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pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
NORTHWEST REGIONAL OFFICE

November 19, 2013

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]
[REDACTED]

Re: 2012 Oil and Gas Act, Section 3218 Determination
Associated to DEP Identifier 290406
Pulaski Township, Lawrence County

Dear [REDACTED]

The Department appreciates your patience and cooperation throughout the gas migration investigation which occurred in your area. We have investigated the possible methane gas contamination of your water supply located at the above listed address. On July 2, 2012, November 8, 2012, and October 1, 2013, samples were collected from your water well supply. Analytical reports for the samples are attached to this letter. As you have been aware, the sample results indicated there was natural gas found in the shallow subsurface in your area. This gas migration has since been mitigated, and all the levels of gas found in the area are well below levels of concern; however, it is wise to keep in mind the hazards of methane. The Department recommends that water wells be vented in order to allow any gas build-up to be released.

Additionally, results showed the recent total dissolved solids level was above predrilling level, which was already elevated above drinking water standards. It is likely that your water well is deeper than other nearby wells, due to the fact that it had elevated sodium, chloride, and total dissolved solids levels in the predrilling samples. Your water softener is not designed treat the total dissolved solids, so this would involve an additional or alternate system. Otherwise, your water softener is effectively treating other parameters, which were apparently temporarily affected immediately after drilling. These elevated parameters were iron and manganese, and they are no longer elevated in the raw water.

The Department also obtained an isotopic sample of the headspace gas from your water well. The test performed on that gas allowed us to get a better idea of the source of the gas. These results showed the water well gas to plot within the Immature Microbial Gas range. This is indicative of glacial gas that is naturally occurring in your area. The gas was likely disturbed by the drilling that took place in your vicinity.

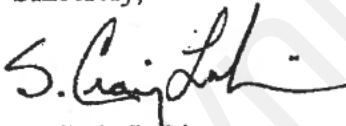
November 19, 2013

At this time, the Department's investigation indicates that oil and gas well drilling has affected your water supply. A representative from Hilcorp Energy Company will be contacting you to address the elevated TDS concentrations in your water supply. Please continue to be patient and we will keep you informed. Should you have any questions, please contact Christine Miner at our office-814.332.6860.

Please refer to the following documents to assist you with interpreting the sample results:

<http://extension.psu.edu/water/converted-publications/how-to-interpret-a-water-analysis-report>
http://www.dep.state.pa.us/dep/deputate/watermgt/WSM/WSM_DWM/PA-MCLs_05.pdf
<http://water.epa.gov/drink/contaminants/secondarystandards.cfm>

Sincerely,



S. Craig Lobins
Northwest District Oil and Gas Manager
District Oil and Gas Operations

Enclosures

cc: Stephanie McMurray(w/encl.), Hilcorp Energy Company
Scott Lux (w/encl.)
David Adams (w/encl.)
Doug Welsh (w/encl.)
Christine Miner (w/encl.)

CJM:ls1