



November 12, 2015

Mr. David Blake Ford  
Encana Oil & Gas (USA) Inc.  
3601 Stagecoach Road North  
Longmont, CO 80504

**RE:               Site Assessment and Groundwater Sampling Report – November 2015**  
**Harsch #31-27**  
**API # 05-013-06553**  
**NW ¼ NE ¼ SEC.27 T2N R69W 6PM**  
**LAT./LONG.: 40.114543/-105.100403**  
**Boulder County, Colorado**

Dear Mr. Ford,

Eagle Environmental Consulting, Inc. (EAGLE) is pleased to present this Site Assessment and Groundwater Sampling Report – November 2015 to Encana Oil & Gas (USA) (Encana) for the above referenced site. The data included within this report covers work completed at the site from August 2014 through November 2015.

## **1.0     SITE BACKGROUND**

In August 2014, a surface release was observed approximately 40 feet north, of the Harsch-62N69W/27NWNE Tank Battery due to a flow line release. Encana sub-contractors completed potholing activities at the location to determine the source of the Harsch #31-27 flow line release. During investigation activities on August 12, 2014, an Encana representative collected a grab groundwater sample (HARSCH31-27-FLOWLINE), from within a pothole located in the area of the suspected flow line release. The HARSCH31-27-FLOWLINE groundwater sample was submitted to ESC Lab Sciences (ESC) located in Mt. Juliet, Tennessee, for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) following Environmental Protection Agency (EPA) Method 8260B.

Based on laboratory analytical results, groundwater sample, HARSCH31-27-FLOWLINE, contained a concentration of benzene exceeding the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 regulatory limit of 5 micrograms per liter (µg/L) with a concentration of 500 µg/L.

On August 21, 2014, Encana sub-contractors completed excavation activities on site to expose the Harsch #31-27 flow line, located parallel to the lease road on the north side of the Harsch-62N69W/27NWNE Tank Battery. Excavation activities were completed to determine the exact location of the Harsch #31-27 flow line release. During excavation activities, petroleum hydrocarbon staining or odor was not observed within the soil beneath the site. Throughout the Harsch #31-27 flow line release investigation, a vacuum truck was present on site recovering groundwater observed within potholes/excavations. EAGLE completed soil boring/temporary monitoring well installation activities north of the Harsch-62N69W/27NWNE Tank Battery to define any potential dissolved or adsorbed petroleum hydrocarbon impacts beneath the site.

## **2.0 SITE DESCRIPTION**

The Harsch #31-27 Well and the Harsch-62N69W/27NWNE Tank Battery site are located within the Northwest Quarter of the Northeast Quarter of Section 27, Township 2 North, Range 69 West of the 6<sup>th</sup> Prime Meridian. The site contains one 335 barrel (bbl) condensate storage tank and one, 110 bbl produced water tank. The Harsch #31-27 Well is located at latitude: 40.114543 and longitude -105.100403, and the Harsch-62N69W/27NWNE Tank Battery is located at latitude: 40.11453 and longitude -105.10039, in Boulder County, Colorado. A site location map is presented as Figure 1.

### **2.1 Site Hydrogeology**

Based on field observations, the site lithology beneath the site is a silty clay from the surface to approximately 4-5 feet below ground surface (bgs). The silty clay is underlain by a fine-grained sandy clay to approximately 10 feet bgs. Groundwater beneath the site ranges from approximately 2 to 5 feet bgs with historic highs observed at 0.25 feet bgs during the May 2015 groundwater sampling event.

An irrigation ditch is located east of the site, which may influence groundwater elevations and flow direction, seasonally beneath the site. Groundwater flow direction varies from northeast, observed during the February, August, and November groundwater sampling events, and west-southwest, observed during the May groundwater sampling event.

## **3.0 TEMPORARY MONITORING WELL INSTALLATION ACTIVITIES**

### **3.1 Field Work Preparation and Planning**

The Utility Notification Center of Colorado (UNCC) was called at least 48 hours in advance of soil boring activities to confirm no unmarked utilities or other obstacles were present within the proposed soil boring locations. Tier II facility owners were also contacted to confirm the necessary buried utility notifications were completed. Each boring location was also cleared to a depth of approximately 5 feet bgs, prior to the advancement of any proposed soil boring, with a pothole or “daylighting” rig, to ensure no unmarked utilities were present beneath the boring location. Prior to any subsurface disturbance activities, a Ground Disturbance Form was completed by Encana and EAGLE.

#### **3.2.1 Temporary Monitoring Well Installation Activities – August 2014**

On August 21, 2014, EAGLE mobilized to the site to complete temporary monitoring well installation activities. EAGLE utilized a hand auger to complete soil boring/temporary well installation at the site. Seven soil borings were advanced within the landscaping located north of the Harsch-62N69W/27NWNE Tank Battery. Each soil boring was completed into 1-inch temporary groundwater monitoring wells (TMW-01 through TMW-07).

Each soil boring was logged in the field according to soil type, soil classification, moisture content, staining, and volatile organic compound (VOC) concentrations. Temporary monitoring wells TMW-01 through TMW-07 were completed with 1-inch, schedule 40, polyvinyl chloride (PVC) pipe to an approximate depth of 6 feet bgs. Five feet of 0.020 slot, 2-inch, PVC screen was placed at the bottom of the borings followed by approximately 1 foot of PVC riser. The well annulus was backfilled with 10/20 silica sand to the top of the screened section. Following grab groundwater sampling activities, temporary monitoring wells TMW-01 through TMW-07 were removed and the soil borings were abandoned with 10/20 silica sand and bentonite to grade. A site map illustrating temporary well locations is presented as

Figure 2. Soil boring logs/temporary monitoring well completion diagrams are included in Attachment A.

### **3.2.2 Soil Screening Procedures**

During temporary monitoring well installation activities, 6-inch soil samples were collected continuously throughout the soil boring via a hand auger equipped with a 6-inch sample barrel. Each soil sample was placed in a sealable plastic bag for VOC headspace analysis. The bag was sealed, labeled, and allowed to volatilize for approximately five to ten minutes. After volatilization, the bagged sample was perforated with the probe of a calibrated field portable photoionization detector (PID), using a 10.6 electron volt (eV) lamp, to measure the organic vapor concentration within the headspace. Organic vapor concentrations were recorded in parts per million by volume (ppm-v) for each sample. Overall, the observed PID values ranged from 0.0 ppm-v to 9.1 ppm-v (TMW-01 @ 0.5-1' bgs). Per Encana's request, no soil samples were submitted for laboratory analysis.

### **3.2.3 Groundwater Sampling Activities**

Per Encana's request, grab groundwater samples were collected from temporary monitoring wells TMW-01 through TMW-07 on August 21, 2014. The grab groundwater samples were collected from each monitoring well in 40 milliliter (mL) amber vials using the peristaltic pump and flow cell with a pumping rate of no more than 500 milliliters per min (mL/min). Prior to groundwater sample collection, the following field parameters were recorded:

- initial depth to groundwater using an interface probe capable of measuring the depth to groundwater or product to an accuracy of 0.01 feet;

The groundwater samples were submitted to ESC located in Mt. Juliet, Tennessee, for analysis of BTEX following EPA Method 8260B. A representative from ESC picked up the groundwater samples under proper chain-of custody (COC) procedures for shipment to the laboratory, and the samples were received within quality assurance/quality control (QA/QC) parameters.

The August 21, 2014 depth to groundwater measurements were correlated to ground surface. Due to groundwater elevations not being static, an accurate groundwater flow direction could not be determined for the site. Groundwater was encountered in all temporary monitoring wells (TMW-01 through TMW-07) at depth to water readings ranging from 1.60 feet bgs in TMW-02 to 5.91 feet bgs in TMW-07.

### **3.2.4 Groundwater Analytical Results**

Based on laboratory analytical results, the grab groundwater samples collected from temporary monitoring wells, TMW-01 through TMW-07, did not contain concentrations of BTEX exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits.

Groundwater analytical results are summarized in Table 1 and presented in Figure 3. The laboratory analytical reports are included in Attachment B.

### **3.3 Additional Temporary Monitoring Well Installation Activities – September 2014**

On September 9, 2014, EAGLE mobilized to the site to complete additional temporary monitoring well installation activities. A Geoprobe 7822DT direct push rig was utilized to complete soil boring/temporary well installations at the site. One soil boring (TMW-08) was located within the release area and the other

soil boring (TMW-09) was located upgradient of the release area. Each soil boring was completed into 1-inch temporary groundwater monitoring wells (TMW-08 and TMW-09).

Both soil borings were logged in the field according to soil type, soil classification, moisture content, staining, and VOC concentrations. Following advancement, each soil boring was completed with 1-inch, schedule 40 PVC pipe to an approximate depth of 10 feet bgs. Eight feet of 0.020 slot, 1-inch, PVC screen was placed at the bottom of the borings followed by approximately 2-4 feet of 1-inch PVC riser. The well annulus was backfilled with 10/20 silica sand to the top of the screened section, followed by a bentonite seal to the surface. Soil boring logs/temporary monitoring well completion diagrams are included in Attachment A.

### **3.3.1 Soil Sampling Procedures**

During temporary soil boring advancement, soil samples were collected continuously within 5-foot, plastic sample liners. The samples within the plastic liners were separated in 2.5 foot intervals for soil identification and analysis. A portion from each interval was placed in a sealable plastic bag, for VOC headspace analysis utilizing a field calibrated PID. Each bag was sealed, labeled, and allowed to volatilize for approximately five to ten minutes. The other portion of each sample from the same interval was placed in laboratory supplied, 4-ounce, glass jars and sealed for laboratory analysis. After volatilization, the bagged sample was perforated with the probe of the calibrated field portable PID, using a 10.6 electron eV lamp, to measure the organic vapor concentration within the headspace. Organic vapor concentrations were recorded in ppm-v for each sample. Photoionization detector values did not exceed 0.0 ppm-v within soil borings, TWM-08 and TMW-09.

The soil sample collected from soil boring TMW-08, TMW-08@5-7.5', was submitted to ESC located in Mt. Juliet, Tennessee, for laboratory analysis of BTEX and total petroleum hydrocarbons- gasoline range organics (TPH-GRO) following EPA Methods 8021/8015, and total petroleum hydrocarbons – diesel range organics (TPH-DRO) following modified EPA Method 3546. In addition, soil sample TMW-08@5-7.5' was analyzed for the metals and the 13 polycyclic aromatic hydrocarbons (PAHs) listed in COGCC Table 910-1 following EPA Methods 6010B and 3060A/7196A, and 8270C-SIM, respectively, as well as pH following EPA Method 9045D, and specific conductance following EPA Method 9050A. Sodium adsorption ratio (SAR) was also calculated by the laboratory. Per Encana's request, a soil sample was not submitted for laboratory analysis from TMW-09.

In addition to the soil sample collected from soil boring TMW-08, ten baseline arsenic soil samples (AS-01 through AS-10) were collected upgradient of the Harsch-62N69W/27NWNE Tank Battery at approximately 0-0.5 feet bgs. The baseline arsenic soil samples, AS-01 through AS-10, were submitted to ESC located in Mt. Juliet, Tennessee, for laboratory analysis of total arsenic following EPA Method 6010B.

Following soil sample collection, EAGLE recorded spatial locations of soil borings TMW-01 through TMW-09, as well as soil samples AS-01 through AS-10 using a Trimble GeoXT 6000 series instrument. Their locations included on the current site map.

A representative from ESC picked up the soil samples under proper COC procedures for shipment to the laboratory and were received within QA/QC parameters.

### **3.3.2 Soil Analytical Results**

Based on laboratory analytical results, the soil sample collected from soil boring TMW-08 did not contain concentrations of BTEX, TPH-GRO, or TPH-DRO exceeding their respective COGCC Table 910-1



regulatory limits or laboratory reporting limits. In addition, soil sample, TMW-08@5-7.5', did not contain PAHs, specific conductance, pH, or SAR concentrations/values exceeding their respective COGCC Table 910-1 regulatory limits and/or laboratory reporting limits.

Arsenic concentrations were observed in soil samples TMW-08@5-7.5' and AS-01 through AS-10 exceeding the COGCC Table 910-1 regulatory limit of 0.39 milligrams per kilogram (mg/kg), with concentrations ranging from 2.9 mg/kg (AS-04@0-0.5') to 5.5 mg/kg (AS-10@0-0.5').

Arsenic is naturally occurring in some geologic environments within Colorado due to the weathering and erosion of bedrock and soil. The Colorado Department of Public Health and Environment (CDPHE) developed a Risk Management Guidance Document for Evaluating Arsenic Concentrations in Soil, which was revised in June 2014. During the study conducted by the EPA, the average concentration of arsenic observed in Colorado soils was 11 mg/kg. Based on the average concentration of arsenic listed in the guidance document provided by the CDPHE and the arsenic concentrations observed within the soil samples collected beneath the site, arsenic is not a chemical of concern to the site at this time.

Soil analytical results are summarized in Table 2, Table 2A, Table 2B. and presented in Figure 4. Laboratory analytical reports are included in Attachment B.

### **3.3.3 Groundwater Sampling Activities**

Per Encana's request, grab groundwater samples were collected from temporary monitoring wells TMW-08 and TMW-09 on September 10, 2014. The grab groundwater samples were collected in 40 mL amber vials using the peristaltic pump and flow cell with a pumping rate of no more than 500 mL/min. Prior to groundwater sample collection, the following field parameters were recorded:

- initial depth to groundwater using an interface probe capable of measuring the depth to groundwater or product to an accuracy of 0.01 feet;

The groundwater samples were submitted to ESC located in Mt. Juliet, Tennessee, for analysis of BTEX following EPA Method 8260B. A representative from ESC picked up the groundwater samples under proper COC procedures for shipment to the laboratory, and the samples were received within QA/QC parameters.

Following grab groundwater sampling activities, temporary monitoring wells TMW-08 and TMW-09 were removed and the soil borings were abandoned with 10/20 silica sand and bentonite to grade.

### **3.3.4 Groundwater Analytical Results**

Based on laboratory analytical results, the grab groundwater sample collected from temporary monitoring well TMW-08 contained a concentration of benzene exceeding the COGCC Table 910-1 regulatory limit of 5 µg/L with a concentration of 7.2 µg/L. The grab groundwater sample collected from temporary monitoring well TMW-09 did not contain concentrations of BTEX exceeding their COGCC Table 910-1 regulatory limits or laboratory reporting limits.

Groundwater analytical results are summarized in Table 1 and presented in Figure 3. The laboratory analytical report is included in Attachment B.

## **4.0 MONITORING WELL INSTALLATION ACTIVITIES**

### **4.1 Field Work Preparation and Planning**

The UNCC was called at least 48 hours in advance of drilling activities to confirm no unmarked utilities or other obstacles were present within the proposed soil boring locations. Tier II facility owners were also contacted to confirm the necessary buried utility notifications were completed. Each boring location was also cleared to a depth of approximately 5 feet bgs, prior to the advancement of any proposed soil boring, with a pothole or “daylighting” rig, to ensure no unmarked utilities were present beneath the boring location. Prior to any subsurface disturbance activities, a Ground Disturbance Form was completed by Encana and EAGLE.

### **4.2 Monitoring Well Installation Activities**

On January 21, 2015, EAGLE mobilized to the site to complete the installation of monitoring wells MW-01 through MW-05. A Geoprobe 7822DT direct push rig was utilized to complete soil boring/monitoring well installations at the site. Each soil boring was advanced to an approximate total depth of 12 feet bgs and completed into a 2-inch groundwater monitoring well (MW-01 through MW-05).

The soil borings were logged in the field according to soil type, soil classification, moisture content, staining, and VOC concentrations. Following advancement, each soil boring was completed with 2-inch, schedule 40 PVC pipe to an approximate depth of 12 feet bgs. Ten feet of 0.020 slot, 2-inch, PVC screen was placed at the bottom of the borings followed by approximately 2-6 feet of 2-inch PVC riser. The well annulus was backfilled with 10/20 silica sand to the top of the screened section, followed by a bentonite seal to the surface. Monitoring wells MW-01 through MW-04 were completed at the surface as PVC stickups with steeling riser casings. Monitoring well MW-05 was completed at the surface with a 8-inch, traffic rated, steel flush mount. Soil boring logs/monitoring well completion diagrams are included in Attachment A. Colorado Division of Water Resources (DWR) notice of intent and well construction well permits are included in Attachment C.

### **4.3 Soil Sampling Procedures**

During soil boring advancement, soil samples were collected continuously within 5-foot, plastic sample liners. The samples within the plastic liners were separated in 2.5 foot intervals for soil identification and analysis. A portion from each interval was placed in a sealable plastic bag, for VOC headspace analysis utilizing a field calibrated PID. Each bag was sealed, labeled, and allowed to volatilize for approximately five to ten minutes. The other portion of each sample from the same interval was placed in laboratory supplied, 4-ounce, glass jars and sealed for laboratory analysis. After volatilization, the bagged sample was perforated with the probe of the calibrated field portable PID, using a 10.6 electron eV lamp, to measure the organic vapor concentration within the headspace. Organic vapor concentrations were recorded in ppm-v for each sample. Overall, the observed PID values ranged from 3.3 ppm-v (MW-04@7.5-10' bgs) to 19.6 ppm-v (MW-03@7.5-10' bgs).

Soil samples MW-01@5-7.5', MW-02@5-7.5', MW-03@5-7.5', MW-04@5-7.5', and MW-05@5-7.5' were submitted to ESC located in Mt. Juliet, Tennessee, for laboratory analysis of BTEX and TPH-GRO following EPA Methods 8021/8015, and TPH-DRO following modified EPA Method 3546.

Following soil sample collection, EAGLE recorded spatial locations of monitoring wells MW-01 through MW-05 using a Trimble GeoXT 6000 series instrument. Their locations included on the current site map.

A representative from ESC picked up the soil samples under proper COC procedures for shipment to the laboratory and were received within QA/QC parameters.

#### **4.4 Soil Analytical Results**

Based on laboratory analytical results, the soil samples collected from monitoring wells MW-01 through MW-05 did not contain concentrations of BTEX, TPH-GRO, or TPH-DRO exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits.

Soil analytical results are summarized in Table 2, Table 2A, and Table 2B. A site map presenting soil sample locations is included as Figure 4. Laboratory analytical reports are included in Attachment B.

### **5.0 GROUNDWATER MONITORING ACTIVITIES**

#### **5.1 Groundwater Sampling Procedures**

Following monitoring well installation activities, monitoring wells MW-01 through MW-05 were developed and purged a minimum of six well volumes using a Geo Pump Series 1 peristaltic pump. In addition, EAGLE surveyed the top of casing (TOC) elevation for each monitoring well location for accurate groundwater elevations and flow direction interpretation.

Prior to groundwater sample collection, MW-01 through MW-05 were purged with a peristaltic pump and flow cell at a rate of no more than 500 mL/min. During purging activities, groundwater parameters were monitored for stabilization. Groundwater samples were collected in 40 mL amber vials once the parameters were observed stable, or following approximately 15 minutes of purging activities. Prior to groundwater sample collection, the following field parameters were recorded:

- initial depth to groundwater using an interface probe capable of measuring the depth to groundwater or product to an accuracy of 0.01 feet;
- dissolved oxygen (DO) concentrations, pH, temperature, specific conductance, and oxidation reduction potential (ORP) values using a YSI 556 Multimeter probe within a flow cell.

Following groundwater sample collection, the following field parameters were recorded:

- final depth to groundwater using an interface probe capable of measuring the depth to groundwater or product to an accuracy of 0.01 feet.

#### **5.2 Groundwater Analytical Results**

Groundwater samples were submitted to ESC for analysis of BTEX following EPA Method 8260B. A representative from ESC picked up the groundwater samples under proper COC procedures for shipment to the laboratory, and the samples were received within QA/QC parameters.

The following describes quarterly groundwater sampling activities completed at the site:

**February 5, 2015:**

Groundwater samples were collected from MW-01 through MW-05. Groundwater was encountered at relative groundwater elevations ranging from 86.16 feet in MW-01 to 92.85 feet in MW-04. Groundwater flow direction beneath the site was predominantly to the northeast with a calculated hydraulic gradient of 0.0128 feet per foot (ft./ft.) across the site (measured from MW-04 to MW-03).

***Groundwater Analytical Results***

Groundwater samples collected from MW-01 through MW-05 did not contain concentrations of BTEX exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits. Groundwater analytical results for the February 5, 2015 groundwater sampling event are presented in Figure 5 and summarized in Table 1.

**May 22, 2015:**

Groundwater samples were collected from MW-01 through MW-05. Groundwater was encountered at relative groundwater elevations ranging from 94.75 feet in MW-05 to 95.43 feet in MW-02. Groundwater elevations beneath the site increased approximately 3.91 feet compared to the February 5, 2015 groundwater sampling event. The groundwater flow direction beneath the site was predominantly to the west-southwest with a calculated hydraulic gradient of 0.0069 ft./ft. across the site (measured from MW-02 to MW-01).

***Groundwater Analytical Results***

Groundwater samples collected from MW-01 through MW-05 did not contain concentrations of BTEX exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits. Groundwater analytical results for the May 22, 2015 groundwater sampling event are presented in Figure 5A and summarized in Table 1.

**August 12, 2015:**

Groundwater samples were collected from MW-01 through MW-05. Groundwater was encountered at relative groundwater elevations ranging from 92.60 feet in MW-03 to 93.42 feet in MW-05. Groundwater elevations beneath the site decreased approximately 2.17 feet compared to the May 22, 2015 groundwater sampling event. The groundwater flow direction beneath the site was predominantly to the north-northeast with a calculated hydraulic gradient of 0.0125 ft./ft. across the site (measured from MW-05 to MW-02).

***Groundwater Analytical Results***

Groundwater samples collected from MW-01 through MW-05 did not contain concentrations of BTEX exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits. Groundwater analytical results for the August 12, 2015 groundwater sampling event are presented in Figure 5B and summarized in Table 1.

## **November 2, 2015:**

Groundwater samples were collected from MW-01 through MW-05. Groundwater was encountered at relative groundwater elevations ranging from 92.18 feet in MW-02 to 92.97 feet in MW-05. Groundwater elevations beneath the site decreased approximately 0.3 feet compared to the August 12, 2015 groundwater sampling event. The groundwater flow direction beneath the site was predominantly to the northeast with a calculated hydraulic gradient of 0.0128 ft./ft. across the site (measured from MW-04 to MW-03).

### ***Groundwater Analytical Results***

Groundwater samples collected from MW-01 through MW-05 did not contain concentrations of BTEX exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits.

A summary of groundwater elevation data is included as Table 3. Groundwater analytical results for the November 2, 2015 groundwater sampling event are presented in Figure 5C and summarized in Table 1. A site map presenting the November 2, 2015 groundwater elevations and flow direction is included as Figure 6. Groundwater laboratory analytical reports are included in Attachment B.

## **4.0 CONCLUSIONS**

Based on the information described above, EAGLE concludes the following:

- Groundwater sample, HARSCH31-27-FLOWLINE, collected on August 12, 2014 contained a concentration of benzene exceeding the COGCC Table 910-1 regulatory limit.
- The grab groundwater samples collected from temporary monitoring wells, TMW-01 through TMW-07, on August 21, 2014 did not contain concentrations of BTEX exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits.
- The soil sample collected from soil boring TMW-08 did not contain concentrations of BTEX, TPH-GRO, or TPH-DRO exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits.
- In addition, soil sample, TMW-08@5-7.5', did not contain PAHs, specific conductance, pH, or SAR concentrations/values exceeding their respective COGCC Table 910-1 regulatory limits and/or laboratory reporting limits.
- Based on the CDPHE Risk Management Guidance Document for Evaluating Arsenic Concentrations in Soil, the arsenic concentrations observed within soil samples, TMW-08@5-7.5' and AS-01 through AS-10 collected at 0-0.5 feet bgs are not a chemical of concern to the site at this time.
- The grab groundwater sample collected from temporary monitoring well TMW-08 on September 10, 2014 contained a concentration of benzene exceeding the COGCC Table 910-1 regulatory limit.

- The grab groundwater sample collected from temporary monitoring well TMW-09 on September 10, 2014 did not contain concentrations of BTEX exceeding their COGCC Table 910-1 regulatory limits or laboratory reporting limits.
- The soil samples collected from monitoring wells MW-01 through MW-05 did not contain concentrations of BTEX, TPH-GRO, or TPH-DRO exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits.
- The groundwater samples collected from monitoring wells MW-01 through MW-05 during the February 5, 2015, May 22, 2015, August 12, 2015, and November 2, 2015 groundwater sampling events did not contain concentrations of BTEX exceeding their respective COGCC Table 910-1 regulatory limits or laboratory reporting limits.
- Groundwater elevations beneath the site during the November 2, 2015 groundwater sampling event decreased approximately 0.3 feet compared to the August 12, 2015 groundwater sampling event.
- The groundwater flow direction beneath the site during the November 2, 2015 groundwater sampling event was predominantly to the northeast with a calculated hydraulic gradient of 0.0125 ft./ft. across the site (measured from MW-04 to MW-03).

## 5.0 RECOMMENDATIONS

- Discontinue quarterly groundwater sampling activities per COGCC approval and abandon monitoring wells MW-01 through MW-05 per Colorado DWR well abandonment guidelines.

EAGLE sincerely appreciates the opportunity to provide our services. If you have any questions or require further information, please contact me at (303) 433-0479.

Sincerely,

***EAGLE ENVIRONMENTAL CONSULTING, INC.***



Daniel Coloccia  
Project Scientist



Martin Eckert III  
Senior Project Manager

## **FIGURES**

**Figure 1: Site Location Map**

**Figure 2: Site Map**

**Figure 3: Temporary Monitoring Well Groundwater Sample Location Map**

**Figure 4: Soil Sample Location Map**

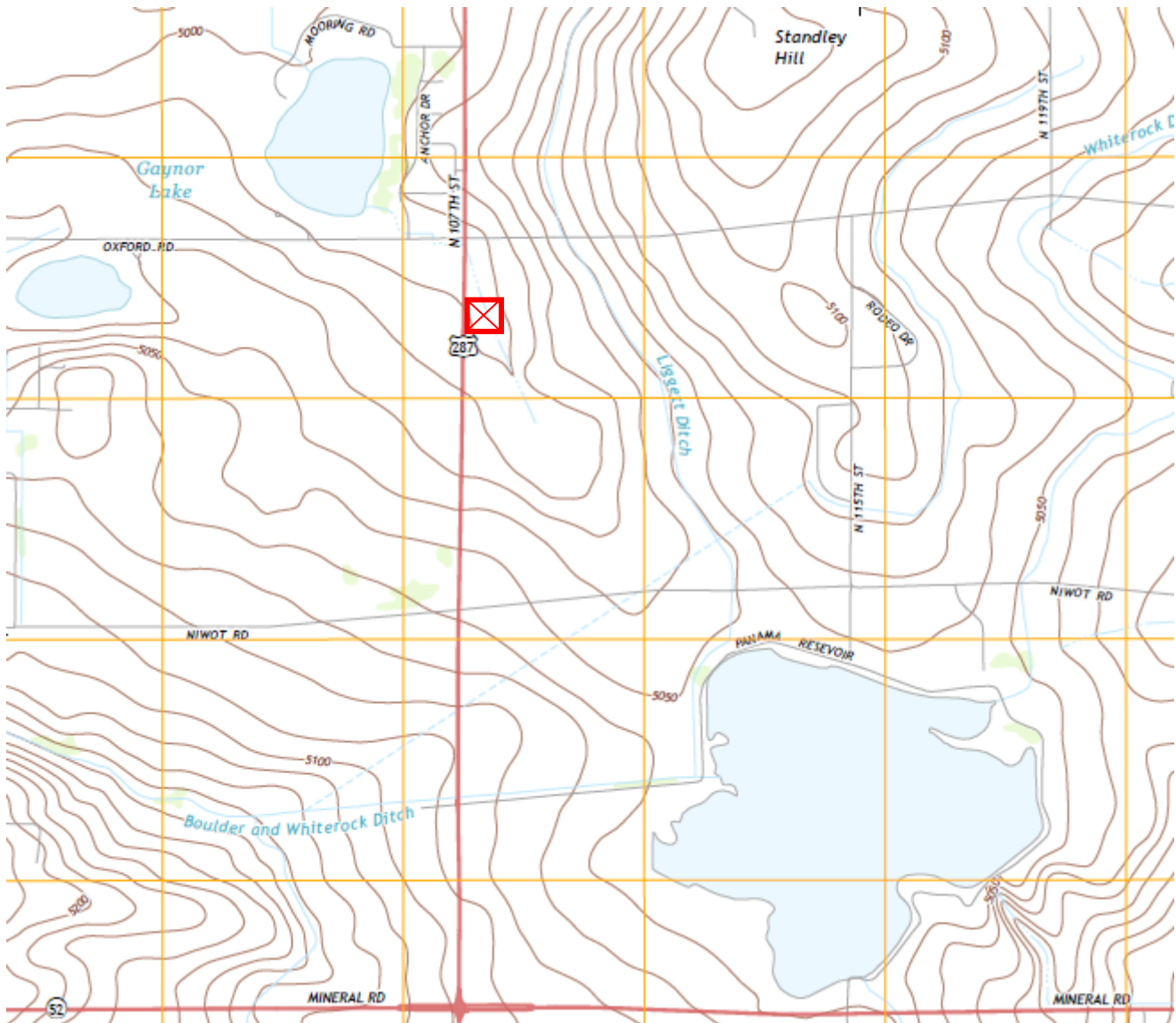
**Figure 5: Groundwater Sample Location Map (02/05/15)**

**Figure 5A: Groundwater Sample Location Map (05/22/15)**

**Figure 5B: Groundwater Sample Location Map (08/12/15)**

**Figure 5C: Groundwater Sample Location Map (11/02/15)**

**Figure 6: Groundwater Elevation Map (11/02/15)**



 APPROXIMATE LOCATION OF HARSCH-62N69W/27NWN TANK BATTERY

TOPOGRAPHIC MAP OBTAINED FROM LIBRE MAP PROJECT

ERIE, COLORADO QUADRANGLE UNITED STATES GEOLOGICAL SURVEY 7.5 MINUTE SERIES

**FIGURE 1**  
**SITE LOCATION MAP**  
**HARSCH #31-27**  
**NW 1/4 NE 1/4 SEC.27 T2N R69W 6PM**  
**LAT./LONG.: 40.114543/-105.100403**  
**BOULDER COUNTY, COLORADO**

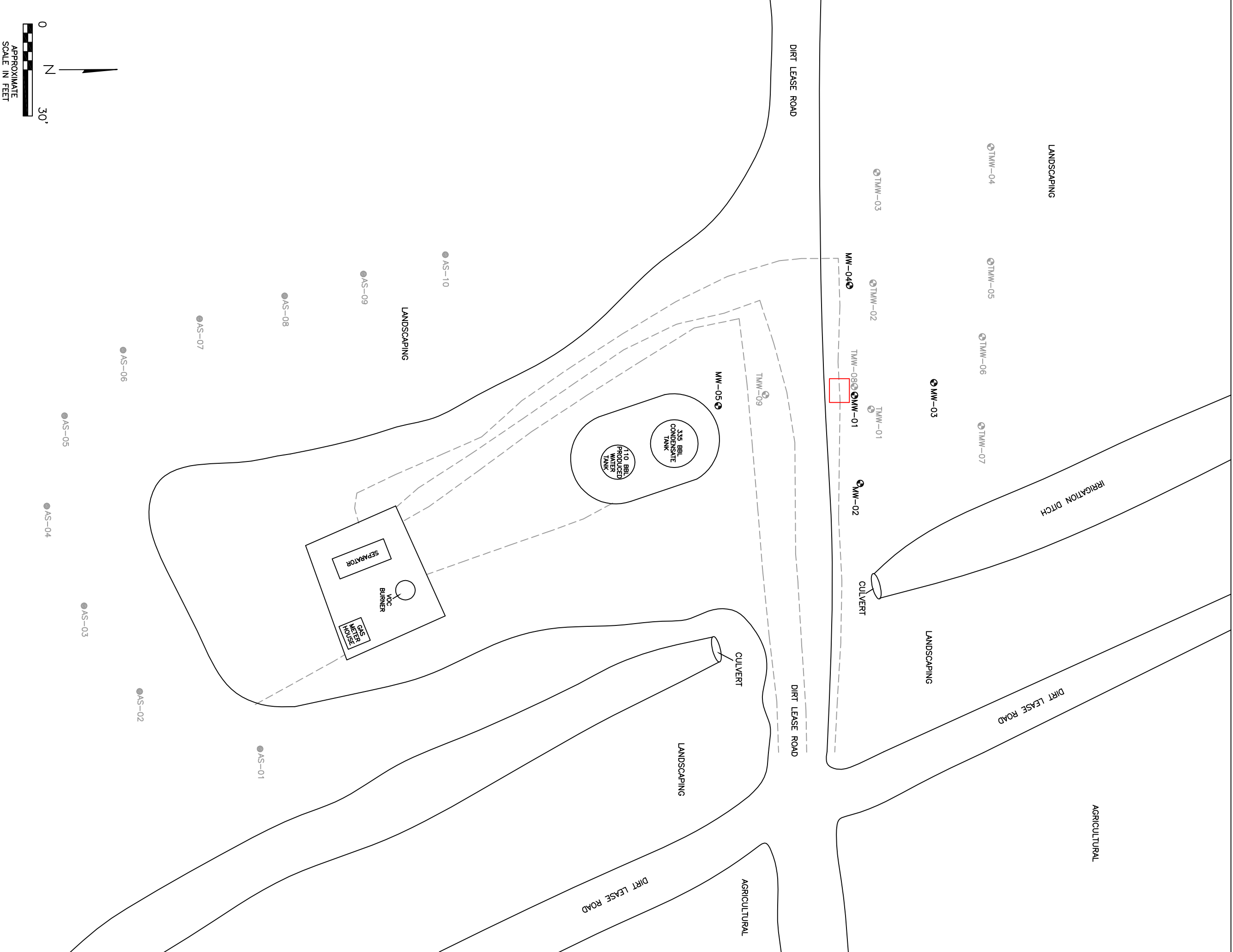


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DATE: 08/27/14





LEGEND

APPROXIMATE MONITORING WELL LOCATION

APPROXIMATE FLOW LINE RELEASE LOCATION

APPROXIMATE FLOW LINE LOCATION

APPROXIMATE ARSENIC SOIL SAMPLE LOCATION

APPROXIMATE TEMPORARY MONITORING WELL LOCATION

DATE: 10/16/15

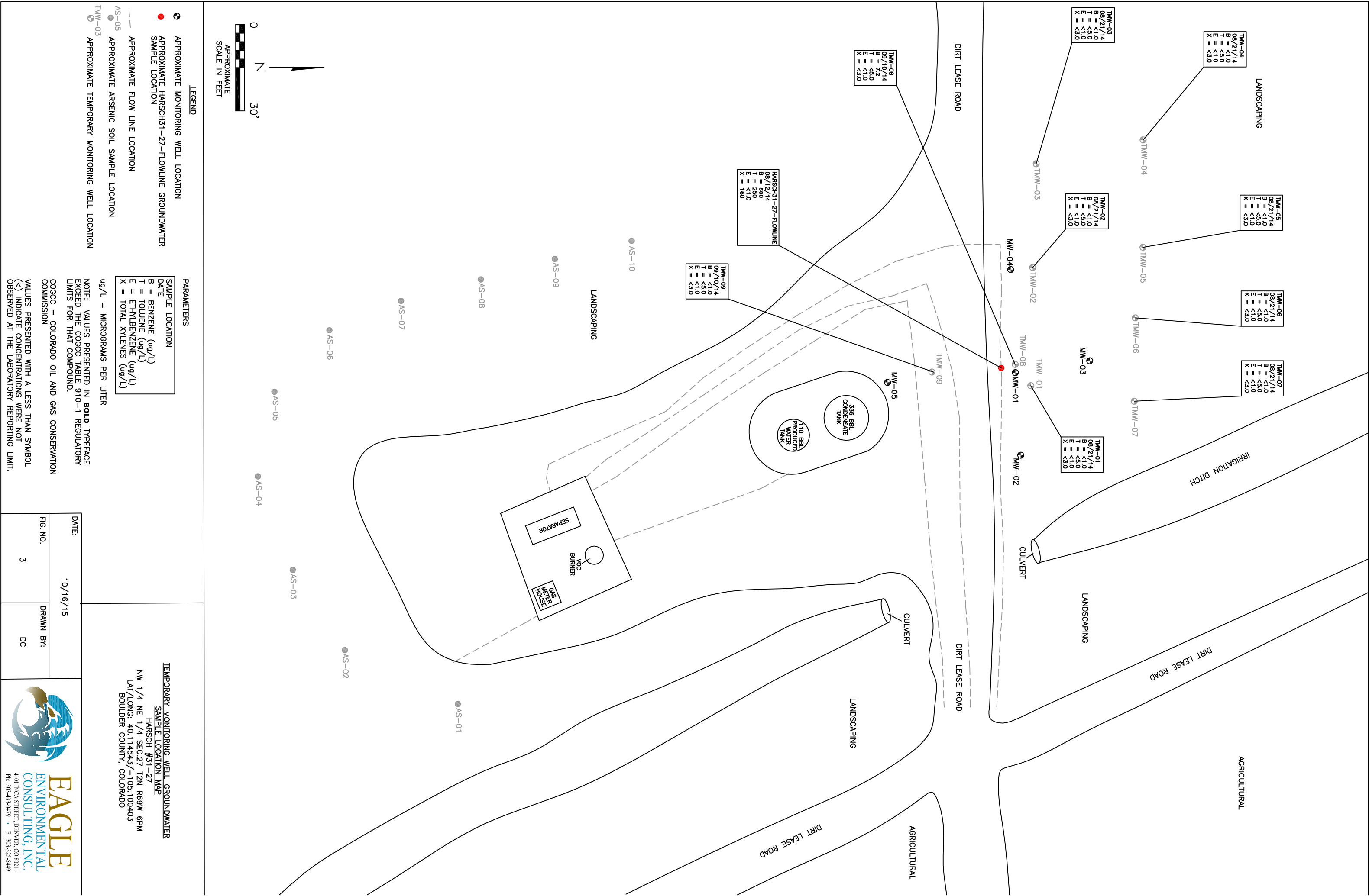
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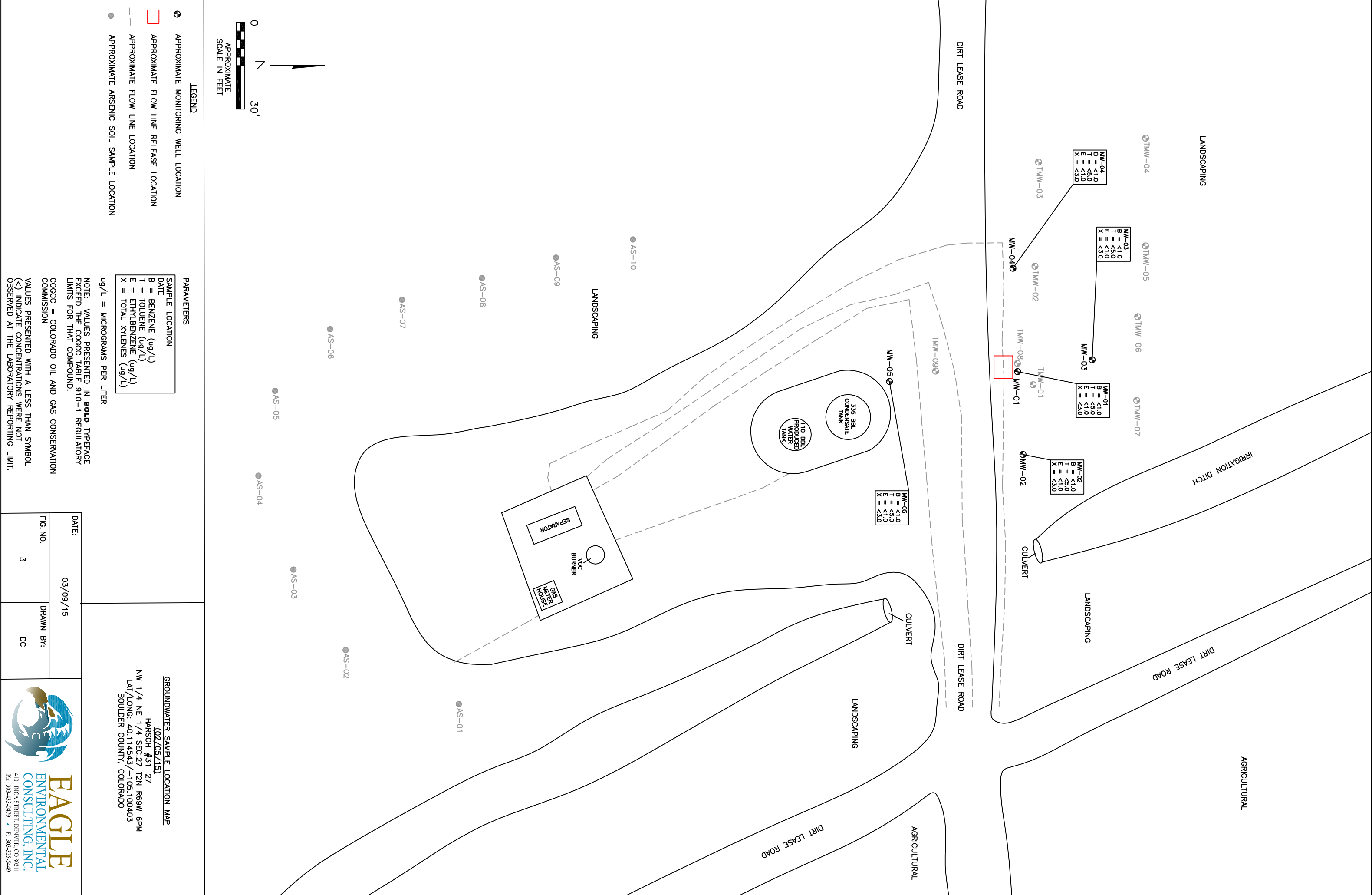
SITE MAP

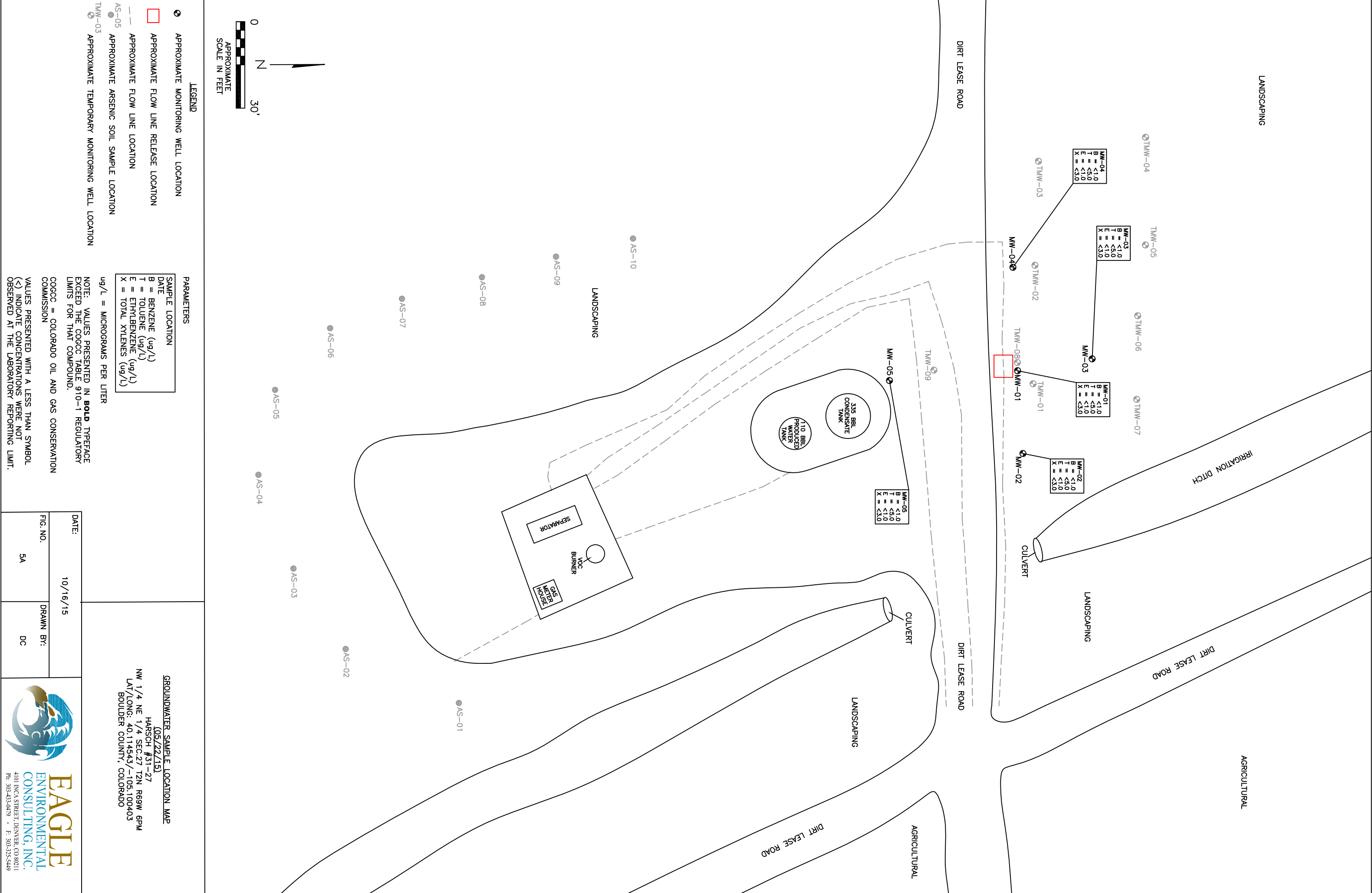
HARSCHE #31-27  
NW 1/4 NE 1/4 SEC.27 T2N R69W 6PM  
LAT/LONG: 40.114543/-105.100403  
BOULDER COUNTY, COLORADO

EAGLE ENVIRONMENTAL CONSULTING, INC.  
4101 INCA STREET, DENVER, CO 80211  
PH: 303.433.0479 • F: 303.325.5449

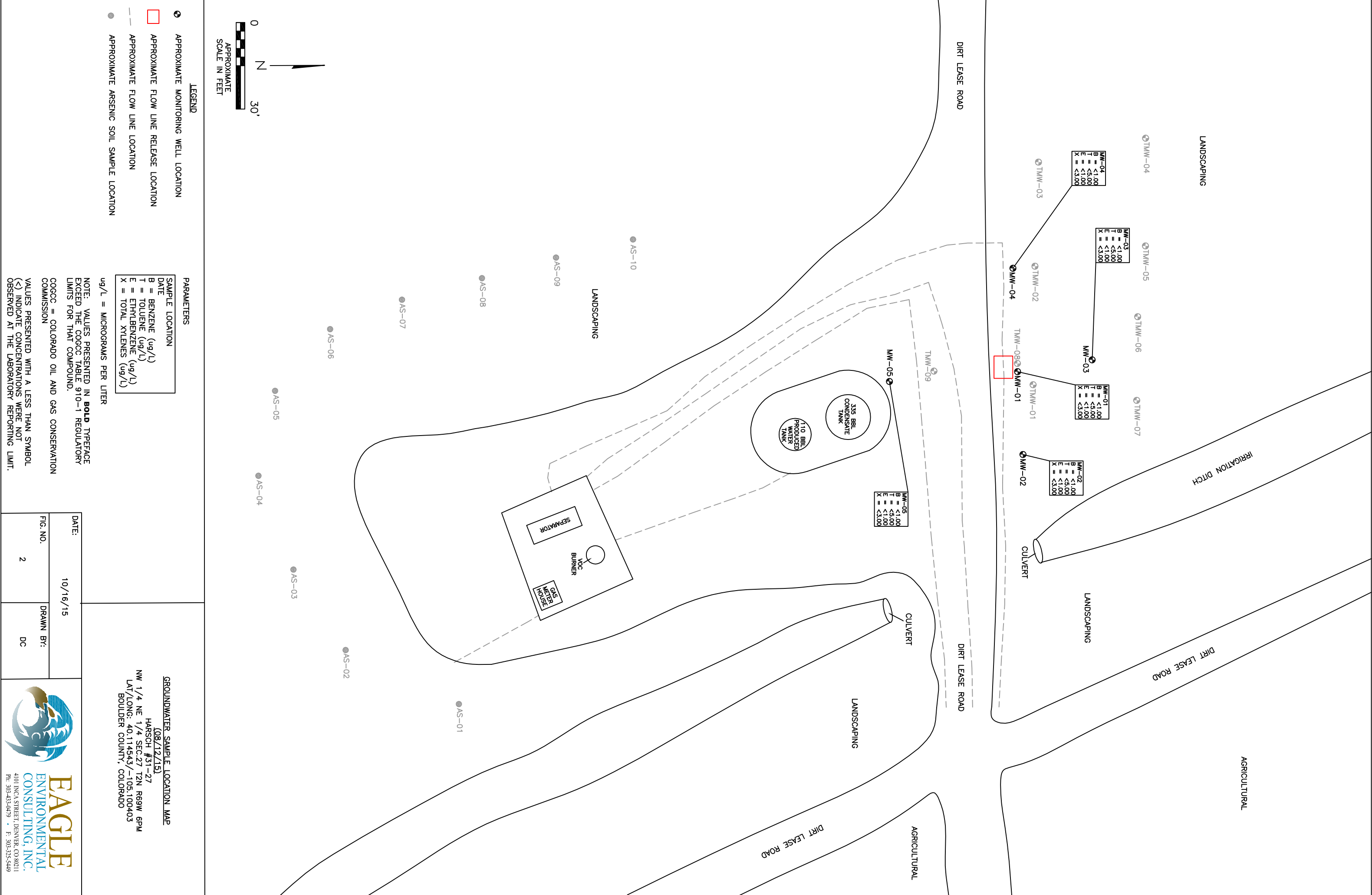


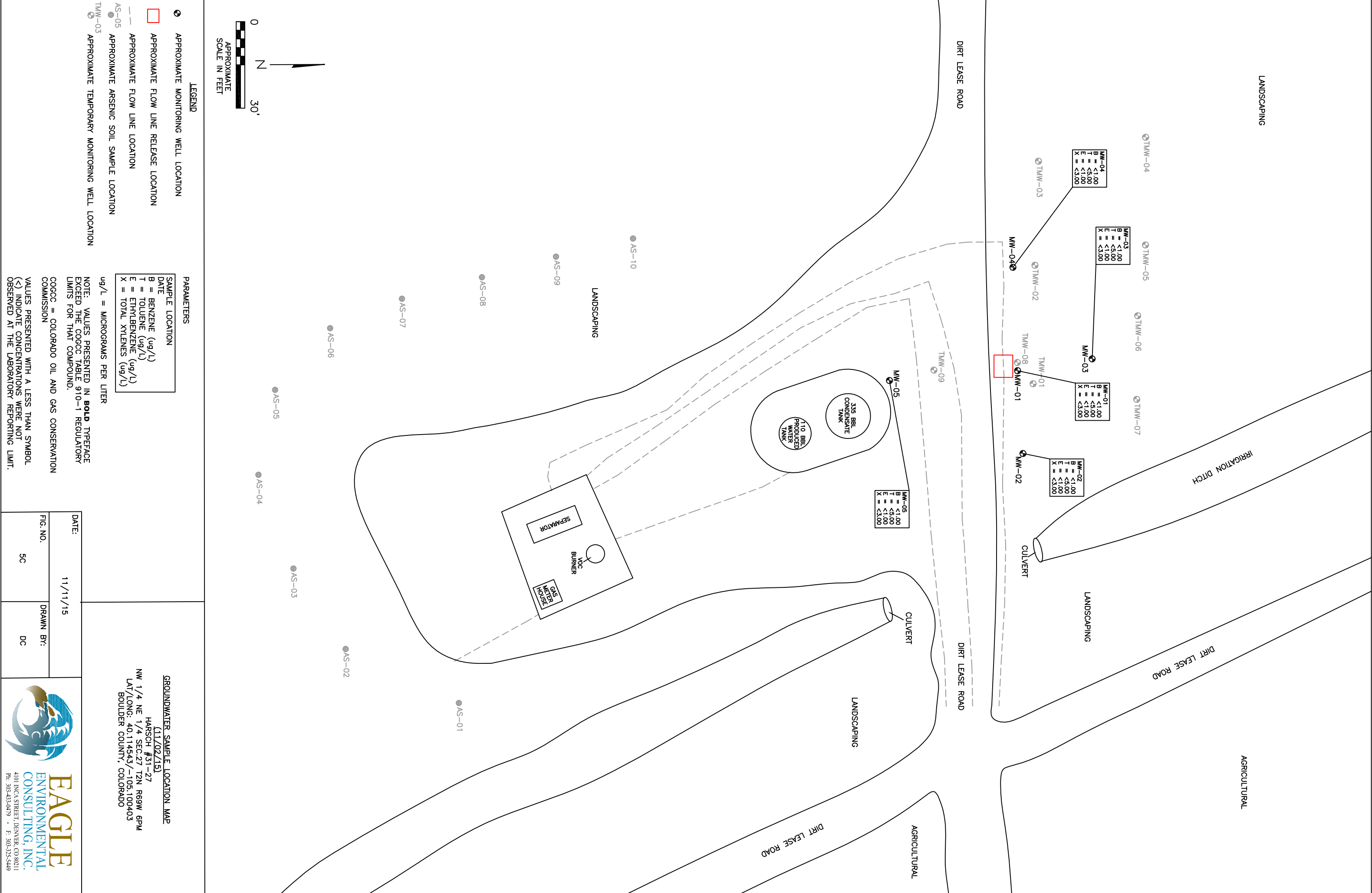


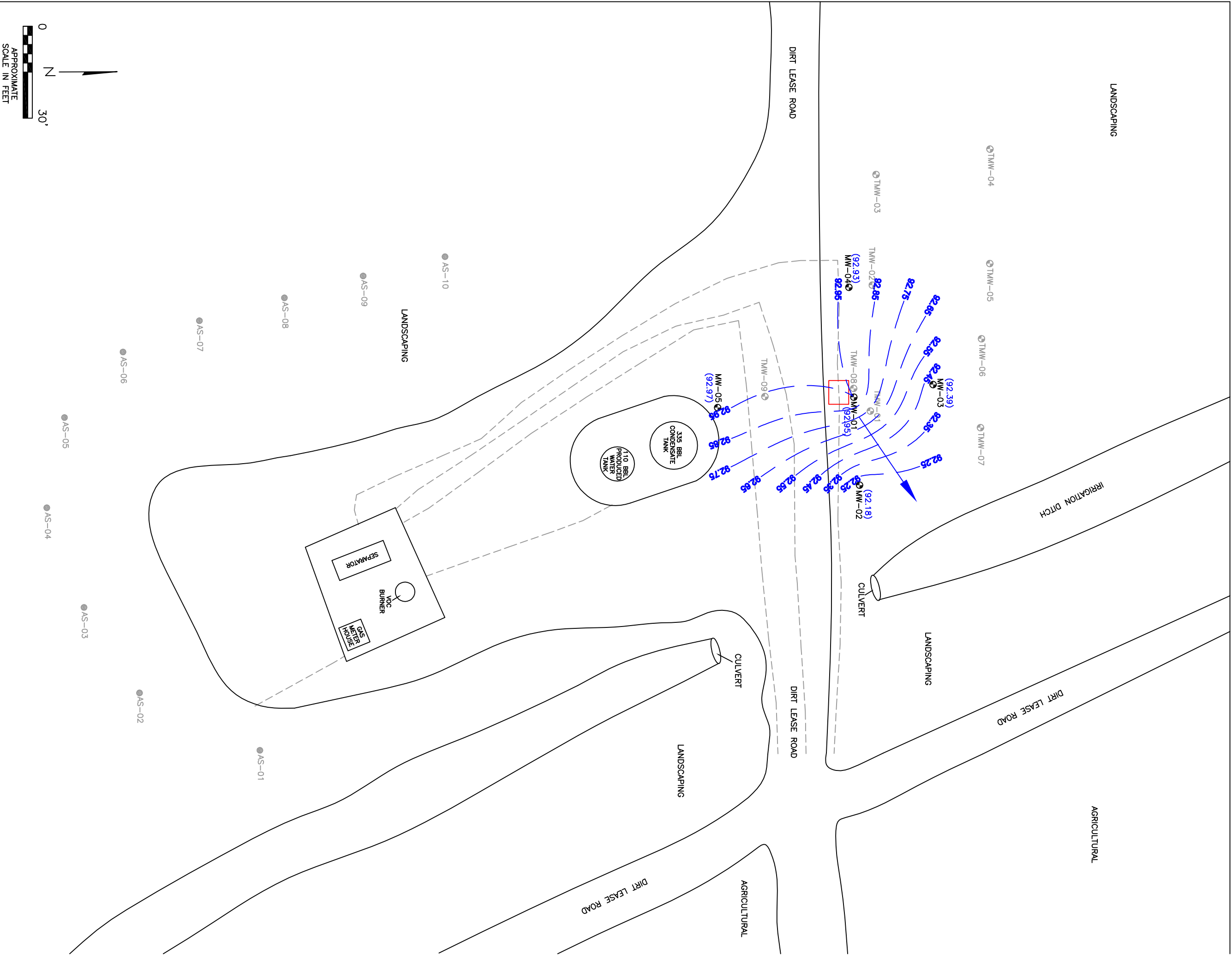












LEGEND

APPROXIMATE MONITORING WELL LOCATION

APPROXIMATE FLOW LINE RELEASE LOCATION

APPROXIMATE FLOW LINE LOCATION

APPROXIMATE ARSENIC SOIL SAMPLE LOCATION

APPROXIMATE TEMPORARY MONITORING WELL LOCATION

GROUNDWATER ELEVATION MAP

(11/02/15)

HARSch #31-27

NW 1/4 NE 1/4 SEC.27 T2N R69W 6PM

LAT/LONG: 40.114543/-105.100403

BOULDER COUNTY, COLORADO

DATE: 11/11/15

FIG. NO. 6

DRAWN BY: DC

EAGLE ENVIRONMENTAL CONSULTING, INC.

4101 INCA STREET, DENVER, CO 80211  
PH: 303.433.0479 • F: 303.325.5449



## **TABLES**

**Table 1: Groundwater Analytical Results Summary**

**Table 2: Soil Analytical Results Summary**

**Table 2A: Soil Analytical Results Summary – Semi Volatile Organics**

**Table 2B: Soil Analytical Results Summary – Metals & Inorganics**

**Table 3: Groundwater Elevation and Parameter Summary**

TABLE 1  
GROUNDWATER ANALYTICAL RESULTS SUMMARY  
HARSCH #31-27  
API# 05-013-06553  
NW 1/4 NE 1/4 SEC.27 T2N R69W 6PM  
LAT/LONG: 40.114543/-105.100403  
BOULDER COUNTY, COLORADO

Sample Location (Latitude, Longitude)	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Table 910-1 Regulatory Limits (µg/L)</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
FLOWLINE (40.112864169, -105.101400994)	08/12/14	<b>500</b>	250	<1.0	160
TMW-01 (40.11289811, -105.101382476)	08/21/14	<1.0	<5.0	<1.0	<3.0
TMW-02 (40.112900614, -105.101540165)	08/21/14	<1.0	<5.0	<1.0	<3.0
TMW-03 (40.112904417, -105.101678686)	08/21/14	<1.0	<5.0	<1.0	<3.0
TMW-04 (40.113013626, -105.101678686)	08/21/14	<1.0	<5.0	<1.0	<3.0
TMW-05 (40.113013333, -105.101566101)	08/21/14	<1.0	<5.0	<1.0	<3.0
TMW-06 (40.113004646, -105.101472681)	08/21/14	<1.0	<5.0	<1.0	<3.0
TMW-07 (40.113003775, -105.101361445)	08/21/14	<1.0	<5.0	<1.0	<3.0
TMW-08 (40.112875868, -105.101402819)	09/10/14	<b>7.2</b>	<5.0	<1.0	<3.0
TMW-09 (40.112797981, -105.101393822)	09/10/14	<1.0	<5.0	<1.0	<3.0
MW-01 (40.112874, -105.101387)	02/05/15	<1.0	<5.0	<1.0	<3.0
	05/22/15	<1.0	<5.0	<1.0	<3.0
	08/12/15	<1.00	<5.00	<1.00	<3.00
	11/02/15	<1.00	<5.00	<1.00	<3.00
MW-02 ( 40.112875, -105.101264)	02/05/15	<1.0	<5.0	<1.0	<3.0
	05/22/15	<1.0	<5.0	<1.0	<3.0
	08/12/15	<1.00	<5.00	<1.00	<3.00
	11/02/15	<1.00	<5.00	<1.00	<3.00
MW-03 (40.112968, -105.101400)	02/05/15	<1.0	<5.0	<1.0	<3.0
	05/22/15	<1.0	<5.0	<1.0	<3.0
	08/12/15	<1.00	<5.00	<1.00	<3.00
	11/02/15	<1.00	<5.00	<1.00	<3.00
MW-04 ( 40.112873, -105.101558)	02/05/15	<1.0	<5.0	<1.0	<3.0
	05/22/15	<1.0	<5.0	<1.0	<3.0
	08/12/15	<1.00	<5.00	<1.00	<3.00
	11/02/15	<1.00	<5.00	<1.00	<3.00
MW-05 (40.112756, -105.101379)	02/05/15	<1.0	<5.0	<1.0	<3.0
	05/22/15	<1.0	<5.0	<1.0	<3.0
	08/12/15	<1.00	<5.00	<1.00	<3.00
	11/02/15	<1.00	<5.00	<1.00	<3.00

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = micrograms per liter

< = indicates result is less than the stated laboratory reporting limit

Values presented in bold typeface exceed their respective COGCC Table 910-1 Regulatory Limit.

Note: FLOWLINE is a grab groundwater sample from a pothole during investigation activities. Groundwater samples were grab samples collected from temporary monitoring wells.

TABLE 2  
SOIL ANALYTICAL RESULTS SUMMARY  
HARSCH #31-27  
API# 05-013-06553  
NW 1/4 NE 1/4 SEC.27 T2N R69W 6PM  
LAT/LONG: 40.114543/-105.100403  
BOULDER COUNTY, COLORADO

Sample Location (Latitude, Longitude)	Date Sample Collected	Approximate Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)
<b>COGCC Table 910-1 Regulatory Limit (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>500</b>	
TMW-08 (40.112875868, -105.101402819)	09/09/14	5-7.5	<0.0025	<0.025	<0.0025	<0.0075	<0.50	<4.0
MW-01 (40.112874, -105.101387)	01/21/15	5-7.5	<0.0025	<0.025	<0.0025	<0.0075	<0.50	<4.0
MW-02 ( 40.112875, -105.101264)	01/21/15	5-7.5	<0.0025	<0.025	0.012	0.026	1.5	5.2
MW-03 (40.112968, -105.101400)	01/21/15	5-7.5	<0.0025	<0.025	<0.0025	<0.0075	<0.50	<4.0
MW-04 ( 40.112873, -105.101558)	01/21/15	5-7.5	<0.0025	<0.025	<0.0025	<0.0075	<0.50	<4.0
MW-05 (40.112756, -105.101379)	01/21/15	5-7.5	<0.0025	<0.025	<0.0025	<0.0075	<0.50	<4.0

COGCC = Colorado Oil and Gas Conservation Commission

mg/kg = milligrams per kilogram

TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics

TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics

< = indicates result is less than the stated laboratory reporting limit

Note: Values presented in bold typeface exceed their respective COGCC Table 910-1 Regulatory Limit.

TABLE 2A  
 SOIL ANALYTICAL RESULTS SUMMARY - SEMI VOLATILE ORGANICS  
 HARSCH #31-27  
 API# 05-013-06553  
 NW 1/4 NE 1/4 SEC.27 T2N R69W 6PM  
 LAT/LONG: 40.114543/-105.100403  
 BOULDER COUNTY, COLORADO

Sample Location	Date	Approximate Depth (feet)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo(A) anthracene (mg/kg)	Benzo(B) fluoranthene (mg/kg)	Benzo(k) fluoranthene (mg/kg)	Benzo(A) pyrene (mg/kg)	Chrysene (mg/kg)	Dibenzo(A,H) anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(1,2,3,C,D) pyrene (mg/kg)	Naphthalene (mg/kg)	Pyrene (mg/kg)
<b>COGCC Table 910-1 Regulatory Limit (mg/kg)</b>			<b>1,000</b>	<b>1,000</b>	<b>0.22</b>	<b>0.22</b>	<b>2.2</b>	<b>0.022</b>	<b>22</b>	<b>0.022</b>	<b>1,000</b>	<b>1,000</b>	<b>0.22</b>	<b>23</b>	<b>1,000</b>
TMW-08	09/09/14	5-7.5	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.020	<0.0060

COGCC = Colorado Oil and Gas Conservation Commission

mg/kg = milligrams per kilogram

< = indicates result is less than the stated laboratory reporting limit

Note: Values presented in bold typeface exceed their respective COGCC Table 910-1 Regulatory Limit.

TABLE 2B  
SOIL ANALYTICAL RESULTS SUMMARY - METALS & INORGANICS  
HARSCH #31-27  
API# 05-013-06553  
NW 1/4 NE 1/4 SEC.27 T2N R69W 6PM  
LAT/LONG: 40.114543/-105.100403  
BOULDER COUNTY, COLORADO

			Metals												Inorganics		
Sample Location (Latitude/Longitude)	Depth (feet)	Date	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (III) (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)	Electrical Conductivity (EC)	Sodium Adsorption Ratio (SAR)	pH
COGCC Table 910-1 Regulatory Limit (mg/kg)			0.39	15,000	70	120,000	23	3,100	400	23	1,600	390	390	23,000	<4mmhos/cm or 2x background	<12^5	6-9
TMW-08 (40.112875868, -105.101402819)	5-7.5	09/09/14	5.0	170	0.74	16	<2.0	16	16	<0.020	20	<2.0	<1.0	60	1.400	8.2	6.9
AS-01 (40.1123419071, -105.10098318)	0-0.5	09/09/14	3.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-02 (40.1122342142, -105.101050844)	0-0.5	09/09/14	3.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-03 (40.1121848343, -105.101150812)	0-0.5	09/09/14	3.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-04 (40.1121518644, -105.101267606)	0-0.5	09/09/14	2.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-05 (40.1121681045, -105.101372826)	0-0.5	09/09/14	3.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-06 (40.1122207696, -105.101449071)	0-0.5	09/09/14	3.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-07 (40.1122894837, -105.101485376)	0-0.5	09/09/14	3.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-08 (40.1123659138, -105.101511448)	0-0.5	09/09/14	5.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-09 (40.1124362769, -105.101537162)	0-0.5	09/09/14	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-10 (40.1125098110, -105.101558872)	0-0.5	09/09/14	5.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

COGCC = Colorado Oil and Gas Conservation Commission

mg/kg = milligrams per kilogram

mmhos/cm = millimhos per centimeter

< = indicates result is less than the stated laboratory reporting limit

Note: Values presented in bold typeface exceed their respective COGCC Table 910-1 Regulatory Limit.

\* Arsenic is naturally occurring in some geologic environments within Colorado due to the weathering and erosion of bedrock and soil. The Colorado Department of Public Health and Environment (CDPHE) developed a Risk Management Guidance Document for Evaluating Arsenic Concentrations in Soil, which was released in June 2011. During the study conducted by the EPA, the average concentration of arsenic observed in Colorado soils was 11 mg/kg. Based on the average concentration of arsenic listed in the guidance document provided by the CDPHE and the arsenic concentrations observed within the soil samples collected at the site, arsenic is not a chemical of concern to the site at this time.

**TABLE 3**  
**GROUNDWATER ELEVATION AND PARAMETER SUMMARY**  
**HARSCH #31-27**  
**API# 05-013-06553**  
**NW 1/4 NE 1/4 SEC.27 T2N R69W 6PM**  
**LAT/LONG: 40.114543/-105.100403**  
**BOULDER COUNTY, COLORADO**

Sample Location	Date	Depth to Groundwater (feet)	TOC Elevation (feet)	Relative Groundwater Elevation (feet)	Dissolved Oxygen (mg/L)	Temperature (°C)	pH	Specific Conductance (µS/cm)	ORP (mV)
MW-01	02/05/15	12.65	98.81	86.16	5.41	11.2	7.95	19,397	136.5
	05/22/15	3.58		95.23	0.18	10.8	7.80	21,084	13.2
	08/12/15	5.78		93.03	0.25	19.3	7.52	26,500	-49.7
	11/02/15	5.86		92.95	0.53	17.3	7.54	24,336	-89.9
MW-02	02/05/15	7.97	100.00	92.03	7.42	9.9	8.16	25,700	136.1
	05/22/15	4.57		95.43	0.24	11.1	7.47	24,838	116.0
	08/12/15	7.24		92.76	0.35	18.3	7.46	34,691	41.2
	11/02/15	7.82		92.18	0.64	17.4	7.50	34,581	-49.7
MW-03	02/05/15	6.64	98.95	92.31	6.83	9.4	8.19	20,774	130.4
	05/22/15	3.96		94.99	0.28	10.9	7.96	18,031	93.3
	08/12/15	6.35		92.60	0.31	18.2	7.55	29,067	103.7
	11/02/15	6.56		92.39	0.80	16.4	7.55	29,342	79.1
MW-04	02/05/15	5.24	98.09	92.85	7.80	8.6	8.21	19,388	133.2
	05/22/15	2.73		95.36	0.31	11.0	7.58	23,147	92.0
	08/12/15	5.00		93.09	0.27	20.6	7.32	28,324	97.4
	11/02/15	5.16		92.93	0.90	16.8	7.41	25,755	-7.7
MW-05	02/05/15	3.98	96.82	92.84	7.44	9.2	8.14	25,333	149.7
	05/22/15	2.07		94.75	0.36	10.9	7.70	19,700	-2.7
	08/12/15	3.40		93.42	0.42	18.5	7.54	30,785	44.8
	11/02/15	3.85		92.97	0.43	17.0	7.42	32,363	-24.2

FM = flush mount

TOC = Top of Casing

mg/L = milligrams per liter

°C = degrees Celcius

µS/cm - microSiemens per centimeter

mV = millivolts

ORP = oxidation reduction potential

Approximate height (feet) of riser stick up:

MW-01 2.88

MW-02 2.66

MW-03 2.61

MW-04 2.49

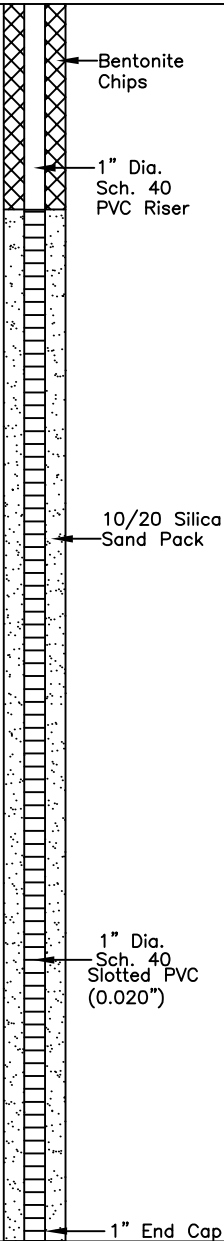
MW-05 FM

## **ATTACHMENT A**

### **Soil Boring/Well Completion Diagrams**

# Boring Log/Well Completion Diagram: TMW-01

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	LANDSCAPING silty CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10-15% silt, dry, N/O, N/S.	CL	HA	1	100	1.8	N/A	0		<p>No potholing completed No soil sample collected</p> <p>1-inch PVC temporary well was removed following GW grab sample collection</p> <p>Well was abandoned with 10/20 silica sand and bentonite to grade</p>
1			HA	2	100	9.1	N/A	1		
2			HA	3	100	0.1	N/A	2		
3			HA	4	100	0.0	N/A	3		
4			HA	5	100	0.0	N/A	4		
5			HA	6	100	0.0	N/A	5		
6			HA	7	100	0.0	N/A	6		
	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.		HA	8	100	0.0	N/A			
			HA	9	100	0.0	N/A			
			HA	10	100	0.0	N/A			
			HA	11	100	0.0	N/A			
			HA	12	100	0.0	N/A			
	BoB @ 6'									<p>HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable</p>

START/COMPLETION DATE: 08/21/2014

SAND PACK INTERVAL (FEET): 1-6

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 1-6

DRILLING COMPANY/EQUIPMENT: EAGLE/HAND AUGER

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 6

WELL DEPTH (FEET): 6

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 0800/0900

SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A



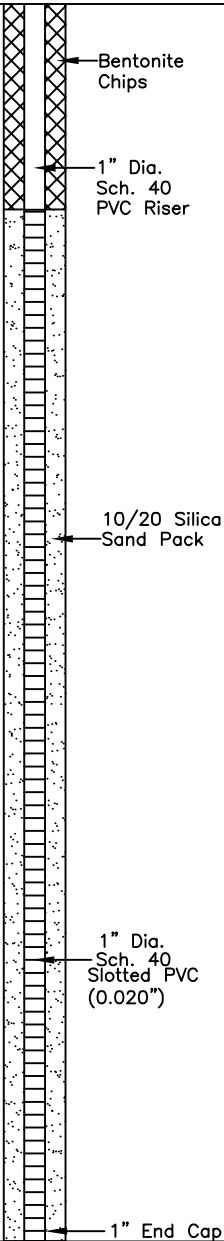
**EAGLE**  
ENVIRONMENTAL  
CONSULTING, INC.

4101 INCA STREET, DENVER, CO 80211  
Ph: 303-433-0479 • F: 303-325-5449



# Boring Log/Well Completion Diagram: TMW-02

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	LANDSCAPING silty CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10-15% silt, dry, N/O, N/S.	CL	HA	1	100	0.0	N/A	0		<p>No potholing completed No soil sample collected</p> <p>1-inch PVC temporary well was removed following GW grab sample collection</p> <p>Well was abandoned with 10/20 silica sand and bentonite to grade</p>
1			HA	2	100	1.1	N/A	1		
			HA	3	100	0.3	N/A			
			HA	4	100	0.0	N/A			
2			HA	5	100	0.0	N/A	2		
			HA	6	100	0.0	N/A			
3	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.		HA	7	100	0.0	N/A	3		
			HA	8	100	0.1	N/A			
4			HA	9	100	0.0	N/A	4		
			HA	10	100	0.0	N/A			
5			HA	11	100	0.0	N/A	5		
			HA	12	100	0.0	N/A			
6	BoB @ 6'							6		<p>HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable</p>

START/COMPLETION DATE: 08/21/2014

SAND PACK INTERVAL (FEET): 1-6

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 1-6

DRILLING COMPANY/EQUIPMENT: EAGLE/HAND AUGER

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 6

WELL DEPTH (FEET): 6

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 0900/1000

SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A

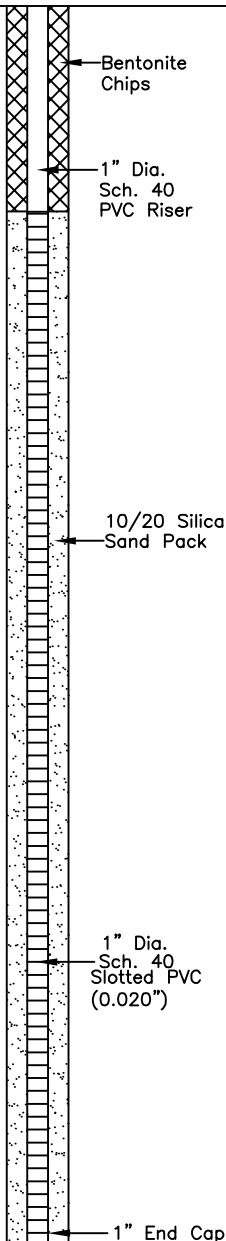


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# Boring Log/Well Completion Diagram: TMW-03

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	LANDSCAPING silty CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10-15% silt, dry, N/O, N/S.	CL	HA	1	100	0.0	N/A	0		No potholing completed No soil sample collected  1-inch PVC temporary well was removed following GW grab sample collection  Well was abandoned with 10/20 silica sand and bentonite to grade
1			HA	2	100	0.0	N/A	1		
2			HA	3	100	0.0	N/A	2		
3			HA	4	100	0.0	N/A	3		
4			HA	5	100	0.0	N/A	4		
5			HA	6	100	0.0	N/A	5		
6			HA	7	100	0.0	N/A	6		
7			HA	8	100	0.0	N/A	7		
8			HA	9	100	0.0	N/A	8		
9			HA	10	100	0.0	N/A	9		
10	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.		HA	11	100	0.0	N/A	10		HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable
11			HA	12	100	0.0	N/A	11		
12			BoB @ 6'							

START/COMPLETION DATE: 08/21/2014

SAND PACK INTERVAL (FEET): 1-6

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 1-6

DRILLING COMPANY/EQUIPMENT: EAGLE/HAND AUGER

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 6

WELL DEPTH (FEET): 6

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1000/1100

SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A

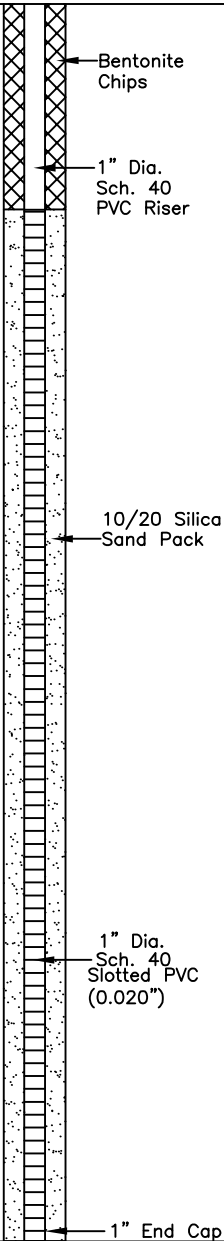


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# Boring Log/Well Completion Diagram: TMW-04

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	LANDSCAPING silty CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10-15% silt, dry, N/O, N/S.	CL	HA	1	100	0.0	N/A	0		<p>No potholing completed No soil sample collected</p> <p>1-inch PVC temporary well was removed following GW grab sample collection</p> <p>Well was abandoned with 10/20 silica sand and bentonite to grade</p>
1			HA	2	100	0.0	N/A	1		
2			HA	3	100	0.0	N/A	2		
3			HA	4	100	0.0	N/A	3		
4			HA	5	100	0.0	N/A	4		
5			HA	6	100	0.0	N/A	5		
6			HA	7	100	0.0	N/A	6		
	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.		HA	8	100	0.0	N/A			
			HA	9	100	0.0	N/A			
			HA	10	100	0.0	N/A			
			HA	11	100	0.0	N/A			
			HA	12	100	0.0	N/A			
	BoB @ 6'									<p>HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable</p>

START/COMPLETION DATE: 08/21/2014

SAND PACK INTERVAL (FEET): 1-6

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 1-6

DRILLING COMPANY/EQUIPMENT: EAGLE/HAND AUGER

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 6

WELL DEPTH (FEET): 6

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1100/1200

SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A



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# Boring Log/Well Completion Diagram: TMW-05

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	LANDSCAPING silty CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10-15% silt, dry, N/O, N/S.	CL	HA	1	100	0.4	N/A	0		<p>No potholing completed No soil sample collected</p> <p>1-inch PVC temporary well was removed following GW grab sample collection</p> <p>Well was abandoned with 10/20 silica sand and bentonite to grade</p>
1			HA	2	100	0.0	N/A	1		
			HA	3	100	0.1	N/A			
			HA	4	100	0.0	N/A			
2			HA	5	100	0.0	N/A	2		
			HA	6	100	0.0	N/A			
3			HA	7	100	0.0	N/A	3		
			HA	8	100	0.0	N/A			
4			HA	9	100	0.0	N/A	4		
			HA	10	100	0.0	N/A			
5			HA	11	100	0.0	N/A	5		
			HA	12	100	0.0	N/A			
6	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.  BoB @ 6'							6		<p>HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable</p>

START/COMPLETION DATE: 08/21/2014

SAND PACK INTERVAL (FEET): 1-6

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 1-6

DRILLING COMPANY/EQUIPMENT: EAGLE/HAND AUGER

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 6

WELL DEPTH (FEET): 6

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1200/1300

SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A

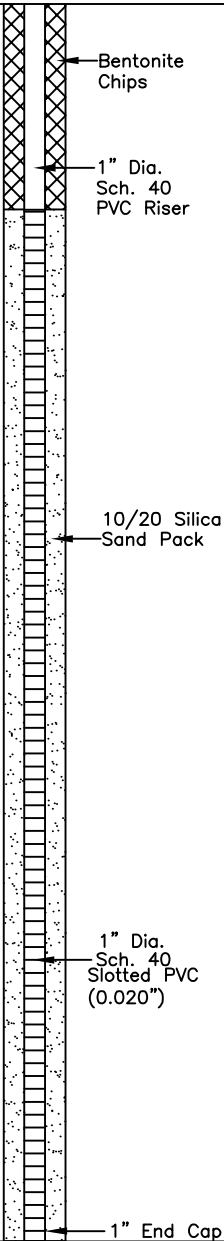


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# Boring Log/Well Completion Diagram: TMW-06

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	LANDSCAPING silty CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10-15% silt, dry, N/O, N/S.	CL	HA	1	100	1.1	N/A	0		<p>No potholing completed No soil sample collected</p> <p>1-inch PVC temporary well was removed following GW grab sample collection</p> <p>Well was abandoned with 10/20 silica sand and bentonite to grade</p>
1			HA	2	100	3.1	N/A	1		
2			HA	3	100	0.1	N/A	2		
3			HA	4	100	0.0	N/A	3		
4			HA	5	100	0.0	N/A	4		
5			HA	6	100	0.0	N/A	5		
6	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.		HA	7	100	0.0	N/A	6		
			HA	8	100	0.0	N/A			
			HA	9	100	0.0	N/A			
			HA	10	100	0.0	N/A			
			HA	11	100	0.0	N/A			
			HA	12	100	0.0	N/A			
	BoB @ 6'									<p>HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable</p>

START/COMPLETION DATE: 08/21/2014

SAND PACK INTERVAL (FEET): 1-6

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 1-6

DRILLING COMPANY/EQUIPMENT: EAGLE/HAND AUGER

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 6

WELL DEPTH (FEET): 6

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1300/1400

SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A

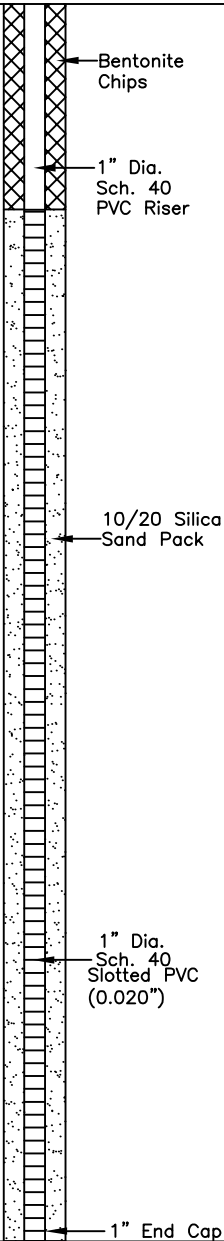


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# Boring Log/Well Completion Diagram: TMW-07

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	LANDSCAPING silty CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10-15% silt, dry, N/O, N/S.	CL	HA	1	100	1.2	N/A	0		<p>No potholing completed No soil sample collected</p> <p>1-inch PVC temporary well was removed following GW grab sample collection</p> <p>Well was abandoned with 10/20 silica sand and bentonite to grade</p>
1			HA	2	100	4.1	N/A	1		
			HA	3	100	0.1	N/A			
			HA	4	100	0.0	N/A			
2			HA	5	100	0.0	N/A	2		
			HA	6	100	0.0	N/A			
3	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.		HA	7	100	0.0	N/A	3		
			HA	8	100	0.0	N/A			
4			HA	9	100	0.0	N/A	4		
			HA	10	100	0.0	N/A			
5			HA	11	100	0.0	N/A	5		
			HA	12	100	0.0	N/A			
6	BoB @ 6'							6		<p>HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable</p>

START/COMPLETION DATE: 08/21/2014

SAND PACK INTERVAL (FEET): 1-6

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 1-6

DRILLING COMPANY/EQUIPMENT: EAGLE/HAND AUGER

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 6

WELL DEPTH (FEET): 6

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1400-1500

SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A

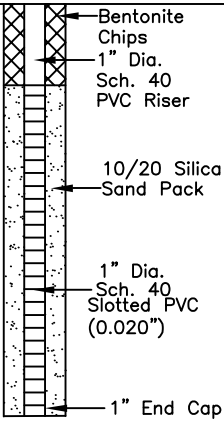


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# Boring Log/Well Completion Diagram: TMW-08

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	Potholed.									<p>Potholed to ~5' bgs 1-inch PVC temporary well was removed following GW grab sample collection</p> <p>Well was abandoned with 10/20 silica sand and bentonite to grade</p>
5	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.	CL				0.0	N/A	5		
10	BoB @ 10'		GP	1	100	0.0		10		
15								15		
20								20		
25								25		
30								30		<p>HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable</p>

START/COMPLETION DATE: 09/09/2014

SAND PACK INTERVAL (FEET): 2-10

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-2

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 2-10

DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 10

WELL DEPTH (FEET): 10

PID INSTRUMENT: MiniRAE 2000

TIME STARTED/COMPLETED: 0945/1030

SAMPLE COLLECTION DEPTH (FEET)/TIME: 5-7.5/1038

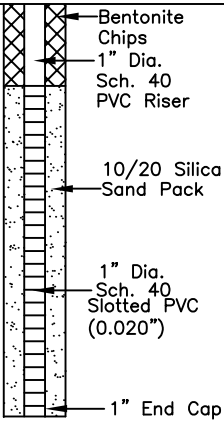


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# Boring Log/Well Completion Diagram: TMW-09

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	Potholed.									<p>Potholed to ~5' bgs 1-inch PVC temporary well was removed following GW grab sample collection</p> <p>Well was abandoned with 10/20 silica sand and bentonite to grade</p>
5	sandy CLAY - brown, med stiff, mod plasticity, poorly sorted with approximately 10% fine grained sand, moist, N/O, N/S.	CL				0.0	N/A	5		
10	BoB @ 10'		GP	1	100	0.0		10		
15								15		
20								20		
25								25		
30								30		<p>HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface N/A - not applicable</p>

START/COMPLETION DATE: 09/09/2014

SAND PACK INTERVAL (FEET): 2-10

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-2

LOGGED BY: D. COLOCCIA

WELL SCREEN INTERVAL (FEET): 2-10

DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE

WELL DIAMETER (INCHES): 1

BORING DEPTH (FEET): 10

WELL DEPTH (FEET): 10

PID INSTRUMENT: MiniRAE 2000

TIME STARTED/COMPLETED: 1030/1100

SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A



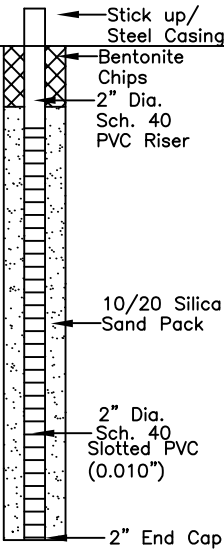
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# Boring Log/Well Completion Diagram: MW-01

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0									 <p>Stick up/ Steel Casing</p> <p>Bentonite Chips</p> <p>2" Dia. Sch. 40 PVC Riser</p> <p>10/20 Silica Sand Pack</p> <p>2" Dia. Sch. 40 Slotted PVC (0.010")</p> <p>2" End Cap</p>	
5	5-10' silty CLAY - brown, medium stiff, moderate plasticity, well sorted with ~10% silt, moderately moist, N/O, N/S	CL	GP	1	90	9.7	N/A	5		
10			GP	2	90	13.1	N/A	10		
12	BoB @ 12'									
15								15		
20								20		
25								25		
30										HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface

START/COMPLETION DATE: 01/21/2015

SAND PACK INTERVAL (FEET): 1.5-12'

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1.5'

LOGGED BY: A. ROMANSKY

WELL SCREEN INTERVAL (FEET): 2-12'

DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE 7822DT

WELL DIAMETER (INCHES): 2"

BORING DEPTH (FEET): 12

WELL DEPTH (FEET): 12

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1210/1300

SAMPLE COLLECTION DEPTH (FEET)/TIME: 5-7.5'/1230

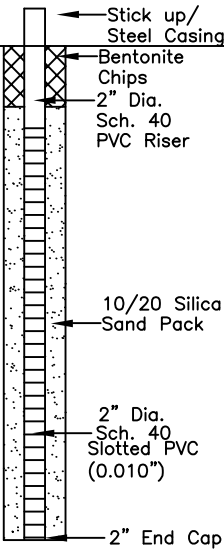


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# Boring Log/Well Completion Diagram: MW-02

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0										
5	5-10' sandy CLAY - light brown to brown, medium stiff, moderate plasticity, well sorted with ~10% sand, moderately moist, N/O, N/S	CL	GP	1	90	17.1	N/A	5		
10			GP	2	90	16.0	N/A	10		
12	BoB @ 12'							12		
15								15		
20								20		
25								25		
30								30		

HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground surface

START/COMPLETION DATE: 01/21/2015

SAND PACK INTERVAL (FEET): 1.5-12'

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1.5'

LOGGED BY: A. ROMANSKY

WELL SCREEN INTERVAL (FEET): 2-12'

DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE 7822DT

WELL DIAMETER (INCHES): 2"

BORING DEPTH (FEET): 12

WELL DEPTH (FEET): 12

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1010/1055

SAMPLE COLLECTION DEPTH (FEET)/TIME: 5-7.5'/1035

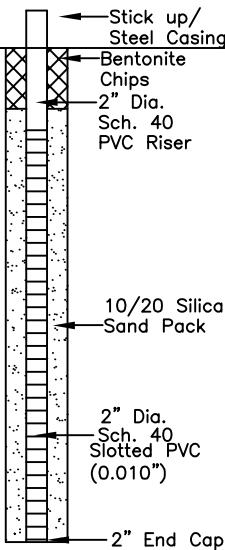


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# Boring Log/Well Completion Diagram: MW-03

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0										
5	5-10' silty CLAY - light brown to brown, medium stiff, moderate plasticity, well sorted with ~10% silt, moderately moist, N/O, N/S	CL	GP	1	100	19.2	N/A	5		
10			GP	2	100	19.6	N/A	10		
	BoB @ 12'									
15										
20										
25										
30										

HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground surface

HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground surface

START/COMPLETION DATE: 01/21/2015

SAND PACK INTERVAL (FEET): 1.5-12'

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1.5'

LOGGED BY: A. ROMANSKY

WELL SCREEN INTERVAL (FEET): 2-12'

DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE 7822DT

WELL DIAMETER (INCHES): 2"

BORING DEPTH (FEET): 12

WELL DEPTH (FEET): 12

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1100/1145

SAMPLE COLLECTION DEPTH (FEET)/TIME: 5-7.5'/1115

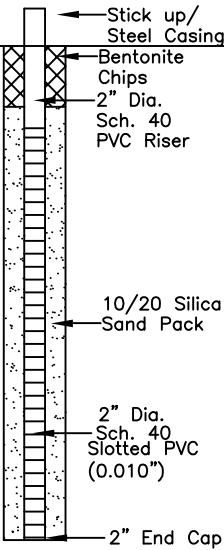


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# Boring Log/Well Completion Diagram: MW-04

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0										
5	5-10' silty CLAY - brown, medium stiff, moderate plasticity, well sorted with ~10% silt, wet, N/O, N/S	CL	GP	1	100	5.3	N/A	5		
10			GP	2	100	3.3	N/A	10		
12	BoB @ 12'									
15										
20										
25										
30										

HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground surface

START/COMPLETION DATE: 01/21/2015

SAND PACK INTERVAL (FEET): 1.5-12'

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 0-1.5'

LOGGED BY: A. ROMANSKY

WELL SCREEN INTERVAL (FEET): 2-12'

DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE 7822DT

WELL DIAMETER (INCHES): 2"

BORING DEPTH (FEET): 12

WELL DEPTH (FEET): 12

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 1305/1410

SAMPLE COLLECTION DEPTH (FEET)/TIME: 5-7.5'/1345

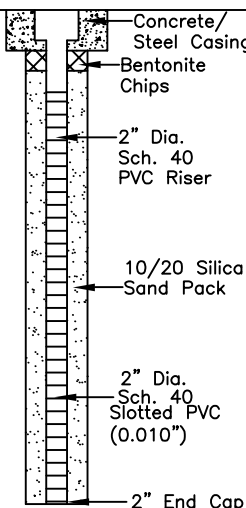


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# Boring Log/Well Completion Diagram: MW-05

PAGE 1 OF 1

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0										
5	5-10' silty CLAY - brown, medium stiff, moderate plasticity, well sorted with ~10% silt, moderate moist, N/O, N/S	CL	GP	1	100	14.4	N/A	5		
10			GP	2	100	10.9	N/A	10		
12	BoB @ 12'							12		
15								15		
20								20		
25								25		
30								30		

HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground surface

START/COMPLETION DATE: 01/21/2015

SAND PACK INTERVAL (FEET): 1.5-12'

PROJECT: HARSCH #31-27

BENTONITE/GROUT INTERVAL (FEET): 1-1.5'

LOGGED BY: A. ROMANSKY

WELL SCREEN INTERVAL (FEET): 2-12'

DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE 7822DT

WELL DIAMETER (INCHES): 2"

BORING DEPTH (FEET): 12

WELL DEPTH (FEET): 12

PID INSTRUMENT: MiniRAE 3000

TIME STARTED/COMPLETED: 0915/1000

SAMPLE COLLECTION DEPTH (FEET)/TIME: 5-7.5'/935



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## **ATTACHMENT B**

### **Laboratory Analytical Reports**



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Tax I.D. 62-0814289

Est. 1970

D Blake Ford  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

## Report Summary

Wednesday August 20, 2014

Report Number: L715390


Samples Received: 08/13/14

Client Project: HARSCH 31-27

Description: Harsch 31-27 Flowline Release

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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Est. 1970

REPORT OF ANALYSIS

D Blake Ford  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 20, 2014

Date Received : August 13, 2014  
Description : Harsch 31-27 Flowline Release  
Sample ID : HARSCH31-27-FLOWLINE-081214  
Collected By : Blake Ford  
Collection Date : 08/12/14 08:20

ESC Sample # : L715390-01

Site ID : HARSCH 31-27

Project # : HARSCH 31-27

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	500	20.	ug/l	8260B	08/13/14	20
Toluene	250	100	ug/l	8260B	08/13/14	20
Ethylbenzene	BDL	1.0	ug/l	8260B	08/13/14	1
Total Xylenes	160	3.0	ug/l	8260B	08/13/14	1
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	08/13/14	1
Dibromofluoromethane	89.2		% Rec.	8260B	08/13/14	1
a,a,a-Trifluorotoluene	96.7		% Rec.	8260B	08/13/14	1
4-Bromofluorobenzene	126.		% Rec.	8260B	08/13/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 08/20/14 14:33 Printed: 08/20/14 14:34





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Est. 1970

REPORT OF ANALYSIS

D Blake Ford  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 20, 2014

Date Received : August 13, 2014  
Description : Harsch 31-27 Flowline Release  
Sample ID : HARSCH31-27-FLOWLINE-081214  
Collected By : Blake Ford  
Collection Date : 08/12/14 08:20

ESC Sample # : L715390-02

Site ID : HARSCH 31-27

Project # : HARSCH 31-27

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	77000	50000	ug/l	9056	08/20/14	50
Sulfate	1800000	250000	ug/l	9056	08/20/14	50
Dissolved Solids	660000	10000	ug/l	2540 C-201	08/15/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 08/20/14 14:33 Printed: 08/20/14 14:34

Summary of Remarks For Samples Printed  
08/20/14 at 14:34:10

TSR Signing Reports: 358  
R1 - Rush: Sameday

Log all BTEX waters as V8260BTEX unless specified otherwise. Enter depths for all samples as part of sample ID. Try not to report benzene as BDL above a 5x dilution.

Sample: L715390-01 Account: ENCANLCO Received: 08/13/14 09:00 Due Date: 08/13/14 00:00 RPT Date: 08/20/14 14:33

Sample: L715390-02 Account: ENCANLCO Received: 08/13/14 09:00 Due Date: 08/20/14 00:00 RPT Date: 08/20/14 14:33



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Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

## Report Summary

Tuesday August 26, 2014

Report Number: L717486


Samples Received: 08/22/14

Client Project:

Description: Harsch #31-27

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 26, 2014

Date Received : August 22, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-TMW-01-082114  
Collected By : D. Coloccia  
Collection Date : 08/21/14 13:55

ESC Sample # : L717486-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	08/23/14	1
Toluene	BDL	5.0	ug/l	8260B	08/23/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	08/23/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	08/23/14	1
Surrogate Recovery						
Toluene-d8	99.3		% Rec.	8260B	08/23/14	1
Dibromofluoromethane	116.		% Rec.	8260B	08/23/14	1
a,a,a-Trifluorotoluene	97.0		% Rec.	8260B	08/23/14	1
4-Bromofluorobenzene	91.3		% Rec.	8260B	08/23/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 26, 2014

Date Received : August 22, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-TMW-02-082114  
Collected By : D. Coloccia  
Collection Date : 08/21/14 14:00

ESC Sample # : L717486-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	08/23/14	1
Toluene	BDL	5.0	ug/l	8260B	08/23/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	08/23/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	08/23/14	1
Surrogate Recovery						
Toluene-d8	101.		% Rec.	8260B	08/23/14	1
Dibromofluoromethane	118.		% Rec.	8260B	08/23/14	1
a,a,a-Trifluorotoluene	97.9		% Rec.	8260B	08/23/14	1
4-Bromofluorobenzene	92.6		% Rec.	8260B	08/23/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 26, 2014

Date Received : August 22, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-TMW-03-082114  
Collected By : D. Coloccia  
Collection Date : 08/21/14 14:04

ESC Sample # : L717486-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	08/23/14	1
Toluene	BDL	5.0	ug/l	8260B	08/23/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	08/23/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	08/23/14	1
Surrogate Recovery						
Toluene-d8	100.		% Rec.	8260B	08/23/14	1
Dibromofluoromethane	115.		% Rec.	8260B	08/23/14	1
a,a,a-Trifluorotoluene	97.7		% Rec.	8260B	08/23/14	1
4-Bromofluorobenzene	88.7		% Rec.	8260B	08/23/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 26, 2014

Date Received : August 22, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-TMW-04-082114  
Collected By : D. Coloccia  
Collection Date : 08/21/14 14:10

ESC Sample # : L717486-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	08/23/14	1
Toluene	BDL	5.0	ug/l	8260B	08/23/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	08/23/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	08/23/14	1
Surrogate Recovery						
Toluene-d8	99.1		% Rec.	8260B	08/23/14	1
Dibromofluoromethane	116.		% Rec.	8260B	08/23/14	1
a,a,a-Trifluorotoluene	95.5		% Rec.	8260B	08/23/14	1
4-Bromofluorobenzene	91.0		% Rec.	8260B	08/23/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 26, 2014

Date Received : August 22, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-TMW-05-082114  
Collected By : D. Coloccia  
Collection Date : 08/21/14 14:13

ESC Sample # : L717486-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	08/23/14	1
Toluene	BDL	5.0	ug/l	8260B	08/23/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	08/23/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	08/23/14	1
Surrogate Recovery						
Toluene-d8	101.		% Rec.	8260B	08/23/14	1
Dibromofluoromethane	117.		% Rec.	8260B	08/23/14	1
a,a,a-Trifluorotoluene	97.1		% Rec.	8260B	08/23/14	1
4-Bromofluorobenzene	88.7		% Rec.	8260B	08/23/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 26, 2014

Date Received : August 22, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-TMW-06-082114  
Collected By : D. Coloccia  
Collection Date : 08/21/14 14:18

ESC Sample # : L717486-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	08/23/14	1
Toluene	BDL	5.0	ug/l	8260B	08/23/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	08/23/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	08/23/14	1
Surrogate Recovery						
Toluene-d8	99.9		% Rec.	8260B	08/23/14	1
Dibromofluoromethane	119.		% Rec.	8260B	08/23/14	1
a,a,a-Trifluorotoluene	95.9		% Rec.	8260B	08/23/14	1
4-Bromofluorobenzene	89.2		% Rec.	8260B	08/23/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

August 26, 2014

Date Received : August 22, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-TMW-07-082114  
Collected By : D. Coloccia  
Collection Date : 08/21/14 14:23

ESC Sample # : L717486-07

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	08/23/14	1
Toluene	BDL	5.0	ug/l	8260B	08/23/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	08/23/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	08/23/14	1
Surrogate Recovery						
Toluene-d8	101.		% Rec.	8260B	08/23/14	1
Dibromofluoromethane	119.		% Rec.	8260B	08/23/14	1
a,a,a-Trifluorotoluene	96.4		% Rec.	8260B	08/23/14	1
4-Bromofluorobenzene	87.0		% Rec.	8260B	08/23/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 08/26/14 10:03 Printed: 08/26/14 10:04

Summary of Remarks For Samples Printed  
08/26/14 at 10:04:15

TSR Signing Reports: 358  
R4 - Rush: Three Day

Log all BTEX waters as V8260BTEX unless specified otherwise. Enter depths for all samples as part of sample ID. Try not to report benzene as BDL above a 5x dilution.

Sample: L717486-01 Account: ENCANLCO Received: 08/22/14 09:00 Due Date: 08/27/14 00:00 RPT Date: 08/26/14 10:03  
Sample: L717486-02 Account: ENCANLCO Received: 08/22/14 09:00 Due Date: 08/27/14 00:00 RPT Date: 08/26/14 10:03  
Sample: L717486-03 Account: ENCANLCO Received: 08/22/14 09:00 Due Date: 08/27/14 00:00 RPT Date: 08/26/14 10:03  
Sample: L717486-04 Account: ENCANLCO Received: 08/22/14 09:00 Due Date: 08/27/14 00:00 RPT Date: 08/26/14 10:03  
Sample: L717486-05 Account: ENCANLCO Received: 08/22/14 09:00 Due Date: 08/27/14 00:00 RPT Date: 08/26/14 10:03  
Sample: L717486-06 Account: ENCANLCO Received: 08/22/14 09:00 Due Date: 08/27/14 00:00 RPT Date: 08/26/14 10:03  
Sample: L717486-07 Account: ENCANLCO Received: 08/22/14 09:00 Due Date: 08/27/14 00:00 RPT Date: 08/26/14 10:03

Company Name/Address: <b>ENCANLCO-EAGLE</b> Encana Oil and Gas 3601 Stagecoach Rd. Longmont, CO 80504				Billing Information: <b>Encana oil and Gas</b>  <b>Attn: Blake Ford</b>  <b>ENCANLCO-EAGLE</b>				Analysis / Container / Preservative												Chain of Custody Page ____ of ____			
Report to: <b>B. Ford, Martin Eckert III</b>				Email To: <b>David.Ford@encana.com, mce3@</b>				<div>ESC L.A.B S.C.I.E.N.C.E.S YOUR LAB OF CHOICE 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859</div> <div>L# <b>6717486</b> Tal <b>H250</b> Acctnum: <b>ENCANLCO -</b> Template: <b>EAGLE</b> Prelogin: TSR: Cooler: Shipped Via: Rem./Contaminant Sample # (lab only)</div>															
Project Description: <b>Harsch #31-27</b>				City/State Collected:																			
Phone: <b>970-379-5558</b>		Client Project #		Lab Project #																			
Fax:				<b>ENCANLCO-EAGLE</b>																			
Collected by (print): <b>D. Coloccia</b>		Site/Facility ID #		P.O. #																			
Collected by (signature): <b>[Signature]</b>		Rush? (Lab MUST Be Notified) Same Day .....200% Next Day .....100% Two Day .....50% <input checked="" type="checkbox"/> Three Day .....25%		Date Results Needed		Email? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes FAX? <input type="checkbox"/> No <input type="checkbox"/> Yes		No. of Cntrs															
Immediately Packed on Ice N <input type="checkbox"/> Y <input checked="" type="checkbox"/>																							
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time																	
<b>HARSH31-27-TMN-01-082114</b>		<b>Grab</b>	<b>GW</b>	<b>N/A</b>	<b>08-21-14</b>	<b>1355</b>	<b>2</b>	<b>X</b>															
<b>HARSH31-27-TMN-02-082114</b>						<b>1400</b>	<b>2</b>	<b>X</b>															
<b>HARSH31-27-TMN-03-082114</b>						<b>1404</b>	<b>2</b>	<b>X</b>															
<b>HARSH31-27-TMN-04-082114</b>						<b>1410</b>	<b>2</b>	<b>X</b>															
<b>HARSH31-27-TMN-05-082114</b>						<b>1413</b>	<b>2</b>	<b>X</b>															
<b>HARSH31-27-TMN-06-082114</b>						<b>1418</b>	<b>2</b>	<b>X</b>															
<b>HARSH31-27-TMN-07-082114</b>						<b>1423</b>	<b>1</b>	<b>X</b>															
* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other																				pH		Temp	
Remarks: <b>6084 7173 7192</b>																				Flow		Other	
Relinquished by: (Signature) <b>[Signature]</b>				Date: <b>08-21-14</b>		Time: <b>1033</b>		Received by: (Signature) <b>[Signature]</b>				Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>				Hold #							
Relinquished by: (Signature) <b>[Signature]</b>				Date: <b>8-21-14</b>		Time: <b>5:30</b>		Received by: (Signature) <b>[Signature]</b>				Temp: <b>3.4</b> °C Bottles Received: <b>13</b>				Condition: (lab use only) <b>5ms</b>							
Relinquished by: (Signature) <b>[Signature]</b>				Date:		Time:		Received for lab by: (Signature) <b>[Signature]</b>				Date: <b>8/22/14</b> Time: <b>9:00</b>				COC Seal Intact: <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA pH Checked: NCF:							



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Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

## Report Summary

Tuesday September 16, 2014

Report Number: L721006


Samples Received: 09/11/14

Client Project:

Description: Harsch #31-27

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH 31-27- TMW-08-090914 5-7.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 10:38

ESC Sample # : L721006-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	09/15/14	1
Chromium, Trivalent	16.	2.0	mg/kg	Calc.	09/15/14	1
ORP	150		mV	2580 B-2011	09/12/14	1
pH	6.9		su	9045D	09/15/14	1
Sodium Adsorption Ratio	8.2			Calc.	09/14/14	1
Specific Conductance	1400		umhos/cm	9050AMod	09/16/14	1
Mercury	BDL	0.020	mg/kg	7471	09/12/14	1
Arsenic	5.0	2.0	mg/kg	6010B	09/12/14	1
Barium	170	0.50	mg/kg	6010B	09/12/14	1
Cadmium	0.74	0.50	mg/kg	6010B	09/12/14	1
Chromium	16.	1.0	mg/kg	6010B	09/12/14	1
Copper	16.	2.0	mg/kg	6010B	09/12/14	1
Lead	16.	0.50	mg/kg	6010B	09/12/14	1
Nickel	20.	2.0	mg/kg	6010B	09/12/14	1
Selenium	BDL	2.0	mg/kg	6010B	09/12/14	1
Silver	BDL	1.0	mg/kg	6010B	09/12/14	1
Zinc	60.	5.0	mg/kg	6010B	09/12/14	1
Benzene	BDL	0.0025	mg/kg	8021	09/12/14	5
Toluene	BDL	0.025	mg/kg	8021	09/12/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	09/12/14	5
Total Xylene	BDL	0.0075	mg/kg	8021	09/12/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	09/12/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	101.		% Rec.	8015	09/12/14	5
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	09/12/14	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	09/13/14	1
Surrogate recovery(%)						
o-Terphenyl	74.4		% Rec.	3546/DRO	09/13/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
L721006-01 (PH) - 6.9@19.7c



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Est. 1970

# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH 31-27- TMW-08-090914 5-7.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 10:38

ESC Sample # : L721006-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	09/16/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	09/16/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	09/16/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	09/16/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	09/16/14	1
Surrogate Recovery						
Nitrobenzene-d5	69.7		% Rec.	8270C-SIM	09/16/14	1
2-Fluorobiphenyl	75.5		% Rec.	8270C-SIM	09/16/14	1
p-Terphenyl-d14	58.2		% Rec.	8270C-SIM	09/16/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/16/14 16:44 Printed: 09/16/14 16:45  
L721006-01 (PH) - 6.9@19.7c

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L721006-01	WG742332	SAMP	Barium	R2988405	J6B



Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
B	(EPA) - The indicated compound was found in the associated method blank as well as the laboratory sample.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed  
09/16/14 at 16:45:07

TSR Signing Reports: 358  
R4 - Rush: Three Day

Log all BTEX waters as V8260BTEX unless specified otherwise. Enter depths for all samples as part of sample ID. Try not to report benzene as BDL above a 5x dilution.

Sample: L721006-01 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/16/14 00:00 RPT Date: 09/16/14 16:44





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Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

## Report Summary

Tuesday September 16, 2014

Report Number: L721141


Samples Received: 09/11/14

Client Project:

Description: Harsch #31-27

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-01-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:13

ESC Sample # : L721141-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.8	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-02-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:17

ESC Sample # : L721141-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.0	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-03-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:22

ESC Sample # : L721141-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.8	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26



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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-04-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:28

ESC Sample # : L721141-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	2.9	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26





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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-05-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:35

ESC Sample # : L721141-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.7	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-06-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:46

ESC Sample # : L721141-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.8	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-07-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:51

ESC Sample # : L721141-07

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.7	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-08-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:54

ESC Sample # : L721141-08

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	5.3	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-09-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 09:59

ESC Sample # : L721141-09

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.6	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 09/16/14 10:25 Printed: 09/16/14 10:26



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 16, 2014

Date Received : September 11, 2014  
Description : Harsch #31-27  
Sample ID : HARSCH31-27-AS-10-090914 0-0.5FT  
Collected By : D. Coloccia  
Collection Date : 09/09/14 10:04

ESC Sample # : L721141-10  
Site ID :  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	5.5	1.0	mg/kg	6010B	09/16/14	.5

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
The reported analytical results relate only to the sample submitted.  
This report shall not be reproduced, except in full, without the written approval from ESC.  
Reported: 09/16/14 10:25 Printed: 09/16/14 10:26

Summary of Remarks For Samples Printed  
09/16/14 at 10:26:19

TSR Signing Reports: 358  
R5 - Desired TAT

Log all BTEX waters as V8260BTEX unless specified otherwise. Enter depths for all samples as part of sample ID. Try not to report benzene as BDL above a 5x dilution.

Sample: L721141-01 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-02 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-03 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-04 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-05 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-06 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-07 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-08 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-09 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25  
Sample: L721141-10 Account: ENCANLCO Received: 09/11/14 09:00 Due Date: 09/18/14 00:00 RPT Date: 09/16/14 10:25

Company Name/Address:

**ENCANLCO-EAGLE**Encana Oil and Gas  
3601 Stagecoach Rd.  
Longmont, CO 80504

Billing Information:

Encana oil and Gas

Attn: Blake Ford

ENCANLCO-EAGLE

Report to:

B. Ford, Martin Eckert III

Email to:

David.Ford@encana.com, mce3@

Project

Description: Harsch #31-27

Phone: 970-379-5558

Fax:

Client Project #

City/State  
Collected:

Lab Project #

ENCANLCO-EAGLE

Collected by (print):

D. Coloccia

Site/Facility ID #

P.O. #

Collected by (signature):

Dec

Rush? (Lab MUST Be Notified)

☐ Same Day .....200%  
☐ Next Day .....100%  
☐ Two Day .....50%  
☐ Three Day .....25%

Date Results Needed

Email? ☐ No ☒ YesFAX? ☐ No ☒ YesNo.  
of  
CntrsImmediately  
Packed on Ice N ☐ Y ☒

Sample ID

Comp/Grab

Matrix \*

Depth

Date

Time

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
Harsch 31-27-AS-01-090914	Grab	SS	0-5'	9/9/14	0913	1
Harsch 31-27-AS-02-090914					0917	1
Harsch 31-27-AS-03-090914					0922	1
Harsch 31-27-AS-04-090914					0928	1
Harsch 31-27-AS-05-090914					0935	1
Harsch 31-27-AS-06-090914					0946	1
Harsch 31-27-AS-07-090914					0951	1
Harsch 31-27-AS-08-090914					0954	1
Harsch 31-27-AS-09-090914					0959	1
Harsch 31-27-AS-10-090914					1004	1

\* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other 627 6742 8390

Remarks: Please include depth on lab report

Relinquished by: (Signature)

Relinquished by: (Signature)

Relinquished by: (Signature)

Date:

9-16-14

Time:

11:50

Received by: (Signature)

Received by: (Signature)

Received for lab by (signature)

pH \_\_\_\_\_ Temp \_\_\_\_\_

Flow \_\_\_\_\_ Other \_\_\_\_\_

Samples returned via: ☐ UPS☒ FedEx ☐ Courier ☐

Temp: \_\_\_\_\_ °C Bottles Received:

3.2 10(402)

Date: 9/11/14 Time: 0910U

Hold #

Condition: (lab use only)

COC Seal Intact: ☒ Y ☐ N ☐ NA

pH Checked:

NCF:

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



L.A.B. S.C.I.E.N.C.E.S

YOUR LAB OF CHOICE

 12065 Lebanon Rd  
 Mount Juliet, TN 37122  
 Phone: 615-758-5858  
 Phone: 800-767-5859  
 Fax: 615-758-5859


L# L721141

K040

Acctnum: ENCANLCO

Template:

Prelogin:

TSR:

Cooler:

Shipped Via:

Rem./Contaminant Sample # (lab only)

-01

-02

-03

-04

-05

-06

-07

-08

-09

-10





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Est. 1970

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

## Report Summary

Monday September 15, 2014

Report Number: L721258

Samples Received: 09/12/14

Client Project:

Description: Harsch 31-27

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 15, 2014

Date Received : September 12, 2014  
Description : Harsch 31-27  
Sample ID : HARSCH31-27-TMW-08-091014  
Collected By : D. Coloccia  
Collection Date : 09/10/14 17:00

ESC Sample # : L721258-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	7.2	1.0	ug/l	8260B	09/14/14	1
Toluene	BDL	5.0	ug/l	8260B	09/14/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	09/14/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	09/14/14	1
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	09/14/14	1
Dibromofluoromethane	102.		% Rec.	8260B	09/14/14	1
a,a,a-Trifluorotoluene	108.		% Rec.	8260B	09/14/14	1
4-Bromofluorobenzene	107.		% Rec.	8260B	09/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/15/14 10:03 Printed: 09/15/14 10:03



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

September 15, 2014

Date Received : September 12, 2014  
Description : Harsch 31-27  
Sample ID : HARSCH31-27-TMW-09-091014  
Collected By : D. Coloccia  
Collection Date : 09/10/14 16:15

ESC Sample # : L721258-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	09/14/14	1
Toluene	BDL	5.0	ug/l	8260B	09/14/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	09/14/14	1
Total Xylenes	BDL	3.0	ug/l	8260B	09/14/14	1
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	09/14/14	1
Dibromofluoromethane	102.		% Rec.	8260B	09/14/14	1
a,a,a-Trifluorotoluene	108.		% Rec.	8260B	09/14/14	1
4-Bromofluorobenzene	107.		% Rec.	8260B	09/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 09/15/14 10:03 Printed: 09/15/14 10:03

Summary of Remarks For Samples Printed  
09/15/14 at 10:03:26

TSR Signing Reports: 358  
R4 - Rush: Three Day

Log all BTEX waters as V8260BTEX unless specified otherwise. Enter depths for all samples as part of sample ID. Try not to report benzene as BDL above a 5x dilution.

Sample: L721258-01 Account: ENCANLCO Received: 09/12/14 09:00 Due Date: 09/17/14 00:00 RPT Date: 09/15/14 10:03

Sample: L721258-02 Account: ENCANLCO Received: 09/12/14 09:00 Due Date: 09/17/14 00:00 RPT Date: 09/15/14 10:03





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Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

## Report Summary

Monday February 02, 2015

Report Number: L745078


Samples Received: 01/23/15

Client Project:

Description: Harsch 31-27

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Entire Report Reviewed By:

  
Jared Willis, ESC Representative

### Laboratory Certification Numbers

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FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
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SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 02, 2015

Date Received : January 23, 2015  
Description : Harsch 31-27  
Sample ID : HARSCH 31-27-MW-01-012115 5-7.5 FT  
Collected By : Alex R  
Collection Date : 01/21/15 12:30

ESC Sample # : L745078-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	01/24/15	5
Toluene	BDL	0.025	mg/kg	8021	01/24/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	01/24/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	01/24/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	01/24/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.0		% Rec.	8015	01/24/15	5
a,a,a-Trifluorotoluene(PID)	97.7		% Rec.	8021	01/24/15	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	01/28/15	1
Surrogate recovery(%)						
o-Terphenyl	75.5		% Rec.	3546/DRO	01/28/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 02, 2015

Date Received : January 23, 2015  
Description : Harsch 31-27  
Sample ID : HARSCH 31-27-MW-02-012115 5-7.5 FT  
Collected By : Alex R  
Collection Date : 01/21/15 10:35

ESC Sample # : L745078-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	01/24/15	5
Toluene	BDL	0.025	mg/kg	8021	01/24/15	5
Ethylbenzene	0.012	0.0025	mg/kg	8021	01/24/15	5
Total Xylene	0.026	0.0075	mg/kg	8021	01/24/15	5
TPH (GC/FID) Low Fraction	1.5	0.50	mg/kg	8015	01/24/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.7		% Rec.	8015	01/24/15	5
a,a,a-Trifluorotoluene(PID)	96.6		% Rec.	8021	01/24/15	5
TPH (GC/FID) High Fraction	5.2	4.0	mg/kg	3546/DRO	01/28/15	1
Surrogate recovery(%)						
o-Terphenyl	74.8		% Rec.	3546/DRO	01/28/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 02, 2015

Date Received : January 23, 2015  
Description : Harsch 31-27  
Sample ID : HARSCH 31-27-MW-03-012115 5-7.5 FT  
Collected By : Alex R  
Collection Date : 01/21/15 11:15

ESC Sample # : L745078-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	01/24/15	5
Toluene	BDL	0.025	mg/kg	8021	01/24/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	01/24/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	01/24/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	01/24/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.2		% Rec.	8015	01/24/15	5
a,a,a-Trifluorotoluene(PID)	97.9		% Rec.	8021	01/24/15	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	01/28/15	1
Surrogate recovery(%)						
o-Terphenyl	79.9		% Rec.	3546/DRO	01/28/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 02, 2015

Date Received : January 23, 2015  
Description : Harsch 31-27  
Sample ID : HARSCH 31-27-MW-04-012115 5-7.5 FT  
Collected By : Alex R  
Collection Date : 01/21/15 13:45

ESC Sample # : L745078-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	01/31/15	5
Toluene	BDL	0.025	mg/kg	8021	01/31/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	01/31/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	01/31/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	01/24/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.3		% Rec.	8015	01/24/15	5
a,a,a-Trifluorotoluene(PID)	97.2		% Rec.	8021	01/24/15	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	01/28/15	1
Surrogate recovery(%)						
o-Terphenyl	80.1		% Rec.	3546/DRO	01/28/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 02, 2015

Date Received : January 23, 2015  
Description : Harsch 31-27  
Sample ID : HARSCH 31-27-MW-05-012115 5-7.5 FT  
Collected By : Alex R  
Collection Date : 01/21/15 09:35

ESC Sample # : L745078-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	01/26/15	5
Toluene	BDL	0.025	mg/kg	8021	01/26/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	01/26/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	01/26/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	01/26/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	91.2		% Rec.	8015	01/26/15	5
a,a,a-Trifluorotoluene(PID)	97.8		% Rec.	8021	01/26/15	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	01/28/15	1
Surrogate recovery(%)						
o-Terphenyl	76.4		% Rec.	3546/DRO	01/28/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

## Report Summary

Friday February 13, 2015

Report Number: L747646


Samples Received: 02/07/15

Client Project:

Description: HARSCH #31-27

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis , ESC Representative

### Laboratory Certification Numbers

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FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
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SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 13, 2015

Date Received : February 07, 2015  
Description : HARSCH #31-27  
Sample ID : HARSCH # 31-27-MW-01-020515  
Collected By : Alex Romansky  
Collection Date : 02/05/15 16:51

ESC Sample # : L747646-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	02/12/15	1
Toluene	BDL	5.0	ug/l	8260B	02/12/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	02/12/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	02/12/15	1
Surrogate Recovery						
Toluene-d8	101.		% Rec.	8260B	02/12/15	1
Dibromofluoromethane	91.4		% Rec.	8260B	02/12/15	1
a,a,a-Trifluorotoluene	103.		% Rec.	8260B	02/12/15	1
4-Bromofluorobenzene	108.		% Rec.	8260B	02/12/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 13, 2015

Date Received : February 07, 2015  
Description : HARSCH #31-27  
Sample ID : HARSCH # 31-27-MW-02-020515  
Collected By : Alex Romansky  
Collection Date : 02/05/15 16:22

ESC Sample # : L747646-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	02/12/15	1
Toluene	BDL	5.0	ug/l	8260B	02/12/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	02/12/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	02/12/15	1
Surrogate Recovery						
Toluene-d8	101.		% Rec.	8260B	02/12/15	1
Dibromofluoromethane	91.2		% Rec.	8260B	02/12/15	1
a,a,a-Trifluorotoluene	104.		% Rec.	8260B	02/12/15	1
4-Bromofluorobenzene	109.		% Rec.	8260B	02/12/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 13, 2015

Date Received : February 07, 2015  
Description : HARSCH #31-27  
Sample ID : HARSCH # 31-27-MW-03-020515  
Collected By : Alex Romansky  
Collection Date : 02/05/15 15:49

ESC Sample # : L747646-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	02/12/15	1
Toluene	BDL	5.0	ug/l	8260B	02/12/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	02/12/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	02/12/15	1
Surrogate Recovery						
Toluene-d8	102.		% Rec.	8260B	02/12/15	1
Dibromofluoromethane	91.5		% Rec.	8260B	02/12/15	1
a,a,a-Trifluorotoluene	104.		% Rec.	8260B	02/12/15	1
4-Bromofluorobenzene	112.		% Rec.	8260B	02/12/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 02/13/15 08:28 Printed: 02/13/15 08:29





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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 13, 2015

Date Received : February 07, 2015  
Description : HARSCH #31-27  
Sample ID : HARSCH # 31-27-MW-04-020515  
Collected By : Alex Romansky  
Collection Date : 02/05/15 15:19

ESC Sample # : L747646-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	02/12/15	1
Toluene	BDL	5.0	ug/l	8260B	02/12/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	02/12/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	02/12/15	1
Surrogate Recovery						
Toluene-d8	101.		% Rec.	8260B	02/12/15	1
Dibromofluoromethane	91.6		% Rec.	8260B	02/12/15	1
a,a,a-Trifluorotoluene	102.		% Rec.	8260B	02/12/15	1
4-Bromofluorobenzene	110.		% Rec.	8260B	02/12/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 02/13/15 08:28 Printed: 02/13/15 08:29



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(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
3601 Stagecoach Rd  
Longmont, CO 80504

February 13, 2015

Date Received : February 07, 2015  
Description : HARSCH #31-27  
Sample ID : HARSCH # 31-27-MW-05-020515  
Collected By : Alex Romansky  
Collection Date : 02/05/15 14:46

ESC Sample # : L747646-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	02/12/15	1
Toluene	BDL	5.0	ug/l	8260B	02/12/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	02/12/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	02/12/15	1
Surrogate Recovery						
Toluene-d8	101.		% Rec.	8260B	02/12/15	1
Dibromofluoromethane	91.0		% Rec.	8260B	02/12/15	1
a,a,a-Trifluorotoluene	101.		% Rec.	8260B	02/12/15	1
4-Bromofluorobenzene	110.		% Rec.	8260B	02/12/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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[illegible]



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Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
10188 East I-25 Frontage Rd  
Firestone, CO 80504

## Report Summary

Wednesday June 03, 2015

Report Number: L767041


Samples Received: 05/23/15

Client Project:

Description: Harsch #31-27

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
10188 East I-25 Frontage Rd  
Firestone, CO 80504

June 03, 2015

Date Received : May 23, 2015  
Description : Harsch #31-27  
Sample ID : HARSCH#31-27-MW-01-052215  
Collected By : Jordan Seaburger  
Collection Date : 05/22/15 12:04

ESC Sample # : L767041-01

Site ID : HARSCH #31-27

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	06/03/15	1
Toluene	BDL	5.0	ug/l	8260B	06/03/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/03/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	06/03/15	1
Surrogate Recovery						
Toluene-d8	109.		% Rec.	8260B	06/03/15	1
Dibromofluoromethane	117.		% Rec.	8260B	06/03/15	1
a,a,a-Trifluorotoluene	107.		% Rec.	8260B	06/03/15	1
4-Bromofluorobenzene	115.		% Rec.	8260B	06/03/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
10188 East I-25 Frontage Rd  
Firestone, CO 80504

June 03, 2015

Date Received : May 23, 2015  
Description : Harsch #31-27  
Sample ID : HARSCH#31-27-MW-02-052215  
Collected By : Jordan Seaburger  
Collection Date : 05/22/15 10:59

ESC Sample # : L767041-02

Site ID : HARSCH #31-27

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	06/03/15	1
Toluene	BDL	5.0	ug/l	8260B	06/03/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/03/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	06/03/15	1
Surrogate Recovery						
Toluene-d8	108.		% Rec.	8260B	06/03/15	1
Dibromofluoromethane	117.		% Rec.	8260B	06/03/15	1
a,a,a-Trifluorotoluene	103.		% Rec.	8260B	06/03/15	1
4-Bromofluorobenzene	123.		% Rec.	8260B	06/03/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 06/03/15 14:42 Printed: 06/03/15 14:43



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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
10188 East I-25 Frontage Rd  
Firestone, CO 80504

June 03, 2015

Date Received : May 23, 2015  
Description : Harsch #31-27  
Sample ID : HARSCH#31-27-MW-03-052215  
Collected By : Jordan Seaburger  
Collection Date : 05/22/15 11:30

ESC Sample # : L767041-03

Site ID : HARSCH #31-27

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	06/03/15	1
Toluene	BDL	5.0	ug/l	8260B	06/03/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/03/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	06/03/15	1
Surrogate Recovery						
Toluene-d8	112.		% Rec.	8260B	06/03/15	1
Dibromofluoromethane	112.		% Rec.	8260B	06/03/15	1
a,a,a-Trifluorotoluene	107.		% Rec.	8260B	06/03/15	1
4-Bromofluorobenzene	101.		% Rec.	8260B	06/03/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
10188 East I-25 Frontage Rd  
Firestone, CO 80504

June 03, 2015

Date Received : May 23, 2015  
Description : Harsch #31-27  
Sample ID : HARSCH#31-27-MW-04-052215  
Collected By : Jordan Seaburger  
Collection Date : 05/22/15 10:33

ESC Sample # : L767041-04

Site ID : HARSCH #31-27

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	06/03/15	1
Toluene	BDL	5.0	ug/l	8260B	06/03/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/03/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	06/03/15	1
Surrogate Recovery						
Toluene-d8	110.		% Rec.	8260B	06/03/15	1
Dibromofluoromethane	116.		% Rec.	8260B	06/03/15	1
a,a,a-Trifluorotoluene	101.		% Rec.	8260B	06/03/15	1
4-Bromofluorobenzene	107.		% Rec.	8260B	06/03/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 06/03/15 14:42 Printed: 06/03/15 14:43





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REPORT OF ANALYSIS

Blake Ford / Martin Eckert III  
EnCana Oil & Gas - Longmont, CO  
10188 East I-25 Frontage Rd  
Firestone, CO 80504

June 03, 2015

Date Received : May 23, 2015  
Description : Harsch #31-27  
Sample ID : HARSCH#31-27-MW-05-052215  
Collected By : Jordan Seaburger  
Collection Date : 05/22/15 10:03

ESC Sample # : L767041-05

Site ID : HARSCH #31-27

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	1.0	ug/l	8260B	06/03/15	1
Toluene	BDL	5.0	ug/l	8260B	06/03/15	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/03/15	1
Total Xylenes	BDL	3.0	ug/l	8260B	06/03/15	1
Surrogate Recovery						
Toluene-d8	111.		% Rec.	8260B	06/03/15	1
Dibromofluoromethane	114.		% Rec.	8260B	06/03/15	1
a,a,a-Trifluorotoluene	103.		% Rec.	8260B	06/03/15	1
4-Bromofluorobenzene	112.		% Rec.	8260B	06/03/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 06/03/15 14:42 Printed: 06/03/15 14:43

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L767041-02	WG791351	SAMP	4-Bromofluorobenzene	R3041073	J1

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Company Name/Address:

**ENCANLCO-EAGLE**Encana Oil and Gas  
3601 Stagecoach Rd.  
Longmont, CO 80504

Billing Information:

Encana oil and Gas

Attn: Blake Ford

ENCANLCO-EAGLE

Report to:

**B. Ford, Martin Eckert III**

Email To:

David.Ford@encana.com, mce3@

Project

Description: **Harsch # 31-27**

City/State

Collected:

Phone: **970-379-5558**

Client Project #

Lab Project #

ENCANLCO-EAGLE

Fax:

Collected by (print):

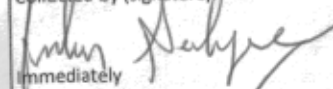
Jordan Seeburger

Site/Facility ID #

Harsch #31-27

P.O. #

Collected by (signature):


**Rush?** (Lab MUST Be Notified)

☐ Same Day .....200%  
☐ Next Day .....100%  
☐ Two Day .....50%  
☐ Three Day .....25%

Date Results Needed

Email? ☐ No ☒ YesFAX? ☐ No ☐ YesNo.  
of  
Cntrs

Sample ID

Comp/Grab

Matrix \*

Depth

Date

Time

No.  
of  
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
Harsch #31-27-MW-01-052215	Grab	GW	N/A	5/22/15	1204	2
Harsch #31-27-MW-02-052215	↓	↓	↓	↓	1059	2
Harsch #31-27-MW-03-052215	↓	↓	↓	↓	1130	2
Harsch #31-27-MW-04-052215	↓	↓	↓	↓	1033	2
Harsch #31-27-MW-05-052215	↓	↓	↓	↓	1003	2

\* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other \_\_\_\_\_

Remarks:

Relinquished by: (Signature)



Date:

5/22/15

Time:

3:45

Received by: (Signature)



Relinquished by: (Signature)



Date:

5/22/15

Time:

7:30

Received by: (Signature)



Relinquished by: (Signature)



Date:

5/23/15

Time:

0800

Received for lab by: (Signature)



Analysis / Container / Preservative

Chain of Custody Page \_\_\_ of \_\_\_



YOUR LAB OF CHOICE

 12065 Lebanon Rd  
 Mount Juliet, TN 37122  
 Phone: 615-758-5858  
 Phone: 800-767-5859  
 Fax: 615-758-5859


L# 747041

D111

Acctnum: ENCANLCO -

Template: EAGLE

Prelogin:

TSR:

Cooler:

Shipped Via:

Rem./Contaminant Sample # (lab only)

-01

-02

-03

-04

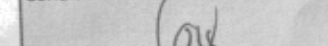
-05

pH \_\_\_\_\_ Temp \_\_\_\_\_

Flow \_\_\_\_\_ Other \_\_\_\_\_

Hold #

Condition: (lab use only)


COC Seal Intact: ☐ Y ☐ N ☐ NA

pH Checked:

NCF:

Samples returned via: ☐ UPS☐ FedEx ☐ Courier ☒ SWA

Temp: °C Bottles Received:

3.1 10 v

Date: 5/23/15 Time: 0800

## EnCana Oil & Gas - Longmont, CO

Sample Delivery Group: L782890  
Samples Received: 08/14/2015  
Project Number:  
Description: HARSCH #37-27  
Site: HARSCH #37-27  
Report To: Blake Ford / Martin Eckert III  
10188 East I-25 Frontage Rd  
Firestone, CO 80504

Entire Report Reviewed By:



Jarred Willis

Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



<sup>1</sup> Cp: Cover Page	1	<sup>1</sup> Cp
<sup>2</sup> Tc: Table of Contents	2	<sup>2</sup> Tc
<sup>3</sup> Ss: Sample Summary	3	<sup>3</sup> Ss
<sup>4</sup> Cn: Case Narrative	4	<sup>4</sup> Cn
<sup>5</sup> Sr: Sample Results	5	<sup>5</sup> Sr
HARSCH#31-27-MW-01-081215   L782890-01	5	
HARSCH#31-27-MW-02-081215   L782890-02	6	
HARSCH#31-27-MW-03-081215   L782890-03	7	
HARSCH#31-27-MW-04-081215   L782890-04	8	
HARSCH#31-27-MW-05-081215   L782890-05	9	
<sup>6</sup> Gl: Glossary of Terms	10	<sup>6</sup> Gl
<sup>7</sup> Al: Accreditations & Locations	11	<sup>7</sup> Al
<sup>8</sup> Sc: Chain of Custody	12	<sup>8</sup> Sc



## HARSCH#31-27-MW-01-081215 L782890-01 GW

Collected by  
Jordan SeaburgerCollected date/time  
08/12/15 17:51Received date/time  
08/14/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG809321	1	08/20/15 19:50	08/20/15 19:50	KLO

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc

## HARSCH#31-27-MW-02-081215 L782890-02 GW

Collected by  
Jordan SeaburgerCollected date/time  
08/12/15 18:11Received date/time  
08/14/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG809321	1	08/20/15 20:08	08/20/15 20:08	KLO

## HARSCH#31-27-MW-03-081215 L782890-03 GW

Collected by  
Jordan SeaburgerCollected date/time  
08/12/15 17:32Received date/time  
08/14/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG809321	1	08/20/15 20:25	08/20/15 20:25	KLO

## HARSCH#31-27-MW-04-081215 L782890-04 GW

Collected by  
Jordan SeaburgerCollected date/time  
08/12/15 17:12Received date/time  
08/14/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG809321	1	08/20/15 20:43	08/20/15 20:43	KLO

## HARSCH#31-27-MW-05-081215 L782890-05 GW

Collected by  
Jordan SeaburgerCollected date/time  
08/12/15 18:20Received date/time  
08/14/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG809321	1	08/20/15 23:14	08/20/15 23:14	KLO



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jarred Willis  
Technical Service Representative

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Gl

<sup>7</sup> Al

<sup>8</sup> Sc





## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	08/20/2015 19:50	WG809321
Toluene	ND		5.00	1	08/20/2015 19:50	WG809321
Ethylbenzene	ND		1.00	1	08/20/2015 19:50	WG809321
Total Xylenes	ND		3.00	1	08/20/2015 19:50	WG809321
(S) Toluene-d8	104		90.0-115		08/20/2015 19:50	WG809321
(S) Dibromofluoromethane	105		79.0-121		08/20/2015 19:50	WG809321
(S) a,a,a-Trifluorotoluene	103		90.4-116		08/20/2015 19:50	WG809321
(S) 4-Bromofluorobenzene	102		80.1-120		08/20/2015 19:50	WG809321

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc



## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	08/20/2015 20:08	WG809321
Toluene	ND		5.00	1	08/20/2015 20:08	WG809321
Ethylbenzene	ND		1.00	1	08/20/2015 20:08	WG809321
Total Xylenes	ND		3.00	1	08/20/2015 20:08	WG809321
(S) Toluene-d8	103		90.0-115		08/20/2015 20:08	WG809321
(S) Dibromofluoromethane	103		79.0-121		08/20/2015 20:08	WG809321
(S) a,a,a-Trifluorotoluene	103		90.4-116		08/20/2015 20:08	WG809321
(S) 4-Bromofluorobenzene	96.8		80.1-120		08/20/2015 20:08	WG809321

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc



## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	08/20/2015 20:25	WG809321
Toluene	ND		5.00	1	08/20/2015 20:25	WG809321
Ethylbenzene	ND		1.00	1	08/20/2015 20:25	WG809321
Total Xylenes	ND		3.00	1	08/20/2015 20:25	WG809321
(S) Toluene-d8	103		90.0-115		08/20/2015 20:25	WG809321
(S) Dibromofluoromethane	108		79.0-121		08/20/2015 20:25	WG809321
(S) a,a,a-Trifluorotoluene	103		90.4-116		08/20/2015 20:25	WG809321
(S) 4-Bromofluorobenzene	101		80.1-120		08/20/2015 20:25	WG809321

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc



## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	08/20/2015 20:43	WG809321
Toluene	ND		5.00	1	08/20/2015 20:43	WG809321
Ethylbenzene	ND		1.00	1	08/20/2015 20:43	WG809321
Total Xylenes	ND		3.00	1	08/20/2015 20:43	WG809321
(S) Toluene-d8	102		90.0-115		08/20/2015 20:43	WG809321
(S) Dibromofluoromethane	104		79.0-121		08/20/2015 20:43	WG809321
(S) a,a,a-Trifluorotoluene	103		90.4-116		08/20/2015 20:43	WG809321
(S) 4-Bromofluorobenzene	99.6		80.1-120		08/20/2015 20:43	WG809321

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc



## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	08/20/2015 23:14	WG809321
Toluene	ND		5.00	1	08/20/2015 23:14	WG809321
Ethylbenzene	ND		1.00	1	08/20/2015 23:14	WG809321
Total Xylenes	ND		3.00	1	08/20/2015 23:14	WG809321
(S) Toluene-d8	101		90.0-115		08/20/2015 23:14	WG809321
(S) Dibromofluoromethane	106		79.0-121		08/20/2015 23:14	WG809321
(S) a,a,a-Trifluorotoluene	113		90.4-116		08/20/2015 23:14	WG809321
(S) 4-Bromofluorobenzene	95.6		80.1-120		08/20/2015 23:14	WG809321

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc



## Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
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The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

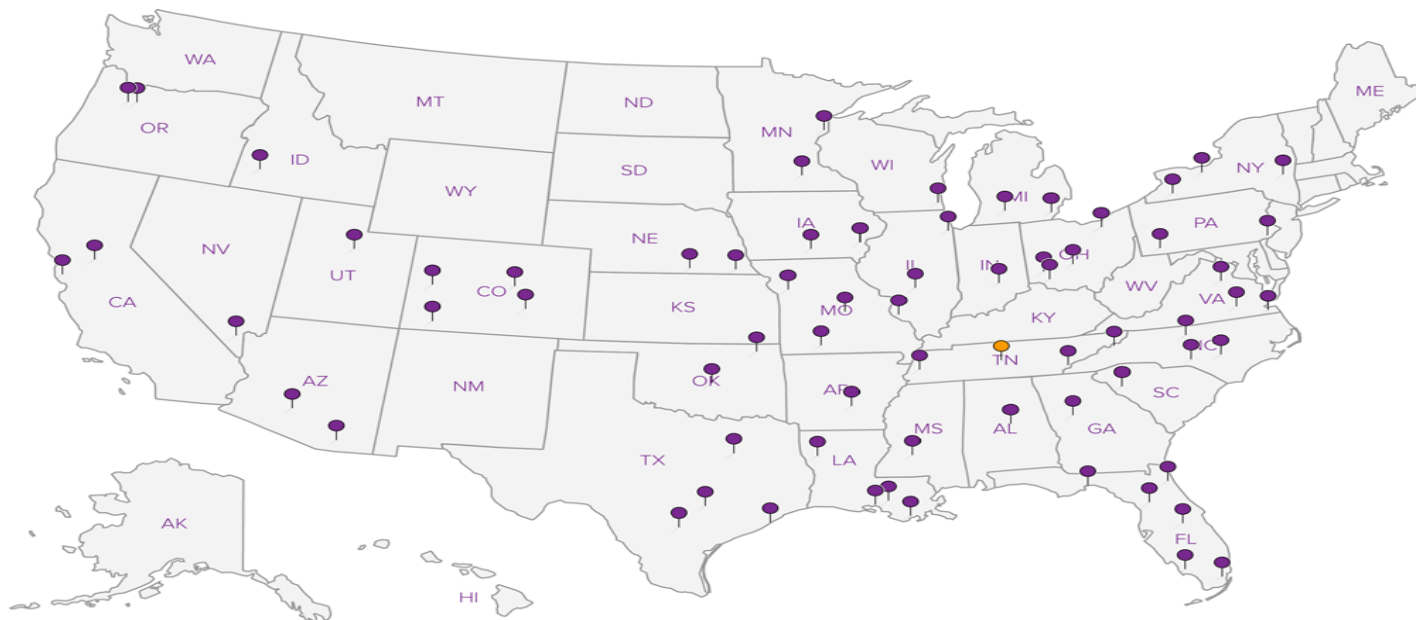
<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>n/a</sup> Accreditation not applicable

## Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA–Crypto	TN00003	USDA	S-67674

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



[illegible]



## EnCana Oil & Gas - Longmont, CO

Sample Delivery Group: L798669  
Samples Received: 11/04/2015  
Project Number:  
Description: Harsch #31-27  
Site: HARSCH #31-27  
Report To: Blake Ford / Martin Eckert III  
10188 East I-25 Frontage Rd  
Firestone, CO 80504

Entire Report Reviewed By:



Jarred Willis

Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



<sup>1</sup> Cp: Cover Page	1	<sup>1</sup> Cp
<sup>2</sup> Tc: Table of Contents	2	<sup>2</sup> Tc
<sup>3</sup> Ss: Sample Summary	3	<sup>3</sup> Ss
<sup>4</sup> Cn: Case Narrative	4	<sup>4</sup> Cn
<sup>5</sup> Sr: Sample Results	5	<sup>5</sup> Sr
MARSCH #31-27-MW-01-110215   L798669-01	5	
MARSCH #31-27-MW-02-110215   L798669-02	6	
MARSCH #31-27-MW-03-110215   L798669-03	7	
MARSCH #31-27-MW-04-110215   L798669-04	8	
MARSCH #31-27-MW-05-110215   L798669-05	9	
<sup>6</sup> Gl: Glossary of Terms	10	<sup>6</sup> Gl
<sup>7</sup> Al: Accreditations & Locations	11	<sup>7</sup> Al
<sup>8</sup> Sc: Chain of Custody	12	<sup>8</sup> Sc



## MARSCH #31-27-MW-01-110215 L798669-01 GW

Collected by  
Jordan SeeburgerCollected date/time  
11/02/15 12:04Received date/time  
11/04/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG826865	1	11/05/15 14:47	11/05/15 14:47	BMB

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc

## MARSCH #31-27-MW-02-110215 L798669-02 GW

Collected by  
Jordan SeeburgerCollected date/time  
11/02/15 12:36Received date/time  
11/04/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG826865	1	11/05/15 12:48	11/05/15 12:48	BMB

## MARSCH #31-27-MW-03-110215 L798669-03 GW

Collected by  
Jordan SeeburgerCollected date/time  
11/02/15 11:18Received date/time  
11/04/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG826865	1	11/05/15 15:08	11/05/15 15:08	BMB

## MARSCH #31-27-MW-04-110215 L798669-04 GW

Collected by  
Jordan SeeburgerCollected date/time  
11/02/15 11:41Received date/time  
11/04/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG826865	1	11/05/15 15:29	11/05/15 15:29	BMB

## MARSCH #31-27-MW-05-110215 L798669-05 GW

Collected by  
Jordan SeeburgerCollected date/time  
11/02/15 13:04Received date/time  
11/04/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG826865	1	11/05/15 15:50	11/05/15 15:50	BMB



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jarred Willis  
Technical Service Representative





Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	11/05/2015 14:47	WG826865
Toluene	ND		5.00	1	11/05/2015 14:47	WG826865
Ethylbenzene	ND		1.00	1	11/05/2015 14:47	WG826865
Total Xylenes	ND		3.00	1	11/05/2015 14:47	WG826865
(S) Toluene-d8	100		90.0-115		11/05/2015 14:47	WG826865
(S) Dibromofluoromethane	103		79.0-121		11/05/2015 14:47	WG826865
(S) a,a,a-Trifluorotoluene	105		90.4-116		11/05/2015 14:47	WG826865
(S) 4-Bromofluorobenzene	95.3		80.1-120		11/05/2015 14:47	WG826865

1Cp

2Tc

3Ss

4Cn

5Sr

6Gl

7Al

8Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	11/05/2015 12:48	WG826865
Toluene	ND		5.00	1	11/05/2015 12:48	WG826865
Ethylbenzene	ND		1.00	1	11/05/2015 12:48	WG826865
Total Xylenes	ND		3.00	1	11/05/2015 12:48	WG826865
(S) Toluene-d8	100		90.0-115		11/05/2015 12:48	WG826865
(S) Dibromofluoromethane	100		79.0-121		11/05/2015 12:48	WG826865
(S) a,a,a-Trifluorotoluene	102		90.4-116		11/05/2015 12:48	WG826865
(S) 4-Bromofluorobenzene	96.6		80.1-120		11/05/2015 12:48	WG826865

1Cp

2Tc

3Ss

4Cn

5Sr

6Gl

7Al

8Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	11/05/2015 15:08	WG826865
Toluene	ND		5.00	1	11/05/2015 15:08	WG826865
Ethylbenzene	ND		1.00	1	11/05/2015 15:08	WG826865
Total Xylenes	ND		3.00	1	11/05/2015 15:08	WG826865
(S) Toluene-d8	99.5		90.0-115		11/05/2015 15:08	WG826865
(S) Dibromofluoromethane	104		79.0-121		11/05/2015 15:08	WG826865
(S) a,a,a-Trifluorotoluene	103		90.4-116		11/05/2015 15:08	WG826865
(S) 4-Bromofluorobenzene	96.6		80.1-120		11/05/2015 15:08	WG826865

1Cp

2Tc

3Ss

4Cn

5Sr

6Gl

7Al

8Sc



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	11/05/2015 15:29	WG826865
Toluene	ND		5.00	1	11/05/2015 15:29	WG826865
Ethylbenzene	ND		1.00	1	11/05/2015 15:29	WG826865
Total Xylenes	ND		3.00	1	11/05/2015 15:29	WG826865
(S) Toluene-d8	100		90.0-115		11/05/2015 15:29	WG826865
(S) Dibromofluoromethane	104		79.0-121		11/05/2015 15:29	WG826865
(S) a,a,a-Trifluorotoluene	104		90.4-116		11/05/2015 15:29	WG826865
(S) 4-Bromofluorobenzene	95.7		80.1-120		11/05/2015 15:29	WG826865

1Cp

2Tc

3Ss

4Cn

5Sr

6Gl

7Al

8Sc





Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	11/05/2015 15:50	WG826865
Toluene	ND		5.00	1	11/05/2015 15:50	WG826865
Ethylbenzene	ND		1.00	1	11/05/2015 15:50	WG826865
Total Xylenes	ND		3.00	1	11/05/2015 15:50	WG826865
(S) Toluene-d8	101		90.0-115		11/05/2015 15:50	WG826865
(S) Dibromofluoromethane	104		79.0-121		11/05/2015 15:50	WG826865
(S) a,a,a-Trifluorotoluene	104		90.4-116		11/05/2015 15:50	WG826865
(S) 4-Bromofluorobenzene	96.1		80.1-120		11/05/2015 15:50	WG826865

1Cp

2Tc

3Ss

4Cn

5Sr

6Gl

7Al

8Sc



## Abbreviations and Definitions

SDG	Sample Delivery Group.
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RDL	Reported Detection Limit.
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(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
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Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
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The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Gl<sup>7</sup> Al<sup>8</sup> Sc



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Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
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Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

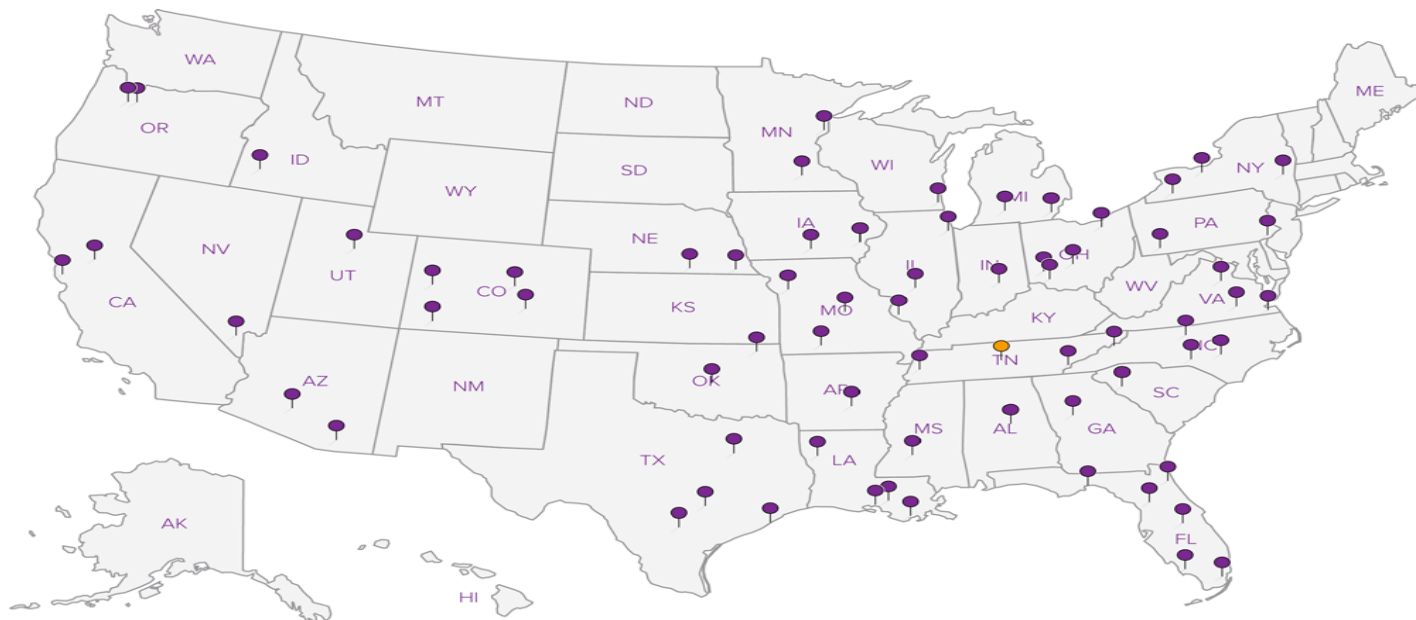
## Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>n/a</sup> Accreditation not applicable

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## **ATTACHMENT C**

### **Colorado DWR Well Permits**

GWS-61  
3/2013**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](mailto:dwrpermitsonline@state.co.us)  
COLORADO DIVISION OF WATER RESOURCES-1313 SHERMAN ST-STE 821-DENVER-CO-80203  
PHONE: 303-866-3581--FAX 303-866-3589 WEB: [www.water.state.co.us](http://www.water.state.co.us)**RECEIVED****MAR 04 2015****WATER RESOURCES  
STATE ENGINEER  
GOLD**Well Owner Name(s): Encana Oil and Gas Inc.Address : 3601 Stagecoach Road, Longmont, CO 80504Phone (area code & no.): 303-774-3900Landowner's Name: Boulder County

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 CRS 34-1-201(3)☒ Other -anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologistContact / Company Eagle Environmental Consulting, Inc.Address 4101 Inca StreetCity, State & Zip Denver, CO 80211Phone 303-433-0479 Fax 303-325-5449Print Name: Bethany CarlSign or enter full name here: Bethany CarlLocation: SW  $\frac{1}{4}$  NE  $\frac{1}{4}$  Section 27Township 2  $\frac{1}{4}$  N  $\frac{1}{4}$  S. Range 69  $\frac{1}{4}$  E  $\frac{1}{4}$  W. 6 PMCounty Boulder

Subdivision: \_\_\_\_\_

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

Site/Property Address Lat./Long40.112721/-105.101354

GPS Location in UTM format (optional):

Set GPS unit to true north, datum NAD83, and use meters for the distance units,  $1^{\circ}$  Zone 12 or  $1^{\circ}$  Zone 13

Easting \_\_\_\_\_ Northing \_\_\_\_\_

# of Monitoring Hole(s) to be constructed: 5Estimated Depth 12 Ft., Aquifer Type IIIPurpose of Monitoring Hole(s) groundwater monitoringAnticipated Date of Construction (mm/dd/yyyy) 03/09/2015Date Notice Submitted (mm/dd/yyyy): 03/04/2015

(Must be at least 3 days prior to construction)

**ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE  
FOR OFFICE USE ONLY****053428**

- MH

PROCESSED BY

Div. 1WD 5

BAS \_\_\_\_\_

MD \_\_\_\_\_

DATE ACKNOWLEDGED

03/04/2015**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 3 days 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 shall 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. Minimum construction standards must be met or a variance obtained. Standard permit application and work report forms, including online filing instructions, are found on the DWR website at <http://www.water.state.co.us>. Well Construction and Test 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.
- 4) Unless a well permit is obtained, or variance approved, the hole(s) must be plugged and sealed within one (1) year after construction. An Abandonment Report (form GWS-9) 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) The owner of the hole(s) shall maintain records of water quality testing and submit this data to the State Engineer upon request.
- 6) 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.
- 7) 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 FAX THE COPY TO THE DIVISION OF WATER RESOURCES.

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

[illegible]

FORM NO. GWS-31 4/2012		<b>WELL CONSTRUCTION AND TEST REPORT</b> STATE OF COLORADO, OFFICE OF THE STATE ENGINEER 1313 Sherman St., Ste 821, Denver, CO 80203 Main (303) 866-3581 Fax (303) 866-3589 www.water.state.co.us			For Office Use Only	
<b>1. WELL PERMIT NUMBER:</b> 053428-MH						
<b>2. WELL OWNER INFORMATION</b>						
NAME OF WELL OWNER: Encana Oil & Gas Inc. (Care of Eagle Environmental Consulting)						
MAILING ADDRESS: 4101 Inca Street						
CITY: Denver		STATE: CO		ZIP CODE: 80211		
TELEPHONE NUMBER w/area code: 303-433-0479						
<b>3. WELL LOCATION AS DRILLED:</b> SW 1/4, NE 1/4, Sec., 27 Twp 2 <input checked="" type="checkbox"/> N or S, <input type="checkbox"/> Range 69 <input type="checkbox"/> E or W <input checked="" type="checkbox"/>						
DISTANCES FROM SEC. LINES: 1214 ft. from <input checked="" type="checkbox"/> N or <input type="checkbox"/> S section line and 2202 ft. from <input checked="" type="checkbox"/> E or <input type="checkbox"/> W section line.						
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____						
Optional GPS Location: GPS Unit must use the following settings: Format must be UTM, Units must be meters, Datum must be NAD83, Unit must be set to true N, <input type="checkbox"/> Zone 12 or <input type="checkbox"/> Zone 13						
STREET ADDRESS AT WELL LOCATION: Lat.Long.:40.112721/-105.101354 Northing: _____						
<b>4. GROUND SURFACE ELEVATION</b> 5012 feet <b>DRILLING METHOD</b> Geoprobe 7822 DT						
<b>DATE COMPLETED</b> 03/09/2015 <b>TOTAL DEPTH</b> 12 feet <b>DEPTH COMPLETED</b> 12 feet						
<b>5. GEOLOGIC LOG:</b>						
Depth	Type	Grain Size	Color	Water Loc.		
0-12	silty CLAY		light brown	-12		
<b>6. HOLE DIAM (in.)</b> From (ft) To (ft)						
2.00 0 12						
<b>7. PLAIN CASING:</b>						
OD (in) Kind Wall Size (in) From (ft) To (ft)						
2.375 sch. 40 0.154 0 2						
<b>PERFORATED CASING:</b> Screen Slot Size (in): 0.010						
2.375 sch. 40 0.154 2 12						
<b>8. FILTER PACK:</b>						
Material silica sand						
Size 10/20						
Interval 1.5-12						
<b>9. PACKER PLACEMENT:</b>						
Type bentonite						
med chip						
Depth 0-1.5						
<b>10. GROUTING RECORD</b>						
Material Amount Density Interval Placement						
Remarks: _____						
<b>11. DISINFECTION:</b> Type _____ Amt. Used _____						
<b>12. WELL TEST DATA:</b> <input type="checkbox"/> Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.						
<b>TESTING METHOD</b>						
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.						
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____						
Remarks: groundwater monitoring well only						
<b>13. 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 \$5000 and/or revocation of the contracting license. If filing online the State Engineer considers entering of licensed contractor name to be compliance with Rule 17.4</b>						
Company Name: Eagle Environmental Consulting, Inc.			Phone w/area code: 303.433.0479		License Number:	
Mailing Address: 4101 Inca Street Denver CO, 80211						
Sign (or enter name if filing online) Bethany Carl		Print Name and Title Bethany Carl, Administrative Assistant		Date 03/10/2015		



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