



April 24, 2019

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

Re: 58 Pa. C.S. § 3218 Determination
Water Supply Request for Investigation No. 287005
Delmar Township, Tioga County

Dear [REDACTED]

The Department has completed its investigation of your water supply located at the above address ("Water Supply"). On May 16, 2012, the Department issued you a letter indicating that the Water Supply had been impacted by oil and gas operations. Based on the review of subsequent sample results and supplementary information obtained to date, the Department has determined that the Water Supply was temporarily affected by oil & gas activities, but has returned to a background condition. Nevertheless, please note that on occasion, your water quality may not meet (*i.e.*, is worse than) the following health and/or aesthetic statewide standards:

Parameters	Unit	Statewide Standards or Recommended Levels	Your Most Recent Sample Results that Are Above Statewide Standards/Levels
Manganese	mg/L	0.05	0.062
Iron	mg/L	0.3	0.409
Turbidity	NTU	1	1.8

The treatment system that was previously installed on the Water Supply should effectively alleviate the levels of the above contaminants. The Department's investigation into your complaint is set forth below.

Summary of Investigation

On February 17, 2012, you notified the Department that nearby oil and gas well drilling activities may have affected your Water Supply. During inspections conducted by the Department and others during the course of the investigation, methane gas was observed in the water and the headspace of the Water Supply. Samples from the Water Supply were collected on numerous occasions throughout the course of the investigation. Those samples were submitted to a Pennsylvania-accredited laboratory or the Department's laboratory in Harrisburg for analysis, and the results of those samples were previously provided to you.

Initial results of samples from the Water Supply showed that the Water Supply had levels of methane above expected background conditions. However, additional sampling results revealed that those levels have returned to levels which are below the Department's unofficial level for methane and that these concentrations are at pre-drill/background conditions.

Parameters	Unit	Pre-Drill	Investigative High	Current Level
Methane	mg/L	<0.01	57.2	<0.00116

As detailed above, turbidity, iron and manganese were detected above their respective health and/or aesthetic statewide standard during the investigation. Turbidity is caused by the presence of suspended matter such as sediment, nonliving organic particulates, plankton, or other microscopic organisms. The turbidity present appears to be at least partially responsible for the occasional iron and manganese concentrations that were observed over their respective secondary maximum contaminant levels (SMCLs). 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.).

Iron and manganese, are common metals associated with groundwater in the region. The most likely source of these metals are from the bedrock from which the Water Supply derives its water and geochemical reactions within the Water Supply. The presence of these constituents appear to be related to background/natural conditions.

Based on the Department's investigation, the Department has determined that the impacts to the Water Supply were temporary and that the quality of the Water Supply is now at or near pre-drill/background conditions. As a result, the Department does not plan to require further action regarding the Water Supply.

Please contact William J. Kosmer, P.G. at 570-974-2613 should you have any questions concerning this matter.

Sincerely,



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



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DISTRICT OIL AND GAS OPERATIONS

5/16/2012

CERTIFIED MAIL NO. [REDACTED]

Re: 58 Pa.C.S § 3218 Determination
Complaint No. 287005
Meridian, Lycoming County
Delmar Township, Tioga

Dear [REDACTED]

The Department has investigated the possible degradation of your water supply well located at [REDACTED] in response to a 2/17/2012 complaint that gas well drilling activities may have affected your water well. On 2/21/2012, the Department collected samples from your water supply. The samples were submitted to the Department's laboratory in Harrisburg for analysis. The analytical reports for the samples were previously submitted to you in a letter dated 4/2/2012. The sample results showed methane was present at 16.3 mg/l in your water supply. Since the initial sampling on 2/21/2012, several additional samples have been collected and analyzed from your water supply, and the results have been summarized on the attached Table 1. At this time, the Department's investigation indicates that gas well drilling has impacted your water supply.

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.

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5/16/2012

The Department is continuing to work to permanently resolve this issue. Should you have any questions concerning this matter, please feel free to contact William J. Kosmer, P.G. at 570-974-2613.

Sincerely,



Jennifer W. Means
Environmental Program Manager
Oil and Gas Management

Enclosures:

Table 1

"How to Interpret A Water Analysis Report"

cc:

Jennifer Means
William J. Kosmer, P.G.
Jeremy Daniel
Complaint File 287005