

December 18, 2024

CERTIFIED MAIL NO. [REDACTED]

Re: Water Supply Request for Investigation #360463
58 Pa. C.S. § 3218 Determination
Windham Township, Wyoming County

Dear [REDACTED]

The Department of Environmental Protection (“Department”) has been investigating the possible degradation of your water supply located at the above-referenced address (“Water Supply”) from oil and gas activities. The Department has determined that your Water Supply 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 information upon which this determination is based is summarized below.

Please note that without any treatment, 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 (“MCL”) 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.). None of the parameters in the Water Supply were above a MCL.

Parameters	Unit	Statewide Standards or Recommended Levels	Your <u>Highest</u> Sample Results that Were Detected Above Statewide Standards/Levels
Methane	mg/L	7**	7.45
Manganese	mg/L	0.05	0.57

* Indicates Primary MCL

**Department Action Level

Summary of Investigation

In May 2021, your Water Supply was sampled by Chesapeake Appalachia, LLC (“CALLC”) as part of a pre-drill survey being conducted prior to the drilling of gas wells on the neighboring CALLC Warren WYO Pad. The May 2021 sample results showed increases in combustible gas headspace measurements as well as increases in concentrations of dissolved methane and ethane when compared to the November 2010 pre-drill values. Subsequently, water quality samples were collected from the Water Supply on several occasions by the Department and private consultants. The samples were submitted to the Department’s laboratory in Harrisburg or to an accredited third-

party laboratory for analysis. The analytical reports for the samples collected by the Department were previously provided to you but are summarized for your convenience in the enclosed table along with sample results provided by CALLC. An additional document is also enclosed to assist you with interpreting the sample results.

The sample results summarized in the enclosed table indicate that concentrations of dissolved methane and ethane were not detected in your Water Supply prior to May 2021. Since May 2021, dissolved methane concentrations ranged from 0.818 mg/L to 7.450 mg/L, and dissolved ethane concentrations ranged from 0.00795 mg/L to 0.304 mg/L, in raw, untreated samples from the Water Supply. Samples of methane from your Water Supply 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 your Water Supply. The isotope and compositional analyses indicate that the methane and ethane in your Water Supply appear to be associated with oil and gas activities.

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 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, it notifies 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 concentrations.

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.

The sample results summarized in the enclosed table further indicate that during the November 2010 pre-drill sampling event, manganese was detected below its SMCL in your Water Supply. Since May 2021, manganese was detected above its SMCL and ranged from 0.0672 mg/L to 0.57 mg/L in raw, untreated samples from the Water Supply. Please note that the presence of manganese is typically a secondary consequence of gas intrusion into the supply well.

Through correspondence with CALLC, the Department has been made aware of the restoration measures taken by CALLC to address the elevated manganese in your Water Supply by installing a treatment system on February 1, 2022. Since installing a treatment system, CALLC has collected six post-treatment samples to assess the system's effectiveness. The post-treatment sampling

results indicate the treatment is effectively reducing the elevated manganese concentrations to values below its SMCL. The current treatment system does not address dissolved gasses; however, methane has not been detected above the Department's action level of 7 mg/L since June 2022. Treatment for dissolved methane is generally inefficient for the low levels currently detected in your Water Supply.

The Department is continuing to work to permanently resolve this issue.

Please contact John Salinkas, P.G. at (570) 346-5532 if you have any questions about the Department's determination regarding your Water Supply.

Sincerely,



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

Enclosures:

Results Table
Fact Sheet – Interpreting Water Supply Results

cc: Michael O'Donnell (email)
Briana Cunningham (email)
John R. Salinkas, P.G (email)
Complaint File #: 360463