



September 13, 2017

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

[REDACTED]

Re: Water Supply Request for Investigation 326085
58 Pa.C.S. § 3218 Determination
Putnam Township, Tioga County

Dear [REDACTED]

The Pennsylvania Department of Environmental Protection has completed its investigation of your water supply located at the above referenced subject address (“the Water Supply”), in response to a complaint received on July 12, 2011 alleging that recent gas well activities may have impacted the Water Supply. Based on sample results and other information collected during the investigation, the Department has determined the Water Supply was temporarily impacted by oil and gas activities but has returned to background conditions. Nevertheless, please note that your water quality exceeds the Maximum Contaminant Level (MCL) or Secondary Maximum Contaminant Level (SMCL) for the analytes listed in Table 1. Primary MCLs are intended to reflect potential dangers to human health, while secondary MCLs reflect the aesthetics of the water (i.e. taste, smell, etc.).

Summary of Investigation

On July 12, 2011, the Department received a complaint from a resident at the above referenced subject address regarding cloudiness, bubbles, fizz, and malodor in the Water Supply. Water quality samples were collected from the Water Supply on several occasions. The samples were submitted to the DEP’s laboratory or to an accredited third party laboratory on behalf of oil and gas operators with wells in the area. Table 2 summarizes all analytical results the Department has available from the Water Supply. Analytical reports for the samples collected by DEP were previously submitted to you. Please see the attached documents, which include information about interpreting water quality results.

Iron, manganese, arsenic, turbidity, and total coliform exceeded the MCL or SMCL for each

respective compound in one or more water quality samples as shown in Table 1. Based on historical data and data collected during the Department's investigation, the current exceedances of arsenic, iron, manganese, turbidity, and total coliform standards listed were determined to be related to background conditions unrelated to oil and gas activity.

Dissolved methane exceeded the Department's unofficial action level of 7 mg/L in samples collected between July 12, 2011 and June 24, 2014. The water quality data indicates that dissolved methane has decreased over time and has not exceeded 7 mg/L since the June 24, 2014 water sample. The dissolved methane concentrations remaining in the Water Supply are commonly observed as background or natural occurring conditions in this region of Pennsylvania.

DEP staff have monitored the headspace of the Water Supply during the investigation. Concentrations of combustible gas in the headspace of the Water Supply in excess of 100% of the lower explosive limit (LEL) were measured during initial stages of the investigation; however, levels of combustible gas have remained below the LEL since 2014. The headspace of the Water Supply was vented in order to mitigate potential hazards associated with fugitive gas. Although combustible gas has not been detected in the headspace of the Water Supply for several years, it is recommended that you continue to maintain and operate the vent on the Water Supply as safety precaution.

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.

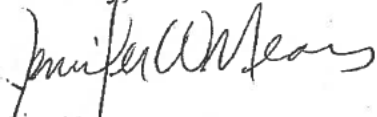
When the DEP is made aware of methane levels greater than 7 mg/L, we notify the water supply owner of the hazards associated with methane in their water supply. Please be aware however, that the methane levels can fluctuate. This means that even with a relatively low level of methane, you should be vigilant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

It is the DEP's understanding that the Water Supply continues to be vented. The DEP strongly recommends that the vent be maintained to ensure it is functioning properly. 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. Additionally, you may consider consulting a qualified contractor to address elevated concentrations of iron, manganese, turbidity, arsenic, and total coliform occurring in the Water Supply as a result of natural/background conditions.

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At this time, available data indicates that the Water Supply has returned to background conditions. The DEP considers this matter closed at this time. If you have any questions about any of the above, please contact Caleb Woolever, a Geologic Specialist on my staff at 570.327.0546.

Sincerely,



Jennifer W. Means
Eastern District Oil and Gas Manager
District Oil and Gas Operations

Enclosures:

How to Interpret a Water Analysis Report
Table 1: Table of Water Quality Exceedances
Table 2: Table of Water Quality Results

Cc:

Sharon Steinbacher
Jennifer W. Means
Stephanie Wharton
Matthew Nuss
Andrea Mullen, P.G.