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December 10, 2015

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

Re: Water Supply Request for Investigation 314763
Determination of Temporary Impact - 58 Pa. C.S § 3218
Muddycreek Township, Butler County

Dear [REDACTED]

The Department has completed its investigation of your water supply [REDACTED].
[REDACTED] Based on the sample results and other information obtained to date, the Department has determined that the Water Supply was temporarily affected by oil and gas activities including but not limited to the drilling, alteration, or operation of an oil or gas well. 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 31, 2015	Low quantity/historic odor	None noted in DEP samples, although Environmental Service Laboratory's June 26, 2015 sample showed a temporary elevation of manganese.

The Department understands from your explanations that the Water Supply no longer yields an adequate quantity of water under certain circumstances. In the testing of your Water Supply included a volatile organics test for a complaint of odor which you have explained is now no longer an issue. There were no exceedances from the standards shown in those volatile organics analyses. All parameters in the most recent sample are below predrilling levels. An inspection of the site upgradient of your Water Supply did not indicate any immediate reason for the issues you are experiencing with low yield. There was a minor elevation of manganese seen in the August 2015 sample performed by Environmental Service Laboratories. This level decreased again in the DEP sample taken in September 2015.

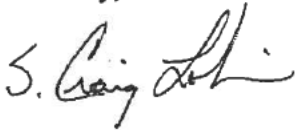
The sample results from the Water Supply are set forth in the table below:

Prady, Jeff & Jean		ESL	ESL	ESL	DEP
Parameter	Std/MCL	12/12/2013	6/26/2015	8/4/2015	9/3/2015
Alkalinity (mg/l)		187	51.6	214	225.4
Barium (mg/l)	2	0.208	0.154	0.193	0.187
Calcium (mg/l)		63.7	28.5	65	65.8
Chloride (mg/l)	250	33.1	31	13	9
Hardness (mg/l)		218	103	221	228
Iron (mg/l)	0.3	nd	0.027	0.098	<0.02
Magnesium (mg/l)		14.3	7.78	14.3	15.5
Manganese (mg/l)	0.05	nd	<0.005	0.068	<0.01
pH	6.5 - 8.5	7.5	6.55	7.62	7.5
Potassium (mg/l)		1.86	1.52	1.89	1.83
Sodium (mg/l)		7.23	16.1	6.52	6.021
Specific Cond (μ S/cm)		477	298.8	453.6	494
Strontium (mg/l)		0.179	0.091	0.186	0.21
Sulfate (mg/l)	250	7.2	37.8	11.1	<20
TDS (mg/l)	500	242	180	250	280
Total Suspended Solids (mg/l)		nd	<5	<5	<5
E. Coli (Col/100mL)	0	absent	present	present	ns
Total Coliform (Col/100mL)	0	present	present	present	ns
Methane (mg/l)		nd	nd	nd	nd
Ethane (mg/l)		nd	nd	nd	nd
Propane (mg/l)		nd	nd	nd	nd
Turbidity	<1	ns	<1	<1	<1
Aluminum (mg/l)	0.2	nd	0.027	<0.01	<0.2
Arsenic (mg/l)	0.01	nd	<0.01	<0.01	<0.003
Selenium (mg/l)	0.05	nd	<0.02	<0.02	<0.007
Lithium (mg/l)	0.073	ns	ns	ns	<0.025
Zinc (mg/l)	2	ns	ns	ns	<0.01
Lead	0.005	nd	<0.005	<0.005	ns
OG		nd	nd	nd	<5
VOCs		nd	nd	ns	nd
Bromide					<0.2

At the time of sampling, your Water Supply was meeting drinking water standards; however, please note that your water quality does not meet (*i.e.*, is worse than) health standards. You may consider exploring remedial actions regarding the levels of e coli, as identified above and also set forth in the attached sampling results. The Department recommends chlorination of water wells for mitigation of bacteria.

Please contact Christine Miner at 814.332.6867 if you have any questions about the Department's determination regarding the Water Supply.

Sincerely,



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

Enclosures: Fact Sheet – Interpreting Water Supply Results
Sample Results

cc: Scott Lux (via email)
Joseph Devito (via email)
Doug Welsh (via email)
David Adams (via email.)
Michael Braymer (via email)
Christine Miner, P.G. (via email)

