*

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| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:31 |

**GW_59993_MH_MW_1**
NENE_20_5N_65W
**2010369-01 (Water)**

**Summit Scientific**

## Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Alkalinity** | **280** | 10.0 | mg/L as CaCO3 | 1 | BDJ0390 | 10/30/20 | 11/04/20 | SM2320-B | |
| Carbonate | ND | 10.0 | " | " | " | " | " | " | |
| **Bicarbonate** | **280** | 10.0 | " | " | " | " | " | " | |

## Conventional Chemistry Parameters by APHA/EPA Methods

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus - Total | ND | 0.0500 | mg/L | 1 | BDK0053 | 11/03/20 | 11/04/20 | SM4500-P-E | |

## Specific Conductance by SM2510B

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1140** | 1.00 | umhos/cm | 1 | BDK0042 | 11/04/20 | 11/04/20 | SM2510B | |

## Total Dissolved Solids by SM2540C

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Dissolved Solids** | **570** | 10.0 | mg/L | 1 | BDK0043 | 11/04/20 | 11/04/20 | SM2540C | |

## pH by SM4500

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **pH** | **7.92** | 1.00 | pH Units | 1 | BDK0032 | 10/29/20 | 11/03/20 | SM4500-H+ B | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:31 |

**GW_59993_MH_MW_1**
NENE_20_5N_65W

**2010369-01 (Water)**

**Summit Scientific**

## Field Data

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **883.00** | | uS/cm | 1 | BDJ0395 | 10/29/20 | 10/29/20 | Field Method | |
| **Temperature** | **14.70** | | Degrees C | " | " | " | " | " | |
| **Turbidity** | **92.5** | | NTU | " | " | " | " | " | |
| **Oxidation/Reduction Potential** | **-287.9** | | mv | " | " | " | " | " | |
| **Dissolved Oxygen** | **0.240** | | mg/L | " | " | " | " | " | |
| **pH** | **7.7** | | SU | " | " | " | " | " | |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0001 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDK0001-BLK1)** | | | | Prepared & Analyzed: 11/02/20 | | | | | | |
| 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* | *0.0134* | | *"* | *0.0133* | | *101* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0126* | | *"* | *0.0133* | | *94.5* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0112* | | *"* | *0.0133* | | *84.3* | *21-167* | | | |
| **LCS (BDK0001-BS1)** | | | | Prepared & Analyzed: 11/02/20 | | | | | | |
| Benzene | 0.0216 | 0.0010 | mg/L | 0.0333 | | 64.8 | 51-132 | | | |
| Toluene | 0.0290 | 0.0010 | " | 0.0333 | | 87.2 | 51-138 | | | |
| Ethylbenzene | 0.0372 | 0.0010 | " | 0.0333 | | 112 | 58-146 | | | |
| m,p-Xylene | 0.0775 | 0.0020 | " | 0.0667 | | 116 | 57-144 | | | |
| o-Xylene | 0.0380 | 0.0010 | " | 0.0333 | | 114 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0139* | | *"* | *0.0133* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0126* | | *"* | *0.0133* | | *94.8* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0118* | | *"* | *0.0133* | | *88.7* | *21-167* | | | |
| **Matrix Spike (BDK0001-MS1)** | | **Source: 2010367-01** | | Prepared & Analyzed: 11/02/20 | | | | | | |
| Benzene | 0.0312 | 0.0010 | mg/L | 0.0333 | 0.00781 | 70.1 | 34-141 | | | |
| Toluene | 0.0301 | 0.0010 | " | 0.0333 | ND | 90.2 | 27-151 | | | |
| Ethylbenzene | 0.0576 | 0.0010 | " | 0.0333 | 0.0165 | 123 | 29-160 | | | |
| m,p-Xylene | 0.153 | 0.0020 | " | 0.0667 | 0.0579 | 143 | 20-166 | | | |
| o-Xylene | 0.0380 | 0.0010 | " | 0.0333 | ND | 114 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0155* | | *"* | *0.0133* | | *116* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0136* | | *"* | *0.0133* | | *102* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0142* | | *"* | *0.0133* | | *107* | *21-167* | | | |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0001 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDK0001-MSD1)** | | **Source: 2010367-01** | | Prepared & Analyzed: 11/02/20 | | | | | | |
| Benzene | 0.0313 | 0.0010 | mg/L | 0.0333 | 0.00781 | 70.5 | 34-141 | 0.352 | 32 | |
| Toluene | 0.0299 | 0.0010 | " | 0.0333 | ND | 89.7 | 27-151 | 0.534 | 25 | |
| Ethylbenzene | 0.0591 | 0.0010 | " | 0.0333 | 0.0165 | 128 | 29-160 | 2.71 | 50 | |
| m,p-Xylene | 0.160 | 0.0020 | " | 0.0667 | 0.0579 | 153 | 20-166 | 4.28 | 36 | |
| o-Xylene | 0.0392 | 0.0010 | " | 0.0333 | ND | 118 | 33-159 | 3.08 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0146* | | *"* | *0.0133* | | *110* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0134* | | *"* | *0.0133* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0142* | | *"* | *0.0133* | | *106* | *21-167* | | | |

## Extractable Petroleum Hydrocarbons by 8015 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0026 - EPA 3520B** | | | | | | | | | | |
| **Blank (BDK0026-BLK1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| C10-C28 (DRO) | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: o-Terphenyl* | *0.0216* | | *"* | *0.0250* | | *86.2* | *44.8-129* | | | |
| **LCS (BDK0026-BS1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| C10-C28 (DRO) | 0.814 | 0.100 | mg/L | 1.00 | | 81.4 | 70-130 | | | |
| *Surrogate: o-Terphenyl* | *0.0192* | | *"* | *0.0250* | | *76.6* | *44.8-129* | | | |
| **LCS Dup (BDK0026-BSD1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| C10-C28 (DRO) | 0.790 | 0.100 | mg/L | 1.00 | | 79.0 | 70-130 | 2.91 | 200 | |
| *Surrogate: o-Terphenyl* | *0.0187* | | *"* | *0.0250* | | *74.7* | *44.8-129* | | | |

## Dissolved Gases by RSK-175 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0401 - GC** | | | | | | | | | | |
| **Blank (BDJ0401-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | | | | | | |
| Ethane | ND | 0.010 | " | | | | | | | |
| Propane | ND | 0.010 | " | | | | | | | |
| *Surrogate: Ethene* | *0.0350* | | *"* | *0.0364* | | *96.2* | *70-130* | | | |
| **LCS (BDJ0401-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | | 70.4 | 70-130 | | | |
| Ethane | 0.078 | 0.010 | " | 0.0798 | | 98.0 | 70-130 | | | |
| Propane | 0.11 | 0.010 | " | 0.139 | | 82.2 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0749* | | *"* | *0.0728* | | *103* | *70-130* | | | |
| **Duplicate (BDJ0401-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | ND | | | | 30 | |
| Ethane | ND | 0.010 | " | | ND | | | | 30 | |
| Propane | ND | 0.010 | " | | ND | | | | 30 | |
| *Surrogate: Ethene* | *0.0337* | | *"* | *0.0364* | | *92.6* | *70-130* | | | |
| **Matrix Spike (BDJ0401-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | ND | 71.1 | 70-130 | | | |
| Ethane | 0.084 | 0.010 | " | 0.0798 | ND | 105 | 70-130 | | | |
| Propane | 0.12 | 0.010 | " | 0.139 | ND | 87.3 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0784* | | *"* | *0.0728* | | *108* | *70-130* | | | |

# Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0398 - EPA 200.8** | | | | | | | | | | |
| **Blank (BDJ0398-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| 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 (BDJ0398-BS1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Calcium | 5550 | 50.0 | ug/l | 5000 | | 111 | 85-115 | | | |
| Iron | 4920 | 10.0 | " | 5000 | | 98.5 | 85-115 | | | |
| Magnesium | 5450 | 50.0 | " | 5000 | | 109 | 85-115 | | | |
| Manganese | 517 | 1.00 | " | 500 | | 103 | 85-115 | | | |
| Potassium | 5310 | 50.0 | " | 5000 | | 106 | 85-115 | | | |
| Sodium | 5190 | 50.0 | " | 5000 | | 104 | 85-115 | | | |
| Barium | 538 | 1.00 | " | 500 | | 108 | 85-115 | | | |
| Boron | 2590 | 10.0 | " | 2500 | | 103 | 85-115 | | | |
| Selenium | 50.3 | 1.00 | " | 50.0 | | 101 | 85-115 | | | |
| Strontium | 533 | 10.0 | " | 500 | | 107 | 85-115 | | | |
| **Duplicate (BDJ0398-DUP1)** | | **Source: 2010369-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Calcium | 79100 | 50.0 | ug/l | | 81100 | | | 2.55 | 20 | |
| Iron | 56.5 | 10.0 | " | | 55.7 | | | 1.41 | 20 | |
| Magnesium | 38700 | 50.0 | " | | 38400 | | | 0.740 | 20 | |
| Manganese | 757 | 1.00 | " | | 773 | | | 2.19 | 20 | |
| Potassium | 2800 | 50.0 | " | | 2780 | | | 0.598 | 20 | |
| Sodium | 78500 | 50.0 | " | | 77000 | | | 2.00 | 20 | |
| Barium | 60.1 | 1.00 | " | | 60.7 | | | 1.02 | 20 | |
| Boron | 89.5 | 10.0 | " | | 96.1 | | | 7.04 | 20 | |
| Selenium | ND | 1.00 | " | | ND | | | | 20 | |
| Strontium | 938 | 10.0 | " | | 959 | | | 2.25 | 20 | |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0398 - EPA 200.8** | | | | | | | | | | |
| **Matrix Spike (BDJ0398-MS1)** | | **Source: 2010369-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Calcium | 87300 | 50.0 | ug/l | 5000 | 81100 | 122 | 70-130 | | | |
| Iron | 4880 | 10.0 | " | 5000 | 55.7 | 96.4 | 70-130 | | | |
| Magnesium | 42900 | 50.0 | " | 5000 | 38400 | 90.3 | 70-130 | | | |
| Manganese | 1290 | 1.00 | " | 500 | 773 | 104 | 70-130 | | | |
| Potassium | 7860 | 50.0 | " | 5000 | 2780 | 102 | 70-130 | | | |
| Sodium | 82400 | 50.0 | " | 5000 | 77000 | 110 | 70-130 | | | |
| Barium | 580 | 1.00 | " | 500 | 60.7 | 104 | 70-130 | | | |
| Boron | 2520 | 10.0 | " | 2500 | 96.1 | 96.9 | 70-130 | | | |
| Selenium | 51.8 | 1.00 | " | 50.0 | ND | 104 | 70-130 | | | |
| Strontium | 1480 | 10.0 | " | 500 | 959 | 104 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0398-MSD1)** | | **Source: 2010369-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Calcium | 84700 | 50.0 | ug/l | 5000 | 81100 | 72.1 | 70-130 | 2.92 | 25 | |
| Iron | 4940 | 10.0 | " | 5000 | 55.7 | 97.8 | 70-130 | 1.37 | 25 | |
| Magnesium | 43500 | 50.0 | " | 5000 | 38400 | 101 | 70-130 | 1.29 | 25 | |
| Manganese | 1300 | 1.00 | " | 500 | 773 | 106 | 70-130 | 0.969 | 25 | |
| Potassium | 8210 | 50.0 | " | 5000 | 2780 | 109 | 70-130 | 4.40 | 25 | |
| Sodium | 82200 | 50.0 | " | 5000 | 77000 | 105 | 70-130 | 0.268 | 25 | |
| Barium | 584 | 1.00 | " | 500 | 60.7 | 105 | 70-130 | 0.772 | 25 | |
| Boron | 2560 | 10.0 | " | 2500 | 96.1 | 98.6 | 70-130 | 1.68 | 25 | |
| Selenium | 49.5 | 1.00 | " | 50.0 | ND | 99.0 | 70-130 | 4.57 | 25 | |
| Strontium | 1540 | 10.0 | " | 500 | 959 | 117 | 70-130 | 4.37 | 25 | |

## Anions by EPA Method 300.0 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0380 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0380-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0380-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 9.13 | 0.200 | mg/L | 10.0 | | 91.3 | 90-110 | | | |
| Chloride | 2.88 | 0.100 | " | 3.00 | | 96.1 | 90-110 | | | |
| Fluoride | 2.13 | 0.200 | " | 2.00 | | 106 | 90-110 | | | |
| Sulfate | 15.6 | 0.300 | " | 15.0 | | 104 | 90-110 | | | |
| Nitrate as N | 2.87 | 0.100 | " | 3.00 | | 95.6 | 90-110 | | | |
| Nitrite as N | 2.81 | 0.100 | " | 3.00 | | 93.6 | 90-110 | | | |
| **Duplicate (BDJ0380-DUP1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | ND | 20.0 | mg/L | | ND | | | | 20 | |
| Chloride | 108 | 10.0 | " | | 110 | | | 2.29 | 20 | |
| Fluoride | ND | 20.0 | " | | ND | | | | 20 | |
| Sulfate | 44.1 | 30.0 | " | | 44.8 | | | 1.57 | 20 | |
| Nitrate as N | 2.90 | 10.0 | " | | 3.00 | | | 3.39 | 20 | |
| Nitrite as N | ND | 10.0 | " | | ND | | | | 20 | |
| Nitrate/Nitrite as N | ND | 20.0 | " | | ND | | | | 20 | |
| **Matrix Spike (BDJ0380-MS1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 1100 | 20.0 | mg/L | 1000 | ND | 110 | 80-120 | | | |
| Chloride | 364 | 10.0 | " | 300 | 110 | 84.5 | 80-120 | | | |
| Fluoride | 240 | 20.0 | " | 200 | ND | 120 | 80-120 | | | |
| Sulfate | 1720 | 30.0 | " | 1500 | 44.8 | 112 | 80-120 | | | |
| Nitrate as N | 346 | 10.0 | " | 300 | 3.00 | 114 | 80-120 | | | |
| Nitrite as N | 314 | 10.0 | " | 300 | ND | 105 | 80-120 | | | |

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

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0390 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0390-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | ND | 10.0 | mg/L as CaCO3 | | | | | | | |
| Carbonate | ND | 10.0 | " | | | | | | | |
| Bicarbonate | ND | 10.0 | " | | | | | | | |
| **LCS (BDJ0390-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 110 | 10.0 | mg/L as CaCO3 | 100 | | 110 | 80-120 | | | |
| **Duplicate (BDJ0390-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 310 | 10.0 | mg/L as CaCO3 | | 310 | | | 0.00 | 20 | |
| Carbonate | ND | 10.0 | " | | ND | | | | 20 | |
| Bicarbonate | 310 | 10.0 | " | | 310 | | | 0.00 | 20 | |
| **Matrix Spike (BDJ0390-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 400 | 10.0 | mg/L as CaCO3 | 100 | 310 | 90.0 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0390-MSD1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 410 | 10.0 | mg/L as CaCO3 | 100 | 310 | 100 | 70-130 | 2.47 | 20 | |

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0053 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0053-BLK1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | | | | | | |
| **LCS (BDK0053-BS1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | | 104 | 80-120 | | | |
| **Duplicate (BDK0053-DUP1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | ND | | | | 20 | |
| **Matrix Spike (BDK0053-MS1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.00 | 0.0500 | mg/L | 1.00 | ND | 100 | 70-130 | | | |
| **Matrix Spike Dup (BDK0053-MSD1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | ND | 104 | 70-130 | 3.13 | 20 | |

## Specific Conductance by SM2510B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0042 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0042-BLK1)** | | | | Prepared & Analyzed: 11/04/20 | | | | | | |
| Specific Conductance (EC) | ND | 1.00 | umhos/cm | | | | | | | |
| **Duplicate (BDK0042-DUP1)** | | **Source: 2010369-01** | | Prepared & Analyzed: 11/04/20 | | | | | | |
| Specific Conductance (EC) | 1150 | 1.00 | umhos/cm | | 1140 | | | 0.523 | 20 | |

## Total Dissolved Solids by SM2540C - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0043 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0043-BLK1)** | | | | Prepared & Analyzed: 11/04/20 | | | | | | |
| Total Dissolved Solids | ND | 10.0 | mg/L | | | | | | | |
| **Duplicate (BDK0043-DUP1)** | | **Source: 2010369-01** | | Prepared & Analyzed: 11/04/20 | | | | | | |
| Total Dissolved Solids | 570 | 10.0 | mg/L | | 570 | | | 0.0175 | 20 | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:31 |

## pH by SM4500 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0032 - General Preparation** | | | | | | | | | | |
| **LCS (BDK0032-BS1)** | | | | Prepared: 10/29/20 Analyzed: 11/03/20 | | | | | | |
| pH | 9.23 | 1.00 | pH Units | 9.21 | | 100 | 90-110 | | | |
| **Duplicate (BDK0032-DUP1)** | | **Source: 2010366-02** | | Prepared: 10/29/20 Analyzed: 11/03/20 | | | | | | |
| pH | 12.6 | 1.00 | pH Units | | 12.6 | | | 0.238 | 20 | |



*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.*

## 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

November 05, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip_Blank/GWA_District_Six_C6

Work Order # 2010370

Enclosed are the results of analyses for samples received by Summit Scientific on 10/29/20 14:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:33 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_59993_MH_MW_1_Trip_Blank | 2010370-01 | Water | 10/29/20 12:30 | 10/29/20 14:45 |

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

$S_2$

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



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

| | | | | | 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_59993_MH_MW_1_Trip_Blank | 10/29 | 1230 | 2 | | | | | X | | | | X | | | | | | | **Sample Frequency:** Q4 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| K MacDougall | 2020/10/29 1445 | | 10/29/2020 1445 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard X
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 4.5
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: Apex/XOG Client Project ID: Trip Blank GWA DISTRICT Six - 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) | 4.5 |
|---|---|

Thermometer ID: 61857155-K

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

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

| Custodian Printed Name or Initials | Signature of Custodian | Date/Time |
|---|---|---|
| | | 10/29/2020 |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:33 |

## GW_59993_MH_MW_1_Trip_Blank

**2010370-01 (Water)**

**Summit Scientific**

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

Date Sampled: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | ug/l | 1 | BDK0001 | 11/02/20 | 11/03/20 | 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: **10/29/20 12:30**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *97.5 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *93.4 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *85.5 %* | *21-167* | | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:33 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0001 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDK0001-BLK1)** | | | | Prepared & Analyzed: 11/02/20 | | | | | | |
| 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* | *13.4* | | *"* | *13.3* | | *101* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *12.6* | | *"* | *13.3* | | *94.5* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.2* | | *"* | *13.3* | | *84.3* | *21-167* | | | |
| **LCS (BDK0001-BS1)** | | | | Prepared & Analyzed: 11/02/20 | | | | | | |
| Benzene | 21.6 | 1.0 | ug/l | 33.3 | | 64.8 | 51-132 | | | |
| Toluene | 29.0 | 1.0 | " | 33.3 | | 87.2 | 51-138 | | | |
| Ethylbenzene | 37.2 | 1.0 | " | 33.3 | | 112 | 58-146 | | | |
| m,p-Xylene | 77.5 | 2.0 | " | 66.7 | | 116 | 57-144 | | | |
| o-Xylene | 38.0 | 1.0 | " | 33.3 | | 114 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *13.9* | | *"* | *13.3* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *12.6* | | *"* | *13.3* | | *94.8* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.8* | | *"* | *13.3* | | *88.7* | *21-167* | | | |
| **Matrix Spike (BDK0001-MS1)** | | **Source: 2010367-01** | | Prepared & Analyzed: 11/02/20 | | | | | | |
| Benzene | 31.2 | 1.0 | ug/l | 33.3 | 7.81 | 70.1 | 34-141 | | | |
| Toluene | 30.1 | 1.0 | " | 33.3 | ND | 90.2 | 27-151 | | | |
| Ethylbenzene | 57.6 | 1.0 | " | 33.3 | 16.5 | 123 | 29-160 | | | |
| m,p-Xylene | 153 | 2.0 | " | 66.7 | 57.9 | 143 | 20-166 | | | |
| o-Xylene | 38.0 | 1.0 | " | 33.3 | ND | 114 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *15.5* | | *"* | *13.3* | | *116* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.6* | | *"* | *13.3* | | *102* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *14.2* | | *"* | *13.3* | | *107* | *21-167* | | | |



*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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/05/20 12:33 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0001 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDK0001-MSD1)** | | **Source: 2010367-01** | | Prepared & Analyzed: 11/02/20 | | | | | | |
| Benzene | 31.3 | 1.0 | ug/l | 33.3 | 7.81 | 70.5 | 34-141 | 0.352 | 32 | |
| Toluene | 29.9 | 1.0 | " | 33.3 | ND | 89.7 | 27-151 | 0.534 | 25 | |
| Ethylbenzene | 59.1 | 1.0 | " | 33.3 | 16.5 | 128 | 29-160 | 2.71 | 50 | |
| m,p-Xylene | 160 | 2.0 | " | 66.7 | 57.9 | 153 | 20-166 | 4.28 | 36 | |
| o-Xylene | 39.2 | 1.0 | " | 33.3 | ND | 118 | 33-159 | 3.08 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.6* | | *"* | *13.3* | | *110* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.4* | | *"* | *13.3* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *14.2* | | *"* | *13.3* | | *106* | *21-167* | | | |



*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.*

## 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 |

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 774725 | Job #: | 46166 | IS-99230 | Co. Job#: |
| Sample Name: | GW_59993_MH_MW_1 | | | | Co. Lab#: |
| Company: | Extraction Oil and Gas | | | | |
| API/Well: | | | | | |
| Container: | 125ml Plastic Bottle | | | | |
| Field/Site Name: | Ground_Water/GWA_District_Six_C6 | | | | |
| Location: | NENE_20_5N_65W | | | | |
| Formation/Depth: | Q4 | | | | |
| Sampling Point: | 762176 | | | | |
| Date Sampled: | 10/29/2020 12:30 | Date Received: | 10/30/2020 | Date Reported: | 11/18/2020 |

| | | |
|---|---|---|
| $\delta$D of water | ---------- | -111.7 ‰ relative to VSMOW |
| $\delta^{18}$O of water | ---------- | -14.42 ‰ relative to VSMOW |
| Tritium content of water | ---------- | na |
| $\delta^{13}$C of DIC | ---------- | -18.6 ‰ relative to VPDB |
| $^{14}$C content of DIC | ---------- | na |
| $\delta^{15}$N of nitrate | ---------- | na |
| $\delta^{18}$O of nitrate | ---------- | na |
| $\delta^{34}$S of sulfate | ---------- | na |
| $\delta^{18}$O of sulfate | ---------- | na |
| Vacuum Distilled? * | ---------- | No |

Remarks:

nd = not detected. na = not analyzed.
*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 775061 | Job #: | 46206 | 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: | Q4 | | | | |
| Sampling Point: | 762176 | | | | |
| Date Sampled: | 10/29/2020 12:30 | Date Received: | 10/30/2020 | Date Reported: | 12/21/2020 |

| Component | Chemical mol. % | $\delta^{13}C$ ‰ | $\delta D$ ‰ | $\delta^{18}O$ ‰ | Dissolved gas cc/L | Dissolved gas ppm |
|---|---|---|---|---|---|---|
| Carbon Monoxide | nd | | | | | |
| Helium | na | | | | | |
| Hydrogen | nd | | | | | |
| Argon | 0.129 | | | | | |
| Oxygen | 0.12 | | | | | |
| Nitrogen | 5.73 | | | | | |
| Carbon Dioxide | 1.66 | | | | | |
| Methane | 73.99 | -47.34 | -231.7 | | 41 | 27 |
| Ethane | 12.44 | -31.97 | | | 7.5 | 9.4 |
| Ethylene | nd | | | | | |
| Propane | 4.41 | -27.91 | | | 2.5 | 4.6 |
| Propylene | nd | | | | | |
| Iso-butane | 0.426 | -30.15 | | | | |
| N-butane | 0.808 | -26.78 | | | | |
| Iso-pentane | 0.128 | -27.5 | | | | |
| N-pentane | 0.0899 | -25.9 | | | | |
| Hexanes + | 0.0649 | | | | | |

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.59
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
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

November 04, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground_Water/GWA_District_Six_C6

Work Order # 2010356

Enclosed are the results of analyses for samples received by Summit Scientific on 10/28/20 17:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:45 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_60666_MH_MW_2 | 2010356-01 | Water | 10/28/20 11:55 | 10/28/20 17:21 |

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

$S_2$

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



| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Extraction Oil and Gas (XOG) | **Report to:** Apex Companies, LLC | **Project Manager:** | Heather Shideman | |
| **Address:** | 2234 117th Ave, Ste 106 | | **E-Mail:** | Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com | |
| **City/State/Zip:** | Greeley, CO 80634 | | **cc:** | jcarlisle@extractionog.com | |
| **Phone:** | (970) 576-3446 | | **Project Name:** | Ground_Water/GWA_District_Six_C6 | |
| **Sampler Name:** | Kade MacDougall | | **Project No.:** Alloc-421 930, 88 | | **Facility ID 766284** |

| | | | | | Preservative | | | | Matrix | | | | Analysis Requested | | | | | | | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ID** | **Field ID / Point of Collection** | **Date Sampled** | **Time Sampled** | **# of containers** | **HCl** | **HNO3** | **None** | **Other (Specify)** | **Ground Water** | **Soil** | **Air-Canister #** | **Other (Specify)** | **COGCC 609** | **No BART** | | | | | | |
| 1 | GW_60666_MH_MW_2 | 10/28 | 1155 | | | | | | X | | | | X | X | | | | | | **Sample Frequency**: |
| | NENE_20_5N_65W | | | | | | | | | | | | | | | | | | | Q4 |
| | | | | | | | | | | | | | | | | | | | | |
| | Temperature, field: | 14.0 | °C | | | | | | | | | | | | | | | | | |
| | pH, field: | 7.35 | s.u. | | | | | | | | | | | | | | | | | |
| | Conductivity, field: | 1093 | uS/cm | | | | | | | | | | | | | | | | | |
| | ORP, field: | 258.5 | mV | | | | | | | | | | | | | | | | | |
| | Dissolved Oxygen, field: | 5.31 | mg/L | | | | | | | | | | | | | | | | | |
| | Turbidity, field: | 44.23 | NTU | | | | | | | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| Relinquished by: | Date/Time: 20/10/28 / 1721 | Received by: | Date/Time: 10/28/2020 1721 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours
___ 24 hours _X_ Standard
___ 48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 12.9
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: APEX COMPANIES Client Project ID: GWA DISTRICT SIX 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) | 12-9 |
|---|---|

Thermometer ID: 61857155-K

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

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

| **Custodian Printed Name or Initials** | **Signature of Custodian** | 10/28/2025 **Date/Time** |
|---|---|---|

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:45 |

## GW_60666_MH_MW_2

NENE_20_5N_65W

**2010356-01 (Water)**

**Summit Scientific**

### Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.0010 | mg/L | 1 | BDJ0376 | 10/29/20 | 10/30/20 | 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: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *106 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *83.5 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *81.2 %* | *21-167* | | " | " | " | " | |

### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| C10-C28 (DRO) | ND | 0.100 | mg/L | 1 | BDJ0394 | 10/30/20 | 10/31/20 | EPA 8015M | |

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: o-Terphenyl* | | *89.3 %* | *44.8-129* | | " | " | " | " | |

### Dissolved Gases by RSK-175

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:45 |

## GW_60666_MH_MW_2

NENE_20_5N_65W

**2010356-01 (Water)**

**Summit Scientific**

### Dissolved Gases by RSK-175

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Methane | ND | 0.010 | mg/L | 1 | BDJ0401 | 10/30/20 | 11/02/20 | RSK-175 mod |
| Ethane | ND | 0.010 | " | " | " | " | " | " |
| Propane | ND | 0.010 | " | " | " | " | " | " |

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: Ethene* | | *93.4 %* | *70-130* | | " | " | " | " | |

### Dissolved Metals by EPA Method 200.8

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Calcium** | **89900** | 50.0 | ug/l | 1 | BDJ0379 | 10/29/20 | 10/29/20 | EPA 200.8 | |
| **Iron** | **11.7** | 10.0 | " | " | " | " | " | " | |
| **Magnesium** | **39400** | 50.0 | " | " | " | " | " | " | |
| **Manganese** | **6.26** | 1.00 | " | " | " | " | " | " | |
| **Potassium** | **2970** | 50.0 | " | " | " | " | " | " | |
| **Sodium** | **71700** | 50.0 | " | " | " | " | " | " | |
| **Barium** | **30.7** | 1.00 | " | " | " | " | " | " | |
| **Boron** | **176** | 10.0 | " | " | " | " | " | " | |
| **Selenium** | **5.62** | 1.00 | " | " | " | " | " | " | |
| **Strontium** | **1130** | 10.0 | " | " | " | " | " | " | |

### Anions by EPA Method 300.0

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Bromide** | **0.251** | 0.200 | mg/L | 1 | BDJ0380 | 10/29/20 | 10/29/20 | EPA 300.0 | |
| **Chloride** | **71.0** | 5.00 | " | 50 | " | " | " | " | |
| **Fluoride** | **0.343** | 0.200 | " | 1 | " | " | " | " | |
| **Sulfate** | **195** | 15.0 | " | 50 | " | " | " | " | |
| **Nitrate as N** | **10.4** | 0.100 | " | 1 | " | " | " | " | |
| Nitrite as N | ND | 0.100 | " | " | " | " | " | " | |
| **Nitrate/Nitrite as N** | **10.4** | 0.200 | " | " | " | " | " | " | |

Summit Scientific

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| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:45 |

**GW_60666_MH_MW_2**
NENE_20_5N_65W
**2010356-01 (Water)**

**Summit Scientific**

## Anions by EPA Method 300.0

## Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Alkalinity** | **310** | 10.0 | mg/L as CaCO3 | 1 | BDJ0390 | 10/30/20 | 11/04/20 | SM2320-B | |
| Carbonate | ND | 10.0 | " | " | " | " | " | " | |
| **Bicarbonate** | **310** | 10.0 | " | " | " | " | " | " | |

## Conventional Chemistry Parameters by APHA/EPA Methods

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus - Total | ND | 0.0500 | mg/L | 1 | BDK0053 | 11/03/20 | 11/04/20 | SM4500-P-E | |

## Specific Conductance by SM2510B

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1200** | 1.00 | umhos/cm | 1 | BDJ0389 | 10/30/20 | 10/30/20 | SM2510B | |

## Total Dissolved Solids by SM2540C

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Dissolved Solids** | **591** | 10.0 | mg/L | 1 | BDJ0388 | 10/30/20 | 10/30/20 | SM2540C | |

## pH by SM4500

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:45 |

## GW_60666_MH_MW_2

NENE_20_5N_65W

**2010356-01 (Water)**

**Summit Scientific**

### pH by SM4500

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **pH** | **7.40** | 1.00 | pH Units | 1 | BDK0031 | 10/28/20 | 11/03/20 | SM4500-H+ B |

### Field Data

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1093.0** | | uS/cm | 1 | BDJ0370 | 10/28/20 | 10/28/20 | Field Method | |
| **Temperature** | **14.00** | | Degrees C | " | " | " | " | " | |
| **Turbidity** | **44.2** | | NTU | " | " | " | " | " | |
| **Oxidation/Reduction Potential** | **258.5** | | mv | " | " | " | " | " | |
| **Dissolved Oxygen** | **5.31** | | mg/L | " | " | " | " | " | |
| **pH** | **7.35** | | SU | " | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:45 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDJ0376-BLK1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| 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* | *0.0138* | | *"* | *0.0133* | | *103* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0133* | | *"* | *0.0133* | | *99.7* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0120* | | *"* | *0.0133* | | *89.9* | *21-167* | | | |
| **LCS (BDJ0376-BS1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0239 | 0.0010 | mg/L | 0.0333 | | 71.6 | 51-132 | | | |
| Toluene | 0.0237 | 0.0010 | " | 0.0333 | | 71.0 | 51-138 | | | |
| Ethylbenzene | 0.0376 | 0.0010 | " | 0.0333 | | 113 | 58-146 | | | |
| m,p-Xylene | 0.0754 | 0.0020 | " | 0.0667 | | 113 | 57-144 | | | |
| o-Xylene | 0.0398 | 0.0010 | " | 0.0333 | | 119 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0138* | | *"* | *0.0133* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0133* | | *"* | *0.0133* | | *99.9* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0119* | | *"* | *0.0133* | | *89.2* | *21-167* | | | |
| **Matrix Spike (BDJ0376-MS1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0119 | 0.0010 | mg/L | 0.0333 | ND | 35.6 | 34-141 | | | |
| Toluene | 0.0234 | 0.0010 | " | 0.0333 | ND | 70.2 | 27-151 | | | |
| Ethylbenzene | 0.0379 | 0.0010 | " | 0.0333 | ND | 114 | 29-160 | | | |
| m,p-Xylene | 0.0763 | 0.0020 | " | 0.0667 | ND | 114 | 20-166 | | | |
| o-Xylene | 0.0415 | 0.0010 | " | 0.0333 | ND | 124 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0143* | | *"* | *0.0133* | | *107* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0135* | | *"* | *0.0133* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0123* | | *"* | *0.0133* | | *92.0* | *21-167* | | | |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDJ0376-MSD1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0116 | 0.0010 | mg/L | 0.0333 | ND | 34.7 | 34-141 | 2.64 | 32 | |
| Toluene | 0.0223 | 0.0010 | " | 0.0333 | ND | 66.9 | 27-151 | 4.86 | 25 | |
| Ethylbenzene | 0.0370 | 0.0010 | " | 0.0333 | ND | 111 | 29-160 | 2.43 | 50 | |
| m,p-Xylene | 0.0734 | 0.0020 | " | 0.0667 | ND | 110 | 20-166 | 3.79 | 36 | |
| o-Xylene | 0.0403 | 0.0010 | " | 0.0333 | ND | 121 | 33-159 | 2.94 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0145* | | *"* | *0.0133* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0131* | | *"* | *0.0133* | | *98.4* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0118* | | *"* | *0.0133* | | *88.9* | *21-167* | | | |



*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.*

## Extractable Petroleum Hydrocarbons by 8015 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0394 - EPA 3520B** | | | | | | | | | | |
| **Blank (BDJ0394-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: o-Terphenyl* | *0.0187* | | *"* | *0.0250* | | *74.7* | *44.8-129* | | | |
| **LCS (BDJ0394-BS1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | 0.971 | 0.100 | mg/L | 1.00 | | 97.1 | 70-130 | | | |
| *Surrogate: o-Terphenyl* | *0.0194* | | *"* | *0.0250* | | *77.6* | *44.8-129* | | | |
| **LCS Dup (BDJ0394-BSD1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | 1.10 | 0.100 | mg/L | 1.00 | | 110 | 70-130 | 12.8 | 200 | |
| *Surrogate: o-Terphenyl* | *0.0216* | | *"* | *0.0250* | | *86.3* | *44.8-129* | | | |

## Dissolved Gases by RSK-175 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0401 - GC** | | | | | | | | | | |
| **Blank (BDJ0401-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | | | | | | |
| Ethane | ND | 0.010 | " | | | | | | | |
| Propane | ND | 0.010 | " | | | | | | | |
| *Surrogate: Ethene* | *0.0350* | | *"* | *0.0364* | | *96.2* | *70-130* | | | |
| **LCS (BDJ0401-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | | 70.4 | 70-130 | | | |
| Ethane | 0.078 | 0.010 | " | 0.0798 | | 98.0 | 70-130 | | | |
| Propane | 0.11 | 0.010 | " | 0.139 | | 82.2 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0749* | | *"* | *0.0728* | | *103* | *70-130* | | | |
| **Duplicate (BDJ0401-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | ND | | | | 30 | |
| Ethane | ND | 0.010 | " | | ND | | | | 30 | |
| Propane | ND | 0.010 | " | | ND | | | | 30 | |
| *Surrogate: Ethene* | *0.0337* | | *"* | *0.0364* | | *92.6* | *70-130* | | | |
| **Matrix Spike (BDJ0401-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | ND | 71.1 | 70-130 | | | |
| Ethane | 0.084 | 0.010 | " | 0.0798 | ND | 105 | 70-130 | | | |
| Propane | 0.12 | 0.010 | " | 0.139 | ND | 87.3 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0784* | | *"* | *0.0728* | | *108* | *70-130* | | | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:45 |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0379 - EPA 200.8** | | | | | | | | | | |
| **Blank (BDJ0379-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0379-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 5290 | 50.0 | ug/l | 5000 | | 106 | 85-115 | | | |
| Iron | 5180 | 10.0 | " | 5000 | | 104 | 85-115 | | | |
| Magnesium | 5690 | 50.0 | " | 5000 | | 114 | 85-115 | | | |
| Manganese | 526 | 1.00 | " | 500 | | 105 | 85-115 | | | |
| Potassium | 5400 | 50.0 | " | 5000 | | 108 | 85-115 | | | |
| Sodium | 5620 | 50.0 | " | 5000 | | 112 | 85-115 | | | |
| Barium | 527 | 1.00 | " | 500 | | 105 | 85-115 | | | |
| Boron | 2640 | 10.0 | " | 2500 | | 106 | 85-115 | | | |
| Selenium | 52.3 | 1.00 | " | 50.0 | | 105 | 85-115 | | | |
| Strontium | 520 | 10.0 | " | 500 | | 104 | 85-115 | | | |
| **Duplicate (BDJ0379-DUP1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 98000 | 50.0 | ug/l | | 96600 | | | 1.51 | 20 | |
| Iron | 388 | 10.0 | " | | 396 | | | 2.17 | 20 | |
| Magnesium | 17100 | 50.0 | " | | 17800 | | | 3.79 | 20 | |
| Manganese | 752 | 1.00 | " | | 790 | | | 4.98 | 20 | |
| Potassium | 23600 | 50.0 | " | | 24700 | | | 4.53 | 20 | |
| Sodium | 75200 | 50.0 | " | | 78200 | | | 4.01 | 20 | |
| Barium | 269 | 1.00 | " | | 271 | | | 0.528 | 20 | |
| Boron | 27.2 | 10.0 | " | | 31.5 | | | 14.7 | 20 | |
| Selenium | ND | 1.00 | " | | 0.0562 | | | | 20 | |
| Strontium | 902 | 10.0 | " | | 895 | | | 0.791 | 20 | |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0379 - EPA 200.8** | | | | | | | | | | |
| **Matrix Spike (BDJ0379-MS1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 101000 | 50.0 | ug/l | 5000 | 96600 | 97.9 | 70-130 | | | |
| Iron | 5880 | 10.0 | " | 5000 | 396 | 110 | 70-130 | | | |
| Magnesium | 23100 | 50.0 | " | 5000 | 17800 | 107 | 70-130 | | | |
| Manganese | 1310 | 1.00 | " | 500 | 790 | 105 | 70-130 | | | |
| Potassium | 30300 | 50.0 | " | 5000 | 24700 | 110 | 70-130 | | | |
| Sodium | 82200 | 50.0 | " | 5000 | 78200 | 78.5 | 70-130 | | | |
| Barium | 795 | 1.00 | " | 500 | 271 | 105 | 70-130 | | | |
| Boron | 2680 | 10.0 | " | 2500 | 31.5 | 106 | 70-130 | | | |
| Selenium | 53.5 | 1.00 | " | 50.0 | 0.0562 | 107 | 70-130 | | | |
| Strontium | 1430 | 10.0 | " | 500 | 895 | 108 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0379-MSD1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 101000 | 50.0 | ug/l | 5000 | 96600 | 92.3 | 70-130 | 0.278 | 25 | |
| Iron | 5810 | 10.0 | " | 5000 | 396 | 108 | 70-130 | 1.09 | 25 | |
| Magnesium | 22700 | 50.0 | " | 5000 | 17800 | 99.3 | 70-130 | 1.60 | 25 | |
| Manganese | 1330 | 1.00 | " | 500 | 790 | 109 | 70-130 | 1.53 | 25 | |
| Potassium | 29500 | 50.0 | " | 5000 | 24700 | 95.9 | 70-130 | 2.39 | 25 | |
| Sodium | 82800 | 50.0 | " | 5000 | 78200 | 90.4 | 70-130 | 0.723 | 25 | |
| Barium | 788 | 1.00 | " | 500 | 271 | 103 | 70-130 | 0.869 | 25 | |
| Boron | 2620 | 10.0 | " | 2500 | 31.5 | 104 | 70-130 | 2.15 | 25 | |
| Selenium | 57.3 | 1.00 | " | 50.0 | 0.0562 | 114 | 70-130 | 6.85 | 25 | |
| Strontium | 1400 | 10.0 | " | 500 | 895 | 102 | 70-130 | 2.12 | 25 | |

## Anions by EPA Method 300.0 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0380 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0380-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0380-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 9.13 | 0.200 | mg/L | 10.0 | | 91.3 | 90-110 | | | |
| Chloride | 2.88 | 0.100 | " | 3.00 | | 96.1 | 90-110 | | | |
| Fluoride | 2.13 | 0.200 | " | 2.00 | | 106 | 90-110 | | | |
| Sulfate | 15.6 | 0.300 | " | 15.0 | | 104 | 90-110 | | | |
| Nitrate as N | 2.87 | 0.100 | " | 3.00 | | 95.6 | 90-110 | | | |
| Nitrite as N | 2.81 | 0.100 | " | 3.00 | | 93.6 | 90-110 | | | |
| **Duplicate (BDJ0380-DUP1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | ND | 20.0 | mg/L | | ND | | | | 20 | |
| Chloride | 108 | 10.0 | " | | 110 | | | 2.29 | 20 | |
| Fluoride | ND | 20.0 | " | | ND | | | | 20 | |
| Sulfate | 44.1 | 30.0 | " | | 44.8 | | | 1.57 | 20 | |
| Nitrate as N | 2.90 | 10.0 | " | | 3.00 | | | 3.39 | 20 | |
| Nitrite as N | ND | 10.0 | " | | ND | | | | 20 | |
| Nitrate/Nitrite as N | ND | 20.0 | " | | ND | | | | 20 | |
| **Matrix Spike (BDJ0380-MS1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 1100 | 20.0 | mg/L | 1000 | ND | 110 | 80-120 | | | |
| Chloride | 364 | 10.0 | " | 300 | 110 | 84.5 | 80-120 | | | |
| Fluoride | 240 | 20.0 | " | 200 | ND | 120 | 80-120 | | | |
| Sulfate | 1720 | 30.0 | " | 1500 | 44.8 | 112 | 80-120 | | | |
| Nitrate as N | 346 | 10.0 | " | 300 | 3.00 | 114 | 80-120 | | | |
| Nitrite as N | 314 | 10.0 | " | 300 | ND | 105 | 80-120 | | | |

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

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0390 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0390-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | ND | 10.0 | mg/L as CaCO3 | | | | | | | |
| Carbonate | ND | 10.0 | " | | | | | | | |
| Bicarbonate | ND | 10.0 | " | | | | | | | |
| **LCS (BDJ0390-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 110 | 10.0 | mg/L as CaCO3 | 100 | | 110 | 80-120 | | | |
| **Duplicate (BDJ0390-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 310 | 10.0 | mg/L as CaCO3 | | 310 | | | 0.00 | 20 | |
| Carbonate | ND | 10.0 | " | | ND | | | | 20 | |
| Bicarbonate | 310 | 10.0 | " | | 310 | | | 0.00 | 20 | |
| **Matrix Spike (BDJ0390-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 400 | 10.0 | mg/L as CaCO3 | 100 | 310 | 90.0 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0390-MSD1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 410 | 10.0 | mg/L as CaCO3 | 100 | 310 | 100 | 70-130 | 2.47 | 20 | |

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0053 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0053-BLK1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | | | | | | |
| **LCS (BDK0053-BS1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | | 104 | 80-120 | | | |
| **Duplicate (BDK0053-DUP1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | ND | | | | 20 | |
| **Matrix Spike (BDK0053-MS1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.00 | 0.0500 | mg/L | 1.00 | ND | 100 | 70-130 | | | |
| **Matrix Spike Dup (BDK0053-MSD1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | ND | 104 | 70-130 | 3.13 | 20 | |

## Specific Conductance by SM2510B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0389 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0389-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Specific Conductance (EC) | ND | 1.00 | umhos/cm | | | | | | | |
| **Duplicate (BDJ0389-DUP1)** | | **Source: 2010356-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Specific Conductance (EC) | 1200 | 1.00 | umhos/cm | | 1200 | | | 0.501 | 20 | |

## Total Dissolved Solids by SM2540C - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0388 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0388-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Total Dissolved Solids | ND | 10.0 | mg/L | | | | | | | |
| **Duplicate (BDJ0388-DUP1)** | | **Source: 2010356-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Total Dissolved Solids | 593 | 10.0 | mg/L | | 591 | | | 0.304 | 20 | |

## pH by SM4500 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0031 - General Preparation** | | | | | | | | | | |
| **LCS (BDK0031-BS1)** | | | | Prepared: 10/28/20 Analyzed: 11/03/20 | | | | | | |
| pH | 9.49 | 1.00 | pH Units | 9.21 | | 103 | 90-110 | | | |
| **Duplicate (BDK0031-DUP1)** | | **Source: 2010345-01** | | Prepared: 10/28/20 Analyzed: 11/03/20 | | | | | | |
| pH | 7.38 | 1.00 | pH Units | | 7.38 | | | 0.00 | 20 | |

## 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

November 04, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip_Blank/GWA_District_Six_C6

Work Order # 2010360

Enclosed are the results of analyses for samples received by Summit Scientific on 10/28/20 17:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:01 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_60666_MH_MW_2_Trip_Blank | 2010360-01 | Water | 10/28/20 11:55 | 10/28/20 17:21 |

# Summit Scientific

S2

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



| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Extraction Oil and Gas (XOG) | **Report to:** Apex Companies, LLC | **Project Manager:** | Heather Shideman | |
| **Address:** | 2234 117th Ave, Ste 106 | | **E-Mail:** | Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com | |
| **City/State/Zip:** | Greeley, CO 80634 | | **cc:** | jcarlisle@extractionog.com | |
| **Phone:** | (970) 576-3446 | | **Project Name:** | Trip_Blank/GWA_District_Six_C6 | |
| **Sampler Name:** | Kade MacDougall | | **Project No.:** | ALLOC-421 | **Facility ID 766284** |

| | | | | | 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_2_Trip_Blank | 10/28 | 1155 | 2 | | | | | X | | | | X | | | | | | | **Sample Frequency:** Q4 |

| | | | | |
|---|---|---|---|---|
| Relinquished by: | Date/Time: 10/28/20 1721 | Received by: | Date/Time: 10/28/2020, 172 | **Turn Around Time** (Check) Same Day ___ 72 hours ___ 24 hours ___ Standard X 48 hours ___ |
| Relinquished by: | Date/Time: | Received by: | Date/Time: | **Notes:** |
| Relinquished by: | Date/Time: | Received by: | Date/Time: | **Sample Integrity:** Temperature Upon Receipt: 12.9 Intact: Yes No |

**Sample Receipt Checklist**

S2 Work Order_____

Client: APEX Companies Client Project ID: TripBlank DISTRICT SIX 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) | 7.8 |
|---|---|

Thermometer ID: 61857155-K

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

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

RB

**Custodian Printed Name or Initials** **Signature of Custodian** 10/28/2020 **Date/Time**

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:01 |

## GW_60666_MH_MW_2_Trip_Blank

**2010360-01 (Water)**

**Summit Scientific**

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

Date Sampled: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | ug/l | 1 | BDJ0376 | 10/29/20 | 10/30/20 | 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: **10/28/20 11:55**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *103 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *101 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *86.5 %* | *21-167* | | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:01 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDJ0376-BLK1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| 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* | *13.8* | | *"* | *13.3* | | *103* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.3* | | *"* | *13.3* | | *99.7* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.0* | | *"* | *13.3* | | *89.9* | *21-167* | | | |
| **LCS (BDJ0376-BS1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 23.9 | 1.0 | ug/l | 33.3 | | 71.6 | 51-132 | | | |
| Toluene | 23.7 | 1.0 | " | 33.3 | | 71.0 | 51-138 | | | |
| Ethylbenzene | 37.6 | 1.0 | " | 33.3 | | 113 | 58-146 | | | |
| m,p-Xylene | 75.4 | 2.0 | " | 66.7 | | 113 | 57-144 | | | |
| o-Xylene | 39.8 | 1.0 | " | 33.3 | | 119 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *13.8* | | *"* | *13.3* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.3* | | *"* | *13.3* | | *99.9* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.9* | | *"* | *13.3* | | *89.2* | *21-167* | | | |
| **Matrix Spike (BDJ0376-MS1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 11.9 | 1.0 | ug/l | 33.3 | ND | 35.6 | 34-141 | | | |
| Toluene | 23.4 | 1.0 | " | 33.3 | ND | 70.2 | 27-151 | | | |
| Ethylbenzene | 37.9 | 1.0 | " | 33.3 | ND | 114 | 29-160 | | | |
| m,p-Xylene | 76.3 | 2.0 | " | 66.7 | ND | 114 | 20-166 | | | |
| o-Xylene | 41.5 | 1.0 | " | 33.3 | ND | 124 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.3* | | *"* | *13.3* | | *107* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.5* | | *"* | *13.3* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.3* | | *"* | *13.3* | | *92.0* | *21-167* | | | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:01 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDJ0376-MSD1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 11.6 | 1.0 | ug/l | 33.3 | ND | 34.7 | 34-141 | 2.64 | 32 | |
| Toluene | 22.3 | 1.0 | " | 33.3 | ND | 66.9 | 27-151 | 4.86 | 25 | |
| Ethylbenzene | 37.0 | 1.0 | " | 33.3 | ND | 111 | 29-160 | 2.43 | 50 | |
| m,p-Xylene | 73.4 | 2.0 | " | 66.7 | ND | 110 | 20-166 | 3.79 | 36 | |
| o-Xylene | 40.3 | 1.0 | " | 33.3 | ND | 121 | 33-159 | 2.94 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.5* | | *"* | *13.3* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.1* | | *"* | *13.3* | | *98.4* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.8* | | *"* | *13.3* | | *88.9* | *21-167* | | | |

## 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 |

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www.isotechlabs.com

| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 774722 | Job #: | 46166 | IS-99230 | Co. Job#: |
| Sample Name: | GW_60666_MH_MW_2 | | | | Co. Lab#: |
| Company: | Extraction Oil and Gas | | | | |
| API/Well: | | | | | |
| Container: | 125ml Plastic Bottle | | | | |
| Field/Site Name: | Ground_Water/GWA_District_Six_C6 | | | | |
| Location: | NENE_20_5N_65W | | | | |
| Formation/Depth: | Q4 | | | | |
| Sampling Point: | 766284 | | | | |
| Date Sampled: | 10/28/2020 11:55 | Date Received: | 10/30/2020 | Date Reported: | 11/18/2020 |

| | | |
|---|---|---|
| $\delta$D of water | ---------- | -102.4 ‰ relative to VSMOW |
| $\delta^{18}$O of water | ---------- | -13.08 ‰ relative to VSMOW |
| Tritium content of water | ---------- | na |
| $\delta^{13}$C of DIC | ---------- | -11.3 ‰ relative to VPDB |
| $^{14}$C content of DIC | ---------- | na |
| $\delta^{15}$N of nitrate | ---------- | na |
| $\delta^{18}$O of nitrate | ---------- | na |
| $\delta^{34}$S of sulfate | ---------- | na |
| $\delta^{18}$O of sulfate | ---------- | na |
| Vacuum Distilled? * | ---------- | No |

Remarks:

nd = not detected. na = not analyzed.
*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

# Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 04, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground_Water/GWA_District_Six_C6

Work Order # 2010357

Enclosed are the results of analyses for samples received by Summit Scientific on 10/28/20 17:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:48 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_60666_MH_MW_3 | 2010357-01 | Water | 10/28/20 10:05 | 10/28/20 17:21 |

Summit Scientific

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

# Summit Scientific

S2

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



**Client:** Extraction Oil and Gas (XOG) **Report to:** Apex Companies, LLC **Project Manager:** Heather Shideman
**Address:** 2234 117th Ave, Ste 106 **E-Mail:** Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com
**City/State/Zip:** Greeley, CO 80634 **cc:** jcarlisle@extractionog.com
**Phone:** (970) 576-3446 **Project Name:** Ground_Water/GWA_District_Six_C6
**Sampler Name:** Kade MacDougall **Project No.:** Alloc-421 930, 88 **Facility ID 766285**

| | | | | | Preservative | | | | Matrix | | | | Analysis Requested | | | | | | | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | Field ID / Point of Collection | Date Sampled | Time Sampled | # of containers | HCl | HNO3 | None | Other (Specify) | Ground Water | Soil | Air-Canister # | Other (Specify) | COGCC 609 | No BART | | | | | | |
| 1 | GW_60666_MH_MW_3 | 10/28 | 1005 | | | | | | X | | | | X | X | | | | | | **Sample Frequency**: |
| | NENE_20_5N_65W | | | | | | | | | | | | | | | | | | | Q4 |
| | | | | | | | | | | | | | | | | | | | | |
| | Temperature, field: | 14.1 | °C | | | | | | | | | | | | | | | | | |
| | pH, field: | 7.26 | s.u. | | | | | | | | | | | | | | | | | |
| | Conductivity, field: | 1210 | uS/cm | | | | | | | | | | | | | | | | | |
| | ORP, field: | 238.3 | mV | | | | | | | | | | | | | | | | | |
| | Dissolved Oxygen, field: | 2.93 | mg/L | | | | | | | | | | | | | | | | | |
| | Turbidity, field: | 89.25 | NTU | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| | 20/10/28 / 1721 | | 10/28/2020 1721 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours
___ 24 hours _X_ Standard
___ 48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 7.8
Intact: (Yes) No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: APEX COMPANIES Client Project ID: IGWA DISTRICT SIX 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) | 12.6 |
|---|---|

Thermometer ID: 61857155-K

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

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

| Custodian Printed Name or Initials | Signature of Custodian | Date/Time |
|---|---|---|
| RG | [signature] | 10/28/2025 |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:48 |

**GW_60666_MH_MW_3**
NENE_20_5N_65W
**2010357-01 (Water)**

**Summit Scientific**

## Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.0010 | mg/L | 1 | BDJ0376 | 10/29/20 | 10/30/20 | 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: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *109 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *80.6 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *82.0 %* | *21-167* | | " | " | " | " | |

## Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| C10-C28 (DRO) | ND | 0.100 | mg/L | 1 | BDJ0394 | 10/30/20 | 10/31/20 | EPA 8015M | |

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: o-Terphenyl* | | *78.0 %* | *44.8-129* | | " | " | " | " | |

## Dissolved Gases by RSK-175

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:48 |

## GW_60666_MH_MW_3

NENE_20_5N_65W

**2010357-01 (Water)**

**Summit Scientific**

### Dissolved Gases by RSK-175

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Methane** | **0.028** | 0.010 | mg/L | 1 | BDJ0401 | 10/30/20 | 11/02/20 | RSK-175 mod |
| Ethane | ND | 0.010 | " | " | " | " | " | " |
| Propane | ND | 0.010 | " | " | " | " | " | " |

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: Ethene* | | *63.7 %* | *70-130* | | " | " | " | " | *S-04* |

### Dissolved Metals by EPA Method 200.8

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Calcium** | **109000** | 50.0 | ug/l | 1 | BDJ0379 | 10/29/20 | 10/29/20 | EPA 200.8 | |
| Iron | ND | 10.0 | " | " | " | " | " | " | |
| **Magnesium** | **44800** | 50.0 | " | " | " | " | " | " | |
| **Manganese** | **260** | 1.00 | " | " | " | " | " | " | |
| **Potassium** | **3840** | 50.0 | " | " | " | " | " | " | |
| **Sodium** | **70700** | 50.0 | " | " | " | " | " | " | |
| **Barium** | **61.1** | 1.00 | " | " | " | " | " | " | |
| **Boron** | **157** | 10.0 | " | " | " | " | " | " | |
| **Selenium** | **1.81** | 1.00 | " | " | " | " | " | " | |
| **Strontium** | **1330** | 10.0 | " | " | " | " | " | " | |

### Anions by EPA Method 300.0

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Bromide** | **0.280** | 0.200 | mg/L | 1 | BDJ0380 | 10/29/20 | 10/29/20 | EPA 300.0 | |
| **Chloride** | **97.0** | 5.00 | " | 50 | " | " | " | " | |
| **Fluoride** | **0.270** | 0.200 | " | 1 | " | " | " | " | |
| **Sulfate** | **197** | 15.0 | " | 50 | " | " | " | " | |
| **Nitrate as N** | **8.56** | 0.100 | " | 1 | " | " | " | " | |
| Nitrite as N | ND | 0.100 | " | " | " | " | " | " | |
| **Nitrate/Nitrite as N** | **8.56** | 0.200 | " | " | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:48 |

**GW_60666_MH_MW_3**
NENE_20_5N_65W
**2010357-01 (Water)**

**Summit Scientific**

## Anions by EPA Method 300.0

## Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Alkalinity** | **320** | 10.0 | mg/L as CaCO3 | 1 | BDJ0390 | 10/30/20 | 11/04/20 | SM2320-B | |
| Carbonate | ND | 10.0 | " | " | " | " | " | " | |
| **Bicarbonate** | **320** | 10.0 | " | " | " | " | " | " | |

## Conventional Chemistry Parameters by APHA/EPA Methods

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus - Total | ND | 0.0500 | mg/L | 1 | BDK0053 | 11/03/20 | 11/04/20 | SM4500-P-E | |

## Specific Conductance by SM2510B

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1310** | 1.00 | umhos/cm | 1 | BDJ0389 | 10/30/20 | 10/30/20 | SM2510B | |

## Total Dissolved Solids by SM2540C

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Dissolved Solids** | **655** | 10.0 | mg/L | 1 | BDJ0388 | 10/30/20 | 10/30/20 | SM2540C | |

## pH by SM4500

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:48 |

## GW_60666_MH_MW_3

NENE_20_5N_65W

**2010357-01 (Water)**

**Summit Scientific**

### pH by SM4500

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **pH** | **7.18** | 1.00 | pH Units | 1 | BDK0031 | 10/28/20 | 11/03/20 | SM4500-H+ B |

### Field Data

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1210.0** | | uS/cm | 1 | BDJ0371 | 10/28/20 | 10/28/20 | Field Method | |
| **Temperature** | **14.10** | | Degrees C | " | " | " | " | " | |
| **Turbidity** | **89.2** | | NTU | " | " | " | " | " | |
| **Oxidation/Reduction Potential** | **238.3** | | mv | " | " | " | " | " | |
| **Dissolved Oxygen** | **2.93** | | mg/L | " | " | " | " | " | |
| **pH** | **7.26** | | SU | " | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:48 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDJ0376-BLK1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| 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* | *0.0138* | | *"* | *0.0133* | | *103* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0133* | | *"* | *0.0133* | | *99.7* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0120* | | *"* | *0.0133* | | *89.9* | *21-167* | | | |
| **LCS (BDJ0376-BS1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0239 | 0.0010 | mg/L | 0.0333 | | 71.6 | 51-132 | | | |
| Toluene | 0.0237 | 0.0010 | " | 0.0333 | | 71.0 | 51-138 | | | |
| Ethylbenzene | 0.0376 | 0.0010 | " | 0.0333 | | 113 | 58-146 | | | |
| m,p-Xylene | 0.0754 | 0.0020 | " | 0.0667 | | 113 | 57-144 | | | |
| o-Xylene | 0.0398 | 0.0010 | " | 0.0333 | | 119 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0138* | | *"* | *0.0133* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0133* | | *"* | *0.0133* | | *99.9* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0119* | | *"* | *0.0133* | | *89.2* | *21-167* | | | |
| **Matrix Spike (BDJ0376-MS1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0119 | 0.0010 | mg/L | 0.0333 | ND | 35.6 | 34-141 | | | |
| Toluene | 0.0234 | 0.0010 | " | 0.0333 | ND | 70.2 | 27-151 | | | |
| Ethylbenzene | 0.0379 | 0.0010 | " | 0.0333 | ND | 114 | 29-160 | | | |
| m,p-Xylene | 0.0763 | 0.0020 | " | 0.0667 | ND | 114 | 20-166 | | | |
| o-Xylene | 0.0415 | 0.0010 | " | 0.0333 | ND | 124 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0143* | | *"* | *0.0133* | | *107* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0135* | | *"* | *0.0133* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0123* | | *"* | *0.0133* | | *92.0* | *21-167* | | | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:48 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDJ0376-MSD1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0116 | 0.0010 | mg/L | 0.0333 | ND | 34.7 | 34-141 | 2.64 | 32 | |
| Toluene | 0.0223 | 0.0010 | " | 0.0333 | ND | 66.9 | 27-151 | 4.86 | 25 | |
| Ethylbenzene | 0.0370 | 0.0010 | " | 0.0333 | ND | 111 | 29-160 | 2.43 | 50 | |
| m,p-Xylene | 0.0734 | 0.0020 | " | 0.0667 | ND | 110 | 20-166 | 3.79 | 36 | |
| o-Xylene | 0.0403 | 0.0010 | " | 0.0333 | ND | 121 | 33-159 | 2.94 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0145* | | *"* | *0.0133* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0131* | | *"* | *0.0133* | | *98.4* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0118* | | *"* | *0.0133* | | *88.9* | *21-167* | | | |

## Extractable Petroleum Hydrocarbons by 8015 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0394 - EPA 3520B** | | | | | | | | | | |
| **Blank (BDJ0394-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: o-Terphenyl* | *0.0187* | | *"* | *0.0250* | | *74.7* | *44.8-129* | | | |
| **LCS (BDJ0394-BS1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | 0.971 | 0.100 | mg/L | 1.00 | | 97.1 | 70-130 | | | |
| *Surrogate: o-Terphenyl* | *0.0194* | | *"* | *0.0250* | | *77.6* | *44.8-129* | | | |
| **LCS Dup (BDJ0394-BSD1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | 1.10 | 0.100 | mg/L | 1.00 | | 110 | 70-130 | 12.8 | 200 | |
| *Surrogate: o-Terphenyl* | *0.0216* | | *"* | *0.0250* | | *86.3* | *44.8-129* | | | |

## Dissolved Gases by RSK-175 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0401 - GC** | | | | | | | | | | |
| **Blank (BDJ0401-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | | | | | | |
| Ethane | ND | 0.010 | " | | | | | | | |
| Propane | ND | 0.010 | " | | | | | | | |
| *Surrogate: Ethene* | *0.0350* | | *"* | *0.0364* | | *96.2* | *70-130* | | | |
| **LCS (BDJ0401-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | | 70.4 | 70-130 | | | |
| Ethane | 0.078 | 0.010 | " | 0.0798 | | 98.0 | 70-130 | | | |
| Propane | 0.11 | 0.010 | " | 0.139 | | 82.2 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0749* | | *"* | *0.0728* | | *103* | *70-130* | | | |
| **Duplicate (BDJ0401-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | ND | | | | 30 | |
| Ethane | ND | 0.010 | " | | ND | | | | 30 | |
| Propane | ND | 0.010 | " | | ND | | | | 30 | |
| *Surrogate: Ethene* | *0.0337* | | *"* | *0.0364* | | *92.6* | *70-130* | | | |
| **Matrix Spike (BDJ0401-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | ND | 71.1 | 70-130 | | | |
| Ethane | 0.084 | 0.010 | " | 0.0798 | ND | 105 | 70-130 | | | |
| Propane | 0.12 | 0.010 | " | 0.139 | ND | 87.3 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0784* | | *"* | *0.0728* | | *108* | *70-130* | | | |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0379 - EPA 200.8** | | | | | | | | | | |
| **Blank (BDJ0379-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0379-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 5290 | 50.0 | ug/l | 5000 | | 106 | 85-115 | | | |
| Iron | 5180 | 10.0 | " | 5000 | | 104 | 85-115 | | | |
| Magnesium | 5690 | 50.0 | " | 5000 | | 114 | 85-115 | | | |
| Manganese | 526 | 1.00 | " | 500 | | 105 | 85-115 | | | |
| Potassium | 5400 | 50.0 | " | 5000 | | 108 | 85-115 | | | |
| Sodium | 5620 | 50.0 | " | 5000 | | 112 | 85-115 | | | |
| Barium | 527 | 1.00 | " | 500 | | 105 | 85-115 | | | |
| Boron | 2640 | 10.0 | " | 2500 | | 106 | 85-115 | | | |
| Selenium | 52.3 | 1.00 | " | 50.0 | | 105 | 85-115 | | | |
| Strontium | 520 | 10.0 | " | 500 | | 104 | 85-115 | | | |
| **Duplicate (BDJ0379-DUP1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 98000 | 50.0 | ug/l | | 96600 | | | 1.51 | 20 | |
| Iron | 388 | 10.0 | " | | 396 | | | 2.17 | 20 | |
| Magnesium | 17100 | 50.0 | " | | 17800 | | | 3.79 | 20 | |
| Manganese | 752 | 1.00 | " | | 790 | | | 4.98 | 20 | |
| Potassium | 23600 | 50.0 | " | | 24700 | | | 4.53 | 20 | |
| Sodium | 75200 | 50.0 | " | | 78200 | | | 4.01 | 20 | |
| Barium | 269 | 1.00 | " | | 271 | | | 0.528 | 20 | |
| Boron | 27.2 | 10.0 | " | | 31.5 | | | 14.7 | 20 | |
| Selenium | ND | 1.00 | " | | 0.0562 | | | | 20 | |
| Strontium | 902 | 10.0 | " | | 895 | | | 0.791 | 20 | |



*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.*

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0379 - EPA 200.8** | | | | | | | | | | |
| **Matrix Spike (BDJ0379-MS1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 101000 | 50.0 | ug/l | 5000 | 96600 | 97.9 | 70-130 | | | |
| Iron | 5880 | 10.0 | " | 5000 | 396 | 110 | 70-130 | | | |
| Magnesium | 23100 | 50.0 | " | 5000 | 17800 | 107 | 70-130 | | | |
| Manganese | 1310 | 1.00 | " | 500 | 790 | 105 | 70-130 | | | |
| Potassium | 30300 | 50.0 | " | 5000 | 24700 | 110 | 70-130 | | | |
| Sodium | 82200 | 50.0 | " | 5000 | 78200 | 78.5 | 70-130 | | | |
| Barium | 795 | 1.00 | " | 500 | 271 | 105 | 70-130 | | | |
| Boron | 2680 | 10.0 | " | 2500 | 31.5 | 106 | 70-130 | | | |
| Selenium | 53.5 | 1.00 | " | 50.0 | 0.0562 | 107 | 70-130 | | | |
| Strontium | 1430 | 10.0 | " | 500 | 895 | 108 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0379-MSD1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 101000 | 50.0 | ug/l | 5000 | 96600 | 92.3 | 70-130 | 0.278 | 25 | |
| Iron | 5810 | 10.0 | " | 5000 | 396 | 108 | 70-130 | 1.09 | 25 | |
| Magnesium | 22700 | 50.0 | " | 5000 | 17800 | 99.3 | 70-130 | 1.60 | 25 | |
| Manganese | 1330 | 1.00 | " | 500 | 790 | 109 | 70-130 | 1.53 | 25 | |
| Potassium | 29500 | 50.0 | " | 5000 | 24700 | 95.9 | 70-130 | 2.39 | 25 | |
| Sodium | 82800 | 50.0 | " | 5000 | 78200 | 90.4 | 70-130 | 0.723 | 25 | |
| Barium | 788 | 1.00 | " | 500 | 271 | 103 | 70-130 | 0.869 | 25 | |
| Boron | 2620 | 10.0 | " | 2500 | 31.5 | 104 | 70-130 | 2.15 | 25 | |
| Selenium | 57.3 | 1.00 | " | 50.0 | 0.0562 | 114 | 70-130 | 6.85 | 25 | |
| Strontium | 1400 | 10.0 | " | 500 | 895 | 102 | 70-130 | 2.12 | 25 | |

## Anions by EPA Method 300.0 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0380 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0380-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0380-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 9.13 | 0.200 | mg/L | 10.0 | | 91.3 | 90-110 | | | |
| Chloride | 2.88 | 0.100 | " | 3.00 | | 96.1 | 90-110 | | | |
| Fluoride | 2.13 | 0.200 | " | 2.00 | | 106 | 90-110 | | | |
| Sulfate | 15.6 | 0.300 | " | 15.0 | | 104 | 90-110 | | | |
| Nitrate as N | 2.87 | 0.100 | " | 3.00 | | 95.6 | 90-110 | | | |
| Nitrite as N | 2.81 | 0.100 | " | 3.00 | | 93.6 | 90-110 | | | |
| **Duplicate (BDJ0380-DUP1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | ND | 20.0 | mg/L | | ND | | | | 20 | |
| Chloride | 108 | 10.0 | " | | 110 | | | 2.29 | 20 | |
| Fluoride | ND | 20.0 | " | | ND | | | | 20 | |
| Sulfate | 44.1 | 30.0 | " | | 44.8 | | | 1.57 | 20 | |
| Nitrate as N | 2.90 | 10.0 | " | | 3.00 | | | 3.39 | 20 | |
| Nitrite as N | ND | 10.0 | " | | ND | | | | 20 | |
| Nitrate/Nitrite as N | ND | 20.0 | " | | ND | | | | 20 | |
| **Matrix Spike (BDJ0380-MS1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 1100 | 20.0 | mg/L | 1000 | ND | 110 | 80-120 | | | |
| Chloride | 364 | 10.0 | " | 300 | 110 | 84.5 | 80-120 | | | |
| Fluoride | 240 | 20.0 | " | 200 | ND | 120 | 80-120 | | | |
| Sulfate | 1720 | 30.0 | " | 1500 | 44.8 | 112 | 80-120 | | | |
| Nitrate as N | 346 | 10.0 | " | 300 | 3.00 | 114 | 80-120 | | | |
| Nitrite as N | 314 | 10.0 | " | 300 | ND | 105 | 80-120 | | | |

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

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0390 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0390-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | ND | 10.0 | mg/L as CaCO3 | | | | | | | |
| Carbonate | ND | 10.0 | " | | | | | | | |
| Bicarbonate | ND | 10.0 | " | | | | | | | |
| **LCS (BDJ0390-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 110 | 10.0 | mg/L as CaCO3 | 100 | | 110 | 80-120 | | | |
| **Duplicate (BDJ0390-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 310 | 10.0 | mg/L as CaCO3 | | 310 | | | 0.00 | 20 | |
| Carbonate | ND | 10.0 | " | | ND | | | | 20 | |
| Bicarbonate | 310 | 10.0 | " | | 310 | | | 0.00 | 20 | |
| **Matrix Spike (BDJ0390-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 400 | 10.0 | mg/L as CaCO3 | 100 | 310 | 90.0 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0390-MSD1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 410 | 10.0 | mg/L as CaCO3 | 100 | 310 | 100 | 70-130 | 2.47 | 20 | |

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0053 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0053-BLK1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | | | | | | |
| **LCS (BDK0053-BS1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | | 104 | 80-120 | | | |
| **Duplicate (BDK0053-DUP1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | ND | | | | 20 | |
| **Matrix Spike (BDK0053-MS1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.00 | 0.0500 | mg/L | 1.00 | ND | 100 | 70-130 | | | |
| **Matrix Spike Dup (BDK0053-MSD1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | ND | 104 | 70-130 | 3.13 | 20 | |

## Specific Conductance by SM2510B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0389 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0389-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Specific Conductance (EC) | ND | 1.00 | umhos/cm | | | | | | | |
| **Duplicate (BDJ0389-DUP1)** | | **Source: 2010356-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Specific Conductance (EC) | 1200 | 1.00 | umhos/cm | | 1200 | | | 0.501 | 20 | |

## Total Dissolved Solids by SM2540C - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0388 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0388-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Total Dissolved Solids | ND | 10.0 | mg/L | | | | | | | |
| **Duplicate (BDJ0388-DUP1)** | | **Source: 2010356-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Total Dissolved Solids | 593 | 10.0 | mg/L | | 591 | | | 0.304 | 20 | |

## pH by SM4500 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0031 - General Preparation** | | | | | | | | | | |
| **LCS (BDK0031-BS1)** | | | | Prepared: 10/28/20 Analyzed: 11/03/20 | | | | | | |
| pH | 9.49 | 1.00 | pH Units | 9.21 | | 103 | 90-110 | | | |
| **Duplicate (BDK0031-DUP1)** | | **Source: 2010345-01** | | Prepared: 10/28/20 Analyzed: 11/03/20 | | | | | | |
| pH | 7.38 | 1.00 | pH Units | | 7.38 | | | 0.00 | 20 | |

## Notes and Definitions

| | |
|---|---|
| S-04 | A sample matrix effect prevented complete surrogate recovery. |
| 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

November 04, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip_Blank/GWA_District_Six_C6

Work Order # 2010361

Enclosed are the results of analyses for samples received by Summit Scientific on 10/28/20 17:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:03 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_60666_MH_MW_3_Trip_Blank | 2010361-01 | Water | 10/28/20 10:05 | 10/28/20 17:21 |

Summit Scientific

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

# Summit Scientific

S2

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



| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Extraction Oil and Gas (XOG) | **Report to:** Apex Companies, LLC | **Project Manager:** | Heather Shideman | |
| **Address:** | 2234 117th Ave, Ste 106 | | **E-Mail:** | Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com | |
| **City/State/Zip:** | Greeley, CO 80634 | | **cc:** | jcarlisle@extractionog.com | |
| **Phone:** | (970) 576-3446 | | **Project Name:** | Trip_Blank/GWA_District_Six_C6 | |
| **Sampler Name:** | Kade MacDougall | | **Project No.:** | ALLOC-421 | **Facility ID 766285** |

| | | | | | 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_3_Trip_Blank | 10/28 | 1005 | 2 | | | | | X | | | | X | | | | | | | **Sample Frequency:** Q4 |

| | | | |
|---|---|---|---|
| Relinquished by: | Date/Time: 10/10/28/ 1721 | Received by: | Date/Time: 10/28/2020 1721 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard X
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 7.8
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: APEX COMPANIES Client Project ID: TRIP BLANK DISTRICT SIX C

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

[✓] [ ] [ ] [ ] [ ]

Matrix (check all that apply): [ ] Air [ ] Soil/Solid [✓] Water [ ] Other:_____ (Describe)

| Temp (°C) | 10.3 |
|---|---|

Thermometer ID: 61857155-K

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

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

| Custodian Printed Name or Initials | Signature of Custodian | Date/Time |
|---|---|---|
| | | 10/28/2020 |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:03 |

## GW_60666_MH_MW_3_Trip_Blank

### 2010361-01 (Water)

### Summit Scientific

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

Date Sampled: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | ug/l | 1 | BDJ0376 | 10/29/20 | 10/30/20 | 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: **10/28/20 10:05**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *106 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *97.0 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *89.3 %* | *21-167* | | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:03 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDJ0376-BLK1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| 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* | *13.8* | | *"* | *13.3* | | *103* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.3* | | *"* | *13.3* | | *99.7* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.0* | | *"* | *13.3* | | *89.9* | *21-167* | | | |
| **LCS (BDJ0376-BS1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 23.9 | 1.0 | ug/l | 33.3 | | 71.6 | 51-132 | | | |
| Toluene | 23.7 | 1.0 | " | 33.3 | | 71.0 | 51-138 | | | |
| Ethylbenzene | 37.6 | 1.0 | " | 33.3 | | 113 | 58-146 | | | |
| m,p-Xylene | 75.4 | 2.0 | " | 66.7 | | 113 | 57-144 | | | |
| o-Xylene | 39.8 | 1.0 | " | 33.3 | | 119 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *13.8* | | *"* | *13.3* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.3* | | *"* | *13.3* | | *99.9* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.9* | | *"* | *13.3* | | *89.2* | *21-167* | | | |
| **Matrix Spike (BDJ0376-MS1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 11.9 | 1.0 | ug/l | 33.3 | ND | 35.6 | 34-141 | | | |
| Toluene | 23.4 | 1.0 | " | 33.3 | ND | 70.2 | 27-151 | | | |
| Ethylbenzene | 37.9 | 1.0 | " | 33.3 | ND | 114 | 29-160 | | | |
| m,p-Xylene | 76.3 | 2.0 | " | 66.7 | ND | 114 | 20-166 | | | |
| o-Xylene | 41.5 | 1.0 | " | 33.3 | ND | 124 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.3* | | *"* | *13.3* | | *107* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.5* | | *"* | *13.3* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.3* | | *"* | *13.3* | | *92.0* | *21-167* | | | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:03 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDJ0376-MSD1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 11.6 | 1.0 | ug/l | 33.3 | ND | 34.7 | 34-141 | 2.64 | 32 | |
| Toluene | 22.3 | 1.0 | " | 33.3 | ND | 66.9 | 27-151 | 4.86 | 25 | |
| Ethylbenzene | 37.0 | 1.0 | " | 33.3 | ND | 111 | 29-160 | 2.43 | 50 | |
| m,p-Xylene | 73.4 | 2.0 | " | 66.7 | ND | 110 | 20-166 | 3.79 | 36 | |
| o-Xylene | 40.3 | 1.0 | " | 33.3 | ND | 121 | 33-159 | 2.94 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.5* | | *"* | *13.3* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.1* | | *"* | *13.3* | | *98.4* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.8* | | *"* | *13.3* | | *88.9* | *21-167* | | | |

## 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 |

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www.isotechlabs.com

| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 774721 | Job #: | 46166 | IS-99230 | Co. Job#: |
| Sample Name: | GW_60666_MH_MW_3 | | | | Co. Lab#: |
| Company: | Extraction Oil and Gas | | | | |
| API/Well: | | | | | |
| Container: | 125ml Plastic Bottle | | | | |
| Field/Site Name: | Ground_Water/GWA_District_Six_C6 | | | | |
| Location: | NENE_20_5N_65W | | | | |
| Formation/Depth: | Q4 | | | | |
| Sampling Point: | 766285 | | | | |
| Date Sampled: | 10/28/2020 10:05 | Date Received: | 10/30/2020 | Date Reported: | 11/18/2020 |

| | | |
|---|---|---|
| $\delta$D of water | ---------- | -102.9 ‰ relative to VSMOW |
| $\delta^{18}$O of water | ---------- | -13.34 ‰ relative to VSMOW |
| Tritium content of water | ---------- | na |
| $\delta^{13}$C of DIC | ---------- | -12.8 ‰ relative to VPDB |
| $^{14}$C content of DIC | ---------- | na |
| $\delta^{15}$N of nitrate | ---------- | na |
| $\delta^{18}$O of nitrate | ---------- | na |
| $\delta^{34}$S of sulfate | ---------- | na |
| $\delta^{18}$O of sulfate | ---------- | na |
| Vacuum Distilled? * | ---------- | No |

Remarks:

nd = not detected. na = not analyzed.
*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

# Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 04, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground_Water/GWA_District_Six_C6

Work Order # 2010358

Enclosed are the results of analyses for samples received by Summit Scientific on 10/28/20 17:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | | |
|---|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project:<br>Project Number:<br>Project Manager: | Ground_Water/GWA_District_Six_C6<br>Alloc 421 930.88<br>Heather Shideman | **Reported:**<br>11/04/20 13:51 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_60666_MH_MW_4 | 2010358-01 | Water | 10/28/20 16:07 | 10/28/20 17:21 |

Summit Scientific

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

# Summit Scientific

S2

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



| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Extraction Oil and Gas (XOG) | **Report to:** Apex Companies, LLC | **Project Manager:** | Heather Shideman | |
| **Address:** | 2234 117th Ave, Ste 106 | | **E-Mail:** | Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com | |
| **City/State/Zip:** | Greeley, CO 80634 | | **cc:** | jcarlisle@extractionog.com | |
| **Phone:** | (970) 576-3446 | | **Project Name:** | Ground_Water/GWA_District_Six_C6 | |
| **Sampler Name:** | Kade MacDougall | | **Project No.:** Alloc-421 930, 88 | | **Facility ID 766286** |

| | | | | | Preservative | | | | Matrix | | | | Analysis Requested | | | | | | | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ID** | **Field ID / Point of Collection** | **Date Sampled** | **Time Sampled** | **# of containers** | **HCl** | **HNO3** | **None** | **Other (Specify)** | **Ground Water** | **Soil** | **Air-Canister #** | **Other (Specify)** | **COGCC 609** | **No BART** | | | | | | |
| 1 | GW_60666_MH_MW_4 | 10/28 | 1607 | | | | | | X | | | | X | X | | | | | | **Sample Frequency**: |
| | NENE_20_5N_65W | | | | | | | | | | | | | | | | | | | Q4 |
| | | | | | | | | | | | | | | | | | | | | |
| | Temperature, field: | 14.2 | °C | | | | | | | | | | | | | | | | | |
| | pH, field: | 7.44 | s.u. | | | | | | | | | | | | | | | | | |
| | Conductivity, field: | 1200 | uS/cm | | | | | | | | | | | | | | | | | |
| | ORP, field: | -317.9 | mV | | | | | | | | | | | | | | | | | |
| | Dissolved Oxygen, field: | -0.04 | mg/L | | | | | | | | | | | | | | | | | |
| | Turbidity, field: | 21.79 | NTU | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| | 20/10/28/1721 | | 10/28/2020/1721 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours
___ 24 hours _X_ Standard
___ 48 hours ___

**Sample Integrity**:
Temperature Upon Receipt: 16.3
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: APEX Companies Client Project ID: IGWA District Six 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) | 10.3 |
|---|---|

Thermometer ID: 61857155-K

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

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

| Custodian Printed Name or Initials | Signature of Custodian | Date/Time |
|---|---|---|
| RG | [signature] | 10/28/2025 |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:51 |

## GW_60666_MH_MW_4

NENE_20_5N_65W

**2010358-01 (Water)**

**Summit Scientific**

### Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Benzene** | **0.0037** | 0.0010 | mg/L | 1 | BDJ0376 | 10/29/20 | 10/30/20 | 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** | **0.18** | 0.050 | " | " | " | " | " | " | |

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *109 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *82.2 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *83.3 %* | *21-167* | | " | " | " | " | |

### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| C10-C28 (DRO) | ND | 0.100 | mg/L | 1 | BDJ0394 | 10/30/20 | 10/31/20 | EPA 8015M | |

Date Sampled: **10/28/20 16:07**

| 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: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:51 |

## GW_60666_MH_MW_4

NENE_20_5N_65W

**2010358-01 (Water)**

**Summit Scientific**

### Dissolved Gases by RSK-175

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Methane** | **7.8** | 1.0 | mg/L | 100 | BDJ0401 | 10/30/20 | 11/02/20 | RSK-175 mod |
| **Ethane** | **3.9** | 1.0 | " | " | " | " | " | " |
| **Propane** | **2.2** | 1.0 | " | " | " | " | " | " |

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: Ethene* | | *88.2 %* | *70-130* | | " | " | " | " | |

### Dissolved Metals by EPA Method 200.8

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Calcium** | **93900** | 50.0 | ug/l | 1 | BDJ0379 | 10/29/20 | 10/29/20 | EPA 200.8 | |
| **Iron** | **47.6** | 10.0 | " | " | " | " | " | " | |
| **Magnesium** | **41900** | 50.0 | " | " | " | " | " | " | |
| **Manganese** | **748** | 1.00 | " | " | " | " | " | " | |
| **Potassium** | **2330** | 50.0 | " | " | " | " | " | " | |
| **Sodium** | **94400** | 50.0 | " | " | " | " | " | " | |
| **Barium** | **28.5** | 1.00 | " | " | " | " | " | " | |
| **Boron** | **196** | 10.0 | " | " | " | " | " | " | |
| Selenium | ND | 1.00 | " | " | " | " | " | " | |
| **Strontium** | **1170** | 10.0 | " | " | " | " | " | " | |

### Anions by EPA Method 300.0

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Bromide** | **0.815** | 0.200 | mg/L | 1 | BDJ0380 | 10/29/20 | 10/29/20 | EPA 300.0 | |
| **Chloride** | **119** | 5.00 | " | 50 | " | " | " | " | |
| **Fluoride** | **0.395** | 0.200 | " | 1 | " | " | " | " | |
| **Sulfate** | **229** | 15.0 | " | 50 | " | " | " | " | |
| Nitrate as N | ND | 0.100 | " | 1 | " | " | " | " | |
| Nitrite as N | ND | 0.100 | " | " | " | " | " | " | |
| Nitrate/Nitrite as N | ND | 0.200 | " | " | " | " | " | " | |

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:51 |

**GW_60666_MH_MW_4**
NENE_20_5N_65W
**2010358-01 (Water)**

**Summit Scientific**

## Anions by EPA Method 300.0

## Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Alkalinity** | **310** | 10.0 | mg/L as CaCO3 | 1 | BDJ0390 | 10/30/20 | 11/04/20 | SM2320-B | |
| Carbonate | ND | 10.0 | " | " | " | " | " | " | |
| **Bicarbonate** | **310** | 10.0 | " | " | " | " | " | " | |

## Conventional Chemistry Parameters by APHA/EPA Methods

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus - Total | ND | 0.0500 | mg/L | 1 | BDK0053 | 11/03/20 | 11/04/20 | SM4500-P-E | |

## Specific Conductance by SM2510B

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1280** | 1.00 | umhos/cm | 1 | BDJ0389 | 10/30/20 | 10/30/20 | SM2510B | |

## Total Dissolved Solids by SM2540C

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Dissolved Solids** | **651** | 10.0 | mg/L | 1 | BDJ0388 | 10/30/20 | 10/30/20 | SM2540C | |

## pH by SM4500

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:51 |

## GW_60666_MH_MW_4

NENE_20_5N_65W

**2010358-01 (Water)**

**Summit Scientific**

### pH by SM4500

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **pH** | **7.39** | 1.00 | pH Units | 1 | BDK0031 | 10/28/20 | 11/03/20 | SM4500-H+ B |

### Field Data

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1200.0** | | uS/cm | 1 | BDJ0372 | 10/28/20 | 10/28/20 | Field Method | |
| **Temperature** | **14.20** | | Degrees C | " | " | " | " | " | |
| **Turbidity** | **21.8** | | NTU | " | " | " | " | " | |
| **Oxidation/Reduction Potential** | **-317.9** | | mv | " | " | " | " | " | |
| **Dissolved Oxygen** | **-0.0400** | | mg/L | " | " | " | " | " | |
| **pH** | **7.44** | | SU | " | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:51 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDJ0376-BLK1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| 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* | *0.0138* | | *"* | *0.0133* | | *103* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0133* | | *"* | *0.0133* | | *99.7* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0120* | | *"* | *0.0133* | | *89.9* | *21-167* | | | |
| **LCS (BDJ0376-BS1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0239 | 0.0010 | mg/L | 0.0333 | | 71.6 | 51-132 | | | |
| Toluene | 0.0237 | 0.0010 | " | 0.0333 | | 71.0 | 51-138 | | | |
| Ethylbenzene | 0.0376 | 0.0010 | " | 0.0333 | | 113 | 58-146 | | | |
| m,p-Xylene | 0.0754 | 0.0020 | " | 0.0667 | | 113 | 57-144 | | | |
| o-Xylene | 0.0398 | 0.0010 | " | 0.0333 | | 119 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0138* | | *"* | *0.0133* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0133* | | *"* | *0.0133* | | *99.9* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0119* | | *"* | *0.0133* | | *89.2* | *21-167* | | | |
| **Matrix Spike (BDJ0376-MS1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0119 | 0.0010 | mg/L | 0.0333 | ND | 35.6 | 34-141 | | | |
| Toluene | 0.0234 | 0.0010 | " | 0.0333 | ND | 70.2 | 27-151 | | | |
| Ethylbenzene | 0.0379 | 0.0010 | " | 0.0333 | ND | 114 | 29-160 | | | |
| m,p-Xylene | 0.0763 | 0.0020 | " | 0.0667 | ND | 114 | 20-166 | | | |
| o-Xylene | 0.0415 | 0.0010 | " | 0.0333 | ND | 124 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0143* | | *"* | *0.0133* | | *107* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0135* | | *"* | *0.0133* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0123* | | *"* | *0.0133* | | *92.0* | *21-167* | | | |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDJ0376-MSD1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0116 | 0.0010 | mg/L | 0.0333 | ND | 34.7 | 34-141 | 2.64 | 32 | |
| Toluene | 0.0223 | 0.0010 | " | 0.0333 | ND | 66.9 | 27-151 | 4.86 | 25 | |
| Ethylbenzene | 0.0370 | 0.0010 | " | 0.0333 | ND | 111 | 29-160 | 2.43 | 50 | |
| m,p-Xylene | 0.0734 | 0.0020 | " | 0.0667 | ND | 110 | 20-166 | 3.79 | 36 | |
| o-Xylene | 0.0403 | 0.0010 | " | 0.0333 | ND | 121 | 33-159 | 2.94 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0145* | | *"* | *0.0133* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0131* | | *"* | *0.0133* | | *98.4* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0118* | | *"* | *0.0133* | | *88.9* | *21-167* | | | |

## Extractable Petroleum Hydrocarbons by 8015 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0394 - EPA 3520B** | | | | | | | | | | |
| **Blank (BDJ0394-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: o-Terphenyl* | *0.0187* | | *"* | *0.0250* | | *74.7* | *44.8-129* | | | |
| **LCS (BDJ0394-BS1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | 0.971 | 0.100 | mg/L | 1.00 | | 97.1 | 70-130 | | | |
| *Surrogate: o-Terphenyl* | *0.0194* | | *"* | *0.0250* | | *77.6* | *44.8-129* | | | |
| **LCS Dup (BDJ0394-BSD1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | 1.10 | 0.100 | mg/L | 1.00 | | 110 | 70-130 | 12.8 | 200 | |
| *Surrogate: o-Terphenyl* | *0.0216* | | *"* | *0.0250* | | *86.3* | *44.8-129* | | | |

## Dissolved Gases by RSK-175 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0401 - GC** | | | | | | | | | | |
| **Blank (BDJ0401-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | | | | | | |
| Ethane | ND | 0.010 | " | | | | | | | |
| Propane | ND | 0.010 | " | | | | | | | |
| *Surrogate: Ethene* | *0.0350* | | *"* | *0.0364* | | *96.2* | *70-130* | | | |
| **LCS (BDJ0401-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | | 70.4 | 70-130 | | | |
| Ethane | 0.078 | 0.010 | " | 0.0798 | | 98.0 | 70-130 | | | |
| Propane | 0.11 | 0.010 | " | 0.139 | | 82.2 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0749* | | *"* | *0.0728* | | *103* | *70-130* | | | |
| **Duplicate (BDJ0401-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | ND | | | | 30 | |
| Ethane | ND | 0.010 | " | | ND | | | | 30 | |
| Propane | ND | 0.010 | " | | ND | | | | 30 | |
| *Surrogate: Ethene* | *0.0337* | | *"* | *0.0364* | | *92.6* | *70-130* | | | |
| **Matrix Spike (BDJ0401-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | ND | 71.1 | 70-130 | | | |
| Ethane | 0.084 | 0.010 | " | 0.0798 | ND | 105 | 70-130 | | | |
| Propane | 0.12 | 0.010 | " | 0.139 | ND | 87.3 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0784* | | *"* | *0.0728* | | *108* | *70-130* | | | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:51 |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0379 - EPA 200.8** | | | | | | | | | | |
| **Blank (BDJ0379-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0379-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 5290 | 50.0 | ug/l | 5000 | | 106 | 85-115 | | | |
| Iron | 5180 | 10.0 | " | 5000 | | 104 | 85-115 | | | |
| Magnesium | 5690 | 50.0 | " | 5000 | | 114 | 85-115 | | | |
| Manganese | 526 | 1.00 | " | 500 | | 105 | 85-115 | | | |
| Potassium | 5400 | 50.0 | " | 5000 | | 108 | 85-115 | | | |
| Sodium | 5620 | 50.0 | " | 5000 | | 112 | 85-115 | | | |
| Barium | 527 | 1.00 | " | 500 | | 105 | 85-115 | | | |
| Boron | 2640 | 10.0 | " | 2500 | | 106 | 85-115 | | | |
| Selenium | 52.3 | 1.00 | " | 50.0 | | 105 | 85-115 | | | |
| Strontium | 520 | 10.0 | " | 500 | | 104 | 85-115 | | | |
| **Duplicate (BDJ0379-DUP1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 98000 | 50.0 | ug/l | | 96600 | | | 1.51 | 20 | |
| Iron | 388 | 10.0 | " | | 396 | | | 2.17 | 20 | |
| Magnesium | 17100 | 50.0 | " | | 17800 | | | 3.79 | 20 | |
| Manganese | 752 | 1.00 | " | | 790 | | | 4.98 | 20 | |
| Potassium | 23600 | 50.0 | " | | 24700 | | | 4.53 | 20 | |
| Sodium | 75200 | 50.0 | " | | 78200 | | | 4.01 | 20 | |
| Barium | 269 | 1.00 | " | | 271 | | | 0.528 | 20 | |
| Boron | 27.2 | 10.0 | " | | 31.5 | | | 14.7 | 20 | |
| Selenium | ND | 1.00 | " | | 0.0562 | | | | 20 | |
| Strontium | 902 | 10.0 | " | | 895 | | | 0.791 | 20 | |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0379 - EPA 200.8** | | | | | | | | | | |
| **Matrix Spike (BDJ0379-MS1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 101000 | 50.0 | ug/l | 5000 | 96600 | 97.9 | 70-130 | | | |
| Iron | 5880 | 10.0 | " | 5000 | 396 | 110 | 70-130 | | | |
| Magnesium | 23100 | 50.0 | " | 5000 | 17800 | 107 | 70-130 | | | |
| Manganese | 1310 | 1.00 | " | 500 | 790 | 105 | 70-130 | | | |
| Potassium | 30300 | 50.0 | " | 5000 | 24700 | 110 | 70-130 | | | |
| Sodium | 82200 | 50.0 | " | 5000 | 78200 | 78.5 | 70-130 | | | |
| Barium | 795 | 1.00 | " | 500 | 271 | 105 | 70-130 | | | |
| Boron | 2680 | 10.0 | " | 2500 | 31.5 | 106 | 70-130 | | | |
| Selenium | 53.5 | 1.00 | " | 50.0 | 0.0562 | 107 | 70-130 | | | |
| Strontium | 1430 | 10.0 | " | 500 | 895 | 108 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0379-MSD1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 101000 | 50.0 | ug/l | 5000 | 96600 | 92.3 | 70-130 | 0.278 | 25 | |
| Iron | 5810 | 10.0 | " | 5000 | 396 | 108 | 70-130 | 1.09 | 25 | |
| Magnesium | 22700 | 50.0 | " | 5000 | 17800 | 99.3 | 70-130 | 1.60 | 25 | |
| Manganese | 1330 | 1.00 | " | 500 | 790 | 109 | 70-130 | 1.53 | 25 | |
| Potassium | 29500 | 50.0 | " | 5000 | 24700 | 95.9 | 70-130 | 2.39 | 25 | |
| Sodium | 82800 | 50.0 | " | 5000 | 78200 | 90.4 | 70-130 | 0.723 | 25 | |
| Barium | 788 | 1.00 | " | 500 | 271 | 103 | 70-130 | 0.869 | 25 | |
| Boron | 2620 | 10.0 | " | 2500 | 31.5 | 104 | 70-130 | 2.15 | 25 | |
| Selenium | 57.3 | 1.00 | " | 50.0 | 0.0562 | 114 | 70-130 | 6.85 | 25 | |
| Strontium | 1400 | 10.0 | " | 500 | 895 | 102 | 70-130 | 2.12 | 25 | |

## Anions by EPA Method 300.0 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0380 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0380-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0380-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 9.13 | 0.200 | mg/L | 10.0 | | 91.3 | 90-110 | | | |
| Chloride | 2.88 | 0.100 | " | 3.00 | | 96.1 | 90-110 | | | |
| Fluoride | 2.13 | 0.200 | " | 2.00 | | 106 | 90-110 | | | |
| Sulfate | 15.6 | 0.300 | " | 15.0 | | 104 | 90-110 | | | |
| Nitrate as N | 2.87 | 0.100 | " | 3.00 | | 95.6 | 90-110 | | | |
| Nitrite as N | 2.81 | 0.100 | " | 3.00 | | 93.6 | 90-110 | | | |
| **Duplicate (BDJ0380-DUP1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | ND | 20.0 | mg/L | | ND | | | | 20 | |
| Chloride | 108 | 10.0 | " | | 110 | | | 2.29 | 20 | |
| Fluoride | ND | 20.0 | " | | ND | | | | 20 | |
| Sulfate | 44.1 | 30.0 | " | | 44.8 | | | 1.57 | 20 | |
| Nitrate as N | 2.90 | 10.0 | " | | 3.00 | | | 3.39 | 20 | |
| Nitrite as N | ND | 10.0 | " | | ND | | | | 20 | |
| Nitrate/Nitrite as N | ND | 20.0 | " | | ND | | | | 20 | |
| **Matrix Spike (BDJ0380-MS1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 1100 | 20.0 | mg/L | 1000 | ND | 110 | 80-120 | | | |
| Chloride | 364 | 10.0 | " | 300 | 110 | 84.5 | 80-120 | | | |
| Fluoride | 240 | 20.0 | " | 200 | ND | 120 | 80-120 | | | |
| Sulfate | 1720 | 30.0 | " | 1500 | 44.8 | 112 | 80-120 | | | |
| Nitrate as N | 346 | 10.0 | " | 300 | 3.00 | 114 | 80-120 | | | |
| Nitrite as N | 314 | 10.0 | " | 300 | ND | 105 | 80-120 | | | |

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

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0390 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0390-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | ND | 10.0 | mg/L as CaCO3 | | | | | | | |
| Carbonate | ND | 10.0 | " | | | | | | | |
| Bicarbonate | ND | 10.0 | " | | | | | | | |
| **LCS (BDJ0390-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 110 | 10.0 | mg/L as CaCO3 | 100 | | 110 | 80-120 | | | |
| **Duplicate (BDJ0390-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 310 | 10.0 | mg/L as CaCO3 | | 310 | | | 0.00 | 20 | |
| Carbonate | ND | 10.0 | " | | ND | | | | 20 | |
| Bicarbonate | 310 | 10.0 | " | | 310 | | | 0.00 | 20 | |
| **Matrix Spike (BDJ0390-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 400 | 10.0 | mg/L as CaCO3 | 100 | 310 | 90.0 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0390-MSD1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 410 | 10.0 | mg/L as CaCO3 | 100 | 310 | 100 | 70-130 | 2.47 | 20 | |

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0053 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0053-BLK1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | | | | | | |
| **LCS (BDK0053-BS1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | | 104 | 80-120 | | | |
| **Duplicate (BDK0053-DUP1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | ND | | | | 20 | |
| **Matrix Spike (BDK0053-MS1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.00 | 0.0500 | mg/L | 1.00 | ND | 100 | 70-130 | | | |
| **Matrix Spike Dup (BDK0053-MSD1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | ND | 104 | 70-130 | 3.13 | 20 | |

## Specific Conductance by SM2510B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0389 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0389-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Specific Conductance (EC) | ND | 1.00 | umhos/cm | | | | | | | |
| **Duplicate (BDJ0389-DUP1)** | | **Source: 2010356-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Specific Conductance (EC) | 1200 | 1.00 | umhos/cm | | 1200 | | | 0.501 | 20 | |

## Total Dissolved Solids by SM2540C - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0388 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0388-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Total Dissolved Solids | ND | 10.0 | mg/L | | | | | | | |
| **Duplicate (BDJ0388-DUP1)** | | **Source: 2010356-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Total Dissolved Solids | 593 | 10.0 | mg/L | | 591 | | | 0.304 | 20 | |

## pH by SM4500 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0031 - General Preparation** | | | | | | | | | | |
| **LCS (BDK0031-BS1)** | | | | Prepared: 10/28/20 Analyzed: 11/03/20 | | | | | | |
| pH | 9.49 | 1.00 | pH Units | 9.21 | | 103 | 90-110 | | | |
| **Duplicate (BDK0031-DUP1)** | | **Source: 2010345-01** | | Prepared: 10/28/20 Analyzed: 11/03/20 | | | | | | |
| pH | 7.38 | 1.00 | pH Units | | 7.38 | | | 0.00 | 20 | |

## 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

November 04, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip_Blank/GWA_District_Six_C6

Work Order # 2010362

Enclosed are the results of analyses for samples received by Summit Scientific on 10/28/20 17:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:04 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_60666_MH_MW_4_Trip_Blank | 2010362-01 | Water | 10/28/20 16:07 | 10/28/20 17:21 |

Summit Scientific

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

# Summit Scientific

S2

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



| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Extraction Oil and Gas (XOG) | **Report to:** Apex Companies, LLC | **Project Manager:** | Heather Shideman | |
| **Address:** | 2234 117th Ave, Ste 106 | | **E-Mail:** | Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com | |
| **City/State/Zip:** | Greeley, CO 80634 | | **cc:** | jcarlisle@extractionog.com | |
| **Phone:** | (970) 576-3446 | | **Project Name:** | Trip_Blank/GWA_District_Six_C6 | |
| **Sampler Name:** | Kade MacDougall | | **Project No.:** | ALLOC-421 | **Facility ID** 766286 |

| | | | | | 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 | 10/28 | 1607 | 2 | | | | | X | | | | X | | | | | | | **Sample Frequency:** Q4 |

| | | | |
|---|---|---|---|
| Relinquished by: | Date/Time: 20/10/28 1721 | Received by: | Date/Time: 10/28/2020 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard X
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 10.3
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: APEX COMPANIES Client Project ID: TRIP BLANK DISTRICT SIX CC6

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

[✓] [ ] [ ] [ ] [ ]

Matrix (check all that apply): [ ] Air [ ] Soil/Solid [✓] Water [ ] Other:_____ (Describe)

| Temp (°C) | 12.9 |
|---|---|

Thermometer ID: 61857155-K

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

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

TG

**Custodian Printed Name or Initials**

**Signature of Custodian**

10/28/2020

**Date/Time**

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:04 |

## GW_60666_MH_MW_4_Trip_Blank

**2010362-01 (Water)**

**Summit Scientific**

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

Date Sampled: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | ug/l | 1 | BDJ0376 | 10/29/20 | 10/30/20 | 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: **10/28/20 16:07**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *106 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *99.5 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *85.8 %* | *21-167* | | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:04 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDJ0376-BLK1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| 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* | *13.8* | | *"* | *13.3* | | *103* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.3* | | *"* | *13.3* | | *99.7* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.0* | | *"* | *13.3* | | *89.9* | *21-167* | | | |
| **LCS (BDJ0376-BS1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 23.9 | 1.0 | ug/l | 33.3 | | 71.6 | 51-132 | | | |
| Toluene | 23.7 | 1.0 | " | 33.3 | | 71.0 | 51-138 | | | |
| Ethylbenzene | 37.6 | 1.0 | " | 33.3 | | 113 | 58-146 | | | |
| m,p-Xylene | 75.4 | 2.0 | " | 66.7 | | 113 | 57-144 | | | |
| o-Xylene | 39.8 | 1.0 | " | 33.3 | | 119 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *13.8* | | *"* | *13.3* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.3* | | *"* | *13.3* | | *99.9* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.9* | | *"* | *13.3* | | *89.2* | *21-167* | | | |
| **Matrix Spike (BDJ0376-MS1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 11.9 | 1.0 | ug/l | 33.3 | ND | 35.6 | 34-141 | | | |
| Toluene | 23.4 | 1.0 | " | 33.3 | ND | 70.2 | 27-151 | | | |
| Ethylbenzene | 37.9 | 1.0 | " | 33.3 | ND | 114 | 29-160 | | | |
| m,p-Xylene | 76.3 | 2.0 | " | 66.7 | ND | 114 | 20-166 | | | |
| o-Xylene | 41.5 | 1.0 | " | 33.3 | ND | 124 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.3* | | *"* | *13.3* | | *107* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.5* | | *"* | *13.3* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.3* | | *"* | *13.3* | | *92.0* | *21-167* | | | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:04 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDJ0376-MSD1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 11.6 | 1.0 | ug/l | 33.3 | ND | 34.7 | 34-141 | 2.64 | 32 | |
| Toluene | 22.3 | 1.0 | " | 33.3 | ND | 66.9 | 27-151 | 4.86 | 25 | |
| Ethylbenzene | 37.0 | 1.0 | " | 33.3 | ND | 111 | 29-160 | 2.43 | 50 | |
| m,p-Xylene | 73.4 | 2.0 | " | 66.7 | ND | 110 | 20-166 | 3.79 | 36 | |
| o-Xylene | 40.3 | 1.0 | " | 33.3 | ND | 121 | 33-159 | 2.94 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.5* | | *"* | *13.3* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.1* | | *"* | *13.3* | | *98.4* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.8* | | *"* | *13.3* | | *88.9* | *21-167* | | | |

## 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 |

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 774724 | Job #: | 46166 | IS-99230 | Co. Job#: |
| Sample Name: | GW_60666_MH_MW_4 | | | | Co. Lab#: |
| Company: | Extraction Oil and Gas | | | | |
| API/Well: | | | | | |
| Container: | 125ml Plastic Bottle | | | | |
| Field/Site Name: | Ground_Water/GWA_District_Six_C6 | | | | |
| Location: | NENE_20_5N_65W | | | | |
| Formation/Depth: | Q4 | | | | |
| Sampling Point: | 766286 | | | | |
| Date Sampled: | 10/28/2020 16:07 | Date Received: | 10/30/2020 | Date Reported: | 11/18/2020 |

| | | |
|---|---|---|
| $\delta$D of water | ---------- | -108.0 ‰ relative to VSMOW |
| $\delta^{18}$O of water | ---------- | -13.76 ‰ relative to VSMOW |
| Tritium content of water | ---------- | na |
| $\delta^{13}$C of DIC | ---------- | -13.5 ‰ relative to VPDB |
| $^{14}$C content of DIC | ---------- | na |
| $\delta^{15}$N of nitrate | ---------- | na |
| $\delta^{18}$O of nitrate | ---------- | na |
| $\delta^{34}$S of sulfate | ---------- | na |
| $\delta^{18}$O of sulfate | ---------- | na |
| Vacuum Distilled? * | ---------- | No |

Remarks:

nd = not detected. na = not analyzed.
*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 775060 | Job #: | 46206 | 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: | Q4 | | | | |
| Sampling Point: | 766286 | | | | |
| Date Sampled: | 10/28/2020 16:07 | Date Received: | 10/30/2020 | Date Reported: | 12/21/2020 |

| Component | Chemical mol. % | $\delta^{13}C$ ‰ | $\delta D$ ‰ | $\delta^{18}O$ ‰ | Dissolved gas cc/L | Dissolved gas ppm |
|---|---|---|---|---|---|---|
| Carbon Monoxide | nd | | | | | |
| Helium | na | | | | | |
| Hydrogen | nd | | | | | |
| Argon | 0.190 | | | | | |
| Oxygen | 0.19 | | | | | |
| Nitrogen | 10.80 | | | | | |
| Carbon Dioxide | 3.52 | | | | | |
| Methane | 70.60 | -46.76 | -228.4 | | 32 | 21 |
| Ethane | 10.97 | -31.34 | | | 5.4 | 6.7 |
| Ethylene | nd | | | | | |
| Propane | 2.84 | -26.69 | | | 1.3 | 2.4 |
| Propylene | nd | | | | | |
| Iso-butane | 0.351 | -30.3 | | | | |
| N-butane | 0.396 | -25.8 | | | | |
| Iso-pentane | 0.0937 | -27.7 | | | | |
| N-pentane | 0.0310 | -24.9 | | | | |
| Hexanes + | 0.0195 | | | | | |

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.64
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
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

November 04, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Ground_Water/GWA_District_Six_C6

Work Order # 2010359

Enclosed are the results of analyses for samples received by Summit Scientific on 10/28/20 17:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | | |
|---|---|---|---|
| Extraction Oil&Gas | Project: | Ground_Water/GWA_District_Six_C6 | |
| 370 17th Street Suite 5300 | Project Number: | Alloc 421 930.88 | **Reported:** |
| Denver CO, 80202 | Project Manager: | Heather Shideman | 11/04/20 14:25 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_60666_MH_MW_5 | 2010359-01 | Water | 10/28/20 14:23 | 10/28/20 17:21 |

Summit Scientific

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

# Summit Scientific

S2

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



| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Extraction Oil and Gas (XOG) | **Report to:** Apex Companies, LLC | **Project Manager:** | Heather Shideman | |
| **Address:** | 2234 117th Ave, Ste 106 | | **E-Mail:** | Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com | |
| **City/State/Zip:** | Greeley, CO 80634 | | **cc:** | jcarlisle@extractionog.com | |
| **Phone:** | (970) 576-3446 | | **Project Name:** | Ground_Water/GWA_District_Six_C6 | |
| **Sampler Name:** | Kade MacDougall | | **Project No.:** Alloc-421 930, 88 | | **Facility ID 766287** |

| | | | | | Preservative | | | | Matrix | | | | Analysis Requested | | | | | | | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ID** | **Field ID / Point of Collection** | **Date Sampled** | **Time Sampled** | **# of containers** | **HCl** | **HNO3** | **None** | **Other (Specify)** | **Ground Water** | **Soil** | **Air-Canister #** | **Other (Specify)** | **COGCC 609** | **No BART** | | | | | | |
| 1 | GW_60666_MH_MW_5 | 20/10/28 | 1423 | | | | | | X | | | | X | X | | | | | | **Sample Frequency**: |
| | NENE_20_5N_65W | | | | | | | | | | | | | | | | | | | Q4 |
| | | | | | | | | | | | | | | | | | | | | |
| | Temperature, field: | 14.2 | °C | | | | | | | | | | | | | | | | | |
| | pH, field: | 7.32 | s.u. | | | | | | | | | | | | | | | | | |
| | Conductivity, field: | 2177 | uS/cm | | | | | | | | | | | | | | | | | |
| | ORP, field: | 89.9 | mV | | | | | | | | | | | | | | | | | |
| | Dissolved Oxygen, field: | 2.47 | mg/L | | | | | | | | | | | | | | | | | |
| | Turbidity, field: | 20.32 | NTU | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| | 20/10/28 / 1721 | | 10/20/2021 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours
___ 24 hours _X_ Standard
___ 48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 12.6
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: APEX COMPANIES Client Project ID: GWA DISTRICT SIX 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) | 7.8 |
|---|---|

Thermometer ID: 61857155-K

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

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

| Custodian Printed Name or Initials | Signature of Custodian | Date/Time |
|---|---|---|
| KB | | 10/28/2025 |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 14:25 |

## GW_60666_MH_MW_5

NENE_20_5N_65W

**2010359-01 (Water)**

**Summit Scientific**

### Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.0010 | mg/L | 1 | BDJ0376 | 10/29/20 | 10/30/20 | 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: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *113 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *85.4 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *83.0 %* | *21-167* | | " | " | " | " | |

### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| C10-C28 (DRO) | ND | 0.100 | mg/L | 1 | BDJ0394 | 10/30/20 | 10/31/20 | EPA 8015M | |

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: o-Terphenyl* | | *95.4 %* | *44.8-129* | | " | " | " | " | |

### Dissolved Gases by RSK-175

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 14:25 |

## GW_60666_MH_MW_5

NENE_20_5N_65W

**2010359-01 (Water)**

**Summit Scientific**

### Dissolved Gases by RSK-175

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Methane** | **0.90** | 0.10 | mg/L | 10 | BDJ0401 | 10/30/20 | 11/02/20 | RSK-175 mod |
| **Ethane** | **0.099** | 0.010 | " | 1 | " | " | " | " |
| **Propane** | **0.037** | 0.010 | " | " | " | " | " | " |

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: Ethene* | | *3.57 %* | *70-130* | | " | " | " | " | *S-04* |

### Dissolved Metals by EPA Method 200.8

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Calcium** | **187000** | 50.0 | ug/l | 1 | BDJ0379 | 10/29/20 | 10/29/20 | EPA 200.8 | |
| **Iron** | **24.0** | 10.0 | " | " | " | " | " | " | |
| **Magnesium** | **67500** | 50.0 | " | " | " | " | " | " | |
| **Manganese** | **236** | 1.00 | " | " | " | " | " | " | |
| **Potassium** | **3710** | 50.0 | " | " | " | " | " | " | |
| **Sodium** | **170000** | 50.0 | " | " | " | " | " | " | |
| **Barium** | **40.9** | 1.00 | " | " | " | " | " | " | |
| **Boron** | **181** | 10.0 | " | " | " | " | " | " | |
| **Selenium** | **3.03** | 1.00 | " | " | " | " | " | " | |
| **Strontium** | **2460** | 10.0 | " | " | " | " | " | " | |

### Anions by EPA Method 300.0

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Bromide** | **314** | 20.0 | mg/L | 100 | BDJ0380 | 10/29/20 | 10/29/20 | EPA 300.0 | |
| **Chloride** | **4.95** | 0.100 | " | 1 | " | " | " | " | |
| **Fluoride** | **0.360** | 0.200 | " | " | " | " | " | " | |
| **Sulfate** | **280** | 30.0 | " | 100 | " | " | " | " | |
| **Nitrate as N** | **5.35** | 0.100 | " | 1 | " | " | " | " | |
| Nitrite as N | ND | 0.100 | " | " | " | " | " | " | |
| **Nitrate/Nitrite as N** | **5.35** | 0.200 | " | " | " | " | " | " | |



*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.*

## GW_60666_MH_MW_5

NENE_20_5N_65W

**2010359-01 (Water)**

**Summit Scientific**

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

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Alkalinity** | **240** | 10.0 | mg/L as CaCO3 | 1 | BDJ0390 | 10/30/20 | 11/04/20 | SM2320-B | |
| Carbonate | ND | 10.0 | " | " | " | " | " | " | |
| **Bicarbonate** | **240** | 10.0 | " | " | " | " | " | " | |

### Conventional Chemistry Parameters by APHA/EPA Methods

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus - Total | ND | 0.0500 | mg/L | 1 | BDK0053 | 11/03/20 | 11/04/20 | SM4500-P-E | |

### Specific Conductance by SM2510B

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **2350** | 1.00 | umhos/cm | 1 | BDJ0389 | 10/30/20 | 10/30/20 | SM2510B | |

### Total Dissolved Solids by SM2540C

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Dissolved Solids** | **1180** | 10.0 | mg/L | 1 | BDJ0388 | 10/30/20 | 10/30/20 | SM2540C | |

### pH by SM4500

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **pH** | **7.30** | 1.00 | pH Units | 1 | BDK0031 | 10/28/20 | 11/03/20 | SM4500-H+ B | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 14:25 |

**GW_60666_MH_MW_5**
NENE_20_5N_65W

**2010359-01 (Water)**

**Summit Scientific**

## Field Data

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **2177.0** | | uS/cm | 1 | BDJ0373 | 10/28/20 | 10/28/20 | Field Method | |
| **Temperature** | **14.20** | | Degrees C | " | " | " | " | " | |
| **Turbidity** | **20.3** | | NTU | " | " | " | " | " | |
| **Oxidation/Reduction Potential** | **89.90** | | mv | " | " | " | " | " | |
| **Dissolved Oxygen** | **2.47** | | mg/L | " | " | " | " | " | |
| **pH** | **7.32** | | SU | " | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 14:25 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDJ0376-BLK1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| 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* | *0.0138* | | *"* | *0.0133* | | *103* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0133* | | *"* | *0.0133* | | *99.7* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0120* | | *"* | *0.0133* | | *89.9* | *21-167* | | | |
| **LCS (BDJ0376-BS1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0239 | 0.0010 | mg/L | 0.0333 | | 71.6 | 51-132 | | | |
| Toluene | 0.0237 | 0.0010 | " | 0.0333 | | 71.0 | 51-138 | | | |
| Ethylbenzene | 0.0376 | 0.0010 | " | 0.0333 | | 113 | 58-146 | | | |
| m,p-Xylene | 0.0754 | 0.0020 | " | 0.0667 | | 113 | 57-144 | | | |
| o-Xylene | 0.0398 | 0.0010 | " | 0.0333 | | 119 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0138* | | *"* | *0.0133* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0133* | | *"* | *0.0133* | | *99.9* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0119* | | *"* | *0.0133* | | *89.2* | *21-167* | | | |
| **Matrix Spike (BDJ0376-MS1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0119 | 0.0010 | mg/L | 0.0333 | ND | 35.6 | 34-141 | | | |
| Toluene | 0.0234 | 0.0010 | " | 0.0333 | ND | 70.2 | 27-151 | | | |
| Ethylbenzene | 0.0379 | 0.0010 | " | 0.0333 | ND | 114 | 29-160 | | | |
| m,p-Xylene | 0.0763 | 0.0020 | " | 0.0667 | ND | 114 | 20-166 | | | |
| o-Xylene | 0.0415 | 0.0010 | " | 0.0333 | ND | 124 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0143* | | *"* | *0.0133* | | *107* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0135* | | *"* | *0.0133* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0123* | | *"* | *0.0133* | | *92.0* | *21-167* | | | |



*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<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 14:25 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDJ0376-MSD1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 0.0116 | 0.0010 | mg/L | 0.0333 | ND | 34.7 | 34-141 | 2.64 | 32 | |
| Toluene | 0.0223 | 0.0010 | " | 0.0333 | ND | 66.9 | 27-151 | 4.86 | 25 | |
| Ethylbenzene | 0.0370 | 0.0010 | " | 0.0333 | ND | 111 | 29-160 | 2.43 | 50 | |
| m,p-Xylene | 0.0734 | 0.0020 | " | 0.0667 | ND | 110 | 20-166 | 3.79 | 36 | |
| o-Xylene | 0.0403 | 0.0010 | " | 0.0333 | ND | 121 | 33-159 | 2.94 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0145* | | *"* | *0.0133* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0131* | | *"* | *0.0133* | | *98.4* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0118* | | *"* | *0.0133* | | *88.9* | *21-167* | | | |

## Extractable Petroleum Hydrocarbons by 8015 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0394 - EPA 3520B** | | | | | | | | | | |
| **Blank (BDJ0394-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: o-Terphenyl* | *0.0187* | | *"* | *0.0250* | | *74.7* | *44.8-129* | | | |
| **LCS (BDJ0394-BS1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | 0.971 | 0.100 | mg/L | 1.00 | | 97.1 | 70-130 | | | |
| *Surrogate: o-Terphenyl* | *0.0194* | | *"* | *0.0250* | | *77.6* | *44.8-129* | | | |
| **LCS Dup (BDJ0394-BSD1)** | | | | Prepared: 10/30/20 Analyzed: 10/31/20 | | | | | | |
| C10-C28 (DRO) | 1.10 | 0.100 | mg/L | 1.00 | | 110 | 70-130 | 12.8 | 200 | |
| *Surrogate: o-Terphenyl* | *0.0216* | | *"* | *0.0250* | | *86.3* | *44.8-129* | | | |

## Dissolved Gases by RSK-175 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0401 - GC** | | | | | | | | | | |
| **Blank (BDJ0401-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | | | | | | |
| Ethane | ND | 0.010 | " | | | | | | | |
| Propane | ND | 0.010 | " | | | | | | | |
| *Surrogate: Ethene* | *0.0350* | | *"* | *0.0364* | | *96.2* | *70-130* | | | |
| **LCS (BDJ0401-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | | 70.4 | 70-130 | | | |
| Ethane | 0.078 | 0.010 | " | 0.0798 | | 98.0 | 70-130 | | | |
| Propane | 0.11 | 0.010 | " | 0.139 | | 82.2 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0749* | | *"* | *0.0728* | | *103* | *70-130* | | | |
| **Duplicate (BDJ0401-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | ND | 0.010 | mg/L | | ND | | | | 30 | |
| Ethane | ND | 0.010 | " | | ND | | | | 30 | |
| Propane | ND | 0.010 | " | | ND | | | | 30 | |
| *Surrogate: Ethene* | *0.0337* | | *"* | *0.0364* | | *92.6* | *70-130* | | | |
| **Matrix Spike (BDJ0401-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/02/20 | | | | | | |
| Methane | 0.030 | 0.010 | mg/L | 0.0428 | ND | 71.1 | 70-130 | | | |
| Ethane | 0.084 | 0.010 | " | 0.0798 | ND | 105 | 70-130 | | | |
| Propane | 0.12 | 0.010 | " | 0.139 | ND | 87.3 | 70-130 | | | |
| *Surrogate: Ethene* | *0.0784* | | *"* | *0.0728* | | *108* | *70-130* | | | |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0379 - EPA 200.8** | | | | | | | | | | |
| **Blank (BDJ0379-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0379-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 5290 | 50.0 | ug/l | 5000 | | 106 | 85-115 | | | |
| Iron | 5180 | 10.0 | " | 5000 | | 104 | 85-115 | | | |
| Magnesium | 5690 | 50.0 | " | 5000 | | 114 | 85-115 | | | |
| Manganese | 526 | 1.00 | " | 500 | | 105 | 85-115 | | | |
| Potassium | 5400 | 50.0 | " | 5000 | | 108 | 85-115 | | | |
| Sodium | 5620 | 50.0 | " | 5000 | | 112 | 85-115 | | | |
| Barium | 527 | 1.00 | " | 500 | | 105 | 85-115 | | | |
| Boron | 2640 | 10.0 | " | 2500 | | 106 | 85-115 | | | |
| Selenium | 52.3 | 1.00 | " | 50.0 | | 105 | 85-115 | | | |
| Strontium | 520 | 10.0 | " | 500 | | 104 | 85-115 | | | |
| **Duplicate (BDJ0379-DUP1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 98000 | 50.0 | ug/l | | 96600 | | | 1.51 | 20 | |
| Iron | 388 | 10.0 | " | | 396 | | | 2.17 | 20 | |
| Magnesium | 17100 | 50.0 | " | | 17800 | | | 3.79 | 20 | |
| Manganese | 752 | 1.00 | " | | 790 | | | 4.98 | 20 | |
| Potassium | 23600 | 50.0 | " | | 24700 | | | 4.53 | 20 | |
| Sodium | 75200 | 50.0 | " | | 78200 | | | 4.01 | 20 | |
| Barium | 269 | 1.00 | " | | 271 | | | 0.528 | 20 | |
| Boron | 27.2 | 10.0 | " | | 31.5 | | | 14.7 | 20 | |
| Selenium | ND | 1.00 | " | | 0.0562 | | | | 20 | |
| Strontium | 902 | 10.0 | " | | 895 | | | 0.791 | 20 | |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0379 - EPA 200.8** | | | | | | | | | | |
| **Matrix Spike (BDJ0379-MS1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 101000 | 50.0 | ug/l | 5000 | 96600 | 97.9 | 70-130 | | | |
| Iron | 5880 | 10.0 | " | 5000 | 396 | 110 | 70-130 | | | |
| Magnesium | 23100 | 50.0 | " | 5000 | 17800 | 107 | 70-130 | | | |
| Manganese | 1310 | 1.00 | " | 500 | 790 | 105 | 70-130 | | | |
| Potassium | 30300 | 50.0 | " | 5000 | 24700 | 110 | 70-130 | | | |
| Sodium | 82200 | 50.0 | " | 5000 | 78200 | 78.5 | 70-130 | | | |
| Barium | 795 | 1.00 | " | 500 | 271 | 105 | 70-130 | | | |
| Boron | 2680 | 10.0 | " | 2500 | 31.5 | 106 | 70-130 | | | |
| Selenium | 53.5 | 1.00 | " | 50.0 | 0.0562 | 107 | 70-130 | | | |
| Strontium | 1430 | 10.0 | " | 500 | 895 | 108 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0379-MSD1)** | | **Source: 2010339-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Calcium | 101000 | 50.0 | ug/l | 5000 | 96600 | 92.3 | 70-130 | 0.278 | 25 | |
| Iron | 5810 | 10.0 | " | 5000 | 396 | 108 | 70-130 | 1.09 | 25 | |
| Magnesium | 22700 | 50.0 | " | 5000 | 17800 | 99.3 | 70-130 | 1.60 | 25 | |
| Manganese | 1330 | 1.00 | " | 500 | 790 | 109 | 70-130 | 1.53 | 25 | |
| Potassium | 29500 | 50.0 | " | 5000 | 24700 | 95.9 | 70-130 | 2.39 | 25 | |
| Sodium | 82800 | 50.0 | " | 5000 | 78200 | 90.4 | 70-130 | 0.723 | 25 | |
| Barium | 788 | 1.00 | " | 500 | 271 | 103 | 70-130 | 0.869 | 25 | |
| Boron | 2620 | 10.0 | " | 2500 | 31.5 | 104 | 70-130 | 2.15 | 25 | |
| Selenium | 57.3 | 1.00 | " | 50.0 | 0.0562 | 114 | 70-130 | 6.85 | 25 | |
| Strontium | 1400 | 10.0 | " | 500 | 895 | 102 | 70-130 | 2.12 | 25 | |

## Anions by EPA Method 300.0 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0380 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0380-BLK1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| 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 (BDJ0380-BS1)** | | | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 9.13 | 0.200 | mg/L | 10.0 | | 91.3 | 90-110 | | | |
| Chloride | 2.88 | 0.100 | " | 3.00 | | 96.1 | 90-110 | | | |
| Fluoride | 2.13 | 0.200 | " | 2.00 | | 106 | 90-110 | | | |
| Sulfate | 15.6 | 0.300 | " | 15.0 | | 104 | 90-110 | | | |
| Nitrate as N | 2.87 | 0.100 | " | 3.00 | | 95.6 | 90-110 | | | |
| Nitrite as N | 2.81 | 0.100 | " | 3.00 | | 93.6 | 90-110 | | | |
| **Duplicate (BDJ0380-DUP1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | ND | 20.0 | mg/L | | ND | | | | 20 | |
| Chloride | 108 | 10.0 | " | | 110 | | | 2.29 | 20 | |
| Fluoride | ND | 20.0 | " | | ND | | | | 20 | |
| Sulfate | 44.1 | 30.0 | " | | 44.8 | | | 1.57 | 20 | |
| Nitrate as N | 2.90 | 10.0 | " | | 3.00 | | | 3.39 | 20 | |
| Nitrite as N | ND | 10.0 | " | | ND | | | | 20 | |
| Nitrate/Nitrite as N | ND | 20.0 | " | | ND | | | | 20 | |
| **Matrix Spike (BDJ0380-MS1)** | | **Source: 2010346-01** | | Prepared & Analyzed: 10/29/20 | | | | | | |
| Bromide | 1100 | 20.0 | mg/L | 1000 | ND | 110 | 80-120 | | | |
| Chloride | 364 | 10.0 | " | 300 | 110 | 84.5 | 80-120 | | | |
| Fluoride | 240 | 20.0 | " | 200 | ND | 120 | 80-120 | | | |
| Sulfate | 1720 | 30.0 | " | 1500 | 44.8 | 112 | 80-120 | | | |
| Nitrate as N | 346 | 10.0 | " | 300 | 3.00 | 114 | 80-120 | | | |
| Nitrite as N | 314 | 10.0 | " | 300 | ND | 105 | 80-120 | | | |

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

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0390 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0390-BLK1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | ND | 10.0 | mg/L as CaCO3 | | | | | | | |
| Carbonate | ND | 10.0 | " | | | | | | | |
| Bicarbonate | ND | 10.0 | " | | | | | | | |
| **LCS (BDJ0390-BS1)** | | | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 110 | 10.0 | mg/L as CaCO3 | 100 | | 110 | 80-120 | | | |
| **Duplicate (BDJ0390-DUP1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 310 | 10.0 | mg/L as CaCO3 | | 310 | | | 0.00 | 20 | |
| Carbonate | ND | 10.0 | " | | ND | | | | 20 | |
| Bicarbonate | 310 | 10.0 | " | | 310 | | | 0.00 | 20 | |
| **Matrix Spike (BDJ0390-MS1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 400 | 10.0 | mg/L as CaCO3 | 100 | 310 | 90.0 | 70-130 | | | |
| **Matrix Spike Dup (BDJ0390-MSD1)** | | **Source: 2010356-01** | | Prepared: 10/30/20 Analyzed: 11/04/20 | | | | | | |
| Total Alkalinity | 410 | 10.0 | mg/L as CaCO3 | 100 | 310 | 100 | 70-130 | 2.47 | 20 | |

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0053 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0053-BLK1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | | | | | | |
| **LCS (BDK0053-BS1)** | | | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | | 104 | 80-120 | | | |
| **Duplicate (BDK0053-DUP1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | ND | | | | 20 | |
| **Matrix Spike (BDK0053-MS1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.00 | 0.0500 | mg/L | 1.00 | ND | 100 | 70-130 | | | |
| **Matrix Spike Dup (BDK0053-MSD1)** | | **Source: 2010356-01** | | Prepared: 11/03/20 Analyzed: 11/04/20 | | | | | | |
| Phosphorus - Total | 1.04 | 0.0500 | mg/L | 1.00 | ND | 104 | 70-130 | 3.13 | 20 | |

## Specific Conductance by SM2510B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0389 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0389-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Specific Conductance (EC) | ND | 1.00 | umhos/cm | | | | | | | |
| **Duplicate (BDJ0389-DUP1)** | | **Source: 2010356-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Specific Conductance (EC) | 1200 | 1.00 | umhos/cm | | 1200 | | | 0.501 | 20 | |

## Total Dissolved Solids by SM2540C - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0388 - General Preparation** | | | | | | | | | | |
| **Blank (BDJ0388-BLK1)** | | | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Total Dissolved Solids | ND | 10.0 | mg/L | | | | | | | |
| **Duplicate (BDJ0388-DUP1)** | | **Source: 2010356-01** | | Prepared & Analyzed: 10/30/20 | | | | | | |
| Total Dissolved Solids | 593 | 10.0 | mg/L | | 591 | | | 0.304 | 20 | |

## pH by SM4500 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0031 - General Preparation** | | | | | | | | | | |
| **LCS (BDK0031-BS1)** | | | | Prepared: 10/28/20 Analyzed: 11/03/20 | | | | | | |
| pH | 9.49 | 1.00 | pH Units | 9.21 | | 103 | 90-110 | | | |
| **Duplicate (BDK0031-DUP1)** | | **Source: 2010345-01** | | Prepared: 10/28/20 Analyzed: 11/03/20 | | | | | | |
| pH | 7.38 | 1.00 | pH Units | | 7.38 | | | 0.00 | 20 | |

## Notes and Definitions

| | |
|---|---|
| S-04 | A sample matrix effect prevented complete surrogate recovery. |
| 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

November 04, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Trip_Blank/GWA_District_Six_C6

Work Order # 2010363

Enclosed are the results of analyses for samples received by Summit Scientific on 10/28/20 17:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:06 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_60666_MH_MW_5_Trip_Blank | 2010363-01 | Water | 10/28/20 14:23 | 10/28/20 17:21 |

Summit Scientific

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

# Summit Scientific

S2

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



| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Extraction Oil and Gas (XOG) | **Report to:** Apex Companies, LLC | **Project Manager:** | Heather Shideman | |
| **Address:** | 2234 117th Ave, Ste 106 | | **E-Mail:** | Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com | |
| **City/State/Zip:** | Greeley, CO 80634 | | **cc:** | jcarlisle@extractionog.com | |
| **Phone:** | (970) 576-3446 | | **Project Name:** | Trip_Blank/GWA_District_Six_C6 | |
| **Sampler Name:** | Kade MacDougall | | **Project No.:** | ALLOC-421 | **Facility ID 766287** |

| | | | | | 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 | 20/10/20 | 1423 | 2 | | | | | X | | | | X | | | | | | | **Sample Frequency:** Q4 |

| | | | |
|---|---|---|---|
| Relinquished by: | Date/Time: 20/10/20 1721 | Received by: | Date/Time: 10/20/2020 1721 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard _X_
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 12.6
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order_____

Client: APEX COMPANIES Client Project ID: TRIP BLANK DISTRICT SIX C

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

[✓] [ ] [ ] [ ] [ ]

Matrix (check all that apply): [ ] Air [ ] Soil/Solid [✓] Water [ ] Other:_____ (Describe)

| Temp (°C) | 12.6 |
|---|---|

Thermometer ID: 61857155-K

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

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

TG

**Custodian Printed Name or Initials**

**Signature of Custodian**

10/28/2020

**Date/Time**

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:06 |

## GW_60666_MH_MW_5_Trip_Blank

**2010363-01 (Water)**

**Summit Scientific**

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

Date Sampled: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | ug/l | 1 | BDJ0376 | 10/29/20 | 10/30/20 | 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: **10/28/20 14:23**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *108 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *96.4 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *87.2 %* | *21-167* | | " | " | " | " | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:06 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDJ0376-BLK1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| 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* | *13.8* | | *"* | *13.3* | | *103* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.3* | | *"* | *13.3* | | *99.7* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.0* | | *"* | *13.3* | | *89.9* | *21-167* | | | |
| **LCS (BDJ0376-BS1)** | | | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 23.9 | 1.0 | ug/l | 33.3 | | 71.6 | 51-132 | | | |
| Toluene | 23.7 | 1.0 | " | 33.3 | | 71.0 | 51-138 | | | |
| Ethylbenzene | 37.6 | 1.0 | " | 33.3 | | 113 | 58-146 | | | |
| m,p-Xylene | 75.4 | 2.0 | " | 66.7 | | 113 | 57-144 | | | |
| o-Xylene | 39.8 | 1.0 | " | 33.3 | | 119 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *13.8* | | *"* | *13.3* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.3* | | *"* | *13.3* | | *99.9* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.9* | | *"* | *13.3* | | *89.2* | *21-167* | | | |
| **Matrix Spike (BDJ0376-MS1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 11.9 | 1.0 | ug/l | 33.3 | ND | 35.6 | 34-141 | | | |
| Toluene | 23.4 | 1.0 | " | 33.3 | ND | 70.2 | 27-151 | | | |
| Ethylbenzene | 37.9 | 1.0 | " | 33.3 | ND | 114 | 29-160 | | | |
| m,p-Xylene | 76.3 | 2.0 | " | 66.7 | ND | 114 | 20-166 | | | |
| o-Xylene | 41.5 | 1.0 | " | 33.3 | ND | 124 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.3* | | *"* | *13.3* | | *107* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.5* | | *"* | *13.3* | | *101* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *12.3* | | *"* | *13.3* | | *92.0* | *21-167* | | | |

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: ALLOC-421<br>Project Manager: Heather Shideman | **Reported:**<br>11/04/20 13:06 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDJ0376 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDJ0376-MSD1)** | | **Source: 2010340-01** | | Prepared: 10/29/20 Analyzed: 10/30/20 | | | | | | |
| Benzene | 11.6 | 1.0 | ug/l | 33.3 | ND | 34.7 | 34-141 | 2.64 | 32 | |
| Toluene | 22.3 | 1.0 | " | 33.3 | ND | 66.9 | 27-151 | 4.86 | 25 | |
| Ethylbenzene | 37.0 | 1.0 | " | 33.3 | ND | 111 | 29-160 | 2.43 | 50 | |
| m,p-Xylene | 73.4 | 2.0 | " | 66.7 | ND | 110 | 20-166 | 3.79 | 36 | |
| o-Xylene | 40.3 | 1.0 | " | 33.3 | ND | 121 | 33-159 | 2.94 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *14.5* | | *"* | *13.3* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *13.1* | | *"* | *13.3* | | *98.4* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *11.8* | | *"* | *13.3* | | *88.9* | *21-167* | | | |

## 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 |

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 774723 | Job #: | 46166 | IS-99230 | Co. Job#: |
| Sample Name: | GW_60666_MH_MW_5 | | | | Co. Lab#: |
| Company: | Extraction Oil and Gas | | | | |
| API/Well: | | | | | |
| Container: | 125ml Plastic Bottle | | | | |
| Field/Site Name: | Ground_Water/GWA_District_Six_C6 | | | | |
| Location: | NENE_20_5N_65W | | | | |
| Formation/Depth: | Q4 | | | | |
| Sampling Point: | 766287 | | | | |
| Date Sampled: | 10/28/2020 14:23 | Date Received: | 10/30/2020 | Date Reported: | 11/18/2020 |

| | | |
|---|---|---|
| $\delta$D of water | ---------- | -106.0 ‰ relative to VSMOW |
| $\delta^{18}$O of water | ---------- | -13.47 ‰ relative to VSMOW |
| Tritium content of water | ---------- | na |
| $\delta^{13}$C of DIC | ---------- | -10.7 ‰ relative to VPDB |
| $^{14}$C content of DIC | ---------- | na |
| $\delta^{15}$N of nitrate | ---------- | na |
| $\delta^{18}$O of nitrate | ---------- | na |
| $\delta^{34}$S of sulfate | ---------- | na |
| $\delta^{18}$O of sulfate | ---------- | na |
| Vacuum Distilled? * | ---------- | No |

Remarks:

nd = not detected. na = not analyzed.
*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

ISOTECH
a Stratum Reservoir brand
www.isotechlabs.com

| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 775059 | Job #: | 46206 | 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: | Q4 | | | | |
| Sampling Point: | 766287 | | | | |
| Date Sampled: | 10/28/2020 14:23 | Date Received: | 10/30/2020 | Date Reported: | 12/21/2020 |

| Component | Chemical mol. % | $\delta^{13}C$ ‰ | $\delta D$ ‰ | $\delta^{18}O$ ‰ | Dissolved gas cc/L | Dissolved gas ppm |
|---|---|---|---|---|---|---|
| Carbon Monoxide | nd | | | | | |
| Helium | na | | | | | |
| Hydrogen | nd | | | | | |
| Argon | 1.24 | | | | | |
| Oxygen | 10.85 | | | | | |
| Nitrogen | 60.71 | | | | | |
| Carbon Dioxide | 5.88 | | | | | |
| Methane | 18.73 | -46.09 | -215.8 | | 5.2 | 3.5 |
| Ethane | 1.92 | -28.34 | | | 0.57 | 0.72 |
| Ethylene | 0.0005 | | | | | |
| Propane | 0.506 | -28.3 | | | 0.14 | 0.26 |
| Propylene | nd | | | | | |
| Iso-butane | 0.0535 | -31.0 | | | | |
| N-butane | 0.101 | -25.6 | | | | |
| Iso-pentane | 0.0010 | | | | | |
| N-pentane | 0.0062 | | | | | |
| Hexanes + | 0.0057 | | | | | |

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.81
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Insufficient pentane concentrations for isotopic analysis.
Propane and butane 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

December 07, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

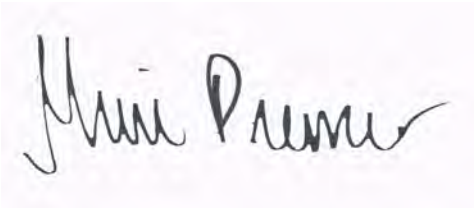
Denver, CO 80202

RE: Ground_Water/GWA_District_Six_C6

Work Order # 2011305

Enclosed are the results of analyses for samples received by Summit Scientific on 11/23/20 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Muri Premer For Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_61256_MH_MW_6 | 2011305-01 | Water | 11/23/20 14:26 | 11/23/20 16:30 |

Summit Scientific

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

# Summit Scientific

S2

2011305

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



| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Extraction Oil and Gas (XOG) | **Report to:** Apex Companies, LLC | **Project Manager:** | Heather Shideman | |
| **Address:** | 2234 117th Ave, Ste 106 | | **E-Mail:** | Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com, Kolbi.Condos@apexcos.com | |
| **City/State/Zip:** | Greeley, CO 80634 | | **cc:** | jcarlisle@extractionog.com | |
| **Phone:** | (970) 576-3446 | | **Project Name:** | Groundwater/GWA_District_Six_C6 | |
| **Sampler Name:** | Kyle McDougall, [illegible] | | **Project No.:** | Alloc-421 930, 88 | **Facility ID** 766715 |

| | | | | | 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)** | **COGCC 609** | **No BART** | **No RSK175** (ethane, methane, propane) | | | | | |
| 1 | GW_61256_MH_MW_6 | 20/11/23 | 1426 | | | | | | X | | | | X | X | X | | | | | **Sample Frequency:** |
| | NENE_20_5N_65W | | | | | | | | | | | | | | | | | | | IN |
| | | | | | | | | | | | | | | | | | | | | |
| | Temperature, field: | 13.6 | °C | | | | | | | | | | | | | | | | | |
| | pH, field: | 7.68 | s.u. | | | | | | | | | | | | | | | | | |
| | Conductivity, field: | 677 | uS/cm | | | | | | | | | | | | | | | | | |
| | ORP, field: | 183.3 | mV | | | | | | | | | | | | | | | | | |
| | Dissolved Oxygen, field: | 0.61 | mg/L | | | | | | | | | | | | | | | | | |
| | Turbidity, field: | 178 | NTU | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| [illegible] | 20/11/23/1630 | [illegible] | 11/23/2020 1630 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard _X_
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 2.8
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order 2011305

Client: APEX COMPANIES Client Project ID: GWA DISTRICT SIX 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) | 3.3 |
|---|---|

Thermometer ID: 61857155-K

| | Yes | No | N/A | Comments (if any) |
|---|---|---|---|---|
| If samples require cooling, was the temperature at 4°C +/- 2°C (1)? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun. | ✓ | | | |
| Were all samples received intact (1)? | ✓ | | | |
| Was adequate sample volume provided (1)? | ✓ | | | |
| If custody seals are present, are they intact (1)? | | | ✓ | |
| Are samples with holding times due within 48 hours sample due within 48 hours present? | ✓ | | | pH ANIONS |
| Is a chain-of-custody (COC) form present and filled out completely (1)? | ✓ | | | |
| Does the COC agree with the number and type of sample bottles received (1)? | ✓ | | | |
| Do the sample IDs on the bottle labels match the COC (1)? | ✓ | | | |
| Is the COC properly relinquished by the client w/ date and time recorded (1)? | ✓ | | | |
| For volatiles in water – is there headspace present? **If yes, contact client and note in narrative.** | | ✓ | | |
| Are samples preserved that require preservation **(excluding cooling)** (1)? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect | ✓ | | | HCL HNO3 H2SO4 |
| If samples are acid preserved for metals, is the pH ≤ 2(1)? Record the pH in Comments. | ✓ | | | pH1 |
| If dissolved metals are requested, were samples field filtered? | | | ✓ | |
| Additional Comments (if any): | | | | |

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

RZ — **Custodian Printed Name or Initials**

**Signature of Custodian**

11/23/20 — **Date/Time**

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

**GW_61256_MH_MW_6**
NENE_20_5N_65W
**2011305-01 (Water)**

**Summit Scientific**

## Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.0010 | mg/L | 1 | BDK0328 | 11/25/20 | 11/26/20 | 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: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *119 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *93.2 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *93.5 %* | *21-167* | | " | " | " | " | |

## Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| C10-C28 (DRO) | ND | 0.100 | mg/L | 1 | BDL0001 | 12/01/20 | 12/02/20 | EPA 8015M | |

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: o-Terphenyl* | | *99.8 %* | *44.8-129* | | " | " | " | " | |

## Dissolved Metals by EPA Method 200.8

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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.*

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

**GW_61256_MH_MW_6**
NENE_20_5N_65W
**2011305-01 (Water)**

**Summit Scientific**

**Dissolved Metals by EPA Method 200.8**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Calcium** | **54000** | 50.0 | ug/l | 1 | BDL0005 | 12/01/20 | 12/01/20 | EPA 200.8 |
| **Iron** | **38.7** | 10.0 | " | " | " | " | " | " |
| **Magnesium** | **23400** | 50.0 | " | " | " | " | " | " |
| **Manganese** | **71.9** | 1.00 | " | " | " | " | " | " |
| **Potassium** | **2170** | 50.0 | " | " | " | " | " | " |
| **Sodium** | **39900** | 50.0 | " | " | " | " | " | " |
| **Barium** | **65.3** | 1.00 | " | " | " | " | " | " |
| **Boron** | **102** | 10.0 | " | " | " | " | " | " |
| Selenium | ND | 1.00 | " | " | " | " | " | " |
| **Strontium** | **759** | 10.0 | " | " | " | " | " | " |

**Anions by EPA Method 300.0**

Date Sampled: **11/23/20 14:26**

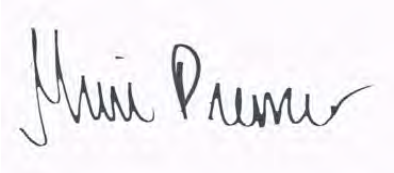
| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Bromide | ND | 0.200 | mg/L | 1 | BDK0298 | 11/24/20 | 11/24/20 | EPA 300.0 | |
| **Chloride** | **15.2** | 2.00 | " | 20 | " | " | " | " | |
| **Fluoride** | **0.284** | 0.200 | " | 1 | " | " | " | " | |
| **Sulfate** | **88.1** | 6.00 | " | 20 | " | " | " | " | |
| **Nitrate as N** | **3.38** | 0.100 | " | 1 | " | " | " | " | |
| **Nitrite as N** | **0.375** | 0.100 | " | " | " | " | " | " | |
| **Nitrate/Nitrite as N** | **3.76** | 0.200 | " | " | " | " | " | " | |

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

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Alkalinity** | **210** | 10.0 | mg/L as CaCO3 | 1 | BDK0318 | 11/25/20 | 12/02/20 | SM2320-B | |
| Carbonate | ND | 10.0 | " | " | " | " | " | " | |
| **Bicarbonate** | **210** | 10.0 | " | " | " | " | " | " | |

Summit Scientific



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

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

**GW_61256_MH_MW_6**
NENE_20_5N_65W
**2011305-01 (Water)**

**Summit Scientific**

## Conventional Chemistry Parameters by APHA/EPA Methods

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus - Total | ND | 0.0500 | mg/L | 1 | BDL0037 | 12/02/20 | 12/02/20 | SM4500-P-E | |

## Specific Conductance by SM2510B

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **860** | 1.00 | umhos/cm | 1 | BDK0315 | 11/25/20 | 11/25/20 | SM2510B | |

## Total Dissolved Solids by SM2540C

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Dissolved Solids** | **423** | 10.0 | mg/L | 1 | BDK0316 | 11/25/20 | 11/25/20 | SM2540C | |

## pH by SM4500

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **pH** | **7.50** | 1.00 | pH Units | 1 | BDK0304 | 11/23/20 | 11/24/20 | SM4500-H+ B | |

## Field Data

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **677** | | uS/cm | 1 | BDK0292 | 11/23/20 | 11/23/20 | Field Method | |
| **Turbidity** | **128** | | NTU | " | " | " | " | " | |
| **Temperature** | **13.6** | | Degrees C | " | " | " | " | " | |
| **Oxidation/Reduction Potential** | **183.3** | | mv | " | " | " | " | " | |
| **Dissolved Oxygen** | **0.61** | | mg/L | " | " | " | " | " | |
| **pH** | **7.68** | | SU | " | " | " | " | " | |

Summit Scientific

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**GW_61256_MH_MW_6**
NENE_20_5N_65W

**2011305-01 (Water)**

**Summit Scientific**

**Field Data**

S2

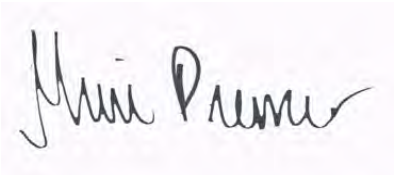
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0328 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDK0328-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| 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* | *0.0141* | | *"* | *0.0133* | | *106* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0128* | | *"* | *0.0133* | | *95.8* | *21-167* | | | |
| **LCS (BDK0328-BS1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0352 | 0.0010 | mg/L | 0.0333 | | 106 | 51-132 | | | |
| Toluene | 0.0380 | 0.0010 | " | 0.0333 | | 114 | 51-138 | | | |
| Ethylbenzene | 0.0386 | 0.0010 | " | 0.0333 | | 116 | 58-146 | | | |
| m,p-Xylene | 0.0768 | 0.0020 | " | 0.0667 | | 115 | 57-144 | | | |
| o-Xylene | 0.0365 | 0.0010 | " | 0.0333 | | 110 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0138* | | *"* | *0.0133* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0142* | | *"* | *0.0133* | | *106* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0126* | | *"* | *0.0133* | | *94.1* | *21-167* | | | |
| **Matrix Spike (BDK0328-MS1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0373 | 0.0010 | mg/L | 0.0333 | ND | 112 | 34-141 | | | |
| Toluene | 0.0364 | 0.0010 | " | 0.0333 | ND | 109 | 27-151 | | | |
| Ethylbenzene | 0.0368 | 0.0010 | " | 0.0333 | ND | 110 | 29-160 | | | |
| m,p-Xylene | 0.0741 | 0.0020 | " | 0.0667 | ND | 111 | 20-166 | | | |
| o-Xylene | 0.0361 | 0.0010 | " | 0.0333 | ND | 108 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0166* | | *"* | *0.0133* | | *125* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0138* | | *"* | *0.0133* | | *103* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0128* | | *"* | *0.0133* | | *95.6* | *21-167* | | | |





S2

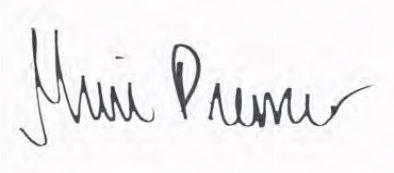
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0328 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDK0328-MSD1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0347 | 0.0010 | mg/L | 0.0333 | ND | 104 | 34-141 | 7.08 | 32 | |
| Toluene | 0.0385 | 0.0010 | " | 0.0333 | ND | 116 | 27-151 | 5.58 | 25 | |
| Ethylbenzene | 0.0382 | 0.0010 | " | 0.0333 | ND | 115 | 29-160 | 3.84 | 50 | |
| m,p-Xylene | 0.0747 | 0.0020 | " | 0.0667 | ND | 112 | 20-166 | 0.860 | 36 | |
| o-Xylene | 0.0358 | 0.0010 | " | 0.0333 | ND | 108 | 33-159 | 0.806 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0144* | | *"* | *0.0133* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0146* | | *"* | *0.0133* | | *110* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0127* | | *"* | *0.0133* | | *95.0* | *21-167* | | | |



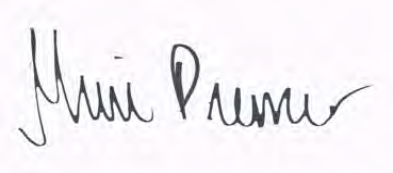


## Extractable Petroleum Hydrocarbons by 8015 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0001 - EPA 3520B** | | | | | | | | | | |
| **Blank (BDL0001-BLK1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: o-Terphenyl* | *0.0265* | | *"* | *0.0250* | | *106* | *44.8-129* | | | |
| **LCS (BDL0001-BS1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | 0.901 | 0.100 | mg/L | 1.00 | | 90.1 | 70-130 | | | |
| *Surrogate: o-Terphenyl* | *0.0258* | | *"* | *0.0250* | | *103* | *44.8-129* | | | |
| **LCS Dup (BDL0001-BSD1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | 0.917 | 0.100 | mg/L | 1.00 | | 91.7 | 70-130 | 1.72 | 200 | |
| *Surrogate: o-Terphenyl* | *0.0246* | | *"* | *0.0250* | | *98.3* | *44.8-129* | | | |





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| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0005 - EPA 200.8** | | | | | | | | | | |
| **Blank (BDL0005-BLK1)** | | | | Prepared & Analyzed: 12/01/20 | | | | | | |
| 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 (BDL0005-BS1)** | | | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 4880 | 50.0 | ug/l | 5000 | | 97.5 | 85-115 | | | |
| Iron | 4360 | 10.0 | " | 5000 | | 87.1 | 85-115 | | | |
| Magnesium | 5520 | 50.0 | " | 5000 | | 110 | 85-115 | | | |
| Manganese | 480 | 1.00 | " | 500 | | 96.0 | 85-115 | | | |
| Potassium | 4880 | 50.0 | " | 5000 | | 97.6 | 85-115 | | | |
| Sodium | 5770 | 50.0 | " | 5000 | | 115 | 85-115 | | | |
| Barium | 508 | 1.00 | " | 500 | | 102 | 85-115 | | | |
| Boron | 2310 | 10.0 | " | 2500 | | 92.4 | 85-115 | | | |
| Selenium | 47.0 | 1.00 | " | 50.0 | | 94.0 | 85-115 | | | |
| Strontium | 503 | 10.0 | " | 500 | | 101 | 85-115 | | | |
| **Duplicate (BDL0005-DUP1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 66000 | 50.0 | ug/l | | 66000 | | | 0.0803 | 20 | |
| Iron | 42.2 | 10.0 | " | | 39.6 | | | 6.35 | 20 | |
| Magnesium | 14600 | 50.0 | " | | 13500 | | | 8.14 | 20 | |
| Manganese | 344 | 1.00 | " | | 327 | | | 5.13 | 20 | |
| Potassium | 8140 | 50.0 | " | | 7600 | | | 6.91 | 20 | |
| Sodium | 73600 | 50.0 | " | | 68200 | | | 7.71 | 20 | |
| Barium | 252 | 1.00 | " | | 255 | | | 1.16 | 20 | |
| Boron | 33.5 | 10.0 | " | | 39.1 | | | 15.3 | 20 | |
| Selenium | 0.144 | 1.00 | " | | ND | | | | 20 | |
| Strontium | 798 | 10.0 | " | | 806 | | | 1.05 | 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.*

S2

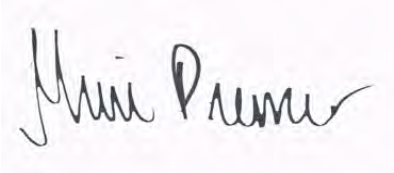
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0005 - EPA 200.8** | | | | | | | | | | |
| **Matrix Spike (BDL0005-MS1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 70000 | 50.0 | ug/l | 5000 | 66000 | 79.4 | 70-130 | | | |
| Iron | 4150 | 10.0 | " | 5000 | 39.6 | 82.1 | 70-130 | | | |
| Magnesium | 17700 | 50.0 | " | 5000 | 13500 | 84.1 | 70-130 | | | |
| Manganese | 798 | 1.00 | " | 500 | 327 | 94.3 | 70-130 | | | |
| Potassium | 11400 | 50.0 | " | 5000 | 7600 | 76.6 | 70-130 | | | |
| Sodium | 73400 | 50.0 | " | 5000 | 68200 | 105 | 70-130 | | | |
| Barium | 763 | 1.00 | " | 500 | 255 | 102 | 70-130 | | | |
| Boron | 2190 | 10.0 | " | 2500 | 39.1 | 86.0 | 70-130 | | | |
| Selenium | 48.3 | 1.00 | " | 50.0 | ND | 96.7 | 70-130 | | | |
| Strontium | 1300 | 10.0 | " | 500 | 806 | 99.7 | 70-130 | | | |
| **Matrix Spike Dup (BDL0005-MSD1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 70000 | 50.0 | ug/l | 5000 | 66000 | 79.7 | 70-130 | 0.0175 | 25 | |
| Iron | 4200 | 10.0 | " | 5000 | 39.6 | 83.2 | 70-130 | 1.26 | 25 | |
| Magnesium | 18100 | 50.0 | " | 5000 | 13500 | 92.8 | 70-130 | 2.41 | 25 | |
| Manganese | 811 | 1.00 | " | 500 | 327 | 96.8 | 70-130 | 1.56 | 25 | |
| Potassium | 11500 | 50.0 | " | 5000 | 7600 | 77.8 | 70-130 | 0.537 | 25 | |
| Sodium | 74200 | 50.0 | " | 5000 | 68200 | 121 | 70-130 | 1.13 | 25 | |
| Barium | 742 | 1.00 | " | 500 | 255 | 97.5 | 70-130 | 2.68 | 25 | |
| Boron | 2140 | 10.0 | " | 2500 | 39.1 | 83.9 | 70-130 | 2.45 | 25 | |
| Selenium | 47.0 | 1.00 | " | 50.0 | ND | 94.0 | 70-130 | 2.85 | 25 | |
| Strontium | 1290 | 10.0 | " | 500 | 806 | 96.4 | 70-130 | 1.30 | 25 | |





S2

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## Anions by EPA Method 300.0 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0298 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0298-BLK1)** | | | | Prepared & Analyzed: 11/24/20 | | | | | | |
| 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 (BDK0298-BS1)** | | | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 9.63 | 0.200 | mg/L | 10.0 | | 96.3 | 90-110 | | | |
| Chloride | 2.94 | 0.100 | " | 3.00 | | 98.1 | 90-110 | | | |
| Fluoride | 1.98 | 0.200 | " | 2.00 | | 99.0 | 90-110 | | | |
| Sulfate | 14.7 | 0.300 | " | 15.0 | | 98.3 | 90-110 | | | |
| Nitrate as N | 2.98 | 0.100 | " | 3.00 | | 99.4 | 90-110 | | | |
| Nitrite as N | 2.96 | 0.100 | " | 3.00 | | 98.5 | 90-110 | | | |
| **Duplicate (BDK0298-DUP1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 0.345 | 0.200 | mg/L | | 0.345 | | | 0.00 | 20 | |
| Chloride | 53.6 | 0.100 | " | | 34.8 | | | 42.4 | 20 | QM-02 |
| Fluoride | 0.218 | 0.200 | " | | 0.220 | | | 0.913 | 20 | |
| Sulfate | 269 | 0.300 | " | | 70.2 | | | 117 | 20 | QM-02 |
| Nitrate as N | 6.53 | 0.100 | " | | 6.34 | | | 3.00 | 20 | |
| Nitrite as N | ND | 0.100 | " | | ND | | | | 20 | |
| Nitrate/Nitrite as N | 6.53 | 0.200 | " | | 6.34 | | | 3.00 | 20 | |
| **Matrix Spike (BDK0298-MS1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 9.06 | 0.200 | mg/L | 10.0 | 0.345 | 87.1 | 80-120 | | | |
| Chloride | 55.4 | 0.100 | " | 3.00 | 34.8 | 686 | 80-120 | | | QM-02 |
| Fluoride | 2.16 | 0.200 | " | 2.00 | 0.220 | 96.8 | 80-120 | | | |
| Sulfate | 287 | 0.300 | " | 15.0 | 70.2 | NR | 80-120 | | | QM-02 |
| Nitrate as N | 9.12 | 0.100 | " | 3.00 | 6.34 | 92.7 | 80-120 | | | |
| Nitrite as N | 2.99 | 0.100 | " | 3.00 | ND | 99.6 | 80-120 | | | |

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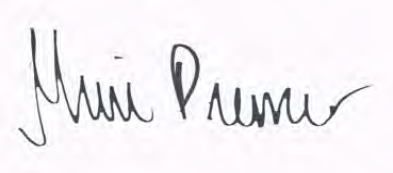
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

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

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0318 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0318-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | ND | 10.0 | mg/L as CaCO3 | | | | | | | |
| Carbonate | ND | 10.0 | " | | | | | | | |
| Bicarbonate | ND | 10.0 | " | | | | | | | |
| **LCS (BDK0318-BS1)** | | | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 110 | 10.0 | mg/L as CaCO3 | 100 | | 110 | 80-120 | | | |
| **Duplicate (BDK0318-DUP1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 290 | 10.0 | mg/L as CaCO3 | | 290 | | | 0.00 | 20 | |
| Carbonate | ND | 10.0 | " | | ND | | | | 20 | |
| Bicarbonate | 290 | 10.0 | " | | 290 | | | 0.00 | 20 | |
| **Matrix Spike (BDK0318-MS1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 380 | 10.0 | mg/L as CaCO3 | 100 | 290 | 90.0 | 70-130 | | | |
| **Matrix Spike Dup (BDK0318-MSD1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 380 | 10.0 | mg/L as CaCO3 | 100 | 290 | 90.0 | 70-130 | 0.00 | 20 | |





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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0037 - General Preparation** | | | | | | | | | | |
| **Blank (BDL0037-BLK1)** | | | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | | | | | | |
| **LCS (BDL0037-BS1)** | | | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.933 | 0.0500 | mg/L | 1.00 | | 93.3 | 80-120 | | | |
| **Duplicate (BDL0037-DUP1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | ND | | | | 20 | |
| **Matrix Spike (BDL0037-MS1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.914 | 0.0500 | mg/L | 1.00 | ND | 91.4 | 70-130 | | | |
| **Matrix Spike Dup (BDL0037-MSD1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.922 | 0.0500 | mg/L | 1.00 | ND | 92.2 | 70-130 | 0.871 | 20 | |

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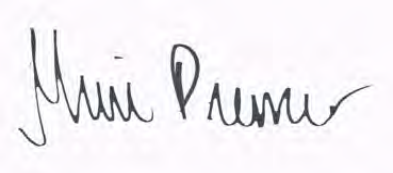
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## Specific Conductance by SM2510B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0315 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0315-BLK1)** | | | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Specific Conductance (EC) | ND | 1.00 | umhos/cm | | | | | | | |
| **Duplicate (BDK0315-DUP1)** | | **Source: 2011302-01** | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Specific Conductance (EC) | 489 | 1.00 | umhos/cm | | 488 | | | 0.328 | 20 | |





## Total Dissolved Solids by SM2540C - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0316 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0316-BLK1)** | | | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Total Dissolved Solids | ND | 10.0 | mg/L | | | | | | | |
| **Duplicate (BDK0316-DUP1)** | | **Source: 2011302-01** | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Total Dissolved Solids | 241 | 10.0 | mg/L | | 241 | | | 0.0415 | 20 | |

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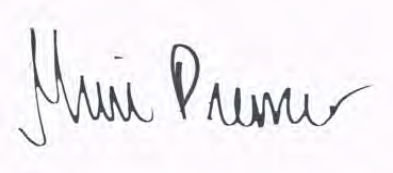
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 16:24 |

## pH by SM4500 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0304 - General Preparation** | | | | | | | | | | |
| **LCS (BDK0304-BS1)** | | | | Prepared: 11/23/20 Analyzed: 11/24/20 | | | | | | |
| pH | 9.45 | 1.00 | pH Units | 9.21 | | 103 | 90-110 | | | |
| **Duplicate (BDK0304-DUP1)** | | **Source: 2011295-01** | | Prepared: 11/23/20 Analyzed: 11/24/20 | | | | | | |
| pH | 6.90 | 1.00 | pH Units | | 6.92 | | | 0.289 | 20 | |





## Notes and Definitions

| | |
|---|---|
| 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

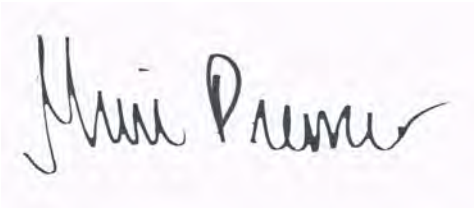
December 07, 2020

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

RE: Trip_Blank/GWA_District_Six_C6
Work Order #2011297

Enclosed are the results of analyses for samples received by Summit Scientific on 11/23/20 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Muri Premer For Paul Shrewsbury
President

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 14:34 |

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_61256_MH_MW_6_Trip_Blank | 2011297-01 | Water | 11/23/20 14:26 | 11/23/20 16:30 |

Summit Scientific

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

# Summit Scientific

S2

2011297

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



**Client:** Extraction Oil and Gas (XOG) **Report to:** Apex Companies, LLC **Project Manager:** Heather Shideman

**Address:** 2234 117th Ave, Ste 106 **E-Mail:** Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com, Kolbi.Condos@apexcos.com

**City/State/Zip:** Greeley, CO 80634 **cc:** jcarlisle@extractionog.com

**Phone:** (970) 576-3446 **Project Name:** Trip_Blank/GWA_District_Six_C6

**Sampler Name:** Kyle McDougall, KMcD **Project No.:** Alloc-421 930, 88 **Facility ID** 766715

| | | | | | 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_61256_MH_MW_6_Trip_Blank | 20/11/23 | 1426 | 2 | | | | | X | | | | X | | | | | | | Sample Frequency: IN |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| KMcD | 20/11/23/1630 | | 11/23/2020 1630 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard X
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 2.8
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order 2011297

Client: APEX COMPANIES Client Project ID: TRIP BLANK GWA

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ ✓ ☐ ☐ ☐ Airbill #: DISTRICT SIX C6

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

| Temp (°C) | 3.3 |
|---|---|

Thermometer ID: 61857155-K

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

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

| RZ | | 11/23/20 |
|---|---|---|
| **Custodian Printed Name or Initials** | **Signature of Custodian** | **Date/Time** |

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 14:34 |

## GW_61256_MH_MW_6_Trip_Blank
**2011297-01 (Water)**

**Summit Scientific**

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

Date Sampled: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | ug/l | 1 | BDK0325 | 11/25/20 | 11/26/20 | 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: **11/23/20 14:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *81.1 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *115 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *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.*

S2

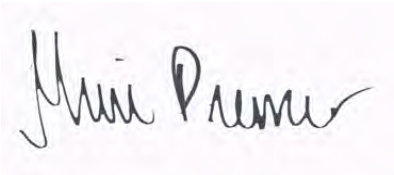
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 14:34 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0325 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDK0325-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| 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* | *12.7* | | *"* | *13.3* | | *95.3* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *15.0* | | *"* | *13.3* | | *112* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.1* | | *"* | *13.3* | | *98.3* | *21-167* | | | |
| **LCS (BDK0325-BS1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 33.7 | 1.0 | ug/l | 33.3 | | 101 | 51-132 | | | |
| Toluene | 39.4 | 1.0 | " | 33.3 | | 118 | 51-138 | | | |
| Ethylbenzene | 34.6 | 1.0 | " | 33.3 | | 104 | 58-146 | | | |
| m,p-Xylene | 67.6 | 2.0 | " | 66.7 | | 101 | 57-144 | | | |
| o-Xylene | 34.1 | 1.0 | " | 33.3 | | 102 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *11.7* | | *"* | *13.3* | | *87.8* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *14.8* | | *"* | *13.3* | | *111* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.9* | | *"* | *13.3* | | *104* | *21-167* | | | |
| **Matrix Spike (BDK0325-MS1)** | | **Source: 2011297-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 35.0 | 1.0 | ug/l | 33.3 | ND | 105 | 34-141 | | | |
| Toluene | 42.3 | 1.0 | " | 33.3 | ND | 127 | 27-151 | | | |
| Ethylbenzene | 37.7 | 1.0 | " | 33.3 | ND | 113 | 29-160 | | | |
| m,p-Xylene | 74.1 | 2.0 | " | 66.7 | ND | 111 | 20-166 | | | |
| o-Xylene | 36.9 | 1.0 | " | 33.3 | ND | 111 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *10.5* | | *"* | *13.3* | | *79.0* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *15.1* | | *"* | *13.3* | | *113* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.6* | | *"* | *13.3* | | *102* | *21-167* | | | |





S2

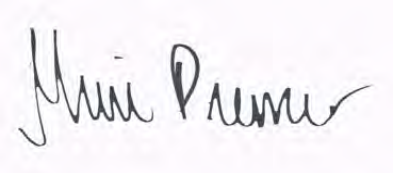
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 14:34 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0325 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDK0325-MSD1)** | | **Source: 2011297-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 35.7 | 1.0 | ug/l | 33.3 | ND | 107 | 34-141 | 2.01 | 32 | |
| Toluene | 40.3 | 1.0 | " | 33.3 | ND | 121 | 27-151 | 4.72 | 25 | |
| Ethylbenzene | 35.4 | 1.0 | " | 33.3 | ND | 106 | 29-160 | 6.18 | 50 | |
| m,p-Xylene | 69.6 | 2.0 | " | 66.7 | ND | 104 | 20-166 | 6.30 | 36 | |
| o-Xylene | 35.3 | 1.0 | " | 33.3 | ND | 106 | 33-159 | 4.57 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *13.8* | | *"* | *13.3* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *14.5* | | *"* | *13.3* | | *109* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.6* | | *"* | *13.3* | | *102* | *21-167* | | | |





*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.*

## 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 |

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www.isotechlabs.com

| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 777338 | Job #: | 46366 | IS-99230 | Co. Job#: |
| Sample Name: | GW_61256_MH_MW_6 | | | | Co. Lab#: |
| Company: | Extraction Oil and Gas | | | | |
| API/Well: | | | | | |
| Container: | 60ml Bottle | | | | |
| Field/Site Name: | Ground_Water/GWA_District_Six_C6 | | | | |
| Location: | NENE_20_5N_65W | | | | |
| Formation/Depth: | IN | | | | |
| Sampling Point: | 766715 | | | | |
| Date Sampled: | 11/23/2020 14:26 | Date Received: | 11/24/2020 | Date Reported: | 12/14/2020 |

| | | |
|---|---|---|
| $\delta$D of water | ---------- | -112.1 ‰ relative to VSMOW |
| $\delta^{18}$O of water | ---------- | -14.48 ‰ relative to VSMOW |
| Tritium content of water | ---------- | na |
| $\delta^{13}$C of DIC | ---------- | -10.8 ‰ relative to VPDB |
| $^{14}$C content of DIC | ---------- | na |
| $\delta^{15}$N of nitrate | ---------- | na |
| $\delta^{18}$O of nitrate | ---------- | na |
| $\delta^{34}$S of sulfate | ---------- | na |
| $\delta^{18}$O of sulfate | ---------- | na |
| Vacuum Distilled? * | ---------- | No |

Remarks: Alloc-421 930, 88

nd = not detected. na = not analyzed.
*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

ISOTECH
a Stratum Reservoir brand
www.isotechlabs.com

| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 778194 | Job #: | 46459 | IS-99230 | Co. Job#: |
| Sample Name: | GW_61256_MH_MW_6 | | | | 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: | IN | | | | |
| Sampling Point: | 766715 | | | | |
| Date Sampled: | 11/23/2020 14:26 | Date Received: | 11/24/2020 | Date Reported: | 12/10/2020 |

| Component | Dissolved gas cc/L | Dissolved gas ppm |
|---|---|---|
| Methane ---------- | 3.8 | 2.6 |
| Ethane ---------- | 0.42 | 0.53 |
| Propane ---------- | 0.049 | 0.089 |

Alloc-421 930, 88

nd = not detected; na = not analyzed.

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a Stratum Reservoir brand
www.isotechlabs.com

| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 778194 | Job #: | 46459 | IS-99230 | Co. Job#: |
| Sample Name: | GW_61256_MH_MW_6 | | | | 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: | IN | | | | |
| Sampling Point: | 766715 | | | | |
| Date Sampled: | 11/23/2020 14:26 | Date Received: | 11/24/2020 | Date Reported: | 1/28/2021 |

| Component | Chemical mol. % | $\delta^{13}C$ ‰ | $\delta D$ ‰ | $\delta^{18}O$ ‰ | Dissolved gas cc/L | Dissolved gas ppm |
|---|---|---|---|---|---|---|
| Carbon Monoxide | nd | | | | | |
| Helium | na | | | | | |
| Hydrogen | nd | | | | | |
| Argon | 1.35 | | | | | |
| Oxygen | 7.03 | | | | | |
| Nitrogen | 72.37 | | | | | |
| Carbon Dioxide | 2.34 | | | | | |
| Methane | 15.27 | -44.62 | -212.0 | | 4.2 | 2.8 |
| Ethane | 1.42 | -30.1 | | | 0.44 | 0.54 |
| Ethylene | nd | | | | | |
| Propane | 0.167 | -21.1 | | | 0.048 | 0.087 |
| Propylene | 0.0004 | | | | | |
| Iso-butane | 0.0432 | -29.5 | | | | |
| N-butane | 0.0008 | | | | | |
| Iso-pentane | 0.0067 | | | | | |
| N-pentane | nd | | | | | |
| Hexanes + | 0.0008 | | | | | |

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.75
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Alloc-421 930, 88
Ethane, propane, and isobutane carbon isotope data obtained online via GC-C-IRMS.
Insufficient n-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

December 07, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

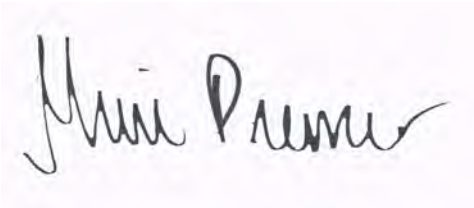
Denver, CO 80202

RE: Ground_Water/GWA_District_Six_C6

Work Order # 2011303

Enclosed are the results of analyses for samples received by Summit Scientific on 11/23/20 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Muri Premer For Paul Shrewsbury

President

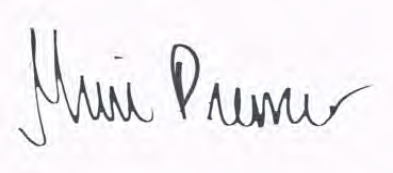
S2

| | | | |
|---|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project:<br>Project Number:<br>Project Manager: | Ground_Water/GWA_District_Six_C6<br>Alloc 421 930.88<br>Heather Shideman | **Reported:**<br>12/07/20 15:13 |

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_61256_MH_MW_8 | 2011303-01 | Water | 11/23/20 10:51 | 11/23/20 16:30 |

Summit Scientific



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

# Summit Scientific

$S_2$

2011303

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



**Client:** Extraction Oil and Gas (XOG) **Report to:** Apex Companies, LLC **Project Manager:** Heather Shideman

**Address:** 2234 117th Ave, Ste 106 **E-Mail:** Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com, Kolbi.Condos@apexcos.com

**City/State/Zip:** Greeley, CO 80634 **cc:** jcarlisle@extractionog.com

**Phone:** (970) 576-3446 **Project Name:** Groundwater/GWA_District_Six_C6

**Sampler Name:** Kyle McDougall **Project No.:** Alloc-421 930, 88 **Facility ID** 766716

| | | | | | 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) | COGCC 609 | No BART | No RSK175 (ethane, methane, propane) | | | | | |
| 1 | GW_61256_MH_MW_8 | 30/11/23 | 1051 | | | | | | X | | | | X | X | X | | | | | Sample Frequency: |
| | NENE_20_5N_65W | | | | | | | | | | | | | | | | | | | IN |
| | | | | | | | | | | | | | | | | | | | | |
| | Temperature, field: | 14.1 | °C | | | | | | | | | | | | | | | | | |
| | pH, field: | 7.50 | s.u. | | | | | | | | | | | | | | | | | |
| | Conductivity, field: | 1088 | uS/cm | | | | | | | | | | | | | | | | | |
| | ORP, field: | 274.4 | mV | | | | | | | | | | | | | | | | | |
| | Dissolved Oxygen, field: | 3.19 | mg/L | | | | | | | | | | | | | | | | | |
| | Turbidity, field: | 31.7 | NTU | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| [signature] | 30/11/23 1630 | [signature] | 11/23/2020 1630 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard _X_
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 3.3
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order 2011303

Client: APEX COMPANIES Client Project ID: GWA DISTRICT SIX 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) | 4.5 |
|---|---|

Thermometer ID: 61857155-K

| | Yes | No | N/A | Comments (if any) |
|---|---|---|---|---|
| If samples require cooling, was the temperature at 4°C +/- 2°C (1)? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun. | ✓ | | | |
| Were all samples received intact (1)? | ✓ | | | |
| Was adequate sample volume provided (1)? | ✓ | | | |
| If custody seals are present, are they intact (1)? | | | ✓ | |
| Are samples with holding times due within 48 hours sample due within 48 hours present? | ✓ | | | pH ANIONS |
| Is a chain-of-custody (COC) form present and filled out completely (1)? | ✓ | | | |
| Does the COC agree with the number and type of sample bottles received (1)? | ✓ | | | |
| Do the sample IDs on the bottle labels match the COC (1)? | ✓ | | | |
| Is the COC properly relinquished by the client w/ date and time recorded (1)? | ✓ | | | |
| For volatiles in water – is there headspace present? **If yes, contact client and note in narrative.** | | ✓ | | |
| Are samples preserved that require preservation **(excluding cooling)** (1)? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect | ✓ | | | HCL HNO3 H2SO4 |
| If samples are acid preserved for metals, is the pH ≤ 2(1)? Record the pH in Comments. | ✓ | | | pH1 |
| If dissolved metals are requested, were samples field filtered? | | | ✓ | |
| Additional Comments (if any): | | | | |

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

| RZ | | 11/23/20 |
|---|---|---|
| **Custodian Printed Name or Initials** | **Signature of Custodian** | **Date/Time** |

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:13 |

## GW_61256_MH_MW_8

NENE_20_5N_65W

**2011303-01 (Water)**

**Summit Scientific**

### Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.0010 | mg/L | 1 | BDK0328 | 11/25/20 | 11/26/20 | 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: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *118 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *101 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *95.6 %* | *21-167* | | " | " | " | " | |

### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| C10-C28 (DRO) | ND | 0.100 | mg/L | 1 | BDL0001 | 12/01/20 | 12/02/20 | EPA 8015M | |

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: o-Terphenyl* | | *98.3 %* | *44.8-129* | | " | " | " | " | |

### Dissolved Metals by EPA Method 200.8

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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.*

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:13 |

**GW_61256_MH_MW_8**
NENE_20_5N_65W
**2011303-01 (Water)**

**Summit Scientific**

## Dissolved Metals by EPA Method 200.8

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Calcium** | **81800** | 50.0 | ug/l | 1 | BDL0005 | 12/01/20 | 12/01/20 | EPA 200.8 |
| **Iron** | **20.1** | 10.0 | " | " | " | " | " | " |
| **Magnesium** | **36900** | 50.0 | " | " | " | " | " | " |
| **Manganese** | **215** | 1.00 | " | " | " | " | " | " |
| **Potassium** | **3420** | 50.0 | " | " | " | " | " | " |
| **Sodium** | **80800** | 50.0 | " | " | " | " | " | " |
| **Barium** | **67.2** | 1.00 | " | " | " | " | " | " |
| **Boron** | **193** | 10.0 | " | " | " | " | " | " |
| **Selenium** | **2.68** | 1.00 | " | " | " | " | " | " |
| **Strontium** | **1170** | 10.0 | " | " | " | " | " | " |

## Anions by EPA Method 300.0

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Bromide** | **0.345** | 0.200 | mg/L | 1 | BDK0298 | 11/24/20 | 11/24/20 | EPA 300.0 | |
| **Chloride** | **34.8** | 2.00 | " | 20 | " | " | " | " | |
| **Fluoride** | **0.220** | 0.200 | " | 1 | " | " | " | " | |
| **Sulfate** | **70.2** | 6.00 | " | 20 | " | " | " | " | |
| **Nitrate as N** | **6.34** | 0.100 | " | 1 | " | " | " | " | |
| Nitrite as N | ND | 0.100 | " | " | " | " | " | " | |
| **Nitrate/Nitrite as N** | **6.34** | 0.200 | " | " | " | " | " | " | |

## Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Alkalinity** | **290** | 10.0 | mg/L as CaCO3 | 1 | BDK0318 | 11/25/20 | 12/02/20 | SM2320-B | |
| Carbonate | ND | 10.0 | " | " | " | " | " | " | |
| **Bicarbonate** | **290** | 10.0 | " | " | " | " | " | " | |

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:13 |

**GW_61256_MH_MW_8**
NENE_20_5N_65W
**2011303-01 (Water)**

**Summit Scientific**

## Conventional Chemistry Parameters by APHA/EPA Methods

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus - Total | ND | 0.0500 | mg/L | 1 | BDL0037 | 12/02/20 | 12/02/20 | SM4500-P-E | |

## Specific Conductance by SM2510B

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1350** | 1.00 | umhos/cm | 1 | BDK0315 | 11/25/20 | 11/25/20 | SM2510B | |

## Total Dissolved Solids by SM2540C

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Dissolved Solids** | **670** | 10.0 | mg/L | 1 | BDK0316 | 11/25/20 | 11/25/20 | SM2540C | |

## pH by SM4500

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **pH** | **7.36** | 1.00 | pH Units | 1 | BDK0304 | 11/23/20 | 11/24/20 | SM4500-H+ B | |

## Field Data

Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1088** | | uS/cm | 1 | BDK0290 | 11/23/20 | 11/23/20 | Field Method | |
| **Turbidity** | **21.7** | | NTU | " | " | " | " | " | |
| **Temperature** | **14.1** | | Degrees C | " | " | " | " | " | |
| **Oxidation/Reduction Potential** | **274.4** | | mv | " | " | " | " | " | |
| **Dissolved Oxygen** | **2.19** | | mg/L | " | " | " | " | " | |
| **pH** | **7.50** | | SU | " | " | " | " | " | |

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.*

**GW_61256_MH_MW_8**

NENE_20_5N_65W

**2011303-01 (Water)**

**Summit Scientific**

**Field Data**

S2

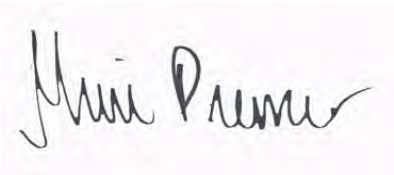
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:13 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0328 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDK0328-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| 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* | *0.0141* | | *"* | *0.0133* | | *106* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0128* | | *"* | *0.0133* | | *95.8* | *21-167* | | | |
| **LCS (BDK0328-BS1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0352 | 0.0010 | mg/L | 0.0333 | | 106 | 51-132 | | | |
| Toluene | 0.0380 | 0.0010 | " | 0.0333 | | 114 | 51-138 | | | |
| Ethylbenzene | 0.0386 | 0.0010 | " | 0.0333 | | 116 | 58-146 | | | |
| m,p-Xylene | 0.0768 | 0.0020 | " | 0.0667 | | 115 | 57-144 | | | |
| o-Xylene | 0.0365 | 0.0010 | " | 0.0333 | | 110 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0138* | | *"* | *0.0133* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0142* | | *"* | *0.0133* | | *106* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0126* | | *"* | *0.0133* | | *94.1* | *21-167* | | | |
| **Matrix Spike (BDK0328-MS1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0373 | 0.0010 | mg/L | 0.0333 | ND | 112 | 34-141 | | | |
| Toluene | 0.0364 | 0.0010 | " | 0.0333 | ND | 109 | 27-151 | | | |
| Ethylbenzene | 0.0368 | 0.0010 | " | 0.0333 | ND | 110 | 29-160 | | | |
| m,p-Xylene | 0.0741 | 0.0020 | " | 0.0667 | ND | 111 | 20-166 | | | |
| o-Xylene | 0.0361 | 0.0010 | " | 0.0333 | ND | 108 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0166* | | *"* | *0.0133* | | *125* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0138* | | *"* | *0.0133* | | *103* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0128* | | *"* | *0.0133* | | *95.6* | *21-167* | | | |





## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0328 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDK0328-MSD1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0347 | 0.0010 | mg/L | 0.0333 | ND | 104 | 34-141 | 7.08 | 32 | |
| Toluene | 0.0385 | 0.0010 | " | 0.0333 | ND | 116 | 27-151 | 5.58 | 25 | |
| Ethylbenzene | 0.0382 | 0.0010 | " | 0.0333 | ND | 115 | 29-160 | 3.84 | 50 | |
| m,p-Xylene | 0.0747 | 0.0020 | " | 0.0667 | ND | 112 | 20-166 | 0.860 | 36 | |
| o-Xylene | 0.0358 | 0.0010 | " | 0.0333 | ND | 108 | 33-159 | 0.806 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0144* | | *"* | *0.0133* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0146* | | *"* | *0.0133* | | *110* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0127* | | *"* | *0.0133* | | *95.0* | *21-167* | | | |

## Extractable Petroleum Hydrocarbons by 8015 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0001 - EPA 3520B** | | | | | | | | | | |
| **Blank (BDL0001-BLK1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: o-Terphenyl* | *0.0265* | | *"* | *0.0250* | | *106* | *44.8-129* | | | |
| **LCS (BDL0001-BS1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | 0.901 | 0.100 | mg/L | 1.00 | | 90.1 | 70-130 | | | |
| *Surrogate: o-Terphenyl* | *0.0258* | | *"* | *0.0250* | | *103* | *44.8-129* | | | |
| **LCS Dup (BDL0001-BSD1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | 0.917 | 0.100 | mg/L | 1.00 | | 91.7 | 70-130 | 1.72 | 200 | |
| *Surrogate: o-Terphenyl* | *0.0246* | | *"* | *0.0250* | | *98.3* | *44.8-129* | | | |

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:13 |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0005 - EPA 200.8** | | | | | | | | | | |
| **Blank (BDL0005-BLK1)** | | | | Prepared & Analyzed: 12/01/20 | | | | | | |
| 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 (BDL0005-BS1)** | | | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 4880 | 50.0 | ug/l | 5000 | | 97.5 | 85-115 | | | |
| Iron | 4360 | 10.0 | " | 5000 | | 87.1 | 85-115 | | | |
| Magnesium | 5520 | 50.0 | " | 5000 | | 110 | 85-115 | | | |
| Manganese | 480 | 1.00 | " | 500 | | 96.0 | 85-115 | | | |
| Potassium | 4880 | 50.0 | " | 5000 | | 97.6 | 85-115 | | | |
| Sodium | 5770 | 50.0 | " | 5000 | | 115 | 85-115 | | | |
| Barium | 508 | 1.00 | " | 500 | | 102 | 85-115 | | | |
| Boron | 2310 | 10.0 | " | 2500 | | 92.4 | 85-115 | | | |
| Selenium | 47.0 | 1.00 | " | 50.0 | | 94.0 | 85-115 | | | |
| Strontium | 503 | 10.0 | " | 500 | | 101 | 85-115 | | | |
| **Duplicate (BDL0005-DUP1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 66000 | 50.0 | ug/l | | 66000 | | | 0.0803 | 20 | |
| Iron | 42.2 | 10.0 | " | | 39.6 | | | 6.35 | 20 | |
| Magnesium | 14600 | 50.0 | " | | 13500 | | | 8.14 | 20 | |
| Manganese | 344 | 1.00 | " | | 327 | | | 5.13 | 20 | |
| Potassium | 8140 | 50.0 | " | | 7600 | | | 6.91 | 20 | |
| Sodium | 73600 | 50.0 | " | | 68200 | | | 7.71 | 20 | |
| Barium | 252 | 1.00 | " | | 255 | | | 1.16 | 20 | |
| Boron | 33.5 | 10.0 | " | | 39.1 | | | 15.3 | 20 | |
| Selenium | 0.144 | 1.00 | " | | ND | | | | 20 | |
| Strontium | 798 | 10.0 | " | | 806 | | | 1.05 | 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.*

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0005 - EPA 200.8** | | | | | | | | | | |
| **Matrix Spike (BDL0005-MS1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 70000 | 50.0 | ug/l | 5000 | 66000 | 79.4 | 70-130 | | | |
| Iron | 4150 | 10.0 | " | 5000 | 39.6 | 82.1 | 70-130 | | | |
| Magnesium | 17700 | 50.0 | " | 5000 | 13500 | 84.1 | 70-130 | | | |
| Manganese | 798 | 1.00 | " | 500 | 327 | 94.3 | 70-130 | | | |
| Potassium | 11400 | 50.0 | " | 5000 | 7600 | 76.6 | 70-130 | | | |
| Sodium | 73400 | 50.0 | " | 5000 | 68200 | 105 | 70-130 | | | |
| Barium | 763 | 1.00 | " | 500 | 255 | 102 | 70-130 | | | |
| Boron | 2190 | 10.0 | " | 2500 | 39.1 | 86.0 | 70-130 | | | |
| Selenium | 48.3 | 1.00 | " | 50.0 | ND | 96.7 | 70-130 | | | |
| Strontium | 1300 | 10.0 | " | 500 | 806 | 99.7 | 70-130 | | | |
| **Matrix Spike Dup (BDL0005-MSD1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 70000 | 50.0 | ug/l | 5000 | 66000 | 79.7 | 70-130 | 0.0175 | 25 | |
| Iron | 4200 | 10.0 | " | 5000 | 39.6 | 83.2 | 70-130 | 1.26 | 25 | |
| Magnesium | 18100 | 50.0 | " | 5000 | 13500 | 92.8 | 70-130 | 2.41 | 25 | |
| Manganese | 811 | 1.00 | " | 500 | 327 | 96.8 | 70-130 | 1.56 | 25 | |
| Potassium | 11500 | 50.0 | " | 5000 | 7600 | 77.8 | 70-130 | 0.537 | 25 | |
| Sodium | 74200 | 50.0 | " | 5000 | 68200 | 121 | 70-130 | 1.13 | 25 | |
| Barium | 742 | 1.00 | " | 500 | 255 | 97.5 | 70-130 | 2.68 | 25 | |
| Boron | 2140 | 10.0 | " | 2500 | 39.1 | 83.9 | 70-130 | 2.45 | 25 | |
| Selenium | 47.0 | 1.00 | " | 50.0 | ND | 94.0 | 70-130 | 2.85 | 25 | |
| Strontium | 1290 | 10.0 | " | 500 | 806 | 96.4 | 70-130 | 1.30 | 25 | |

S2

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:13 |

## Anions by EPA Method 300.0 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0298 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0298-BLK1)** | | | | Prepared & Analyzed: 11/24/20 | | | | | | |
| 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 (BDK0298-BS1)** | | | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 9.63 | 0.200 | mg/L | 10.0 | | 96.3 | 90-110 | | | |
| Chloride | 2.94 | 0.100 | " | 3.00 | | 98.1 | 90-110 | | | |
| Fluoride | 1.98 | 0.200 | " | 2.00 | | 99.0 | 90-110 | | | |
| Sulfate | 14.7 | 0.300 | " | 15.0 | | 98.3 | 90-110 | | | |
| Nitrate as N | 2.98 | 0.100 | " | 3.00 | | 99.4 | 90-110 | | | |
| Nitrite as N | 2.96 | 0.100 | " | 3.00 | | 98.5 | 90-110 | | | |
| **Duplicate (BDK0298-DUP1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 0.345 | 0.200 | mg/L | | 0.345 | | | 0.00 | 20 | |
| Chloride | 53.6 | 0.100 | " | | 34.8 | | | 42.4 | 20 | QM-02 |
| Fluoride | 0.218 | 0.200 | " | | 0.220 | | | 0.913 | 20 | |
| Sulfate | 269 | 0.300 | " | | 70.2 | | | 117 | 20 | QM-02 |
| Nitrate as N | 6.53 | 0.100 | " | | 6.34 | | | 3.00 | 20 | |
| Nitrite as N | ND | 0.100 | " | | ND | | | | 20 | |
| Nitrate/Nitrite as N | 6.53 | 0.200 | " | | 6.53 | | | 3.00 | 20 | |
| **Matrix Spike (BDK0298-MS1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 9.06 | 0.200 | mg/L | 10.0 | 0.345 | 87.1 | 80-120 | | | |
| Chloride | 55.4 | 0.100 | " | 3.00 | 34.8 | 686 | 80-120 | | | QM-02 |
| Fluoride | 2.16 | 0.200 | " | 2.00 | 0.220 | 96.8 | 80-120 | | | |
| Sulfate | 287 | 0.300 | " | 15.0 | 70.2 | NR | 80-120 | | | QM-02 |
| Nitrate as N | 9.12 | 0.100 | " | 3.00 | 6.34 | 92.7 | 80-120 | | | |
| Nitrite as N | 2.99 | 0.100 | " | 3.00 | ND | 99.6 | 80-120 | | | |

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:13 |

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

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0318 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0318-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | ND | 10.0 | mg/L as CaCO3 | | | | | | | |
| Carbonate | ND | 10.0 | " | | | | | | | |
| Bicarbonate | ND | 10.0 | " | | | | | | | |
| **LCS (BDK0318-BS1)** | | | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 110 | 10.0 | mg/L as CaCO3 | 100 | | 110 | 80-120 | | | |
| **Duplicate (BDK0318-DUP1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 290 | 10.0 | mg/L as CaCO3 | | 290 | | | 0.00 | 20 | |
| Carbonate | ND | 10.0 | " | | ND | | | | 20 | |
| Bicarbonate | 290 | 10.0 | " | | 290 | | | 0.00 | 20 | |
| **Matrix Spike (BDK0318-MS1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 380 | 10.0 | mg/L as CaCO3 | 100 | 290 | 90.0 | 70-130 | | | |
| **Matrix Spike Dup (BDK0318-MSD1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 380 | 10.0 | mg/L as CaCO3 | 100 | 290 | 90.0 | 70-130 | 0.00 | 20 | |

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0037 - General Preparation** | | | | | | | | | | |
| **Blank (BDL0037-BLK1)** | | | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | | | | | | |
| **LCS (BDL0037-BS1)** | | | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.933 | 0.0500 | mg/L | 1.00 | | 93.3 | 80-120 | | | |
| **Duplicate (BDL0037-DUP1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | ND | | | | 20 | |
| **Matrix Spike (BDL0037-MS1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.914 | 0.0500 | mg/L | 1.00 | ND | 91.4 | 70-130 | | | |
| **Matrix Spike Dup (BDL0037-MSD1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.922 | 0.0500 | mg/L | 1.00 | ND | 92.2 | 70-130 | 0.871 | 20 | |

S2

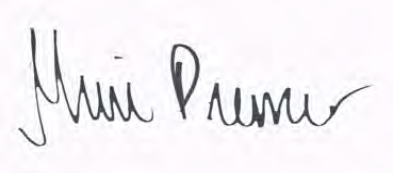
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:13 |

## Specific Conductance by SM2510B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0315 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0315-BLK1)** | | | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Specific Conductance (EC) | ND | 1.00 | umhos/cm | | | | | | | |
| **Duplicate (BDK0315-DUP1)** | | **Source: 2011302-01** | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Specific Conductance (EC) | 489 | 1.00 | umhos/cm | | 488 | | | 0.328 | 20 | |





## Total Dissolved Solids by SM2540C - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0316 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0316-BLK1)** | | | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Total Dissolved Solids | ND | 10.0 | mg/L | | | | | | | |
| **Duplicate (BDK0316-DUP1)** | | **Source: 2011302-01** | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Total Dissolved Solids | 241 | 10.0 | mg/L | | 241 | | | 0.0415 | 20 | |

## pH by SM4500 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0304 - General Preparation** | | | | | | | | | | |
| **LCS (BDK0304-BS1)** | | | | Prepared: 11/23/20 Analyzed: 11/24/20 | | | | | | |
| pH | 9.45 | 1.00 | pH Units | 9.21 | | 103 | 90-110 | | | |
| **Duplicate (BDK0304-DUP1)** | | **Source: 2011295-01** | | Prepared: 11/23/20 Analyzed: 11/24/20 | | | | | | |
| pH | 6.90 | 1.00 | pH Units | | 6.92 | | | 0.289 | 20 | |

## Notes and Definitions

| | |
|---|---|
| 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

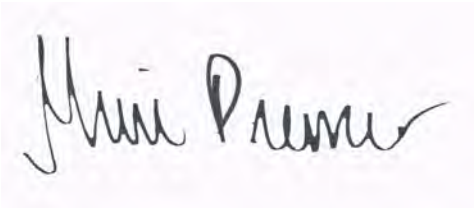
December 07, 2020

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

RE: Trip_Blank/GWA_District_Six_C6
Work Order #2011299

Enclosed are the results of analyses for samples received by Summit Scientific on 11/23/20 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Muri Premer For Paul Shrewsbury
President

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:00 |

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_61256_MH_MW_8_Trip_Blank | 2011299-01 | Water | 11/23/20 10:51 | 11/23/20 16:30 |

Summit Scientific

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

# Summit Scientific

S2

2011299

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



**Client:** Extraction Oil and Gas (XOG) **Report to:** Apex Companies, LLC **Project Manager:** Heather Shideman

**Address:** 2234 117th Ave, Ste 106 **E-Mail:** Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com, Kolbi.Condos@apexcos.com

**City/State/Zip:** Greeley, CO 80634 **cc:** jcarlisle@extractionog.com

**Phone:** (970) 576-3446 **Project Name:** Trip_Blank/GWA_District_Six_C6

**Sampler Name:** [illegible] **Project No.:** Alloc-421 930, 88 **Facility ID** 766716

| | | | | | 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_61256_MH_MW_8_Trip_Blank | 20/11/23 | 1051 | 2 | | | | | X | | | | X | | | | | | | Sample Frequency: IN |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| [illegible] | 20/11/23 / 1630 | [illegible] | 11/23/2020 1630 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard _X_
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 3.3
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order 2011299

Client: APEX COMPANIES Client Project ID: TRIP BLANK GWA

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ ✓ ☐ ☐ ☐ Airbill #: DISTRICT SIX C6

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

| Temp (°C) | 2.8 |
|---|---|

Thermometer ID: 61857155-K

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

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

| RZ | | 11/23/20 |
|---|---|---|
| **Custodian Printed Name or Initials** | **Signature of Custodian** | **Date/Time** |

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:00 |

## GW_61256_MH_MW_8_Trip_Blank
**2011299-01 (Water)**

**Summit Scientific**

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

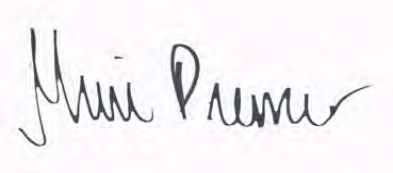
Date Sampled: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | ug/l | 1 | BDK0325 | 11/25/20 | 11/26/20 | 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: **11/23/20 10:51**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *84.5 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *117 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *100 %* | *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.*

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:00 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0325 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDK0325-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| 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* | *12.7* | | *"* | *13.3* | | *95.3* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *15.0* | | *"* | *13.3* | | *112* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.1* | | *"* | *13.3* | | *98.3* | *21-167* | | | |
| **LCS (BDK0325-BS1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 33.7 | 1.0 | ug/l | 33.3 | | 101 | 51-132 | | | |
| Toluene | 39.4 | 1.0 | " | 33.3 | | 118 | 51-138 | | | |
| Ethylbenzene | 34.6 | 1.0 | " | 33.3 | | 104 | 58-146 | | | |
| m,p-Xylene | 67.6 | 2.0 | " | 66.7 | | 101 | 57-144 | | | |
| o-Xylene | 34.1 | 1.0 | " | 33.3 | | 102 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *11.7* | | *"* | *13.3* | | *87.8* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *14.8* | | *"* | *13.3* | | *111* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.9* | | *"* | *13.3* | | *104* | *21-167* | | | |
| **Matrix Spike (BDK0325-MS1)** | | **Source: 2011297-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 35.0 | 1.0 | ug/l | 33.3 | ND | 105 | 34-141 | | | |
| Toluene | 42.3 | 1.0 | " | 33.3 | ND | 127 | 27-151 | | | |
| Ethylbenzene | 37.7 | 1.0 | " | 33.3 | ND | 113 | 29-160 | | | |
| m,p-Xylene | 74.1 | 2.0 | " | 66.7 | ND | 111 | 20-166 | | | |
| o-Xylene | 36.9 | 1.0 | " | 33.3 | ND | 111 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *10.5* | | *"* | *13.3* | | *79.0* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *15.1* | | *"* | *13.3* | | *113* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.6* | | *"* | *13.3* | | *102* | *21-167* | | | |

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:00 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0325 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDK0325-MSD1)** | | **Source: 2011297-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 35.7 | 1.0 | ug/l | 33.3 | ND | 107 | 34-141 | 2.01 | 32 | |
| Toluene | 40.3 | 1.0 | " | 33.3 | ND | 121 | 27-151 | 4.72 | 25 | |
| Ethylbenzene | 35.4 | 1.0 | " | 33.3 | ND | 106 | 29-160 | 6.18 | 50 | |
| m,p-Xylene | 69.6 | 2.0 | " | 66.7 | ND | 104 | 20-166 | 6.30 | 36 | |
| o-Xylene | 35.3 | 1.0 | " | 33.3 | ND | 106 | 33-159 | 4.57 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *13.8* | | *"* | *13.3* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *14.5* | | *"* | *13.3* | | *109* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.6* | | *"* | *13.3* | | *102* | *21-167* | | | |

## 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 |

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 777336 | Job #: | 46366 | IS-99230 | Co. Job#: |
| Sample Name: | GW_61256_MH_MW_8 | | | | Co. Lab#: |
| Company: | Extraction Oil and Gas | | | | |
| API/Well: | | | | | |
| Container: | 60ml Bottle | | | | |
| Field/Site Name: | Ground_Water/GWA_District_Six_C6 | | | | |
| Location: | NENE_20_5N_65W | | | | |
| Formation/Depth: | IN | | | | |
| Sampling Point: | 766716 | | | | |
| Date Sampled: | 11/23/2020 10:51 | Date Received: | 11/24/2020 | Date Reported: | 12/14/2020 |

| | | |
|---|---|---|
| $\delta$D of water | ---------- | -107.2 ‰ relative to VSMOW |
| $\delta^{18}$O of water | ---------- | -13.66 ‰ relative to VSMOW |
| Tritium content of water | ---------- | na |
| $\delta^{13}$C of DIC | ---------- | -11.3 ‰ relative to VPDB |
| $^{14}$C content of DIC | ---------- | na |
| $\delta^{15}$N of nitrate | ---------- | na |
| $\delta^{18}$O of nitrate | ---------- | na |
| $\delta^{34}$S of sulfate | ---------- | na |
| $\delta^{18}$O of sulfate | ---------- | na |
| Vacuum Distilled? * | ---------- | No |

Remarks: Alloc-421 930, 88

nd = not detected. na = not analyzed.
*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 778192 | Job #: | 46459 | IS-99230 | Co. Job#: |
| Sample Name: | GW_61256_MH_MW_8 | | | | 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: | IN | | | | |
| Sampling Point: | 766716 | | | | |
| Date Sampled: | 11/23/2020 10:51 | Date Received: | 11/24/2020 | Date Reported: | 12/10/2020 |

| Component | Dissolved gas cc/L | Dissolved gas ppm |
|---|---|---|
| Methane ---------- | 0.018 | 0.012 |
| Ethane ---------- | 0.0011 | 0.0013 |
| Propane ---------- | 0.00022 | 0.00040 |

Alloc-421 930, 88

nd = not detected; na = not analyzed.

# Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 07, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

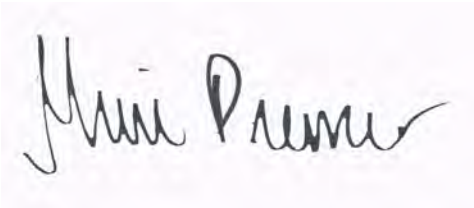
Denver, CO 80202

RE: Ground_Water/GWA_District_Six_C6

Work Order # 2011304

Enclosed are the results of analyses for samples received by Summit Scientific on 11/23/20 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Muri Premer For Paul Shrewsbury

President

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_61256_MH_MW_10 | 2011304-01 | Water | 11/23/20 12:34 | 11/23/20 16:30 |

Summit Scientific

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

# Summit Scientific

S2

2011304

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



**Client:** Extraction Oil and Gas (XOG) **Report to:** Apex Companies, LLC **Project Manager:** Heather Shideman

**Address:** 2234 117th Ave, Ste 106 **E-Mail:** Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com, Kolbi.Condos@apexcos.com

**City/State/Zip:** Greeley, CO 80634 **cc:** jcarlisle@extractionog.com

**Phone:** (970) 576-3446 **Project Name:** Groundwater/GWA_District_Six_C6

**Sampler Name:** [illegible] **Project No.:** Alloc-421 930, 88 **Facility ID** 766717

| | | | | | 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) | COGCC 609 | No BART | No RSK175 (ethane, methane, propane) | | | | | |
| 1 | GW_61256_MH_MW_10 | 20/11/23 | 1234 | | | | | | X | | | | X | X | X | | | | | Sample Frequency: |
| | NENE_20_5N_65W | | | | | | | | | | | | | | | | | | | IN |
| | | | | | | | | | | | | | | | | | | | | |
| | Temperature, field: | 13.9 | °C | | | | | | | | | | | | | | | | | |
| | pH, field: | 7.48 | s.u. | | | | | | | | | | | | | | | | | |
| | Conductivity, field: | 908 | uS/cm | | | | | | | | | | | | | | | | | |
| | ORP, field: | 182.7 | mV | | | | | | | | | | | | | | | | | |
| | Dissolved Oxygen, field: | 1.17 | mg/L | | | | | | | | | | | | | | | | | |
| | Turbidity, field: | 19.7 | NTU | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| [illegible] | 20/11/23 1630 | [illegible] | 11/23/2020 1630 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| | | [illegible] | |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| | | | |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard X
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 4.5
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order 2011304

Client: APEX COMPANIES Client Project ID: GWA DISTRICT SIX 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) | 2.8 |
|---|---|

Thermometer ID: 61857155-K

| | Yes | No | N/A | Comments (if any) |
|---|---|---|---|---|
| If samples require cooling, was the temperature at 4°C +/- 2°C (1)? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun. | ✓ | | | |
| Were all samples received intact (1)? | ✓ | | | |
| Was adequate sample volume provided (1)? | ✓ | | | |
| If custody seals are present, are they intact (1)? | | | ✓ | |
| Are samples with holding times due within 48 hours sample due within 48 hours present? | ✓ | | | pH ANIONS |
| Is a chain-of-custody (COC) form present and filled out completely (1)? | ✓ | | | |
| Does the COC agree with the number and type of sample bottles received (1)? | ✓ | | | |
| Do the sample IDs on the bottle labels match the COC (1)? | ✓ | | | |
| Is the COC properly relinquished by the client w/ date and time recorded (1)? | ✓ | | | |
| For volatiles in water – is there headspace present? **If yes, contact client and note in narrative.** | | ✓ | | |
| Are samples preserved that require preservation **(excluding cooling)** (1)? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect | ✓ | | | HCL HNO3 H2SO4 |
| If samples are acid preserved for metals, is the pH ≤ 2(1)? Record the pH in Comments. | ✓ | | | pH1 |
| If dissolved metals are requested, were samples field filtered? | | | ✓ | |
| Additional Comments (if any): | | | | |

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

| RZ | | 11/23/20 |
|---|---|---|
| **Custodian Printed Name or Initials** | **Signature of Custodian** | **Date/Time** |

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

**GW_61256_MH_MW_10**
NENE_20_5N_65W
**2011304-01 (Water)**

**Summit Scientific**

## Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.0010 | mg/L | 1 | BDK0328 | 11/25/20 | 11/26/20 | 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: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *132 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *101 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *96.9 %* | *21-167* | | " | " | " | " | |

## Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| C10-C28 (DRO) | ND | 0.100 | mg/L | 1 | BDL0001 | 12/01/20 | 12/02/20 | EPA 8015M | |

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: o-Terphenyl* | | *97.2 %* | *44.8-129* | | " | " | " | " | |

## Dissolved Metals by EPA Method 200.8

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

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.*

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

**GW_61256_MH_MW_10**
NENE_20_5N_65W
**2011304-01 (Water)**

**Summit Scientific**

## Dissolved Metals by EPA Method 200.8

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Calcium** | **70300** | 50.0 | ug/l | 1 | BDL0005 | 12/01/20 | 12/01/20 | EPA 200.8 |
| Iron | ND | 10.0 | " | " | " | " | " | " |
| **Magnesium** | **29700** | 50.0 | " | " | " | " | " | " |
| **Manganese** | **24.4** | 1.00 | " | " | " | " | " | " |
| **Potassium** | **3190** | 50.0 | " | " | " | " | " | " |
| **Sodium** | **64700** | 50.0 | " | " | " | " | " | " |
| **Barium** | **52.3** | 1.00 | " | " | " | " | " | " |
| **Boron** | **185** | 10.0 | " | " | " | " | " | " |
| **Selenium** | **2.25** | 1.00 | " | " | " | " | " | " |
| **Strontium** | **1030** | 10.0 | " | " | " | " | " | " |

## Anions by EPA Method 300.0

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Bromide** | **0.240** | 0.200 | mg/L | 1 | BDK0298 | 11/24/20 | 11/24/20 | EPA 300.0 | |
| **Chloride** | **31.3** | 2.00 | " | 20 | " | " | " | " | |
| **Fluoride** | **0.283** | 0.200 | " | 1 | " | " | " | " | |
| **Sulfate** | **112** | 6.00 | " | 20 | " | " | " | " | |
| **Nitrate as N** | **5.53** | 0.100 | " | 1 | " | " | " | " | |
| Nitrite as N | ND | 0.100 | " | " | " | " | " | " | |
| **Nitrate/Nitrite as N** | **5.59** | 0.200 | " | " | " | " | " | " | |

## Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Alkalinity** | **275** | 10.0 | mg/L as CaCO3 | 1 | BDK0318 | 11/25/20 | 12/02/20 | SM2320-B | |
| Carbonate | ND | 10.0 | " | " | " | " | " | " | |
| **Bicarbonate** | **275** | 10.0 | " | " | " | " | " | " | |

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

**GW_61256_MH_MW_10**
NENE_20_5N_65W
**2011304-01 (Water)**

**Summit Scientific**

## Conventional Chemistry Parameters by APHA/EPA Methods

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus - Total | ND | 0.0500 | mg/L | 1 | BDL0037 | 12/02/20 | 12/02/20 | SM4500-P-E | |

## Specific Conductance by SM2510B

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **1150** | 1.00 | umhos/cm | 1 | BDK0315 | 11/25/20 | 11/25/20 | SM2510B | |

## Total Dissolved Solids by SM2540C

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Total Dissolved Solids** | **571** | 10.0 | mg/L | 1 | BDK0316 | 11/25/20 | 11/25/20 | SM2540C | |

## pH by SM4500

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **pH** | **7.36** | 1.00 | pH Units | 1 | BDK0304 | 11/23/20 | 11/24/20 | SM4500-H+ B | |

## Field Data

Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Specific Conductance (EC)** | **908** | | uS/cm | 1 | BDK0291 | 11/23/20 | 11/23/20 | Field Method | |
| **Turbidity** | **19.7** | | NTU | " | " | " | " | " | |
| **Temperature** | **13.9** | | Degrees C | " | " | " | " | " | |
| **Oxidation/Reduction Potential** | **182.7** | | mv | " | " | " | " | " | |
| **Dissolved Oxygen** | **1.17** | | mg/L | " | " | " | " | " | |
| **pH** | **7.48** | | SU | " | " | " | " | " | |

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.*

**GW_61256_MH_MW_10**
NENE_20_5N_65W

**2011304-01 (Water)**

**Summit Scientific**

**Field Data**

S2

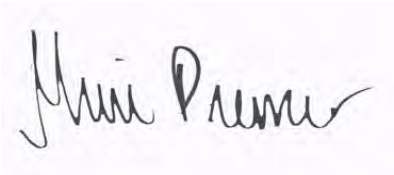
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0328 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDK0328-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| 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* | *0.0141* | | *"* | *0.0133* | | *106* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0128* | | *"* | *0.0133* | | *95.8* | *21-167* | | | |
| **LCS (BDK0328-BS1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0352 | 0.0010 | mg/L | 0.0333 | | 106 | 51-132 | | | |
| Toluene | 0.0380 | 0.0010 | " | 0.0333 | | 114 | 51-138 | | | |
| Ethylbenzene | 0.0386 | 0.0010 | " | 0.0333 | | 116 | 58-146 | | | |
| m,p-Xylene | 0.0768 | 0.0020 | " | 0.0667 | | 115 | 57-144 | | | |
| o-Xylene | 0.0365 | 0.0010 | " | 0.0333 | | 110 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0138* | | *"* | *0.0133* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0142* | | *"* | *0.0133* | | *106* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0126* | | *"* | *0.0133* | | *94.1* | *21-167* | | | |
| **Matrix Spike (BDK0328-MS1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0373 | 0.0010 | mg/L | 0.0333 | ND | 112 | 34-141 | | | |
| Toluene | 0.0364 | 0.0010 | " | 0.0333 | ND | 109 | 27-151 | | | |
| Ethylbenzene | 0.0368 | 0.0010 | " | 0.0333 | ND | 110 | 29-160 | | | |
| m,p-Xylene | 0.0741 | 0.0020 | " | 0.0667 | ND | 111 | 20-166 | | | |
| o-Xylene | 0.0361 | 0.0010 | " | 0.0333 | ND | 108 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0166* | | *"* | *0.0133* | | *125* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0138* | | *"* | *0.0133* | | *103* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0128* | | *"* | *0.0133* | | *95.6* | *21-167* | | | |





## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0328 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDK0328-MSD1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 0.0347 | 0.0010 | mg/L | 0.0333 | ND | 104 | 34-141 | 7.08 | 32 | |
| Toluene | 0.0385 | 0.0010 | " | 0.0333 | ND | 116 | 27-151 | 5.58 | 25 | |
| Ethylbenzene | 0.0382 | 0.0010 | " | 0.0333 | ND | 115 | 29-160 | 3.84 | 50 | |
| m,p-Xylene | 0.0747 | 0.0020 | " | 0.0667 | ND | 112 | 20-166 | 0.860 | 36 | |
| o-Xylene | 0.0358 | 0.0010 | " | 0.0333 | ND | 108 | 33-159 | 0.806 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0144* | | *"* | *0.0133* | | *108* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *0.0146* | | *"* | *0.0133* | | *110* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0127* | | *"* | *0.0133* | | *95.0* | *21-167* | | | |

## Extractable Petroleum Hydrocarbons by 8015 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0001 - EPA 3520B** | | | | | | | | | | |
| **Blank (BDL0001-BLK1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: o-Terphenyl* | *0.0265* | | *"* | *0.0250* | | *106* | *44.8-129* | | | |
| **LCS (BDL0001-BS1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | 0.901 | 0.100 | mg/L | 1.00 | | 90.1 | 70-130 | | | |
| *Surrogate: o-Terphenyl* | *0.0258* | | *"* | *0.0250* | | *103* | *44.8-129* | | | |
| **LCS Dup (BDL0001-BSD1)** | | | | Prepared: 12/01/20 Analyzed: 12/02/20 | | | | | | |
| C10-C28 (DRO) | 0.917 | 0.100 | mg/L | 1.00 | | 91.7 | 70-130 | 1.72 | 200 | |
| *Surrogate: o-Terphenyl* | *0.0246* | | *"* | *0.0250* | | *98.3* | *44.8-129* | | | |

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0005 - EPA 200.8** | | | | | | | | | | |
| **Blank (BDL0005-BLK1)** | | | | Prepared & Analyzed: 12/01/20 | | | | | | |
| 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 (BDL0005-BS1)** | | | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 4880 | 50.0 | ug/l | 5000 | | 97.5 | 85-115 | | | |
| Iron | 4360 | 10.0 | " | 5000 | | 87.1 | 85-115 | | | |
| Magnesium | 5520 | 50.0 | " | 5000 | | 110 | 85-115 | | | |
| Manganese | 480 | 1.00 | " | 500 | | 96.0 | 85-115 | | | |
| Potassium | 4880 | 50.0 | " | 5000 | | 97.6 | 85-115 | | | |
| Sodium | 5770 | 50.0 | " | 5000 | | 115 | 85-115 | | | |
| Barium | 508 | 1.00 | " | 500 | | 102 | 85-115 | | | |
| Boron | 2310 | 10.0 | " | 2500 | | 92.4 | 85-115 | | | |
| Selenium | 47.0 | 1.00 | " | 50.0 | | 94.0 | 85-115 | | | |
| Strontium | 503 | 10.0 | " | 500 | | 101 | 85-115 | | | |
| **Duplicate (BDL0005-DUP1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 66000 | 50.0 | ug/l | | 66000 | | | 0.0803 | 20 | |
| Iron | 42.2 | 10.0 | " | | 39.6 | | | 6.35 | 20 | |
| Magnesium | 14600 | 50.0 | " | | 13500 | | | 8.14 | 20 | |
| Manganese | 344 | 1.00 | " | | 327 | | | 5.13 | 20 | |
| Potassium | 8140 | 50.0 | " | | 7600 | | | 6.91 | 20 | |
| Sodium | 73600 | 50.0 | " | | 68200 | | | 7.71 | 20 | |
| Barium | 252 | 1.00 | " | | 255 | | | 1.16 | 20 | |
| Boron | 33.5 | 10.0 | " | | 39.1 | | | 15.3 | 20 | |
| Selenium | 0.144 | 1.00 | " | | ND | | | | 20 | |
| Strontium | 798 | 10.0 | " | | 806 | | | 1.05 | 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.*

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|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## Dissolved Metals by EPA Method 200.8 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0005 - EPA 200.8** | | | | | | | | | | |
| **Matrix Spike (BDL0005-MS1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 70000 | 50.0 | ug/l | 5000 | 66000 | 79.4 | 70-130 | | | |
| Iron | 4150 | 10.0 | " | 5000 | 39.6 | 82.1 | 70-130 | | | |
| Magnesium | 17700 | 50.0 | " | 5000 | 13500 | 84.1 | 70-130 | | | |
| Manganese | 798 | 1.00 | " | 500 | 327 | 94.3 | 70-130 | | | |
| Potassium | 11400 | 50.0 | " | 5000 | 7600 | 76.6 | 70-130 | | | |
| Sodium | 73400 | 50.0 | " | 5000 | 68200 | 105 | 70-130 | | | |
| Barium | 763 | 1.00 | " | 500 | 255 | 102 | 70-130 | | | |
| Boron | 2190 | 10.0 | " | 2500 | 39.1 | 86.0 | 70-130 | | | |
| Selenium | 48.3 | 1.00 | " | 50.0 | ND | 96.7 | 70-130 | | | |
| Strontium | 1300 | 10.0 | " | 500 | 806 | 99.7 | 70-130 | | | |
| **Matrix Spike Dup (BDL0005-MSD1)** | | **Source: 2011348-01** | | Prepared & Analyzed: 12/01/20 | | | | | | |
| Calcium | 70000 | 50.0 | ug/l | 5000 | 66000 | 79.7 | 70-130 | 0.0175 | 25 | |
| Iron | 4200 | 10.0 | " | 5000 | 39.6 | 83.2 | 70-130 | 1.26 | 25 | |
| Magnesium | 18100 | 50.0 | " | 5000 | 13500 | 92.8 | 70-130 | 2.41 | 25 | |
| Manganese | 811 | 1.00 | " | 500 | 327 | 96.8 | 70-130 | 1.56 | 25 | |
| Potassium | 11500 | 50.0 | " | 5000 | 7600 | 77.8 | 70-130 | 0.537 | 25 | |
| Sodium | 74200 | 50.0 | " | 5000 | 68200 | 121 | 70-130 | 1.13 | 25 | |
| Barium | 742 | 1.00 | " | 500 | 255 | 97.5 | 70-130 | 2.68 | 25 | |
| Boron | 2140 | 10.0 | " | 2500 | 39.1 | 83.9 | 70-130 | 2.45 | 25 | |
| Selenium | 47.0 | 1.00 | " | 50.0 | ND | 94.0 | 70-130 | 2.85 | 25 | |
| Strontium | 1290 | 10.0 | " | 500 | 806 | 96.4 | 70-130 | 1.30 | 25 | |

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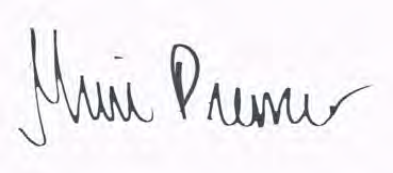
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## Anions by EPA Method 300.0 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0298 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0298-BLK1)** | | | | Prepared & Analyzed: 11/24/20 | | | | | | |
| 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 (BDK0298-BS1)** | | | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 9.63 | 0.200 | mg/L | 10.0 | | 96.3 | 90-110 | | | |
| Chloride | 2.94 | 0.100 | " | 3.00 | | 98.1 | 90-110 | | | |
| Fluoride | 1.98 | 0.200 | " | 2.00 | | 99.0 | 90-110 | | | |
| Sulfate | 14.7 | 0.300 | " | 15.0 | | 98.3 | 90-110 | | | |
| Nitrate as N | 2.98 | 0.100 | " | 3.00 | | 99.4 | 90-110 | | | |
| Nitrite as N | 2.96 | 0.100 | " | 3.00 | | 98.5 | 90-110 | | | |
| **Duplicate (BDK0298-DUP1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 0.345 | 0.200 | mg/L | | 0.345 | | | 0.00 | 20 | |
| Chloride | 53.6 | 0.100 | " | | 34.8 | | | 42.4 | 20 | QM-02 |
| Fluoride | 0.218 | 0.200 | " | | 0.220 | | | 0.913 | 20 | |
| Sulfate | 269 | 0.300 | " | | 70.2 | | | 117 | 20 | QM-02 |
| Nitrate as N | 6.53 | 0.100 | " | | 6.34 | | | 3.00 | 20 | |
| Nitrite as N | ND | 0.100 | " | | ND | | | | 20 | |
| Nitrate/Nitrite as N | 6.34 | 0.200 | " | | 6.34 | | | 3.00 | 20 | |
| **Matrix Spike (BDK0298-MS1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 11/24/20 | | | | | | |
| Bromide | 9.06 | 0.200 | mg/L | 10.0 | 0.345 | 87.1 | 80-120 | | | |
| Chloride | 55.4 | 0.100 | " | 3.00 | 34.8 | 686 | 80-120 | | | QM-02 |
| Fluoride | 2.16 | 0.200 | " | 2.00 | 0.220 | 96.8 | 80-120 | | | |
| Sulfate | 287 | 0.300 | " | 15.0 | 70.2 | NR | 80-120 | | | QM-02 |
| Nitrate as N | 9.12 | 0.100 | " | 3.00 | 6.34 | 92.7 | 80-120 | | | |
| Nitrite as N | 2.99 | 0.100 | " | 3.00 | ND | 99.6 | 80-120 | | | |





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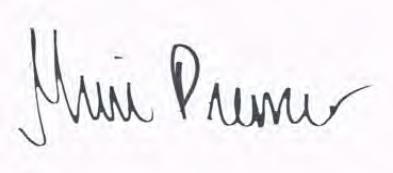
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

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

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0318 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0318-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | ND | 10.0 | mg/L as CaCO3 | | | | | | | |
| Carbonate | ND | 10.0 | " | | | | | | | |
| Bicarbonate | ND | 10.0 | " | | | | | | | |
| **LCS (BDK0318-BS1)** | | | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 110 | 10.0 | mg/L as CaCO3 | 100 | | 110 | 80-120 | | | |
| **Duplicate (BDK0318-DUP1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 290 | 10.0 | mg/L as CaCO3 | | 290 | | | 0.00 | 20 | |
| Carbonate | ND | 10.0 | " | | ND | | | | 20 | |
| Bicarbonate | 290 | 10.0 | " | | 290 | | | 0.00 | 20 | |
| **Matrix Spike (BDK0318-MS1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 380 | 10.0 | mg/L as CaCO3 | 100 | 290 | 90.0 | 70-130 | | | |
| **Matrix Spike Dup (BDK0318-MSD1)** | | **Source: 2011303-01** | | Prepared: 11/25/20 Analyzed: 12/02/20 | | | | | | |
| Total Alkalinity | 380 | 10.0 | mg/L as CaCO3 | 100 | 290 | 90.0 | 70-130 | 0.00 | 20 | |





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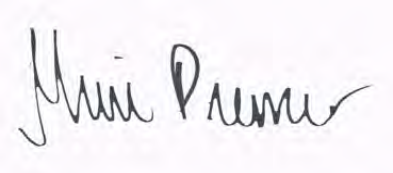
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDL0037 - General Preparation** | | | | | | | | | | |
| **Blank (BDL0037-BLK1)** | | | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | | | | | | |
| **LCS (BDL0037-BS1)** | | | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.933 | 0.0500 | mg/L | 1.00 | | 93.3 | 80-120 | | | |
| **Duplicate (BDL0037-DUP1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | ND | 0.0500 | mg/L | | ND | | | | 20 | |
| **Matrix Spike (BDL0037-MS1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.914 | 0.0500 | mg/L | 1.00 | ND | 91.4 | 70-130 | | | |
| **Matrix Spike Dup (BDL0037-MSD1)** | | **Source: 2011303-01** | | Prepared & Analyzed: 12/02/20 | | | | | | |
| Phosphorus - Total | 0.922 | 0.0500 | mg/L | 1.00 | ND | 92.2 | 70-130 | 0.871 | 20 | |





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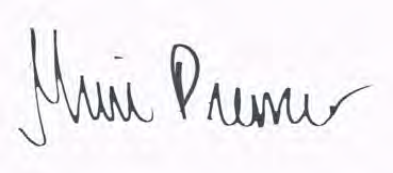
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## Specific Conductance by SM2510B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0315 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0315-BLK1)** | | | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Specific Conductance (EC) | ND | 1.00 | umhos/cm | | | | | | | |
| **Duplicate (BDK0315-DUP1)** | | **Source: 2011302-01** | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Specific Conductance (EC) | 489 | 1.00 | umhos/cm | | 488 | | | 0.328 | 20 | |





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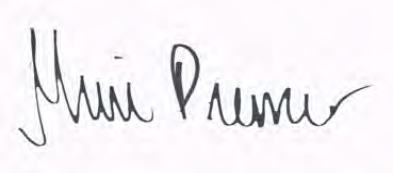
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## Total Dissolved Solids by SM2540C - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0316 - General Preparation** | | | | | | | | | | |
| **Blank (BDK0316-BLK1)** | | | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Total Dissolved Solids | ND | 10.0 | mg/L | | | | | | | |
| **Duplicate (BDK0316-DUP1)** | | **Source: 2011302-01** | | Prepared & Analyzed: 11/25/20 | | | | | | |
| Total Dissolved Solids | 241 | 10.0 | mg/L | | 241 | | | 0.0415 | 20 | |





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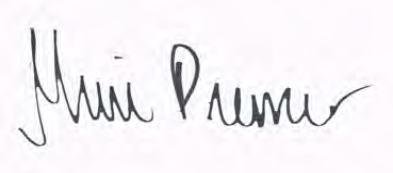
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Ground_Water/GWA_District_Six_C6<br>Project Number: Alloc 421 930.88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 15:43 |

## pH by SM4500 - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0304 - General Preparation** | | | | | | | | | | |
| **LCS (BDK0304-BS1)** | | | | Prepared: 11/23/20 Analyzed: 11/24/20 | | | | | | |
| pH | 9.45 | 1.00 | pH Units | 9.21 | | 103 | 90-110 | | | |
| **Duplicate (BDK0304-DUP1)** | | **Source: 2011295-01** | | Prepared: 11/23/20 Analyzed: 11/24/20 | | | | | | |
| pH | 6.90 | 1.00 | pH Units | | 6.92 | | | 0.289 | 20 | |





## Notes and Definitions

| | |
|---|---|
| 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

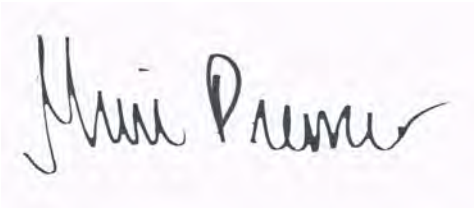
December 07, 2020

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

RE: Trip_Blank/GWA_District_Six_C6
Work Order #2011298

Enclosed are the results of analyses for samples received by Summit Scientific on 11/23/20 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Muri Premer For Paul Shrewsbury
President

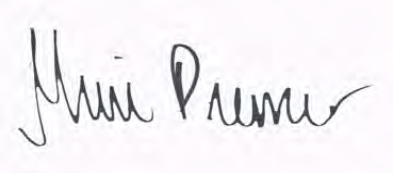
S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 14:47 |

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| GW_61256_MH_MW_10_Trip_Blank | 2011298-01 | Water | 11/23/20 12:34 | 11/23/20 16:30 |

Summit Scientific



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

# Summit Scientific

S2

2011298

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



**Client:** Extraction Oil and Gas (XOG) **Report to:** Apex Companies, LLC **Project Manager:** Heather Shideman

**Address:** 2234 117th Ave, Ste 106 **E-Mail:** Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com, Kolbi.Condos@apexcos.com

**City/State/Zip:** Greeley, CO 80634 **cc:** jcarlisle@extractionog.com

**Phone:** (970) 576-3446 **Project Name:** Trip_Blank/GWA_District_Six_C6

**Sampler Name:** Kole McDougall **Project No.:** Alloc-421 930, 88 **Facility ID** 766717

| | | | | | 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_61256_MH_MW_10_Trip_Blank | 20/11/23 | 1234 | 2 | | | | | X | | | | X | | | | | | | Sample Frequency: IN |

| Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|
| [signature] | 20/11/23 / 1630 | [signature] | 11/23/2020 1630 |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |
| Relinquished by: | Date/Time: | Received by: | Date/Time: |

**Turn Around Time** (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard X
48 hours ___

**Sample Integrity:**
Temperature Upon Receipt: 4.5
Intact: Yes No

**Notes:**

**Sample Receipt Checklist**

S2 Work Order 2011298

Client: APEX COMPANIES Client Project ID: TRIP BLANK GWA

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ ✓ ☐ ☐ ☐ Airbill #: DISTRICT SIX C6

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

| Temp (°C) | 4.5 |
|---|---|

Thermometer ID: 61857155-K

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

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

| RZ | | 11/23/20 |
|---|---|---|
| **Custodian Printed Name or Initials** | **Signature of Custodian** | **Date/Time** |

S2

| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 14:47 |

## GW_61256_MH_MW_10_Trip_Blank
**2011298-01 (Water)**

**Summit Scientific**

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

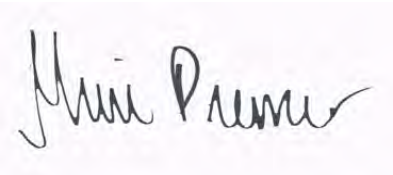
Date Sampled: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | ug/l | 1 | BDK0325 | 11/25/20 | 11/26/20 | 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: **11/23/20 12:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | | *82.4 %* | *23-173* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *114 %* | *20-170* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *97.7 %* | *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.*

S2

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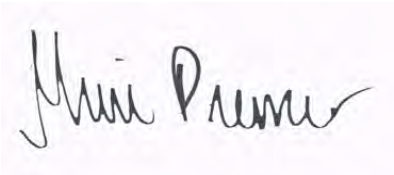
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 14:47 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0325 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BDK0325-BLK1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| 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* | *12.7* | | *"* | *13.3* | | *95.3* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *15.0* | | *"* | *13.3* | | *112* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.1* | | *"* | *13.3* | | *98.3* | *21-167* | | | |
| **LCS (BDK0325-BS1)** | | | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 33.7 | 1.0 | ug/l | 33.3 | | 101 | 51-132 | | | |
| Toluene | 39.4 | 1.0 | " | 33.3 | | 118 | 51-138 | | | |
| Ethylbenzene | 34.6 | 1.0 | " | 33.3 | | 104 | 58-146 | | | |
| m,p-Xylene | 67.6 | 2.0 | " | 66.7 | | 101 | 57-144 | | | |
| o-Xylene | 34.1 | 1.0 | " | 33.3 | | 102 | 53-146 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *11.7* | | *"* | *13.3* | | *87.8* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *14.8* | | *"* | *13.3* | | *111* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.9* | | *"* | *13.3* | | *104* | *21-167* | | | |
| **Matrix Spike (BDK0325-MS1)** | | **Source: 2011297-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 35.0 | 1.0 | ug/l | 33.3 | ND | 105 | 34-141 | | | |
| Toluene | 42.3 | 1.0 | " | 33.3 | ND | 127 | 27-151 | | | |
| Ethylbenzene | 37.7 | 1.0 | " | 33.3 | ND | 113 | 29-160 | | | |
| m,p-Xylene | 74.1 | 2.0 | " | 66.7 | ND | 111 | 20-166 | | | |
| o-Xylene | 36.9 | 1.0 | " | 33.3 | ND | 111 | 33-159 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *10.5* | | *"* | *13.3* | | *79.0* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *15.1* | | *"* | *13.3* | | *113* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.6* | | *"* | *13.3* | | *102* | *21-167* | | | |





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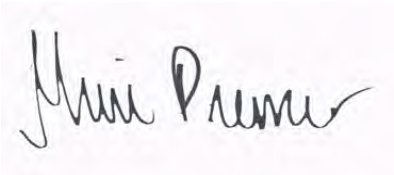
| | | |
|---|---|---|
| Extraction Oil&Gas<br>370 17th Street Suite 5300<br>Denver CO, 80202 | Project: Trip_Blank/GWA_District_Six_C6<br>Project Number: Alloc-421 930,88<br>Project Manager: Heather Shideman | **Reported:**<br>12/07/20 14:47 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Summit Scientific

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BDK0325 - EPA 5030 Water MS** | | | | | | | | | | |
| **Matrix Spike Dup (BDK0325-MSD1)** | | **Source: 2011297-01** | | Prepared: 11/25/20 Analyzed: 11/26/20 | | | | | | |
| Benzene | 35.7 | 1.0 | ug/l | 33.3 | ND | 107 | 34-141 | 2.01 | 32 | |
| Toluene | 40.3 | 1.0 | " | 33.3 | ND | 121 | 27-151 | 4.72 | 25 | |
| Ethylbenzene | 35.4 | 1.0 | " | 33.3 | ND | 106 | 29-160 | 6.18 | 50 | |
| m,p-Xylene | 69.6 | 2.0 | " | 66.7 | ND | 104 | 20-166 | 6.30 | 36 | |
| o-Xylene | 35.3 | 1.0 | " | 33.3 | ND | 106 | 33-159 | 4.57 | 26 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *13.8* | | *"* | *13.3* | | *104* | *23-173* | | | |
| *Surrogate: Toluene-d8* | *14.5* | | *"* | *13.3* | | *109* | *20-170* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *13.6* | | *"* | *13.3* | | *102* | *21-167* | | | |





*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.*

## 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 |

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 777337 | Job #: | 46366 | IS-99230 | Co. Job#: |
| Sample Name: | GW_61256_MH_MW_10 | | | | Co. Lab#: |
| Company: | Extraction Oil and Gas | | | | |
| API/Well: | | | | | |
| Container: | 60ml Bottle | | | | |
| Field/Site Name: | Ground_Water/GWA_District_Six_C6 | | | | |
| Location: | NENE_20_5N_65W | | | | |
| Formation/Depth: | IN | | | | |
| Sampling Point: | 766717 | | | | |
| Date Sampled: | 11/23/2020 12:34 | Date Received: | 11/24/2020 | Date Reported: | 12/14/2020 |

| | | |
|---|---|---|
| $\delta$D of water | ---------- | -107.0 ‰ relative to VSMOW |
| $\delta^{18}$O of water | ---------- | -13.71 ‰ relative to VSMOW |
| Tritium content of water | ---------- | na |
| $\delta^{13}$C of DIC | ---------- | -11.0 ‰ relative to VPDB |
| $^{14}$C content of DIC | ---------- | na |
| $\delta^{15}$N of nitrate | ---------- | na |
| $\delta^{18}$O of nitrate | ---------- | na |
| $\delta^{34}$S of sulfate | ---------- | na |
| $\delta^{18}$O of sulfate | ---------- | na |
| Vacuum Distilled? * | ---------- | No |

Remarks: Alloc-421 930, 88

nd = not detected. na = not analyzed.
*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 778193 | Job #: | 46459 | IS-99230 | Co. Job#: |
| Sample Name: | GW_61256_MH_MW_10 | | | | 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: | IN | | | | |
| Sampling Point: | 766717 | | | | |
| Date Sampled: | 11/23/2020 12:34 | Date Received: | 11/24/2020 | Date Reported: | 12/10/2020 |

| Component | Dissolved gas cc/L | Dissolved gas ppm |
|---|---|---|
| Methane ---------- | 3.1 | 2.1 |
| Ethane ---------- | 0.42 | 0.52 |
| Propane ---------- | 0.056 | 0.10 |

Alloc-421 930, 88

nd = not detected; na = not analyzed.

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| | | | | | |
|---|---|---|---|---|---|
| Lab #: | 778193 | Job #: | 46459 | IS-99230 | Co. Job#: |
| Sample Name: | GW_61256_MH_MW_10 | | | | 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: | IN | | | | |
| Sampling Point: | 766717 | | | | |
| Date Sampled: | 11/23/2020 12:34 | Date Received: | 11/24/2020 | Date Reported: | 1/28/2021 |

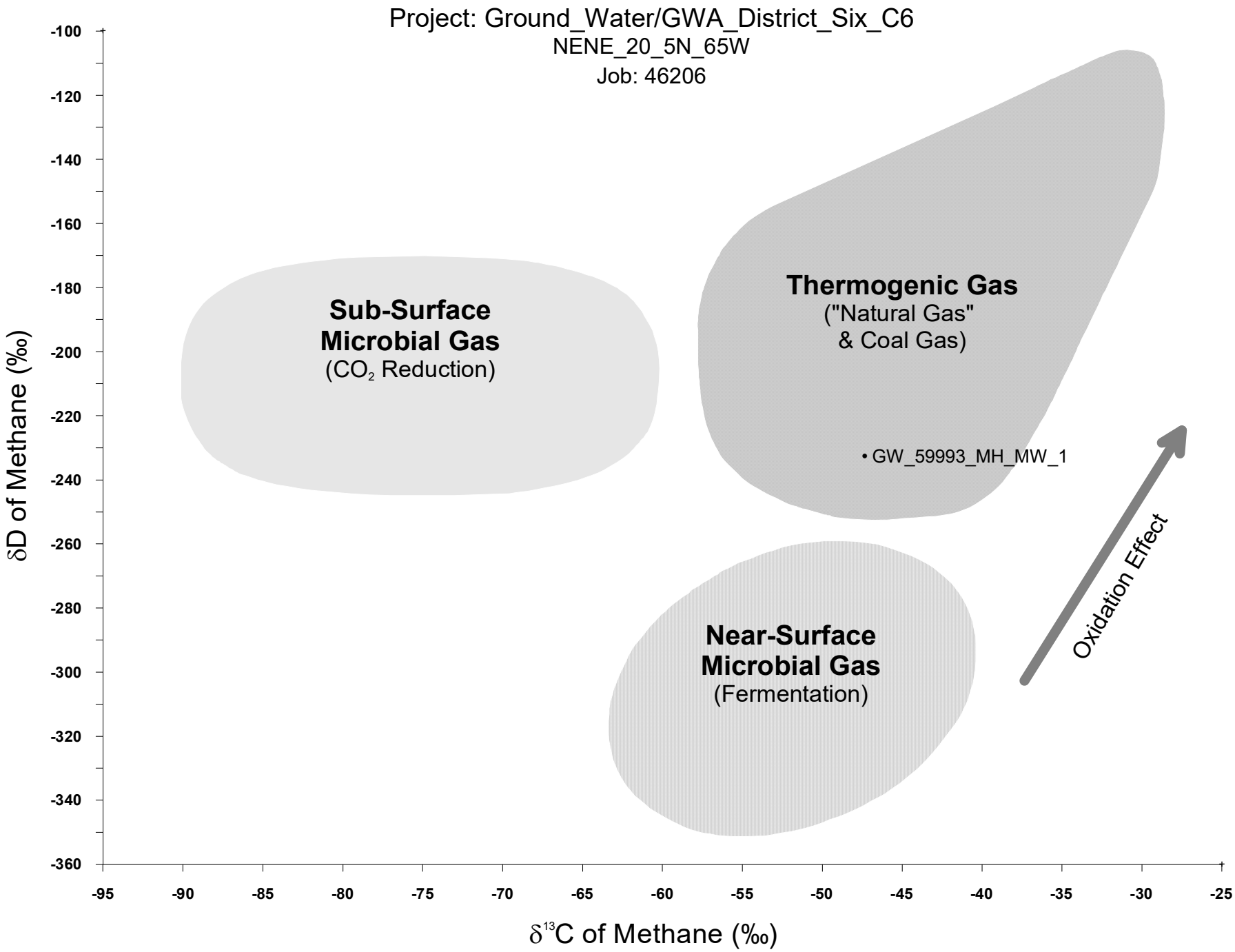
| Component | Chemical mol. % | $\delta^{13}C$ ‰ | $\delta D$ ‰ | $\delta^{18}O$ ‰ | Dissolved gas cc/L | Dissolved gas ppm |
|---|---|---|---|---|---|---|
| Carbon Monoxide | nd | | | | | |
| Helium | na | | | | | |
| Hydrogen | nd | | | | | |
| Argon | 1.01 | | | | | |
| Oxygen | 8.51 | | | | | |
| Nitrogen | 72.33 | | | | | |
| Carbon Dioxide | 4.88 | | | | | |
| Methane | 11.75 | -45.14 | -211.1 | | 3.5 | 2.3 |
| Ethane | 1.32 | -31.2 | | | 0.44 | 0.54 |
| Ethylene | nd | | | | | |
| Propane | 0.185 | -20.5 | | | 0.056 | 0.10 |
| Propylene | nd | | | | | |
| Iso-butane | 0.0120 | | | | | |
| N-butane | 0.0022 | | | | | |
| Iso-pentane | 0.0007 | | | | | |
| N-pentane | 0.0004 | | | | | |
| Hexanes + | 0.0007 | | | | | |

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.73
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Alloc-421 930, 88
Ethane and propane carbon isotope data obtained online via GC-C-IRMS.
Insufficient butane and pentane concentrations for isotopic analysis.

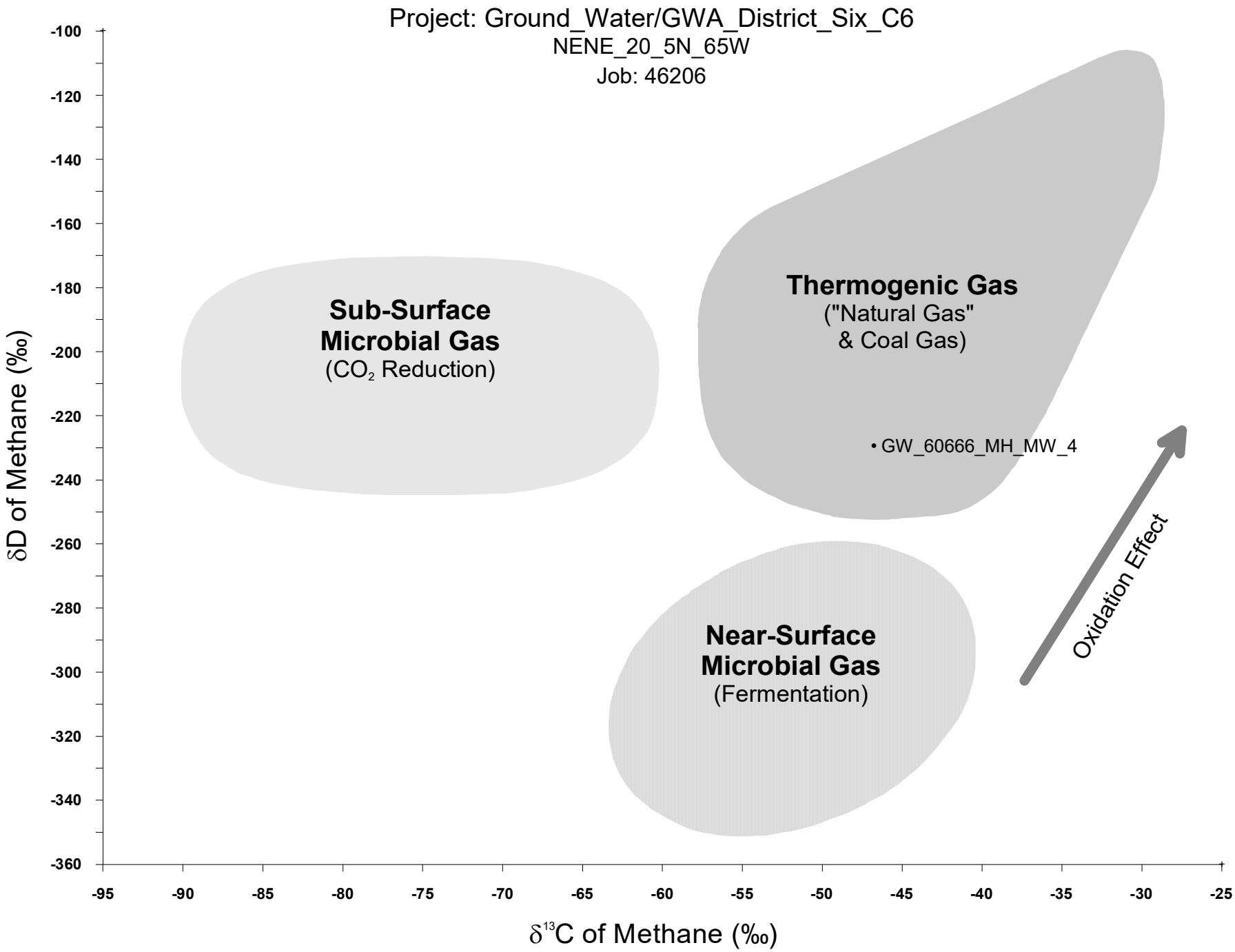
nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative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

**Attachment G**

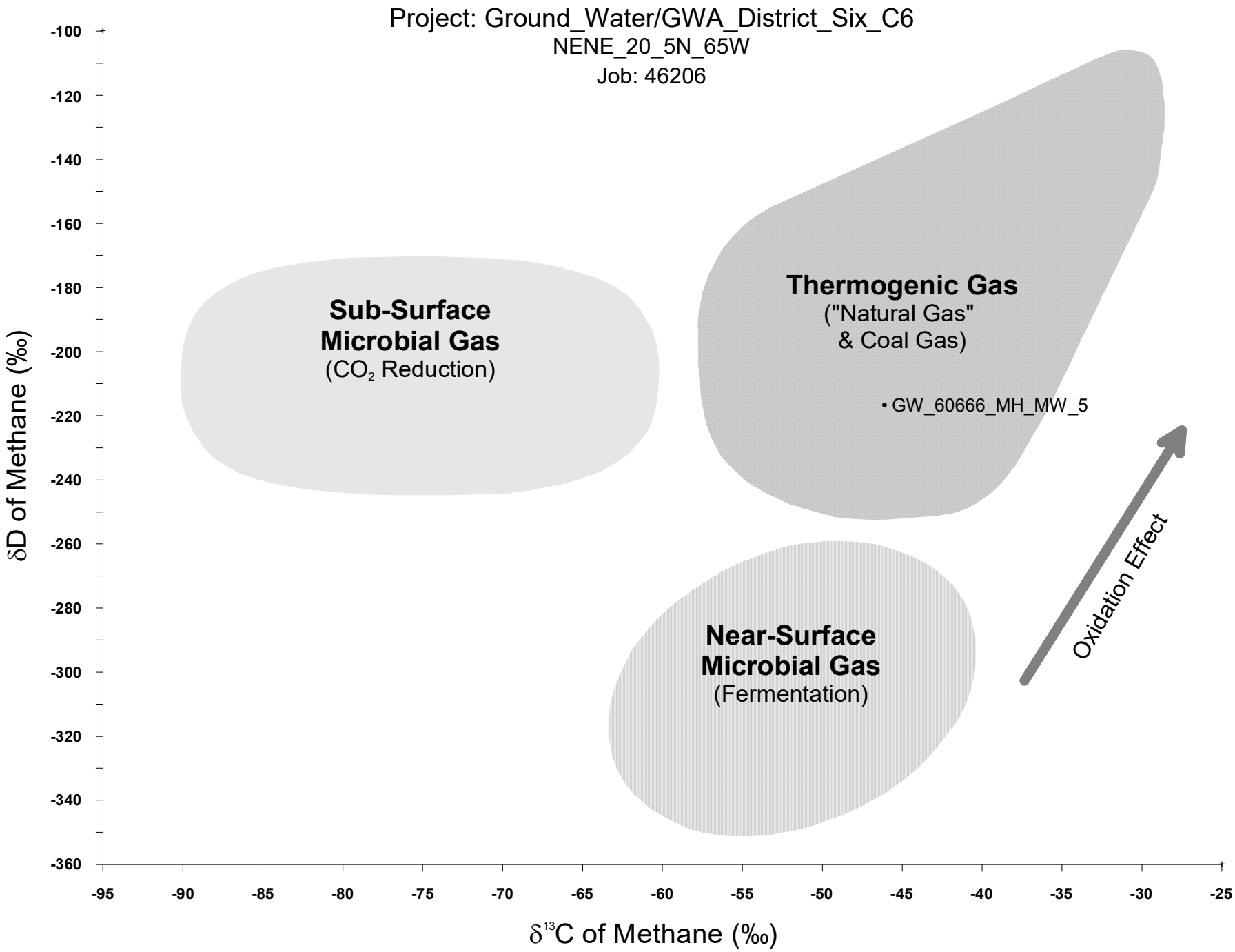
**2020 Q4 Groundwater Isotope Ratio Plots**



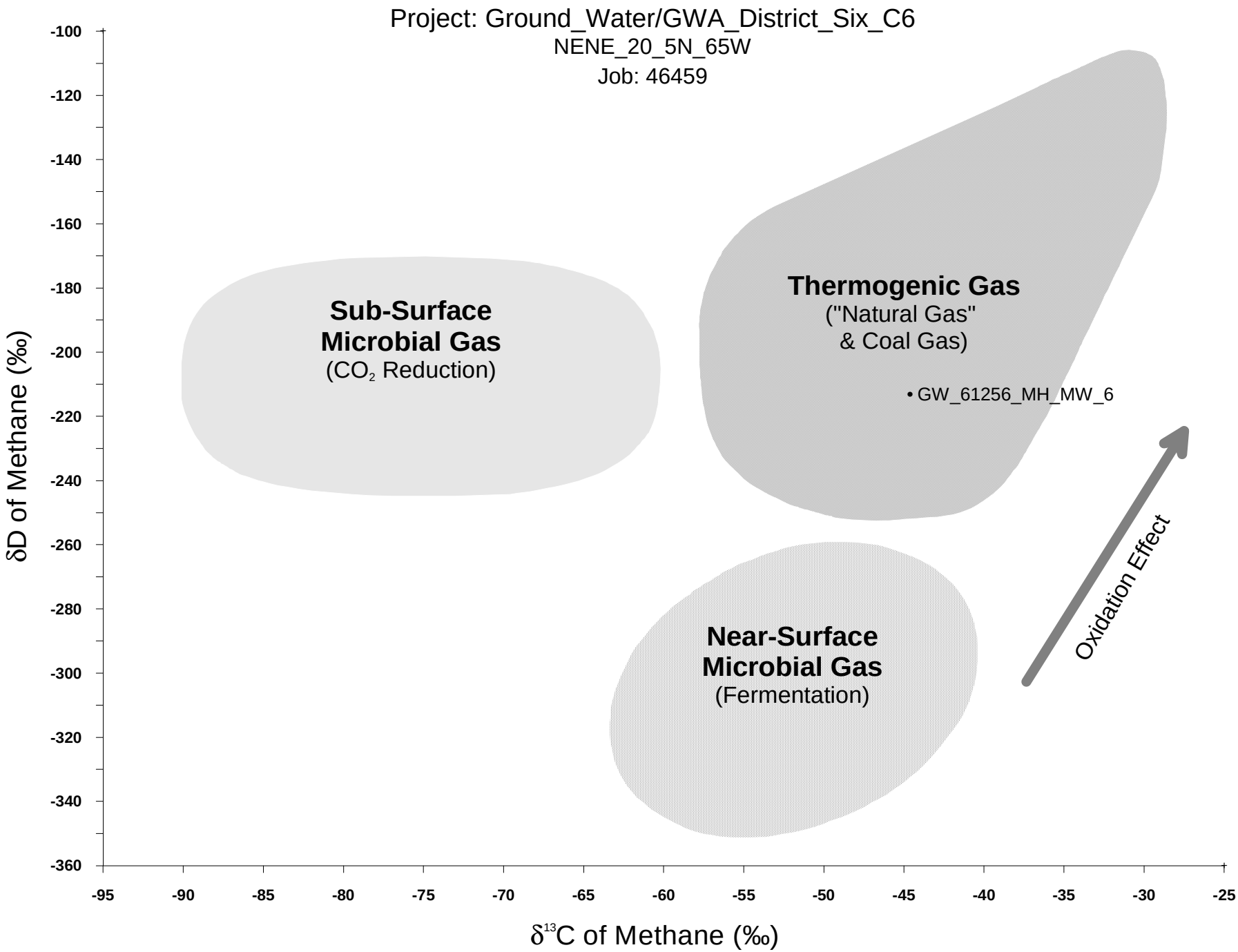

This plot is a visual representation of data and not intended to be an interpretation of results.



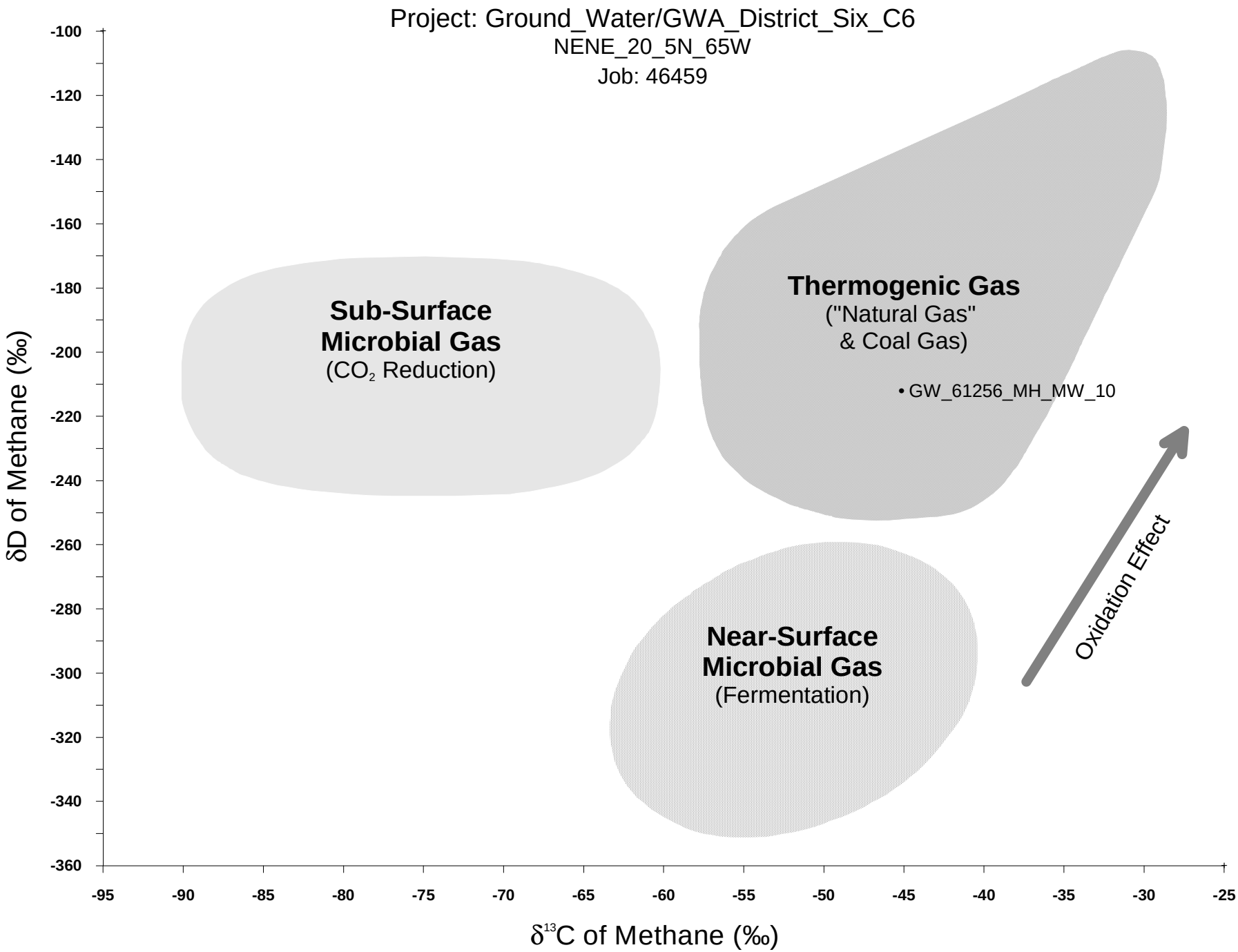

This plot is a visual representation of data and not intended to be an interpretation of results.




This plot is a visual representation of data and not intended to be an interpretation of results.




This plot is a visual representation of data and not intended to be an interpretation of results.




This plot is a visual representation of data and not intended to be an interpretation of results.

**Attachment H**

**District Six C6 Plug and Abandonment Workover Daily Summary**

# Daily Activity and Cost Summary

**Well Name: DISTRICT SIX C06**

| API | Surface Legal Location | Field Name | License # | State/Province | Well Configuration Type |
|---|---|---|---|---|---|
| 0512324211 | NENE 20 5N65W 6 PM | WATTENBERG | | COLORADO | VERTICAL |
| **Original KB Elevation (ft)** | **KB-Tubing Head Distance (ft)** | **Spud Date Production** | **Rig Release Date** | **PBTD (All) (ftKB)** | **Total Depth All (TVD) (ftKB)** |
| 4,682.00 | | 11/10/2006 00:00 | 11/15/2006 00:00 | Original Hole - 8,261.0 | |

| Job Category | Primary Job Type | Secondary Job Type | Status 1 |
|---|---|---|---|
| WORKOVER | P&A | Drilling - re-entry | COMPLETED |
| **AFE Number** | **Start Date** | **End Date** | **Total AFE Amount (Cost)** |
| | 6/14/2019 | 7/11/2019 | |

Objective

Summary

| Contractor | Rig Number \ Crew | Rig Type |
|---|---|---|
| RANGER ENERGY SERVICES | | Workover |

| Rpt # | Start Date | End Date | Day Total (Cost) | Cum To Date (Cost) | Summary |
|---|---|---|---|---|---|
| 1.0 | 6/14/2019 | 6/14/2019 | 4,853.00 | 4,853.00 | MIRU W/O RIG AND SUPPORT EQUIP MAKE READY FRO RENENTRY OPS AND SDFN |
| 2.0 | 6/15/2019 | 6/15/2019 | 7,218.00 | 12,071.00 | AOL; HSM/JSA; CHECK PRESSURE SICP=0PSI SURFACE CSG=5PSI; R/U P/S TALLY DRILL COLLARS (6) AND 2.875 N80 TBG; M/U BHA 3BLADE 3.75" BIT AND DRILL COLLARS (3 1/8") TAG TOC @ 3' AND DRILLOUT EOT @ 349' P/U OFF TOC AND CIRC CLEAN; LAYDOWN 5JTS (EOT @ 218') SECURE WELL AND SD TILL MONDAY |
| 3.0 | 6/17/2019 | 6/17/2019 | 6,489.00 | 18,560.00 | AOL; HSM/JSA; CHECK PRESSURES (SICP=0PSI SITP=0PSI,SISCP=15PSI/BDI); TIH 4JTS; R/U P/S; TAG TOC @ 349'; BEGIN TO DRILLOUT CEMENT; EOT @ 1089' STOP DRTILLING OUT TIE PUMP INTO SURFACE CASING AD PRESSURE UPTO 500PSI PRESUURE BLEED OFF FORMM 500PSI TO 0PSI IN 2MINUTES; WOO; R/D P/S; AND POOH LAYING DOWN: EOT @ 777', RIG CREW MAKING ADJUSTMENTS TO BRAKES SECURE WELL AND EQUIP; SDFN |
| 4.0 | 6/18/2019 | 6/18/2019 | 5,230.00 | 23,790.00 | AOL; HSM/JSA;; CHECK PRESSURES SICP=0PSI, SITP=0PSI,SISCP=8PSI BDI; CONTINUE TO POOH LAYING DOWN TBG AND COLLARS; OOH; R/D RIG FLOOR N/D BOPS & WELLHEAD, R/U 8 5/8 LARKIN FLANGE; R/U CASING JACK; WORK 4.5 CSG FROMM 80K TO 200K IN ATTEMPT TO PULL CASING SLIPS; SLIPS OOH; R/D CASING JACK;; N/U 7 1/16 5K RIG BOPS AND SECURE WELL WHILE WAITING FOR TOOLS AND EQUIP FOR CASING WASH OVER TO AOL; KLX BOPS AND ANNULAR AOL; N/D RIG BOPS; N/U KLX 9" 5K BOPS AND ANNULAR; R/U WORK FLOOR; SPOT TRAILERS AND MAKE READY TO WASH OVER CASING & SDFN |
| 5.0 | 6/19/2019 | 6/19/2019 | 6,694.50 | 30,484.50 | AOL; HSM/JSA; R/U P/S AND DUEL DEADMEN; M/U XO, 7 3/8 WASH PIPE & WAVY BOTTOM SHOE; RIH TAG TOC @ 3' BEGIN TO WASH OVER 4.5 CSG; ROP 6' PER HR; END OF SHOE @ 38' POOH TO INSPECT WEAR AND CHANGE OUT BHA FOR CROWN STYLE SHOE;RIH TAG TOC @ 38' BEGIN TO WASH OVER; MAKE ADJUSTMENTS TO DEADMEN LINES/STIFFARMS; POOH AND SECURE WELL/EQUIP & SDFN |
| 6.0 | 6/20/2019 | 6/20/2019 | 6,856.00 | 37,340.50 | AOL; HSM/JSA; CHECK PRESSURES SICP/SISCP=25PSI (BDI); RIH TAG ON TOP OF 4.5 WORK WASH PIPE OVER TOP OF; CONT TO RIH TAG TOC @ 41'; BEGIN TO WASH DOWN; SWIVLE TORQED UP AND WRAPPED HOSES/DEADMEN LINES; MAKE ADJUSTMENTS TO DEADMEN AND ADD EXTRA SUPPORT TO LINES ABOVE TBG BOARD; CONT TO WASH OVER; HYDRAULIC CONNECTION ON SWIVEL BEGIN TO LEAK; P/U OFF OF AND REPAIR HYDRAULIC LEAK; RETURN TO WASHING OVER 4.5CSG TAG TOC @ 42'; ADDITIONAL HYDRAULIC LEAK EMERGED ON SWIVEL POOH LAYING DOWN 1JT WASH PIPE AND REPAIR HYDRAULIC LEAKS ON SWIVEL; P/U 1JT WASH PIPE AND RIH TAG TOC @ 42' AND CONTINUE TO WASH OVER; END OF WAS H PIPE @ 58' POOH TO SECURE WELL AND INSPECT BHA (NORMAL WEAR); OOH SECURE WELL & EQUIP CHANGE OUT CROWN STYLE SHOE FOR WAVY BOTTOM & SDFN |
| 7.0 | 6/21/2019 | 6/21/2019 | 6,533.00 | 43,873.50 | AOL; HSM/JSA; SICP/SISCP=22PSI (BDI); OPEN WELL; WORK 7 3/8 WASH PIPE OVER TOP OF 4.5 CSG RIH; TAG TOC @ 58' BEGIN TO WASH OVER 4.5 CSG, PUMPING 1BPM @ 200PSI RETURNING 1BPM WITH FINE METAL SHAVINGS (20%) AND FINE TO COARSE CEMENT (80%); END OF WASH PIPE @ 72'(CBL SHOW CSG COLLAR @ THIS DEPTH); RACK SWIVEL BACK TO DERRICK AND POOH 1 STAND OF WASH PIPE INSPECT WAVY BOTTOM SHOE FOR EXCESSIVE WEAR; OOH SHOE SHOWS SIGNS OF EXCESSIVE WEAR ON LEADING EDGE ; BREAK DOWN BHA AND STAND BACK WASH PIPE; SECURE WELL AND EQUIP AND SDFN |
| 8.0 | 6/22/2019 | 6/22/2019 | 6,694.50 | 50,568.00 | AOL; HSM/JSA; SICP/SISCP=7PSI (BDI); OPEN WELL ATTEMPT OT RUN STAND IN HOLE UNABLE TO GET DOWN TAG 8' HIGH; LAY DOWN 1JT WASH PIPE; R/U P/S; AND RIH TAG TRASH @ 64'; BEGIN TO WASH DOWN DEBRIS WASH AWAY TAG SOLID @ 73' IH;L CONTINUE TO WASH OVER CSG; RETURN FINE MEATAL SHAVINGS AND FINE TO COARSE CEMENT; CIRC CLEAN ; END OF WASH PIPE @ 83'; POOH LAYING DOWN; CHANGE OUT WAVY BOTTOM SHOE FOR DRAG SHOE; SECURE WELL AND SDFN |

# Daily Activity and Cost Summary

**Well Name: DISTRICT SIX C06**

| API | Surface Legal Location | Field Name | License # | State/Province | Well Configuration Type |
|---|---|---|---|---|---|
| 0512324211 | NENE 20 5N65W 6 PM | WATTENBERG | | COLORADO | VERTICAL |
| **Original KB Elevation (ft)** | **KB-Tubing Head Distance (ft)** | **Spud Date Production** | **Rig Release Date** | **PBTD (All) (ftKB)** | **Total Depth All (TVD) (ftKB)** |
| 4,682.00 | | 11/10/2006 00:00 | 11/15/2006 00:00 | Original Hole - 8,261.0 | |

| Rpt # | Start Date | End Date | Day Total (Cost) | Cum To Date (Cost) | Summary |
|---|---|---|---|---|---|
| 9.0 | 6/23/2019 | 6/23/2019 | 6,210.00 | 56,778.00 | AOL; HSM/JSA; SICP/SISCP=3.5PSI (BDI); M/U WASH PIPE AND DRAG SHOE; RIH TAG TOC @ 83' AND BEGIN WASH OVER 4.5 CSG, END OF WASH PIPE @ 93'; P/U OFF TOC AND UP RATES AND CIRC CLEAN; POOH LAYING DOWN WASH PIPE; OOH INSPECT SHOE (NORMAL WEAR STILL HAS CUTTING EDGE); PULL/HAUL OFF WATER FROM WORK TANK AND MAKE READY FOR HYDROVAC IN AM (BACK OF TANK FULL OF CUTTINGS) SECURE WELL AND EQUIP AND SDFN |
| 10.0 | 6/24/2019 | 6/24/2019 | 7,179.00 | 63,957.00 | AOL;HSM/JSA; SICP/SISCP=0PSI; HYDROVAC AOL CLEAN OUT CEMENT AND CUTTINGS FROM RIG TANK; PREFORM SAFETY STAND DOWN DISCUSS PROPER HAND PLACEMENT AND COMMUNICATION; P/U JT OF WASH PIPE ATTEMPT TO M/U BHA ( FLAT BOTTOM) UANBLE TO MA/U INSPECT THREADS PIN END ON WASH PIPE CRACKED LAYDOWN AND REPLACE THREADS ON SHOE DAMAGED, LAYDOWN SHOE P/U WAVY BOTTOM SHOE M/U BAH AND RIH TAG TOC @ 93' BEGIN TO WASH OVER CSG; END OF WASH PIPE @ 98'; NOTICE WATER @ SURFACE FROM AROUND SURFACE CASING P/U CIRC CLEAN; BEGIN DIGGING OUT SURFACE IN ATTEMPT TO FIND HOLE IN SURFACE; DUG DOWN 5' (TO CEMENT) UNABLE TO FIND LEAK WATER STILL SEEPING TO SURFACE WHILE PUMPING; POOH TO SECURE WELL; BREAK FIRST CONNECTION; 4.5 CSG INSID E WASH PIPE; RIH TAG TOC/CSG; R/D P/S; R/U ELEVATORS (7 3/8) POOH; STRIP WASH PIPE OVER CSG; CHANGE OUT ELEVATORS (4.5) PULL CSG FROM WASH PIPE (75') DISCOVER 1.25" TBG WRAPPED AROUND 4.5CSG (APPROX 30'+/-); LAYDOWN 4.5; R/U 7 3/8 ELEVATORS LAYDOWN WASHPIPE AND SECURE WELL AND EQUIP; SDFN |
| 11.0 | 6/25/2019 | 6/25/2019 | 10,246.16 | 74,203.16 | AOL;HSM/JSA; BREAK DOW N STAND OF 4.5 CSG LAID DOWN PREVIOUS DAY MOVE OFF TO EDGE OF LOCATION; WOO; M/U 7 3/8 SKIRTED HOG NOSE MILL WITH FLAT 3' BOTTOM SHOE; RIH TAG TOF @ 75' NO TAGS PRIOR; POOH BREAKDOWN BHA; M/U 8 5/8 PACKER RIH TAG TOF P/U 1' SET PACKER PULLING 40K INTO; TIE PUMP INTO SURFACE CSG AND PRESSURE UP TO 500 PSI FLUID @ SURFACE FROM AROUND SURFACE CSG; RELEASE PACKER PULL UP HOLE 10; SET PACKER PULL INTO TENSION PRESSURE UP LEAK AND SURAFACE AGAIN; LAYDOWN 1JT; SET PACKER @ 60' ATTEMPT TO PRESSURE UP UNABLE TO PRESSURE MOVE PACKER UP HOLE TO 53' AND PRESSURE UPTO 600PSI (DOWN SURFACE) ; PRESSURE HOLDING HOLE IN CSG BENEATH 53' IH; RELEASE PACKER POOH; WOO; MAKE READY TO RIH AND PUMP CEMENT IN AM SECURE WELL AND EQUIP; SDFN |
| 12.0 | 6/26/2019 | 6/26/2019 | 3,095.00 | 77,298.16 | AOL;HSM/JSA; CHECK PRESSURES SICP/SISCP=0PSI; OPEN WELL RIH EOT @ 60.15'; SPOT AND R/U CEMENTERS; HSM/JSA; P/T LINES TO 2500PSI (GOOD TEST) PUMP 20SKS GNEAT W/2%; POOH LAYING DOWN SECURE BLINDS RAM PUMP 2..5BBL SPACER AND SQUEEZE CEMENT INTO HOLE IN 85/8 CSG;CLEAN OUT EQUIP TO DIRTY TANK; SWI AND SDFN |
| 13.0 | 6/27/2019 | 6/27/2019 | 3,163.00 | 80,461.16 | AOL; HSM/ JSAS CHECK PRESSURES SISCP=0PSI =SLIGHT BLOW WHEN OPENING VALVE (BDI); M/U 7 7/8 BIT BIT SUB AND PU 4 3/4 COLLAR INS PECT CEMNET SAMPLE SAMPLE APPEERS TO BE STILL TO MOIST ("GREEN") IN CENTER WOO, SDFN AND ALLOW CEMENT TO FURTHER HARDEN OVER NIGHT |
| 14.0 | 6/28/2019 | 6/28/2019 | 4,962.00 | 85,423.16 | AOL;HSM/JSA, CHECK PRESSURES SISCP= 0PSI W/ SLIGHT BLOW (BDI) OPON OPENING VALVE; OPEN WELL RIH W/ 7 7/8 BI AND 4 3/4 DRILL COLLARS TAG TOC @ 55' AND BEGIN TO DRILL OUT TO TOF (4.5 CSG); TAG TOP OF CSG @ 78'; CIRC CLEAN AND POOH; OOH ; CHANGE OVER HANDLING EQUIP TO 2.875; M/U 8 5/8 PACKER AND RIH EOT @ 67.7'; PULL TENSION INTO PACKER (45K) PUMP DOWN SURFACE TO FILL/ ENSURE PACKER HOLDING/ UNABLETO PRESSURE UP NO RETURNS FOR TBG ASSUME PACKER TO BE HOLDING; SECURE WELL AND INSTAL GAUGES ON TBG AND SURFACE VALVES; SDFN |
| 15.0 | 6/29/2019 | 6/29/2019 | 9,289.36 | 94,712.52 | AOL; HSM/JSA; CHECK PRESSURES STIP= 0PSI (STATIC) SISCP=0PSI ( ON VACUUM); CALL OFFICE; UNSET PACKER POOH ; ESTABLISH INJECTION RATES PUMPING .5BPM @ 10PSI, 1BPM @ 35PSI, 2BPM @ 45PSI: P/U AND RIH W 2.875 TBG (OPEN ENDED); EOT @ 60.66'; SPOT AN R/U CE (RANGER); HSM/JSA; P/T LINES TO 1000PSI (GOOD TEST); BEGIN PUMPING 20SKS GNEAT WITH 2%; 20SKS AWAY POOH W/ TBG; SECURE BLIND RAMS DISPLACE 2.8BBL FW DOWN SURFACE CASING & SQUEEZE; SECURE WELL; WASH UP EQUIP TO DIRTY TANK; RDMO CE AND SHUT DOWN FOR REMAINDER OF WEEKEND |

# Daily Activity and Cost Summary

**Well Name: DISTRICT SIX C06**

| API | Surface Legal Location | Field Name | License # | State/Province | Well Configuration Type |
|---|---|---|---|---|---|
| 0512324211 | NENE 20 5N65W 6 PM | WATTENBERG | | COLORADO | VERTICAL |
| **Original KB Elevation (ft)** | **KB-Tubing Head Distance (ft)** | **Spud Date Production** | **Rig Release Date** | **PBTD (All) (ftKB)** | **Total Depth All (TVD) (ftKB)** |
| 4,682.00 | | 11/10/2006 00:00 | 11/15/2006 00:00 | Original Hole - 8,261.0 | |

| Rpt # | Start Date | End Date | Day Total (Cost) | Cum To Date (Cost) | Summary |
|---|---|---|---|---|---|
| 16.0 | 7/1/2019 | 7/1/2019 | 6,210.00 | 100,922.52 | AOL;HSM/JSA; CHECK PRESSUES SISCP=6PSI (BDI); OPEN WELL OBSERVE BUBBLES BREAKING SURFACE EVERY 5MIN +/-, R/U P/S; P/U D/C AND M/U 7 7/8 (TRICONE) AND RIH TAG TOC @ 46' AND BEGIN DRILLING OUT @ 1.5BPM RETURN FINE TO CORSE CEMENT; TAG TOP OF 4.5 CSG @ 78' P/U OFF OF AND CIRC CLEAN; POOH LAYING DOWN COLLARS; OOH; SECURE WELL; B/D BHA; RACK SWIVEL BACK TO DERRICK; PERFORM INJECTION TEST ABLE TO INJECT AS FOLLOWS .5 BPM @ 80PSI, 1BPM @ 170-190PSI, 2BPM @ 250-280PSI; SECURE WELL AND EQUIP; SDFN |
| 17.0 | 7/2/2019 | 7/2/2019 | 8,030.80 | 108,953.32 | AOL; HSM; CHECK PRESSURES SISCP=15PSI (BDI); WOC; CE AOL; MIRU CE (OTEX) AND FW TRANSPORT (MILLER); HSM/JSA; P/T LINES TO 2400PSI (GOOD TEST); OPEN WELL AND PUMP 10BBL CaCl2, FOLLOWED BY 3BBL FW SPACER, 10BBL SMS (WELL BLOCK); 10BBL FW SPACER ; 100SKS CONTROL SET C 13.5 # CEMENT; WASH UP EQUIP; SQUEEZE CEMENT INTO HOLES PUMPING .5 BBL (3TIMES) CONTINUE TO SQUEEZE CEMNENT INTO HOLE PUMPING .25BBL (5 TIMES) PRESRING UP TO 600PSI PRESSURE BLEEDING BACK TO 140PSI AND HOLDING EACH TIME; CONTIUE TO SQUEEZE CEMENT ONLY ABLE TO .1BBL (X2) EACH TIME BEFORE PRESSURING UP TO 600PSI; .3BBL OF CEMENT LEFT IN CSG PRESSURE UPTO 800PSI AND SWI RDMO CE AND SDFN |
| 18.0 | 7/3/2019 | 7/3/2019 | 1,538.00 | 110,491.32 | AOL; HSM/JSA; CHECK PRESSURE SISCP=50PSI (BDI); OPEN WELL TOP OFF CSG W/ FW MONITOR WELL FOR MIGRATION (BUBBLES); OBSERVE "BUBBLES" BREAKING SURFACE OF FW P/U 2.875 TBG RIH TAG TOC @ 43.66'; POOH ; CLOSE AND SEUCRE BLIND RAMS; ATTEMPT TO GET INJECTION RATE .5BPM @ 70PSI BEGIN WALKING UPTO 1BPM PRESSURE SPIKED TO 1000PSI; AND PARTED SURFACE CSG @ BOTTOM OF COLLAR (8 5/8) BENEATH SURFACE HEAD; R/D RIG FLOOR; REMOVE BOPS; WAIT ON WELDER; WELDER AOL; HSM/AOL (HOTWORK PERMIT) ASSIGN FIRE WATCHMEN; BEGIN TO CUT/DRESS CSG; INSTALL WELD ON COLLAR; ALLOW TO COOL; M/U SURFACE HEAD, LARKIN FLANGE, N/U BOPS, R/U WORK FLOOR & P/S; M/U 7 7/8 TRICONE BIT, BIT SUB & 4 3/4 COLLARS; RIH TAG TOC @ 43' AND DRILLOUT TO 64.35' CIRC CLEAN; POOH LAYING DOWN; OOH BREAK DOWN BHA; FILL CSG; COSE AND SECURE BLINDRAMS AND PREFORM INJECTION TEST PUMPING .5BPM @ 50-100PSI, 1BPM @ 200-250PSI, 2BPM @ 300-400PSI; SECURE WELL AND EQUIP; SDFN |
| 19.0 | 7/4/2019 | 7/4/2019 | 1,538.00 | 112,029.32 | AOL; HSM, CHECK PRESSURES; SISCP= 0PSI (ON VACUUM), C&J & MILLER FW TRK AOL; MIRU CE EQUIP; HSM/JSA; P/T LINE TO 2000PSI (5MIN); BEGIN TO PUMP DOWN SURFACE CSG; PUMPING .5BBL GEL SPACER; FOLOWED BY 26SKS (6BBL) RDP BLEND; DISPLACE RDP PUMING 2.8BBL FW/GEL; SWI; WASH UP EQUIP TO DIRTY TANK; RDMO; SHUT DOWN TILL WEEKEND |
| 20.0 | 7/6/2019 | 7/6/2019 | 1,538.00 | 113,567.32 | AOL; HSM/JSA; CHECK PRESSURES SISCP= 13PSI (BDI); OPEN WELL, WATCH FOR MIGRATION (BUBBLES), NO MIGRATION OBSERVED; SECURE WELL AND INSTALL DIGITAL GAUGE AND MONITOR FOR 1HR; AFTER 1HR SISCP=0PSI, RIH WITH 6 3/4 TRICONE BIT & 4 3/4 DC'S, TAG TOC @ 43' DRILLING OUT RDP TO 60.58', SECURE WELL AND INSTALL DIGITAL GAUGE AND MONITOR FOR 1 HR; AFTER 1HR SISCP= 0PSI; CONTINUE TO DRILLOUT RDP/CEMENT TO TOP OF 4.5CSG TAG TOP OF 4.5 CSG @ 76' P/U OFF OF AND CIRC WELLBORE CLEAN; POOH LAYING DOWN; OOH BREAK DOWN BHA; FILL CSG; SECURE WELL INSTALL GAUGE AND MONITOR PRESSURE SISCP= 0PSI AFTER 30MIN; SECURE WELL AND EQUIP; SDFN |
| 21.0 | 7/7/2019 | 7/7/2019 | 104,385.94 | 217,953.26 | AOL; HSM/JSA; CHECK PESSURE SISCP=0PSI AND OBSERVED NO MIGRATION @ SURFACE; WOO/WOC; C&J CE & MILLER FW TRUCK AOL; MIRU CE; HSM/JSA; P/T LINES TO 1500PSI FOR 5 MIN; P/U & RIH 2 JTS 0F 2.375 TBG (EOT @ 61.23'); PUMP 1BBL FW FLUSH FOLLOWED BY 30SKS MIGRASEAL CEMENT (14.6PPG 1.38 YIELD); POOH W/ TBG; SECURE WELL; WASH UP EQUIP TO DIRTY TANK; APPLY 100PSI TO TOP CEMENT/CSG; SWI; RDMO CE & SDFN |

# Daily Activity and Cost Summary

**Well Name: DISTRICT SIX C06**

| API | Surface Legal Location | Field Name | License # | State/Province | Well Configuration Type |
|---|---|---|---|---|---|
| 0512324211 | NENE 20 5N65W 6 PM | WATTENBERG | | COLORADO | VERTICAL |
| **Original KB Elevation (ft)** | **KB-Tubing Head Distance (ft)** | **Spud Date Production** | **Rig Release Date** | **PBTD (All) (ftKB)** | **Total Depth All (TVD) (ftKB)** |
| 4,682.00 | | 11/10/2006 00:00 | 11/15/2006 00:00 | Original Hole - 8,261.0 | |

| Rpt # | Start Date | End Date | Day Total (Cost) | Cum To Date (Cost) | Summary |
|---|---|---|---|---|---|
| 22.0 | 7/8/2019 | 7/8/2019 | 1,538.00 | 219,491.26 | AOL; HSM/JSA;; CHECK PRESSURES SISCP=0PSI;; NO MIGRATION; R/D WORK FLOOR; N/D BOPS; R/D PUMP IRON; RECEIVE CALL FROM OFFICE; BEGIN TO MIRU BACK ONTO WELL; R/U PUMP IRON; N/U BOPS; R/U WORK FLOOR; SPOT AND R/U P/S; SPOT TBG/COLLAR TRAILERS; P/U-M/U 3.125 DC'S & 7 7/8 BLADE BIT, RIH TAG TOC @ 7.5' (KB) AND BEGIN TO DRILLOUT PUMPING 1.5BPM @ 0-100PSI RETURNING SAME WITH FINE TO COARSE CEMENT IN RETURNS AND MINIMAL METAL SHAVINGS; TAG TOP OF 4.5 CSG @ 76.35' LIGHTLY FEATHERING DOWN ONTO; P/U OFF OF AND UP PUMP RATE (2.5BPM @ 0-200PSI) AND CIRC CLEAN; RETURNS CLEAN POOH; LAYING DWON 2 DC'S OOH SECURE WELL, B/D BHA AND M/U 3 3/4 TRICONE BIT; INSTALL CRYSTAL GAUGE AND MONITOR PRESSURE S FOR 30MIN AFTER 30MIN SISCP=0PSI; SECURE EQUIP AND SDFN |
| 23.0 | 7/9/2019 | 7/9/2019 | 5,155.00 | 224,646.26 | DRIVE TO LOC. CHECK PRESSURES SICSP=0 OPEN WELL OBSERVED NO MIGRATION P/U BHA 3 3/4 TRYCONE BIT RUN IN THE HOLE WITH 5- 2 7/8 DRILL COLLARS TAG CEMENT @76FT BREAK CIRCULATION GET INTO 4.5 CASING WATCH RETURNS CLOSELY PUMPING @ 2.5 BBLS . PUMP PSI 100-300 DRILLED 20FT. OF CEMENT THEN IT FELL THROUGH CONTINUE RIH.TAGGED AGAIN @251 FT. STARTING PUMPING AGAIN @2.5 BBLS PUMP PSI 100-300 DRILLED 2 FT. FELL THROUGH AGAIN CONTINUE RIH. TO TAG RETAINER @1085FT. PICK OFF OF IT 5FT. CIRCULATE HOLE CLEAN LAY DOWN 2 JOINTS RACK POWER SWIVEL BACK TRIP OUT TO DERRICK 7 STANDS LAY DOWN 5 DRILL COLLARS GO BACK IN THE HOLE WITH MULE SHOE TAG RETAINER @ 1085' LAYING DOWN 1JT EOT @ 1069'; MIRU RANGER CE AND RANGER FW TRUCK; P/T LINES TO 1500PSI FOR FIVE MIN. AND PUMP 15SKS (15.8# 1.15 YIELD) G NEAT W/2% CaCl2 DISPLACE WITH 4.66BBLS OF FW R/D CE AND WASH UP TO DIRTY TANK; POOH LAYING DOWN/ STANDING BACK 14 STANDS TO DERRICK; OOH; SECURE WELL AND EQUIP; SDFN |
| 24.0 | 7/10/2019 | 7/10/2019 | 4,479.20 | 229,125.46 | DRIVE TO LOC. HAVE JSA SAFETY MEETING CHECK SISP =0 NO MIGRATION RIH.TAGGED TOC AT 880FT. COME OUT LAYING DOWN ALL BUT 4 JTS. 129 FT R/U CE (C&J) AND MILLER FRESH WATER HAVE SAFETY MEETING LOAD LINES AND PRESSURE TEST TO 2042 PSI HOLD FOR 5 MIN. TEST WAS GOOD START PUMPING FRESH WATER FOLLOWED BY 24 SX @14.6 PPG (1.38 YEILD) TRIP OUT THE REMAINING OF THE JTS. PUMP 1SX@14.6 PPG (1.38 YEILD) TOP OFF (0.1BBLS) WASH UP R/D CE (C&J) JOB COMPLETE SECURE WELL AND EQUIPMENT SDFN |
| 25.0 | 7/11/2019 | 7/11/2019 | 1,538.00 | 230,663.46 | AOL; HSM/JSA; CHECK PRESSURES SISCP=13PSI (BDI) TOP OFF WITH FW; MONITOR FOR MIGRATION; NO MIGRATION ;N/D BOPS AND CROSS OVER FLANGE; INSTALL 8 5/8 NIGHT CAP AND RDMO |
| 26.0 | 7/18/2019 | 7/18/2019 | 2,000.00 | 232,663.46 | DISTRICT SIX C06 WAS CUT AND CAPPED ON 7/18/2019. ATP VERIFIED CEMENT AT SURFACE, DIG DOWN AROUND WELLHEAD TO 8', CUT AND CAP WELL. |