



January 15, 2021

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

Rome, PA 18837

Re: 58 Pa. C.S. § 3218 Determination
Water Supply Request for Investigation No. 347960

Dear [REDACTED]

The Department has been investigating the possible degradation (presence of methane) of your water supplies located at the above address (“Water Supply Home”) and (“Water Supply Barn”), collectively (“Water Supplies”), in response to a February 11, 2020 complaint that gas well drilling activities may have affected your Water Supplies. The Department’s investigation, prompted by information you provided, has determined that your Water Supply Barn was adversely affected by oil and gas activities, including but not limited to the drilling, alteration, or operation of an oil or gas well. The Department’s investigation has determined that your Water Supply Home has not been impacted by oil and gas activities.

Please note that without the recently installed treatment system, water quality sampling indicates that on occasion your water quality does not meet (*i.e.*, is worse than) the following health and/or aesthetic statewide standards, (Note that Primary Maximum Contaminant Levels (MCLs) are intended to reflect potential dangers to human health, while secondary Maximum Contaminant Levels (SMCLs) reflect the aesthetics of the water (*i.e.* taste, smell, etc.)):

Parameters	Unit	Statewide Standards or Recommended Levels	Your <u>Highest</u> Sample Results that were Detected Above Statewide Standards/Levels Home / Barn
Methane	mg/L	7	66 / 52
Manganese	mg/L	0.05	NA / 0.944
Iron	mg/L	0.3	0.533 / 0.68
Turbidity	NTU	<1	4.5 / 7.2

The information upon which this determination is based is summarized below.

Summary of Investigation

On July 31, 2017, as part of investigative screening activities in the area, the presence of methane gas was detected in your Water Supplies. During inspections conducted by the

Department and others, methane gas was observed in the water and the headspace of the Water Supplies. Subsequently, water quality samples were collected from both of the Water Supplies on several occasions by the Department and private consultants, and were submitted to the Department's laboratory or to an accredited third party laboratory for analysis. The analytical reports for the samples collected by the Department were previously submitted to you, but are summarized for your convenience in the enclosed table, along with sample results provided by Repsol.

Analytical data collected over the investigation period reveal concentrations of methane ranging from 19 mg/L to 66 mg/L in your Water Supply Home and 28 mg/L to 52 mg/L in your Water Supply Barn. Free gas in the headspace of Water Supply Barn has been detected at levels as high as 100% gas by volume.

Samples of the methane from both of the Water Supplies were collected and sent to a specialized laboratory for isotopic and compositional analysis. These analyses allowed for a more detailed characterization of the gas present in each of the Water Supplies. The isotope and compositional analyses indicate that the stray gas in your Water Supply Barn appears to be associated with oil and gas activities. However, the stray gas in your Water Supply home appears to be related to background conditions.

Methane is the predominant component of natural gas. Federal water standard limitations have not been established for methane gas. The level of concern begins above 28 mg/L methane, which is referred to as the saturation level. At this level, under normal atmospheric pressure, the water cannot hold additional methane in solution. This may allow the gas to come out of the water and concentrate in the air space of your home or building. There is a physical danger of fire or explosion due to the migration of natural gas into water wells or through soils into dwellings where it could be ignited by sources that are present in most homes/buildings. Natural gas can also cause a threat of asphyxiation, although this is extremely rare.

When the Department is made aware of methane levels greater than 7 mg/L, we notify the water supply owner of the hazards associated with methane in their water supply. Please be aware however, that the methane levels can fluctuate. This means that even with a relatively low level of methane, you should be vigilant of changes in your water that could indicate an increase in methane concentration.

It is the Department's recommendation that all water wells should be equipped with a working vent. This will help alleviate the possibility of concentrating these gases in areas where ignition would pose a threat to life or property. Please note that it is not possible to completely eliminate the hazards of having natural gas in your water supply by simply venting your well.

Over the course of the investigation, samples collected from your Water Supply Home contained turbidity above its MCL of 1 NTU at concentrations ranging from 3.5 NTU to 4.5 NTU. Iron was detected in exceedance of its SMCL of 0.3 mg/L ranging from 0.357 mg/L to 0.533 mg/L. All other parameters tested in your Water Supply Home during the monitoring period met their respective MCLs/SMCLs for compounds for which an MCL/SMCL exists. It should be noted

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that turbidity and iron were similarly detected in exceedance of their respective standards in pre-drill samples collected from your Water Supply Home prior to gas drilling activities in the area. Methane was also detected in pre-drill samples, but at a lower concentration than currently present.

Over the course of the investigation, samples collected from your Water Supply Barn contained turbidity above its MCL of 1 NTU at concentrations ranging from 2.73 NTU to 7.2 NTU. Iron was detected in exceedance of its SMCL of 0.3 mg/L ranging from <0.2 mg/L to 0.68 mg/L. Manganese was detected in exceedance of its SMCL of 0.05 mg/L at concentrations ranging from 0.404 mg/L to 0.944 mg/L. All other parameters tested in your Water Supply Barn during the monitoring period met their respective MCLs/SMCLs for compounds for which an MCL/SMCL exists. It should be noted that turbidity and manganese exceeded their respective standards in samples collected from your Water Supply Barn prior to gas drilling activities in the area. Methane was also detected in pre-drill samples, but at a lower concentration than currently present.

Given analytical data available for analysis, the Department has determined that your Water Supply Barn was adversely affected by oil and gas activities, including but not limited to the drilling, alteration, or operation of an oil or gas well. The Department's investigation has determined that your Water Supply Home has not been impacted by oil and gas activities. It is the Department's understanding that treatment systems have been installed on both of your Water Supplies by the operator.

The Department is continuing to work to permanently resolve this issue. Should you have any questions regarding the investigation, please contact William J. Kosmer, P.G. at 570.974.2613.

Sincerely,



Jennifer W. Means
Environmental Program Manager
Eastern Oil and Gas District

Enclosures:
Laboratory Analytical Table
"How to Interpret A Water Analysis Report"

cc:
William J. Kosmer, P.G.
Stephanie Wharton
Matthew Nuss
Carrie Knapp
Complaint File # 347960