

October 28, 2020

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

Re: Request for Investigation 345911  
Stray Gas Migrating into Water Supply – Positive Determination  
Heath Township, Jefferson County

Dear [REDACTED]

This letter is regarding the Pennsylvania Department of Environmental Protection's (Department's) investigation of the natural gas migrating into your water supply listed in Exhibit A ("Water Supply"). The investigation began on October 17, 2019, when the Department was notified that natural gas was discovered in your water well by National Fuel Gas (NFG).

Four water wells venting natural gas were identified in the area of investigation. These supplies were monitored for methane gas throughout the investigation. Water samples were collected from your Water Supply and multiple gas samples were collected and analyzed. In addition, a gas sample from a nearby abandoned gas well, the Easton #3 ("Gas Well"), was collected, analyzed, and compared to those from the water supplies. The gas sample results indicated that the stray gas entering the water wells is thermogenic (natural gas or coal gas) and is likely from a gas well or pipeline.

The Gas Well, which was shut-in and has no known operator, had a hole in the surface casing. The Gas Well was vented, and the amount of methane gas detected in your Water Supply dropped to zero within two days. Three of the water wells were vented during the investigation and the methane gas detected in the four wells dropped to zero one month after venting the Gas Well. As of June 24, 2020, gas continued to be detected intermittently in the four water supplies, but at significantly reduced levels. It is believed that this is residual gas in the subsurface and gas levels in the water wells should continue to decline.

Based on the depth at which the natural gas was entering your Water Supply, the location of the hole in the surface casing of the abandoned Gas Well, the location of the water supplies in relation to the Gas Well, and the venting of the Gas Well, which resulted in the gas levels dropping to zero in each of the water supplies, the Department determined that the Gas Well was the source of the gas migrating into the four water supplies. The case information is summarized below.

CASE INFORMATION:

Date of Complaint	Nature of Complaint (odor, taste, quantity, use, color)	Pollution
October 17, 2019	Natural gas venting from water well	Free and dissolved natural gas in private water well

WATER SAMPLE RESULTS:

Parameter/Description	Standard or recommended level	Complainant water well DEP sample 10/23/2019	Complainant water well DEP sample 12/05/2019	Complainant water well DEP sample 07/23/2020
Alkalinity (mg/l)	up to 400	191.4	86.4	91.0
Aluminum (ug/l)	200	3589.00	<300.00	<15.0
Arsenic (ug/l)	10	3.760	<3.00	<3.00
Barium (mg/l)	2	0.167	0.064	0.059
Bromide (mg/l)		<0.2	<0.2	<0.2
Calcium (mg/l)	25-50	5.004	3.990	4.079
Hardness (mg/l)	20 to 110	25	19	19
Iron (mg/l)	0.3	14.400	3.571	0.548
Lithium (ug/l)		<25.0	<25.0	<25.0
Magnesium (mg/l)	25-50	3.00	2.13	2.22
Manganese (mg/l)	0.05	0.304	0.173	0.217
pH	6.5-8.5	10.1	6.6	7.0
Potassium (mg/l)		2.46	<1.00	<1.00
Selenium (ug/l)	50	<7.00	<7.00	<7.00
Sodium (mg/l)		106.60	42.50	47.02
Conductivity (umhos/cm)		441.00	236.00	271.00
Strontium (mg/l)		0.025	0.017	0.016
Chloride (mg/l)	250	22.34	22.93	24.47
TDS (mg/l)	500	258	112	146
Sulfate (mg/l)	250	1.01	1.33	2.07
TSS (mg/l)		58	<5	<5
Turbidity (ntu)		34.40	14.90	<1
Zinc (ug/l)	5000	80.00	38.00	58.00
Ethane (mg/l)	0	5.770	1.590	<0.0124
Methane (mg/l)	Action level 7 mg/l	23.200	5.220	0.0368
Propane (mg/l)	0	1.890	0.451	<0.0142

During the Department's investigation, water samples were collected from your Water Supply. Initial sample results indicate that your water quality exceeded several health and/or aesthetic statewide standards. Please see bolded parameter levels in the water sample results table. This is likely attributed to the natural gas entering your Water Supply and the accompanying geochemical reactions. While the levels of iron and manganese in your Water Supply have decreased since the venting of the Gas Well, the most recent water sample results indicate that your water quality still exceeds statewide standards for iron and manganese. Iron and manganese occur naturally in many water supplies in Northwestern Pennsylvania due to the types of rocks the groundwater flows through. If you have any questions about any of the above, please contact Aaron O'Hara at 814-332-6199.

Sincerely,

Richard L. Neville

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

c: Joe Lichtinger (email)  
Steve Lencer (email)  
Jason Branan(email)  
Chad Meyer (email)  
Brian Shank (email)  
Michael Braymer (email)  
Kayla Despenes (email)  
File through Aaron O'Hara