

January 24, 2018

Karen Shanahan Olson
Senior EHS Manager
PDC Energy, Inc.
1775 Sherman Street, Suite 3000
Denver, CO 80203

**RE: Produced Water Vessel Closure Report
Billings 43, 44-21 Produced Water Vessel
Facility ID #: 327580
NESE S21 T6N R66W**

Dear Mrs. Olson,

On behalf of PDC Energy, Inc. (PDC), Tasman Geosciences, Inc. (Tasman) has prepared this Produced Water Vessel Closure Report (Report) to document environmental sampling activities performed in accordance with the removal of the produced water vessel at the Billings 43, 44-21 tank battery. This Report is being submitted under the Form 27 Management Plan for Closure of Produced Water Vessels, which was assigned Blanket Remediation #9440 by the Colorado Oil and Gas Conservation Commission (COGCC).

A summary of excavation and environmental sampling activities is provided below.

Site Assessment Activities

Between January 9 and January 16, 2018, confirmation soil sampling activities were conducted following the removal of the partially buried produced water vessel. Soil encountered in the excavation was field screened for volatile organic compound (VOC) concentrations in soil using a photoionization detector (PID). Approximately 340 cubic yards of impacted material were excavated and transported to the North Weld Waste Management Facility in Ault, Colorado for disposal under PDC manifests. Five (5) soil samples (SS03 – SS04, and SS06 – SS08) were collected from the sidewalls of the final excavation extent at approximately 9 feet below ground surface (bgs). The samples were submitted to Summit Scientific Laboratories in Golden, Colorado for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260B, and TPH – diesel range organics (DRO) by USEPA Method 8015.

Analytical results indicated that organic compound concentrations were in compliance with COGCC Table 910-1 soil standards in all five soil sample locations.

Groundwater was encountered in the excavation area at approximately 11 feet bgs. Between January 16 and January 23, 2018, approximately 100 barrels were removed via vacuum truck and transported to a licensed disposal facility. On January 23, 2018, one groundwater sample (GW01) was collected from the excavation and submitted to Summit for laboratory analysis of BTEX by USEPA Method 8260B.

Analytical results indicated that constituent concentrations were below the applicable COGCC regulatory groundwater standards in the groundwater sample collected from the excavation.

The excavation extent and sample locations are illustrated on Figure 1. Soil analytical data is summarized in Table 1 and the laboratory analytical report is included as Attachment A.

Conclusions

Based on the soil and groundwater analytical data described herein, petroleum hydrocarbon impacts in exceedance of regulatory standards were successfully removed during excavation activities. Consequently, no further site investigation is recommended at this time.

Please contact me at (720) 409-8791 if you have questions regarding this report.

Sincerely,

Tasman Geosciences, Inc.



Christine Hamlin
Program Manager