

# MarcellusGas.Org

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March 31, 2017

**CERTIFIED MAIL NO. 7016 0340 0000 8577 2705**

Re: Water Supply Request for Investigation ID 321627  
Positive Determination—58 Pa. C.S. § 3218  
Concord Township, Butler County

The Department of Environmental Protection (DEP) has completed its investigation of your two water supplies listed in Exhibit A which are both at the same address (“Water Supplies”). Based on the sample results and other information obtained to date, the Department has determined that the Water Supplies are affected adversely by historic oil and gas activities, specifically, multiple abandoned wells. This information is summarized below.

**CASE INFORMATION**

Date of Complaint	Nature of Complaint (odor, taste, quantity, use, color)	Sample Results Above Statewide Standards or Recommended Levels
August 9, 2016	Benzene and Acetone in two supplies	Benzene, 1,2,4 Trimethylbenzene, 1,3,5 Trimethylbenzene, Iron, Manganese, Turbidity, Total Petroleum Hydrocarbons, Ultraviolet Infrared Characterization.

DEP has been obtaining samples from two different water wells on the property, both of which are currently affected. ‘W1’ is the well closest to your residence, and ‘W2’ is approximately 400 feet south southeast of your residence. Based on the review of the sample results, there are exceedances of the drinking water standards in both Water Supplies. There is also substantiation of a benzene odor in the water supply. Currently, the treatment system that you installed on well W2, which is plumbed into your residence, is working effectively to treat the water to drinking water standard levels. Methane and ethane gas levels are at low, background levels in both wells. There was no explosive gas detected in the headspace of the water wells during this investigation.

The sample results from the Water Supplies are set forth in the table below:

Parameter	Standard	W1	W1	W1	W1	W2	W2	W2	W2
CID 321627	(all in mg/l)	7/6/16 National Testing Laboratory	7/28/2016 Kevco/ALS Environ- mental	DEP 8/16/2016 Raw	DEP 9/28/2016 Raw	DEP 8/16/2016 Raw	DEP 9/28/2016 Raw	DEP 1/11/2017 Raw	DEP 1/11/2017 Treated
Benzene	0.005 mg/l	0.043 mg/l	0.0109 mg/l	0.401 mg/l	0.264 mg/l	0.00662 mg/l	0.0116 mg/l	0.00128 mg/l	nd
1,2,4- Trimethylbenzene	0.015 mg/l	ns	ns	0.188 mg/l	0.226 mg/l	nd	nd	nd	nd
1,3,5- Trimethylbenzene	0.013 mg/l	ns	ns	0.0995 mg/l	0.136 mg/l	nd	nd	nd	nd
4- Isopropyltoluene	na	ns	ns	0.00407 mg/l	0.0049 mg/l	nd	nd	nd	nd
Chloromethane	0.08 mg/l	nd	ns	nd	0.00251 mg/l	nd	nd	nd	nd
Ethylbenzene	0.7 mg/l	nd	nd	0.0662 mg/l	0.14 mg/l	nd	nd	0.000403 mg/l	nd
Isopropylbenzene	na		ns	0.0123 mg/l	0.0208 mg/l	nd	nd	0.000323 mg/l	nd
m/p Xylene	10 mg/l(all)	Total Xylenes= 0.212 mg/l	Total Xylenes = 0.0068	0.482 mg/l	0.960 mg/l	nd	nd	nd	nd
Naphthalene	0.1 mg/l	ns	ns	0.0132 mg/l	0.0216 mg/l	nd	nd	nd	nd
n-Butylbenzene	1.5 mg/l	ns	ns	0.00760 mg/l	0.00849 mg/l	nd	nd	nd	nd
n-Propylbenzene	1.5 mg/l	ns	ns	0.014 mg/l	0.022 mg/l	nd	nd	nd	nd
o-Xylene	10 mg/l(all)	See Total Xylenes	See Total Xylenes	0.254 mg/l	0.223 mg/l	0.000346 mg/l	nd	nd	nd
Sec-Butylbenzene	1.5 mg/l	ns	ns	0.00337 mg/l	0.0041 mg/l	nd	nd	nd	nd
t-Butyl alcohol	na	ns	ns	nd	nd	0.00942 mg/l	nd	0.00344 mg/l	nd
Tert- Butylbenzene	1.5 mg/l	ns	ns	0.00138 mg/l	0.00163 mg/l	nd	nd	nd	nd
Toluene	1 mg/l		0.0081 mg/l	0.261 mg/l	0.508 mg/l	nd	nd	nd	nd
Iron	0.3 mg/l	0.02 mg/l	ns	3.208 mg/l	13 mg/l	1.585 mg/l	2.354 mg/l	8.326 mg/l	<0.02 mg/l
Manganese	0.05 mg/l	0.013 mg/l	ns	10.3 mg/l	4.364 mg/l	0.75 mg/l	0.428 mg/l	0.233 mg/l	<0.01 mg/l
Turbidity	1 NTU	0.4 NTU	ns	27.89 NTU	83.8 NTU	8.34 NTU	14.67 NTU	30.86 NTU	<1 NTU
TPH	<5.0 mg/l	ns	ns	18.5 mg/l	66.9 mg/l	<5 mg/l	<5 mg/l	<5 mg/l	<5 mg/l
UVIR		na	ns	(8/17/2016) UVIR indicates weathered petroleum product, possibly crude oil		na	ns	na	ns

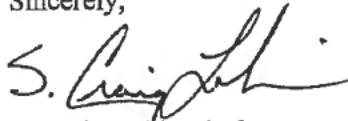
Note: Acetone found in DEP samples and Tetrahydrofuran found in the [redacted] sample, are both widely known as laboratory contaminants. Grey highlights indicate that the result is above drinking water standards or maximum contaminant levels. ns=not sampled, nd=not detected, na=not applicable or available

March 31, 2017

The Department has not yet determined the source of the pollution. It is unknown if the culprit oil or gas well can be identified. This is an ongoing investigation, and we will be contacting you so that we may sample again. Since the Department was made aware of this complaint, there have been four abandoned wells located in your vicinity. The Department is in the process of placing these wells on the abandoned well plugging fund for eventual plugging by a state contracted plugging company. It is believed that plugging of the abandoned wells will improve the quality of the fresh water aquifers in the area. Eight other historic oil and gas wells were reported to us in previous years. The additional eight will likely be considered for inclusion in the contract with the other four wells discovered in your area.

We will continue to place abandoned wells in your area on the DEP Plug Fund as they become known to us. I will contact you again in the future to resample during the early summer months. Copies of the most recent sample results are enclosed for your records, as well as water quality interpretation sheets. Thank you for your patience in this matter. If you have any questions, please contact Christine Miner at 814.332.6860 for assistance.

Sincerely,



S. Craig Lobins, P.G.  
District Manager  
Northwest District Oil and Gas Operations

Enclosures: Sample Analyses, Quality Interpretation Fact Sheets, Benzene Fact Sheet

cc: Joseph Devito (elec. w/encl.)  
Scott Lux (elec. w/encl.)  
David Adams (elec. w/encl.)  
Doug Welsh (elec. w/encl.)  
Michael Braymer (elec. w/encl.)  
Katherine Knickelbein (elec. w/encl.)  
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