



October 20, 2017

Ales Fischer, P.G.
Environmental Supervisor, Western Colorado
1120 Lincoln Street, Suite 801
Denver, Colorado 80203

**RE: Excavation and Assessment Summary
K35 CDP Pipeline Release (Spill/Release Point ID – 452145)
Caerus Oil and Gas LLC
Garfield County, Colorado**

Mr. Fischer,

LT Environmental, Inc. (LTE), at the request of Caerus Oil and Gas LLC (Caerus), is providing this status summary of excavation and assessment activities associated with the K35 CDP Pipeline Release, Garfield County, Colorado (Site). These activities were conducted in response to a release of petroleum hydrocarbons initially observed on September 11, 2017 following a failed pressure test of the line.

Excavation Activities

On September 11, 2017, Caerus personnel conducted excavation activities around the release point. Soil was excavated to a depth of 7 feet (ft.) below ground surface (bgs.) to 15 ft. bgs. Soil samples were collected from the excavation and submitted to ALS Environmental in Holland, Michigan (ALS) for laboratory analysis of constituents identified in Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1. Laboratory analytical results of excavation soil samples indicated hydrocarbon impacts to soil.

Site Assessment Activities

From October 9 through 18, 2017, LTE installed nine soil borings in the project area advanced to depths ranging from 15 to 50 ft. bgs. The soil borings were logged by an LTE geologist who inspected the soil for the presence or absence of petroleum hydrocarbon odor and/or staining. The soil was characterized by visually inspecting the soil samples and field screening the soil headspace using a photo-ionization detector (PID) to monitor for the presence of volatile organic vapors. Soil samples were collected from each soil boring and submitted to ALS for laboratory analysis of constituents identified in COGCC Table 910-1. Monitoring wells were constructed in each borehole by installing screened casing across the groundwater interface and solid casing to surface. Each well was protected by installing a solid steel riser over the well to approximately 3 feet above ground surface.



Groundwater Sampling

Following well construction, each groundwater monitoring well was developed using a foot valve pump and surge block. During well development, ten well casing volumes of groundwater were removed from each well. Depth to water and product thickness were measured in all wells during this sampling event utilizing an oil water interface probe. Depth to water ranges from 6 ft. bgs. in MW-06 to 39 ft. bgs. in MW-08. Light Non-Aqueous Phase Liquid (LNAPL) has been observed in monitoring wells MW-01, MW-02, MW-04, MW-05 and MW-08. Product thickness ranges from approximately 0.1 inches in MW-05 to 3 inches in MW-01. Additionally, groundwater samples were collected from a domestic water well (permit #290931) approximately 1,500 feet downgradient of MW-06. This well is owned by Caerus and provides water for the hunting cabins nearby. The hunting cabins are also owned by Caerus and only used by Caerus employees. Groundwater samples were submitted to ALS for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX). The attached figure illustrates the location of all groundwater monitoring wells that have been installed to date.

Sampling Analytical Results

Laboratory analytical results are still pending for some soil and groundwater samples. The following is a summary of results received to date. Laboratory analytical results of groundwater samples collected from Caerus' water well do not indicate any concentrations of BTEX above the laboratory method detection limit. Laboratory analytical results of soil samples collected from the excavation at the point of release indicate a total petroleum hydrocarbon (TPH) concentration of 78,300 milligrams per kilogram (mg/kg) and benzene concentration of 180 mg/kg. Laboratory analytical results of soil samples collected within soil borings indicate TPH concentrations up to 14,300 mg/kg and benzene concentrations up to 11 mg/kg. Laboratory analytical results of groundwater samples indicate benzene concentrations up to 9,700 micrograms per liter ($\mu\text{g/L}$). Laboratory analytical results of both soil and groundwater collected from MW-06 do not indicate concentrations of TPH or BTEX above the laboratory method detection limits. Therefore, MW-06 is considered a down-gradient point of compliance.

If you have any questions or desire further information, please contact Jake Janicek at (970) 778-2314 or myself at (970) 285-9985.

Sincerely,

LT ENVIRONMENTAL, INC.

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

Chris McKisson
West Slope Manager



Attachments

Figure 1 - Site Map



IMAGE COURTESY OF GOOGLE EARTH 2016

LEGEND

-  MONITORING WELL
-  RELEASE LOCATION

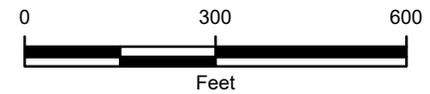


FIGURE 1
SITE MAP
K35 CDP PIPELINE
GARFIELD COUNTY, COLORADO

CAERUS OIL AND GAS, LLC

