



LEAGUE OF  
WOMEN VOTERS®

League of Women Voters of Delaware  
League of Women Voters of New Jersey  
League of Women Voters of New York  
League of Women Voters of Pennsylvania

January 17, 2017

By E-Mail and United States Mail

The Honorable Chris Christie, Governor of New Jersey  
The Honorable Andrew M. Cuomo, Governor of New York  
The Honorable Jack A. Markell, Governor of Delaware  
The Honorable Tom Wolf, Governor of Pennsylvania  
Brigadier General William H. Graham, Chair  
Lieutenant Colonel Michael A. Bliss, Federal Representative

Delaware River Basin Commission  
25 State Police Drive  
P.O. Box 7360  
West Trenton, NJ 08628-0360

Preservation of Safe Drinking Water for 15-17 Million Americans

Dear Governor Christie, Governor Cuomo, Governor Markell, Governor Wolf,  
Brigadier General Graham and Lieutenant Colonel Bliss:

The League of Women Voters of Delaware, New Jersey, New York and Pennsylvania join together in this letter to acknowledge the critical role of the Delaware River Basin Commission (“DRBC”) to protect, conserve and preserve, for the long-term, access to safe drinking water from the Delaware River Basin by 5% of the America’s population.<sup>1</sup> We appreciate your past deliberative stewardship and encourage you to continue to make access to safe drinking water the top priority of the DRBC. Preservation of safe drinking water represents a matter of national security; and a precursor to Americans’ well-being and America’s economic sustainability. This imperative likewise coincides with a time honored position of the League of Women Voters to protect natural resources such as water.

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<sup>1</sup> *Economic Value of Nature and Ecosystems in the Delaware River Basin*; Journal of Contemporary Water Research & Education by Gerald J. Kauffman, August 2016.  
<http://www.wra.udel.edu/wpcontent/uploads/2016/07/EconomicValueofNatureandEcosystemsintHeDelawareRiverBasinGJKauffman2016.pdf>

As reflected by the media spotlight on external impacts to safe drinking water, Americans understand the consequence of degraded health as a result of lapses in government oversight which led to lead leaching into the municipal water pipes serving Flint Michigan residents. Remediation is costlier and less effective than prevention would have been. The League of Women Voters seeks to prevent adverse impacts to drinking water sourced from the Delaware River Basin and is therefore taking this opportunity to share results from current reports to guide the DRBC in making deliberative, science based decisions.

A report, dated August 2016, titled *Economic Value of Nature and Ecosystems in the Delaware River Basin*<sup>2</sup> reveals that by 2010 a billion gallons of water per day were withdrawn from the Delaware River basin to sustain the region and supply drinking water.<sup>3</sup> The report determines that the economic value of the Delaware River basin exceeds \$22 billion per year; with public drinking water supplies valued at \$3.1 billion, \$2.4 billion attributable to benefits from water quality and \$3.8 billion attributable to benefits from water supplies.<sup>4</sup> The report also attributes a value of \$425 million to potential Marcellus Shale gas extraction,<sup>5</sup> an industrial activity that presents a competing interest to the preservation of a safe drinking water supply for the 15-17 Million people who rely upon safe drinking water, directly or indirectly, from the Delaware River Basin. Gas drilling operations represent a short-term, boom-bust economy that brings long-term risks and potentially irreversible impacts to drinking water. Such impacts include contamination of the Delaware River and Bay with dangerous materials ranging from carcinogens like benzene, through highly toxic metals such as arsenic and cadmium and radioactive elements including radium, thorium and uranium. Radioactive materials are not removed by standard water treatments and the levels of radioactivity may rise as elements undergo radioactive decay.<sup>6</sup> Jeopardizing currently operating businesses with a competing use of water resources and pollution potential also need to be considered.

In a long anticipated report issued in December 2016 by the Environmental Protection Agency (“EPA”) titled *Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (Final Report)*<sup>7</sup> the EPA found scientific evidence that activities in the hydraulic fracturing water cycle can and have impacted drinking water resources under certain circumstances.

The following findings identified in the EPA report reflect conditions under which impacts from hydraulic fracturing activities can be more frequent or severe:

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<sup>2</sup> *Id.*

<sup>3</sup> *Id.* at Page 105

<sup>4</sup> *Id.* at Page 106

<sup>5</sup> *Id.* at page 105

<sup>6</sup> <https://ehp.niehs.nih.gov/1408855/>

<sup>7</sup> U.S.EPA. Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-16/236F, 2016. <https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990>

- (i) Water withdrawals for hydraulic fracturing in times or areas of low water availability, particularly in areas with limited or declining groundwater resources;
- (ii) Spills during the handling of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources;
- (iii) Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources;
- (iv) Injection of hydraulic fracturing fluids directly into groundwater resources;
- (v) Discharge of inadequately treated hydraulic fracturing wastewater to surface water; and
- (vi) Disposal or storage of hydraulic fracturing wastewater in unlined pits resulting in contamination of groundwater resources.

The EPA report also states that 173 of the hydraulic fracturing chemicals identified by EPA have chronic oral toxicity values.

In your capacity as stewards of the environment and protectors of the health and well-being of your constituents who are increasingly confronted by environmentally-created health impacts beyond their control, for which they could become financially responsible, we draw your attention to a journal article published in 2016 titled *Toward an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment of the Peer-Reviewed Scientific Literature, 2009-2015*,<sup>8</sup> which analyzes the results of peer-reviewed publications in three sub-topics, including water quality, and reported that at the time of submission of the article, approximately 69% of the papers in the water quality sub-topic had identified potential and/or actual adverse impacts on water from gas drilling operations. The abstract of this article states the following:

The body of science evaluating the potential impacts of unconventional natural gas development (UNGD) has grown significantly in recent years, although many data gaps remain. Still, a broad empirical understanding of the impacts is beginning to emerge amidst a swell of research. The present categorical assessment provides an overview of the peer reviewed scientific literature from 2009–2015 as it relates to the potential impacts of UNGD on public health, water quality, and air quality. We have categorized all available original research during this time period in an attempt to understand the weight and direction of the scientific literature. Our results indicate that at least 685 papers have been published in peer-reviewed scientific journals that are relevant to assessing the impacts of UNGD. 84% of public health studies contain findings that indicate public health hazards, elevated risks, or adverse health outcomes; 69% of water

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<sup>8</sup> *Toward an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment of the Peer-Reviewed Scientific Literature, 2009-2015*, by Jake Hays and Seth B. C. Shonkoff, April 20, 2016. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0154164> ; See also an archive of more than 1,000 publications-virtually all peer-reviewed-on 12 different sub-topics related to science and health studies connected to shale and tight gas development,<sup>8</sup>with 157 addressing water quality and 30 addressing water usage available at PSE Study Citation Database. [https://www.zotero.org/groups/pse\\_study\\_citation\\_database/items](https://www.zotero.org/groups/pse_study_citation_database/items)

quality studies contain findings that indicate potential, positive association, or actual incidence of water contamination; and 87% of air quality studies contain findings that indicate elevated air pollutant emissions and/or atmospheric concentrations. This paper demonstrates that the weight of the findings in the scientific literature indicates hazards and elevated risks to human health as well as possible adverse health outcomes associated with UNGD. There are limitations to this type of assessment and it is only intended to provide a snapshot of the scientific knowledge based on the available literature. However, this work can be used to identify themes that lie in or across studies, to prioritize future research, and to provide an empirical foundation for policy decisions.<sup>9</sup>

A review of the annual reports (10-Ks) of publicly traded companies engaged in gas drilling and hydraulic fracturing lifecycle operations in the Commonwealth of Pennsylvania acknowledge their operations pose the following risks and hazards: natural gas leaks, uncontrollable flows of oil, natural gas or well fluids, migration of gas into fresh groundwater sources, spills, ruptures, unauthorized discharges, loss of drilling fluid, build-up of naturally occurring radioactive material, explosions and fire, among other impacts, with such events resulting in injury, loss of life, property damage and environmental pollution. These publicly filed reports also disclose that the companies are neither fully insured nor fully insurable; thereby potentially passing along to citizens the risks and hazards associated with failed gas drilling and hydraulic fracturing operations and gas transmission.<sup>10</sup>

A compelling and ever-growing compilation titled *The List of the Harmed*,<sup>11</sup> reflects 21,700 individuals or families (with links to published news accounts pertaining to the related entry) reporting illness, death and property-related loss resulting from the same operational risks and hazards cited by the oil and gas industry in their annual 10-K reports to shareholders.

The Delaware River Basin Commissioners are called upon to make, and keep, safe drinking water the top priority when evaluating all proposed uses of the water flowing to and from the Delaware River Basin. The 15-17 million people who obtain their drinking water from the Delaware River Basin rely upon you to keep pace with the complex factors that contribute

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<sup>9</sup> Id at page 1.

<sup>10</sup> See for example: Cabot Oil and Gas Corporation 10-K for 2015, page 27-28, available at: <http://phx.corporate-ir.net/phoenix.zhtml?c=116492&p=irolsecText&TEXT=aHR0cDovL2FwaS50ZW5rd2l6YXJkLmNvbS9maWxpbnmcueG1sP2lwYWdlPTEwNzYxMTc0JkRTRVE9MSZTRVE9J>; Chesapeake Energy Corporation 10-K for 2015, page 30, available at [http://www.chk.com/Documents/investors/CHK2015AR\\_Issuu.pdf](http://www.chk.com/Documents/investors/CHK2015AR_Issuu.pdf); and Range Resources 10-K for 2015, page6 22-23 and 26, available at <http://ir.rangeresources.com/phoenix.zhtml?c=101196&p=irol-secText&TEXT=aHR0cDovL2FwaS50ZW5rd2l6YXJkLmNvbS9maWxpbnmcueG1sP2lwYWdlPTEwNzYxMTc0JkRTRVE9MSZTRVE9J>

<sup>11</sup> The List of the Harmed available at: <https://pennsylvaniaallianceforcleanwaterandair.wordpress.com/the-list/> which as of October 31, 2015 reflected **742 entries in Pennsylvania**; and as of October 31, 2016 reflected **21,700** entries from among the following United States: Alabama, Arkansas, California, Colorado, Connecticut, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri Montana, New Jersey, Nebraska, New Mexico, New York, North Dakota, Off-shore from Louisiana, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Texas, Utah Virginia, Wisconsin and Wyoming. New accounts are posted with the entries.

to the cumulative risks of harm to health and property associated with those risks. Links to peer-reviewed studies, 10-K reports and the 21,700 personal accounts referred to in this letter are respectfully intended to assist you in performing your critical role as protectors of the Delaware River Basin for your constituents. To achieve and maintain this end, the Delaware River Basin Commissioners are urged to continue indefinitely the moratorium on gas drilling and hydraulic fracturing in the Delaware River Basin.

Thank you for your service and commitment to your constituents, for your review of the resource material referred to in this letter and for your consideration of the requests made in this letter.

Sincerely,



Jill Fuchs, President  
LEAGUE OF WOMEN VOTERS OF DELAWARE



Nancy K. Hedinger, President  
LEAGUE OF WOMEN VOTERS OF NEW JERSEY



Dare Thompson, President  
LEAGUE OF WOMEN VOTERS OF NEW YORK



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