

January 9, 2012

Hon. Robert W. Godshall
150 Main Capitol Building
PO Box 202053
Harrisburg, PA 17120-2053

Re: Consumer Affairs Committee Written Testimony on House Bill 1855

Dear Representative Godshall,

On behalf of myself and on behalf of the Pennsylvania Ground Water Association, I am submitting this written testimony on House Bill 1855 that will be considered by the Consumer Affairs Committee.

To provide some background, in 2001 some Pennsylvania Ground Water Association members, including myself, were very involved in the development of House Bill 1591 that passed in the House of Representatives but never came out of committee in the Senate. I am a consulting groundwater geologist with more than 45 years of experience in locating, quantifying, developing, protecting, and remediating the groundwater resources of Pennsylvania.

Today there is no denying that new legislation is urgently needed to protect the quality and quantity of Pennsylvania's groundwater resources. This new legislation must contain all of the components listed below to create a new program that will effectively protect the groundwater resources of Pennsylvania. The new legislation should:

1. set construction standards for residential water wells
2. set construction standards for monitoring wells
3. set construction standards for geothermal boreholes
4. set construction standards for certain geotechnical borings
5. require the registration of water-well, monitoring well, geothermal borehole, and geotechnical drilling companies
6. require the permitting of water-well, monitoring well, geothermal borehole, and geotechnical drilling rigs
7. require the licensing of water-well, monitoring well, geothermal borehole, and geotechnical drillers through a process of passing a written exam
8. set the continuing education requirements for the annual renewal of drillers' licenses
9. require the permitting of new residential water wells, monitoring wells, geothermal boreholes, and certain geotechnical borings and the submission of a completion report
10. require the inspection of the drilling and construction of new residential water wells, monitoring wells, geothermal boreholes, and certain geotechnical borings by a Water-Well Enforcement Officer
11. establish the duties of local Water-Well Enforcement Officers

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12. establish the requirements to become a Water-Well Enforcement Officer by passing a written exam
13. establish the requirements for annual continuing education for Water-Well Enforcement Officers
14. establish a Water-Well and Geothermal Borehole Technical Advisory Committee
15. establish the fee structure for the registration of drilling companies, the permitting of drilling rigs, the licensing of drillers, the permitting of new residential water wells, monitoring wells, geothermal boreholes, and certain geotechnical borings, and the designation of Water-Well Enforcement Officers

All of the 15 components listed above were addressed in whole or in part in House Bill 1591. Some of the wording in House Bill 1591 needs to be updated due to the passage of 11 years. For example, today, due to few new homes being constructed in the current economy, and due to Federal Tax Credits for the installation or retrofitting of residential and commercial geothermal heat pump systems, at least ten times more geothermal boreholes than residential water wells are being drilled each month. Geothermal boreholes penetrate Pennsylvania's aquifers and hence must be thoroughly addressed in the new legislation and its related regulations.

House Bill 1855 does not address geothermal boreholes at all, and does not include all of the 15 components listed above, so it is the recommendation of the Pennsylvania Ground Water Association and me that House Bill 1855 be amended and revised to incorporate the 15 components listed above.

The Pennsylvania Ground Water Association is volunteering and I am personally volunteering to help with the process of amending and editing House Bill 1855, including providing technical advice and wording as needed.

When it is time for the implementation of this new legislation, I am personally volunteering to prepare drafts of the two written exams and proposed continuing education courses for the review and approval of the Department of Environmental Protection.

Thank you and the members of the Consumer Affairs Committee for considering this written testimony. Please contact me if you or any committee members have any questions concerning this testimony.

Sincerely,



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International Ground Source Heat Pump Association Accredited Trainer

and

Director, Treasurer, and Education Committee Chairman of the Pennsylvania Ground Water Association

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Northeast Driller

Study looks at water quality in private wells near Marcellus drilling

FOR THE NORTHEAST DRILLER

A study of more than 200 drinking-water wells near Marcellus Shale natural-gas wells in 20 counties did not find statistically significant evidence of contamination from hydraulic fracturing — a process used by gas drillers to release natural gas using a high-pressure mixture of water, sand and chemical additives.

The study was conducted by researchers and extension educators in Penn State's College of Agricultural Sciences. The research was funded by the state General Assembly's Center for Rural Pennsylvania and the Pennsylvania Water Resources Research Center at Penn State.

"This is the first project to provide an unbiased and large-scale study of water quality in private water wells used to supply drinking water to rural homes and farms both before and after the drilling of Marcellus gas wells nearby," said project leader Bryan Swistock, water resources extension specialist.

Conducted from February 2010 to July 2011, the study found methane in about a quarter of the water wells before any drilling occurred, but the concentrations were generally below advisory levels for treatment, Swistock said. The presence of methane can be naturally occurring or related to drilling activity.

"We really didn't see any significant changes in methane levels after drilling or hydraulic fracturing," he added.

There is no federal drinking water standard for methane as it can be ingested without harm, but high levels can cause an explosion hazard as the dissolved methane escapes from water.

Elevated levels of dissolved bromide were measured in some water wells and appeared to be a result of the gas-well drilling process and not hydraulic fracturing.

"Bromide was not detected in any of the water wells before drilling, but it did show up in several wells after drilling, which needs to be investigated further," Swistock said.

The study's modest number of samples for methane and bromide and the relatively short length of the study speak

to the need for additional data collection and analysis, Swistock pointed out.

"Future research should look at a broader number of water contaminants over a longer period of time," Swistock said. "More detailed and longer-term studies are critical to ensuring that Pennsylvanians' private water supplies are protected."

Wells in the study were not randomly selected. Project publicity solicited participation from well owners who knew gas drilling was going to occur near them, and many responded by contacting Swistock or other project investigators working for Penn State Extension.

"Our network of Penn State Extension educators throughout the state was absolutely critical to the efficient completion of this project," Swistock said.

The first phase of the study included 48 private water wells located within about 2,500 feet of a Marcellus well pad. These wells were tested by Penn State researchers both before and after gas-well drilling. Twenty-six of the 48 were near Marcellus wells that were drilled and fracked, 16 sites had drilling but no fracking, and six sites were controls where no drilling or fracking occurred.

These wells were tested for 18 common water-quality parameters that could occur from gas-drilling activity, including chloride, barium, sodium, iron, manganese, methane, ethane, bromide, and oil and grease.

The second phase was comprised of 185 additional private water wells located within about 5,000 feet of a Marcellus well pad. Homeowners provided water test results collected by independent, state-accredited laboratories prior to Marcellus gas-well drilling. These tests then were compared with samples collected by Penn State personnel or by homeowners trained by Penn State personnel after gas drilling and hydraulic fracturing occurred.

Phase two included 173 sites near hydraulically fractured gas wells and 12 control sites where no drilling had occurred within five miles. These wells were tested for 14 common water quality parameters — methane, ethane, bromide and oil and grease were not included due to funding and sample-

collection constraints.

Separate statistical analyses of results from each phase of the project produced similar results, according to Swistock.

In addition to the increased bromide concentrations in some water wells, a small number of water wells examined in the study also appeared to be affected by disturbance due to drilling, as evidenced by sediment and/or increased levels of iron and manganese that were noticeable to the water-supply owner and confirmed by water-testing results.

"While most water wells, even within 3,000 feet of a Marcellus well, did not have changes in water quality after drilling or hydraulic fracturing, that was the distance where we did sporadically measure increased bromide, sediment or metals. This seems to be the distance that we need to focus on for future testing and research," Swistock said.

In addition to future research directions, the study also identified critical education needs for owners of private water wells. Most water-well owners had difficulty interpreting detailed water-test reports that they received as part of pre-drilling surveys, according to the researchers.

"As a result, most homeowners with pre-drilling water-quality problems were unable to identify them even after receiving extensive water-testing reports," Swistock said. "There is a clear need to help homeowners understand pre-drilling problems, their risks and how to solve them."

Other investigators on this project were Dr. Elizabeth Boyer, associate professor of water resources and director of the Pennsylvania Water Resources Research Center in the School of Forest Resources; James Clark, extension educator based in McKean County; Mark Maddien, extension educator based in Sullivan County; and Dana Rizzo, extension educator based in Westmoreland County.

The full initial report and executive summary of this study are available on the Center for Rural Pennsylvania's website at <http://www.rural.palegislatre.us/>. The investigators currently are preparing this work to submit for publication in the peer-reviewed literature.