



March 21, 2019

CERTIFIED MAIL NO. [REDACTED]

Re: Water Supply Request for Investigation 336405
Determination of Temporary Impact - 58 Pa. C.S § 3218
Bradford Township, McKean County

Dear [REDACTED]

The Department has completed its investigation of your water supply listed in Exhibit A ("Water Supply"). Based on the sample results reviewed and supplementary information obtained to date, the Department has determined that the Water Supply was temporarily affected by oil and gas activities but has returned to expected conditions. Nevertheless, please note that your water quality does not meet (*i.e.*, is worse than) the following health and/or aesthetic statewide standards unrelated to oil and gas activities:

Parameters	Unit	Statewide Standards or Recommended Levels	Your Sample Results that Are Above Statewide Standards/Levels
Iron	mg/L	0.300	0.301

You may consider exploring remedial actions regarding the levels of Iron in the Water Supply. The Department's investigation into your complaint is set forth below.

Summary of Investigation

On August 20, 2018, you contacted U.S. Energy Development Corporation (USED) to report that you thought that there was gas in the Water Supply. After representatives from USED met with you and checked the water inside of your residence, USED contacted the Department. During the Department's first site visit on August 21, 2018 you described that there had been intermittent sputtering and bubbling inside of the toilet tank and intermittent sputtering at the bathroom sink, which led you to believe that there was gas in the water. In addition to the presence of gas in your water, there had been sediment accumulating in your toilet, sinks and coffee pot over the prior two or three weeks, which was not typical. You also stated that the water had a peculiar taste during the same timeframe. On the dates of the Department's initial inspections, your water was clear in nature, however the specific conductivity of the water was elevated and suggested that there was an impact from USED's neighboring Pierce lease. Minor amounts of an unknown flammable gas (< 10 % LEL) were intermittently and briefly detected at the bathroom sink faucet and in the toilet tank during the onset of the Department's

investigation. Throughout the investigation, air monitoring did not detect methane at the bathroom sink faucet or otherwise throughout the residence when the flammable gas was present. Samples from the Water Supply were collected as shown in the table below and submitted to the Department's laboratory in Harrisburg for analysis. Those analytical results are enclosed.

Initial results of samples from the Water Supply showed that the Water Supply had levels of Total Dissolved Solids (TDS), Chloride, Manganese, Iron, Aluminum, Specific Conductivity (SPC), Magnesium, Calcium, Potassium, Hardness and Sodium above pre-drill levels and expected conditions. However, additional sampling results revealed that those levels returned to expected conditions. Neither dissolved methane or ethane were detected in the August 21, 2018 water sample.

The following table compares the results of the parameters that were elevated as a result of this incident.

Contaminant or Parameter	Unit	Standards or Recommended Levels	Pre-Drill Survey 2/12/09	Sample Result 8/21/18	Sample Result 9/17/18	Sample Result 10/2/18	Sample Result 11/8/18
TDS	mg/l	500	42	2116	520	212	132
Chloride	mg/l	250	< 1	967	283	81	49
Manganese	mg/l	0.05	NA	0.06	0.34	0.03	0.03
Iron	mg/l	0.3	NA	0.33	0.24	0.25	0.30
Aluminum	ug/l	200	NA	251	< 200	301	< 200
SPC	uS/cm		42	3160	942	314	202
Magnesium	mg/l		1.2	48.7	15.8	6.5	4.3
Calcium	mg/l		4.4	240	67.7	25.1	16.1
Potassium	mg/l		< 0.5	4.2	2.6	1.6	1.2
Sodium	mg/l		< 1	291	74.2	19.5	11.9
Hardness	mg/l		NA	800	234	89	58
Methane	mg/l		< 1	< 0.01	--	--	--
Ethane	mg/l		< 1	< 0.01	--	--	--

On August 22, 2018 USEDC discovered an underground gathering line leak at their Pierce No. 1 well. This well is located [redacted] of your spring box. The Department has determined that the leak from the compromised gathering line allowed production water to infiltrate the aquifer that feeds your spring. Upon USEDC's repair of this line, the quality of your water began to improve and the intermittent presence of flammable gas at the bathroom sink faucet and toilet tank became less frequent and eventually ceased.

Based on the Department's investigation, the Department has determined that the impacts on the Water Supply were temporary and that the quality of the Water Supply has now returned to expected conditions. Because the Water Supply has returned to Drinking Water Standards, the Department does not plan to require further action regarding the Water Supply.

Please contact Brian Ayers at 814.723.0977 if you have any questions about the Water Supply.

Sincerely,



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

Enclosures:

Exhibit A
Fact Sheet – Interpreting Water Supply Results
Sample Results

cc: File through Lichtinger
Richard Sheriff (via email)
Brian Ayers (via email)
[REDACTED] U.S. Energy Development Corporation [REDACTED]
Michael Braymer (via email)
Kayla Despenses (via email)

BBA:br