

November 15, 2022

**CERTIFIED MAIL NO.** [REDACTED]

[REDACTED]

Re: Water Supply Request for Investigation  
DEP Identifier: 357415  
Positive Determination -- 58 Pa. C.S § 3218  
Connoquenessing Township, Butler County

[REDACTED]

The Department has completed its investigation of your water supply listed in Exhibit A (“Water Supply”). Based on the sample results and other information obtained to date, the Department has determined that the Water Supply has likely been adversely affected by oil and gas activities including but not limited to the drilling, alteration, or operation of an oil or gas well. The oil and gas wells involved are likely historic abandoned oil and gas wells which have been compromised over time. It is likely, based on other compliant information in the area, that the local aquifer has been affected. This information was relayed to you within two emails dated December 15, 2021 and January 13, 2022. The case information is summarized below, as well as the full spreadsheet of sample analyses attached.

**CASE INFORMATION:**

<b>Date of Complaint</b>	<b>Nature of Complaint</b> (odor, taste, quantity, use, color)	<b>Sample Results Above Statewide Standards in Pretreated Water</b> <b>(None above drinking water standards in the water treated by the current functioning treatment system)</b>
June 14, 2021	Issues related to the well (cistern) running dry, and the water smelling like diesel and sulfur	Iron 0.359 mg/l (0.3 mg/l std) Total Dissolved Solids 584 mg/l (500 mg/l std) Methane 9.06 mg/l (7 mg/l action level)

## **INVESTIGATION SUMMARY:**

This complaint, received by the Department in person on the property June 11, 2021, involved the water well running dry on June 10, 2021, and a diesel fuel smell and sulfur smell. This is a historic area of conventional and unconventional oil and gas well drilling, as well as strip and deep mining, and extensive water well drilling. This area is also known to have low yield aquifers, likely due to the increase in population density in recent years/decades. The complainant purchased this property in June of 2021. There was no water well record found for the complainant's well in the Pennsylvania Ground Water Information System; however, the well depth is said to be 460 -feet-deep. Surrounding unconventional and conventional gas wells were inspected in response to this complaint. There had been a recent complaint (CID 353804), filed on the same water well, which prompted the inclusion of those sample results here for your records.

Department personnel have reported 21 abandoned oil and gas wells in the area which are slated for plugging with the use of funding from the Infrastructure Investment and Jobs Act. Samples were obtained on June 11, 2021 of the raw cistern water, and on September 2, 2021 of the raw cistern water, treated water through the aerator, carbon filter, and reverse osmosis unit at the kitchen sink. The September untreated sample showed a marked decline in the chloride and total dissolved solids levels, although the iron, and methane remained above drinking water standards or Department action levels. Total dissolved solids remained above drinking water standards but were below predrilling levels.

While there are some volatile organic compounds above drinking water standards in the raw water, they are treated completely by the reverse osmosis unit. All elevated parameters are treated to below drinking water standards, or below maximum contaminant levels by the current treatment system in place. An Ultraviolet/Infrared (UVIR) raw water sample that was performed on June 11, 2021 yielded a result indicating "...petroleum product present in sample, possibly crude oil." One previously performed UVIR analysis yielded "...possibly crude or hydraulic oil" and another yielded "...a possible crude oil." This is likely the source of the diesel like odor. A study of the hydrocarbon compounds present resulted in the conclusion that the compounds are sourced from crude oil, with two possibly sourced from chlorinating the water supply, and one likely a laboratory contaminant. Also, an isotopic sample was obtained in order to characterize the gas present. The results indicate the gas is sourced from a thermogenic source, either coalbed methane or shallow production gas. Many times, it is noted that there is a sulfur odor which occurs along with methane gas. This could be the source of the sulfur odor.

Future plugging of the historic wells in your area should partially or fully mitigate the issues surrounding contamination to water supplies by these abandoned oil and gas wells. Thank you for your patience in this matter. Please contact Christine Miner at 824.573.3592 if you have any questions about the Department's determination, or if your water changes in any way.

Sincerely,



Richard L. Neville  
Northwest District Oil and Gas Manager  
District Oil and Gas Operations

Enclosures:

Exhibit A, Laboratory Analyses Spreadsheet, Laboratory Analyses, Fact Sheet

Cc: Lux/Johnson (via email)  
Braymer/Despenes (via email)  
Lichtinger/Miner (via email)

**EXHIBIT A**

Water Supply Located at:

