



Nicholson GeoSolutions LLC

3433 East Lake Drive
Centennial, CO 80121

September 20, 2017

Mr. Derek Johnson
Berry Petroleum Company
235 Callahan Avenue
Parachute, Colorado 81635

Subject: F-01 Landfarm Sampling Results

Dear Derek:

Nicholson GeoSolutions LLC collected a screening level soil sample from the landfarm on the F-01 well pad in the Garden Gulch area, Garfield County, Colorado. Sampling was conducted on September 10th, 2017. The sample was composited from 16 subsamples collected at depths of about 18 inches across the surface of the landfarm. The sample was analyzed for Total Volatile Petroleum Hydrocarbons (TVPH – gasoline range), Total Extractable Petroleum Hydrocarbons (TEPH – diesel and motor oil range), BTEX (benzene, toluene, ethylbenzene, and xylenes) and PAHs to evaluate compliance with the COGCC Table 910-1 standards and further treatment needs. Inorganic parameters (SAR, pH, conductivity, and metals) were not analyzed for this sample since these parameters have been previously well characterized. The laboratory report is attached.

Benzo(a)pyrene was reported at 0.0577 mg/kg and dibenz(a,h)anthracene was reported at 0.0225 mg/kg (COGCC standard = 0.022 mg/kg for both compounds). All other results were below the standards.

The attached graph shows the concentrations of benzo(a)pyrene in the landfarm from September 2012 to the present. Benzo(a)pyrene concentrations in the F-01 landfarm fell from 0.11 mg/kg on September 24th, 2012 to 0.028 mg/kg on November 1st, 2014, then rose to 0.0577 mg/kg for the most recent sample event.

Further treatment of this landfarm should be conducted. The landfarm should be sampled again in the spring of 2018 to reassess the benzo(a)pyrene and dibenz(a,h)anthracene concentrations.

Nicholson GeoSolutions LLC



David K. Nicholson, P.G.
Principal Geologist

