

# CITIZEN DAVID TAMES GAS GOLIATHS ON THE MARCELLUS SHALE STAGE: CITIZEN ACTION AS A FORM OF DISPUTE PREVENTION IN THE INTERNET AGE

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## INTRODUCTION

“Water, water everywhere and not a drop to drink.”<sup>1</sup> This could soon become the lament of millions of people who derive their drinking water from sources located near the latest natural gas boom site in the East, known as the “Marcellus Shale” region.<sup>2</sup> Drilling is underway in Pennsylvania and West Virginia, but not yet in New York. The focus here is New York.

Horizontal hydraulic fracturing holds promise for accessing shale gas. But with the current state of the industry practices, it also promises certain devastation to the environment and human health unless all local, state, and federal government officials immediately begin to take seriously the already documented risks associated with this unconventional drilling method. Every citizen has an interest in protecting our natural resources, water included. In this real life drama, David is played by U.S. citizens and Goliath is played by the rich and powerful oil and gas industry. Members of the oil and gas industry and land-owning citizens seeking to lease their property for gas extraction prefer the circumscribed definition of the term hydraulic fracturing or “fracking,” which refers only to the actual gas drilling. Environmental groups and individuals advocating for conservation of natural resources opt for a broad interpretation of the term, reasoning that every step in the hydrau-

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<sup>1</sup> This is a paraphrase of a line from *The Rime of the Ancient Mariner* by Samuel Coleridge. The narrator is a sailor aboard a ship surrounded by salt water which he cannot drink. The actual quote is, “water, water everywhere nor any drop to drink.”

<sup>2</sup> See *A New Yorker's Guide to Industrial Gas Drilling*, EARTHJUSTICE, [http://earthjustice.org/our\\_work/campaigns/a-new-yorkers-guide-to-industrial-gas-drilling](http://earthjustice.org/our_work/campaigns/a-new-yorkers-guide-to-industrial-gas-drilling) (last visited Mar. 17, 2011) [hereinafter *A New Yorker's Guide*].

lic gas drilling process is worthy of attention since adverse impacts can and do result from steps before and after the actual drilling occurs. The future environmental and human health of America hangs in the balance with thirty-four of the continental United States sitting atop shale deposits. Shared information combined with public participation and citizen action provides the hope for leveling the stage. Fortunately, the tools and the will exist. With work towards establishing common ground, the promise for a positive outcome can follow.

## I. THE PROCESS AND RISKS OF GAS DRILLING

The Marcellus Shale, one of the nation's largest shale formations, is located across the states of New York, Pennsylvania, West Virginia and Ohio, with between an estimated 168 and 516 trillion cubic feet of natural gas throughout its entire extent, and with accessibility ranging from ground surface to 7,000 or more feet below ground.<sup>3</sup> The Marcellus Shale also sits amidst an intricate network of underground aquifers that supply drinking water in New York and surrounding states via municipal water supplies and private wells.<sup>4</sup> Our finite water supply knows no boundaries and its future is subject, in part, to the evolving balance of power among the gas giants, government and the common taxpayer. Regardless of which role an individual plays in this drama, consider the fact that human cells consist of between sixty percent and ninety percent water and that the quality of the water content in our bodies is determined by the quality of the water we drink.

Hydraulic fracturing combines fresh water, salt, sand and various chemicals marketed as "stimulation products," to coax out the gas from the shale.<sup>5</sup> This process was first used commercially by

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<sup>3</sup> *Marcellus Shale—Appalachian Basin Natural Gas Play*, GEOLOGY.COM, <http://geology.com/articles/marcellus-shale.shtml> (last visited Mar. 24, 2011). The depth of the Utica Shale in New York which sits below the Marcellus Shale ranges from exposure at the ground surface along the Southern Adirondacks to more than 10,000 feet along the New York-Pennsylvania border. See The Draft Supplemental Generic Environmental Impact Statement [hereinafter Draft SGEIS] at § 6.14.1.3 (Sept. 2009), available at [http://www.dec.ny.gov/docs/materials\\_minerals\\_pdf/ogdsgeischap6.pdf](http://www.dec.ny.gov/docs/materials_minerals_pdf/ogdsgeischap6.pdf).

<sup>4</sup> Finger Lakes Institute, *Considerations for Marcellus Shale Drilling* (Sept. 23, 2009), available at [http://fli.hws.edu/marcellus/MBalyszak\\_MarcellusShaleDrillingConsiderations.pdf](http://fli.hws.edu/marcellus/MBalyszak_MarcellusShaleDrillingConsiderations.pdf).

<sup>5</sup> *A New Yorker's Guide*, *supra* note 2. This process is also used for shale oil extraction. See *Hydraulic Fracturing of Oil & Gas Wells Drilled in Shale*, Geology.com, <http://www.geology.com/articles/hydraulic-fracturing/>.

Halliburton in 1949.<sup>6</sup> Horizontal drilling, which allows drillers to extract gas at an angle underground, and hydraulic fracturing combine to produce the current generation of horizontal gas drilling, which involves a relatively small above-ground “footprint” to access a large volume of underground gas.<sup>7</sup> This technology has previously been used to extract natural gas from the Barnett Shale play in Texas,<sup>8</sup> and in such other shale-rich states as Arkansas, Colorado, Louisiana, Pennsylvania, West Virginia, and Wyoming.<sup>9</sup> Unlike conventional drilling, horizontal drilling, combined with hydraulic fracturing, requires millions of gallons of chemically treated water applied in a series of powerful underground explosions<sup>10</sup> to stimulate release of shale gas.<sup>11</sup> The end product yields gas for energy consumption, as well as waste water irreversibly laden with toxic chemicals and technologically-enhanced levels of naturally occurring radioactive material that result in risks to environmental and human health.<sup>12</sup>

Dr. Theo Colborn, Director of the Endocrine Disruption Exchange in Paonia, Colorado, has commented that although natural gas exploration has been going on in the West for a while, there was a dramatic increase in drilling after the 2005 Energy Act was passed, which exempted oil and gas companies from a number of the environmental laws, including the Safe Drinking Water Act and

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<sup>6</sup> See *The Halliburton Loophole*, N.Y. TIMES (Nov. 2, 2009), available at <http://www.nytimes.com/2009/11/03/opinion/03tue3.html> [hereinafter *The Halliburton Loophole*].

<sup>7</sup> Lynn Helms, *Horizontal Drilling*, 35 N.D. DEP'T OF MINERAL RES. NEWSLETTER 1 (Jan. 2008), available at <http://www.dmr.nd.gov/ndgs/newsletter/NL0308/pdfs/horizontal.pdf>.

<sup>8</sup> Al Armendariz, *Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements* (Jan. 26, 2009), available at [http://www.edf.org/documents/9235\\_Barnett\\_Shale\\_Report.pdf](http://www.edf.org/documents/9235_Barnett_Shale_Report.pdf).

<sup>9</sup> Mark Ruffalo, *When Truth is Scarier than Fiction*, MARCELLUS SHALE PROTEST (Nov. 23, 2010), available at <http://www.marcellusprotest.org/mark-ruffalo-csi>; see also Kate Sindig, Blog, *Tragic Case Well Explosion Kills Two People*, NRDC (July 23, 2010), available at [http://switchboard.nrdc.org/blogs/ksindig/tragic\\_gas\\_well\\_explosion\\_kill.html](http://switchboard.nrdc.org/blogs/ksindig/tragic_gas_well_explosion_kill.html).

<sup>10</sup> In Arkansas, where natural gas wastewater disposal wells were linked to a recent incident of earthquakes, including the largest in 35 years, Chesapeake Energy and Clarita, two companies that own the impacted wells, agreed to shut them down without admitting responsibility. See Campbell Robertson, *Waste Wells to Be Closed In Arkansas*, N.Y. TIMES (Mar. 4, 2011), available at <http://www.nytimes.com/2011/03/05/us/05fracking.html>.

<sup>11</sup> See Theo Colborn et al., *Natural Gas Operations from a Public Health Perspective*, INT'L J. OF HUMAN & ECOLOGICAL RISK ASSESSMENT (forthcoming), available at [http://endocrinedisruption.com/files/NaturalGasManuscriptPDF09\\_13\\_10.pdf](http://endocrinedisruption.com/files/NaturalGasManuscriptPDF09_13_10.pdf).

<sup>12</sup> For more on the possible health effects as a result of drilling and fracturing, see *id.* See also Armendariz, *supra* note 8.

the Clean Water Act.<sup>13</sup> Colborn began investigating the chemicals used in the drilling process when people living near the gas wells began to complain about health complications.<sup>14</sup> Based upon her research, Colborn concluded that forty-three percent of the chemicals she verified as being used in fracking are endocrine disruptors, man-made chemicals, which when absorbed into the body either mimic hormones or block hormones and disrupt the body's normal function; they have been linked to infertility, ADHD, autism, diabetes, thyroid disorders—childhood and adult cancers that have been found to be linked to fetal exposure to endocrine disruptors.<sup>15</sup> Fish, birds and wildlife are susceptible to endocrine disruptors as well. Drilling may produce airborne pollutants as well, such as arsenic, mercury and radioactive materials.<sup>16</sup> Methane and volatile organic chemicals may become airborne as well.<sup>17</sup> Ozone also results from the truck diesel exhaust once it mixes with the nitrous oxide under a sunny sky, leading to pulmonary disease.<sup>18</sup> Ozone also affects our trees and food crops.<sup>19</sup>

Public testimony before the Philadelphia City Council on January 27, 2011 by Pouné Saberi, a family physician at the University of Pennsylvania, disclosed that studies have found a 40-fold increased risk of cancer after only “seven days, when exposed to the same chemicals that have contaminated drinking water of two families in Pennsylvania from shale gas drilling.”<sup>20</sup> Dr. Saberi also testified that results of an EPA testing of water wells of Wyoming residents living around pipelines from drilling sites tested positive for Bisphenol-A, an endocrine disruptor now banned from infants' milk bottles.<sup>21</sup> She also noted a twenty-five percent increase in pediatric asthma in Texas in regions where children live near well pads.<sup>22</sup>

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<sup>13</sup> Sue Smith-Heavenrich, *Theo Colborn Addresses Air, Water Issues Related to Gas Drilling*, *BROADER VIEW WEEKLY* (Feb. 20, 2009), available at [http://www.tiogagaslease.org/images/BVW\\_02\\_20\\_09.pdf](http://www.tiogagaslease.org/images/BVW_02_20_09.pdf).

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

<sup>19</sup> Smith-Heavenrich, *supra* note 13.

<sup>20</sup> See Kristian Boose, *Public Comment Philadelphia City Council Jan. 27, 2011 from Pouné Saberi; Family Physician*, *PROTECTING OUR WATERS* (Jan. 27, 2010), <http://protectingourwaters.wordpress.com/2011/01/27/public-comment-philadelphia-city-council-jan-27-2011-from-poune-saberi-family-physician/>.

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

New York has a unique set of geological conditions that create additional risks. For example, scientists have discovered that New York's shale-bound uranium may be released into ground water as a result of the fracking process.<sup>23</sup>

In addition to direct impacts from drilling on human health, indirect impacts to human health via our food supply require ongoing attention and oversight. The draft Supplemental Generic Environmental Impact Statement ("Draft SGEIS") fails to address the potential impacts of natural gas drilling on agriculture;<sup>24</sup> this notwithstanding the fact that "[t]he counties covering the Marcellus Shale formation include an agricultural region called the plateau country which is known for its production of dairy, beef, vegetables, wine, potatoes and many other foods. It is the largest agricultural region in the state."<sup>25</sup> "Certified organic farms increased from 218 in 2002 to 590 in 2008 with a concentration in the Marcellus Shale region," and these numbers represent only a fraction of the farms practicing natural farming methods.<sup>26</sup> Upstate New York farmers who sell their food for human consumption have entered into leases or are considering entering into leases for gas drilling below their farmland, risking outcomes not unlike those experienced by certain Pennsylvanian farmers and cattle ranchers who leased their underground shale rights for gas drilling. Reports of Pennsylvania's experience deserve critical attention from New York's farmers and regulators alike. The Pennsylvania

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<sup>23</sup> See *Uranium in Ground Water? Fracking Mobilizes Uranium in Marcellus Shale*, SCIENCE DAILY, Oct. 27, 2010, <http://www.sciencedaily.com/releases/2010/10/101025172926.htm>; see also Abraham Lustgarten, *Is New York's Marcellus Shale Too Hot To Handle?*, PROPUBLICA (Nov. 9, 2009), available at <http://www.propublica.org/article/is-the-marcellus-shale-too-hot-to-handle-1109>. Another example is reflected in geologist testing, which suggests that the presence of radioactive materials in New York's portion of the Marcellus Shale is far higher than that which exists in other states. *Id.* Since the fracking process unleashes this radioactive material, it ends up in the fracking water making the safe disposal of the frack wastewater more of a challenge than already exists. *Id.* According to Rick Kessy, Operations Manager for Fortuna Energy, a subsidiary of Canadian Talisman Energy, "treatment facilities in Pennsylvania are accepting Fortuna wastewater with much lower levels of radioactivity from the company's wells there, but if plants can't take higher concentrations, it could be crippling." *Id.* "In the event that they are not able to comply due to high radioactivity, they would reject the [waste] water," Kessy said. *Id.* "And if we did not have a viable option for it, our operations would just shut down. There is no other option." *Id.* Radium, "a potent carcinogen is among the most dangerous of these metals because it gives off radon gas, accumulates in plants and vegetables and takes 1,600 years to decay." *Id.*

<sup>24</sup> See Draft SGEIS, *supra* note 3.

<sup>25</sup> See Colleen Blacklock, *Potential Impacts of Gas Drilling on Agriculture in the Marcellus Shale Region in New York State*, Dec. 11, 2008, available at [http://www.occainfo.org/documents/PotentialImpactsofGasDrillingonAgriculture\\_001.pdf](http://www.occainfo.org/documents/PotentialImpactsofGasDrillingonAgriculture_001.pdf).

<sup>26</sup> *Id.*

Department of Agriculture was reported to have quarantined dairy cattle believed to have drunk from a frack water spill; their milk was no longer considered safe for consumption.<sup>27</sup> In another report, fracking fluid leaks were said to account for injuring and killing livestock, and there are fears that the accumulation of fracking fluid in the soil could put crops at risk.<sup>28</sup> In 2009, a tomato farmer in Avella, Pennsylvania found arsenic levels 2,600 times what is recommended as well as dangerously high levels of benzene and naphthalene, all used in the fracking process.<sup>29</sup> Food sources from rivers and streams are not exempt. Spills of fracking fluid in 2009 from a well site run by Cabot Oil & Gas seeped into a nearby creek where a fishkill was reported to the PA Department of Environmental Protection.<sup>30</sup> With thirty-four of the continental United States containing shale located below the cattle ranches and farms that feed Americans, the potential impacts of horizontal hydraulic gas drilling on our food supply, over time, extend beyond New York to become an issue of national concern.

In a January 24, 2011 letter to the Philadelphia City Council, Tracy Carluccio, the Deputy Manager of the Delaware Riverkeeper Network, voiced public concern over the

fast pace development drillers will pursue in the Special Protection Waters of the Delaware River if regulations are finalized and permitting begins . . . Meanwhile, the problem of disposing of millions of gallons of brine water from the drilling industry is another dilemma. The AP reported Pennsylvania state records indicate at least 3.6 million barrels of frack wastewater were sent to treatment plants that empty into rivers during the 12 months ending June 2010. On January 4, [2011], the AP news uncovered the illegal discharge of 44,000 barrels of frack wastewater that was being discharged into Neshaminy Creek from a Hatfield Wastewater Treatment Plant beginning in 2009 thru June 2010. Both the PA DEP and the DRBC were unaware of this illegal acceptance and discharge of this flowback water from Cabot Oil & Gas for many months—contaminated water containing hundreds of chemicals that was trucked many miles from the shale

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<sup>27</sup> See Mari Margil & Ben Price, *Pennsylvania Township Declares Freedom from Fracking, YES!* (Oct. 27, 2010), <http://www.yesmagazine.org/planet/pennsylvania-township-declares-freedom-from-fracking>.

<sup>28</sup> See NEWSINFERNO, *Is Fracking Poisoning Our Food?* (Aug. 31, 2010), available at <http://www.newsinferno.com/health-concerns/is-fracking-poisoning-our-food/>.

<sup>29</sup> *Id.*

<sup>30</sup> Abraham Lustgarten, *Frack Fluid Spill in Dimock Contaminates Stream, Killing Fish*, PROPUBLICA (Sept. 21, 2009), available at <http://www.propublica.org/article/frack-fluid-spill-in-dimock-contaminates-stream-killing-fish-921>.

region to this treatment facility in Bucks County that flowed into the Delaware River.<sup>31</sup>

The testimony given at the January 27, 2011 State of Pennsylvania Senate Republican Committee hearing<sup>32</sup> on the opportunities and challenges of developing Marcellus Shale natural gas provides invaluable insight into societal costs associated with hydraulic drilling resulting from the lack of regulation and preparedness, notwithstanding the apparent boost to a sector of the job market and private pocketbooks. Whether the financial benefits to the state as a whole outweigh these costs is left to be seen.

For purposes of achieving a balanced outcome in New York, the testimony bears repeating at length. Members of the drilling industry testified to the number of wells drilled and other infrastructure-related statistics.<sup>33</sup> David Spigelmyer from Chesapeake Energy stated that as many as 4,000 wells are drilled annually, while pointing out that the multiple well pad drilling technique is a “conservation winner,” nearly doubling the state’s production with less than one-third the surface disturbance compared to shallow wells.<sup>34</sup> According to David Callahan, a spokesperson from the Marcellus Shale Coalition, “2,300 Marcellus Shale wells have been drilled in Pennsylvania as of the end of 2010, and according to research at Penn State, the Commonwealth can expect to see 3,500 wells per year drilled in the state by 2020.”<sup>35</sup> Callahan further testified that leasing state forest lands for Marcellus development “has resulted in approximately \$238 million in up front bonus payments to the state in 2010 and future royalties from production on these lands that could reach several hundred million dollars per year for the state.”<sup>36</sup> This testimony was sharply contrasted by Bruce Miller from the Brockway Area Clean Water Alliance who “expressed concern about the impact of drilling in the Brockway Area Municipal authority water supply watershed, a 4,000-acre un-

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<sup>31</sup> Kristian Boose, *Public Comment Philadelphia City Council Jan. 27, 2011 from Tracy Carluccio Deputy Director Delaware Riverkeeper Network*, PROTECTING OUR WATERS (Jan. 28, 2011), <http://protectingourwaters.wordpress.com/2011/01/28/public-comment-philadelphia-city-council-jan-27-2011-from-tracy-carluccio-deputy-director-delaware-riverkeeper-network/>.

<sup>32</sup> David E. Hess, *Senate Committee Hears Challenges, Opportunities of Marcellus Shale*, PA ENVIRONMENT DIGEST (Jan. 27, 2011), <http://paenvironmentdaily.blogspot.com/2011/01/senate-committee-hears-challenges.html>.

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

developed forested area in Elk and Jefferson counties.”<sup>37</sup> “He told the committee the authority watched helplessly over the past two years as the authority’s property and neighboring tracts were developed for drilling and the forest was cleared and fragmented by drill pads, gas pipelines and access roads.”<sup>38</sup>

Government participants also gave testimony on the new jobs generated in the state and royalties in excess of \$1 billion paid to landowners thus far. In addition, according to Bradford County Commissioner Doug McLinko, the drilling companies “have invested more than \$125 million to rebuild roads in Bradford County to handle the increased truck traffic.”<sup>39</sup> He also testified that drilling has caused housing shortages and an increase in crime in that county.<sup>40</sup> Senator Yaw noted that “40% of the drinking wells in Bradford County do not meet drinking water standards.”<sup>41</sup> Commissioner Coolidge from Tioga County noted the use of local hotels for out of town Marcellus Shale workers has resulted in a shortage of rooms for tourists, thereby affecting the tourism industry there.<sup>42</sup> In addition, there has been an increase in the demand for human services in Tioga County, including child welfare services (no further explanation was given).<sup>43</sup> Both county commissioners testified on the need to update local emergency response services, including fire and emergency medical, to respond to drilling related accidents.<sup>44</sup> Combined testimony from Commissioner Coolidge and county conservation managers noted that the department of environmental protection took away the local permitting authority and oversight personnel in 2009 relating to erosion, sedimentation and stream crossing issues, making them unable to respond to problems or control environmental impacts to water quality.<sup>45</sup> As a result, the sedimentation resulting from the heavy truck traffic has become “totally unacceptable,” with storm water sediment once filtered by grass buffers now flowing directly into streams.<sup>46</sup>

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<sup>37</sup> *Id.*

<sup>38</sup> Hess, *supra* note 32.

<sup>39</sup> *Id.*

<sup>40</sup> *Id.*

<sup>41</sup> *Id.*

<sup>42</sup> *Id.*

<sup>43</sup> *Id.*

<sup>44</sup> Hess, *supra* note 32.

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

Wyoming County's emergency management director stated that "transportation-related emergencies have increased 300% in Wyoming County as a result of drilling activities, while hazardous materials spills have increased 30%."<sup>47</sup> He recommended each drilling company should be mandated to establish an emergency operations plan and provide the plan to local responders."<sup>48</sup> The emergency management coordinator for Susquehanna County noted "a need for specialized training and equipment to deal with drilling-related emergencies."<sup>49</sup> The 911 coordinator for Susquehanna County also noted the difficulty in coordinating responses to well drilling emergencies because there is no cell phone service in Susquehanna County.<sup>50</sup> While gas companies have satellite phones, dialing in an emergency "requires going through several intermediaries to get to the county."<sup>51</sup> Once there, merely providing the location of a drill rig can be difficult if they are in isolated areas. 911 calls have increased sixteen percent between 2008 and 2010.<sup>52</sup>

Of particular relevance to New York was testimony on the "big picture." David Sanko, the Executive Director of the Pennsylvania State Association of Township Supervisors said, "Marcellus Shale development was not an activity that communities planned for and as a result they are playing catch-up and trying to figure out what needs to be done to deal with land use, environmental and other local impacts of the industry."<sup>53</sup>

Let this regrettable lesson from our unregulated neighbor to the south serve as a warning that New York should proceed cautiously with the gas companies seeking to do business in our state.

## II. THE CONSPICUOUS ABSENCE OF REGULATION

Martin Luther King was quoted as saying that while "morality cannot be legislated, behavior can be regulated."<sup>54</sup> Natural gas drilling across the nation has been under-regulated, to the detri-

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<sup>47</sup> *Id.*

<sup>48</sup> *Id.*

<sup>49</sup> *Id.*

<sup>50</sup> Hess, *supra* note 32.

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

<sup>54</sup> This quote comes from a speech advocating civil rights legislation: "But we must go on to say that while it may be true that morality cannot be legislated, behavior can be regulated."

ment of environmental and human health. Under current law, gas companies do not have to disclose the chemicals they use in the fracking process, even though they can seep into our finite water supply, evaporate into the air we breathe and contaminate the soil that grows our food.<sup>55</sup>

In 2004, the Environmental Protection Agency (“EPA”) determined that hydraulic fracturing technology used to capture natural gas from shale does not pose risks to environmental or human health, despite the use of hundreds of undisclosed chemicals, some of which are known to be carcinogenic.<sup>56</sup> In addition, passage of certain provisions of the Energy Policy Act of 2005, advanced by former Halliburton CEO-turned-Vice-President, Richard Cheney, exempted the oil and gas industry from the Safe Drinking Water Act and the Clean Water Act, and substantially stripped the EPA of its authority to regulate hydraulic fracturing.<sup>57</sup> As a result of closed door sessions among oil giants and legislators, orchestrated by then-Vice President Richard Cheney, the oil and gas industry received a free pass on existing federal laws intended to protect the environment and human health—a result which eliminated regulation in the very instance where it is needed most.<sup>58</sup>

While New York state law gas drilling regulations would take precedence over decisions made at the next higher regulatory level, the future of our drinking water quality rests in significant part in the hands of the federal-interstate regional regulatory agency known as the Delaware River Basin Commission (“DRBC”). The

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MLK Speech Transcription, [www.wmich.edu/library/archives/mlk/transcription.html](http://www.wmich.edu/library/archives/mlk/transcription.html) (last visited Mar. 24, 2011).

<sup>55</sup> See Abraham Lustgarten, *Former Bush EPA Official Says Fracking Exemption Went Too Far; Congress Should Revisit*, PROPUBLICA (Mar. 9, 2011), available at <http://www.propublica.org/article/former-bush-epa-official-says-fracking-exemption-went-too-far>.

<sup>56</sup> See ENVIRONMENTAL PROTECTION AGENCY, HYDRAULIC FRACTURING BACKGROUND INFORMATION, available at [http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells\\_hydrowhat.cfm](http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_hydrowhat.cfm) (last visited Apr. 3, 2011). See also Smith-Heavenrich, *supra* note 13. This 2004 determination has been challenged and is now under review again by the EPA, as will be later discussed.

<sup>57</sup> See Energy Policy Act of 2005, Pub. L. 109-58, 119 Stat. 594, §§ 322–323. See also *The Halliburton Loophole*, *supra* note 6.

<sup>58</sup> *Id.* See also Boose, *supra* note 31; Chenango Delaware Otsego Gas Drilling Opposition Group (CDOG), *Stop Subsidizing the Gas Industry by Exempting It from Regulations that Apply to Every Other Industry*, <http://www.un-naturalgas.org/Exemptions%20are%20subsidies%20Rev%201%20MB-1.pdf> (last visited Mar. 17, 2011) (listing the federal environmental statute exemptions provided to the oil and gas industry, as compiled by the Citizen’s campaign for the Environment). See also generally Citizens Campaign for the Environment, <http://www.citizenscampaign.com>; see also un-natural gas.org, <http://www.un-naturalgas.org> (last visited Mar. 17, 2011).

DRBC consists of governors from the states of New York, Pennsylvania, New Jersey and Delaware, and the Division Engineer, North Atlantic Division, of the U.S. Army Corps of Engineers, which oversees the drinking water of fifteen million people.<sup>59</sup> In 2010, the DRBC determined that all natural gas wells must first apply for and obtain the Commission's approval before commencing any natural gas well project for the production from, or exploration of, shale formations within the drainage area of special protection waters in the Delaware River Basin.<sup>60</sup> The Commission has further identified three areas of concern: 1. Water removal in significant quantities from rivers, streams and aquifers to facilitate the fracking; 2. Release of pollutants into the ground or surface water; and 3. Proper treatment and disposal of the 'frac water' that results from the drilling process; all of which is currently unregulated.<sup>61</sup> New regulations, subject to input from the public are in the process of being finalized. The Commission released draft rules for horizontal hydraulic fracturing in December 2010,<sup>62</sup> over the strenuous objections of former New York State Governor David Paterson, New York City Mayor Michael Bloomberg, and the NYC Council, among a host of others, who all asserted that DRBC acted without the benefit of a prior comprehensive investigation of the risks to the environment and human health attendant to this unconventional drilling practice.<sup>63</sup> The draft rules were also "in direct conflict to the over 10,000 citizens who called on DRBC to wait until the science and a cumulative impact study for the Delaware River Watershed has been conducted and important studies like the EPA study on the effects of hydraulic fracturing on drinking water is complete."<sup>64</sup> According to the DRBC, "between 15,000

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<sup>59</sup> See *Natural Gas Drilling in the Delaware River Basin*, DELAWARE RIVER BASIN COMMISSION, <http://www.state.nj.us/drbc/naturalgas.htm> (last visited Mar. 24, 2011).

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

<sup>62</sup> See *Draft Natural Gas Development Regulations*, DELAWARE RIVER BASIN COMMISSION (posted Dec. 9, 2010), [http://www.nj.gov/drbc/notice\\_naturalgas-draftregs.htm](http://www.nj.gov/drbc/notice_naturalgas-draftregs.htm).

<sup>63</sup> See Mireya Navarro, *N.Y. Objects to Release of Multistate Fracking Rules*, N.Y. TIMES (Dec. 9, 2010), <http://green.blogs.nytimes.com/2010/12/09/n-y-objects-to-release-of-multistate-fracking-rules/>; see also Boose, *supra* note 31.

<sup>64</sup> See Boose, *supra* note 31. Public participants had an opportunity to comment in person or in writing to the 140-page draft regulations, which were issued by the Commission. There was an extended public comment period ending on April 15, 2011 and two public hearings scheduled in Honesdale, Pennsylvania and Liberty, New York on February 22 and another public hearing in Trenton, New Jersey on February 24, 2011. See *Press Release: DRBC Extends Comment Period on Draft Natural Development Gas Regulations* (Mar. 2, 2011), [http://www.nj.gov/drbc/newsrel\\_naturalgas030211.htm](http://www.nj.gov/drbc/newsrel_naturalgas030211.htm).

and 18,000 wells could be drilled in as many as 2,200 locations within the [Delaware River] Basin.”<sup>65</sup>

The proposed Fracturing Responsibility and Awareness Chemicals Act (the “Frac Act”), which has been sitting in Congress without much hope of passing in the current national political climate, would close the so-called “Halliburton loophole” and restore the EPA’s authority to regulate hydraulic fracturing. It would likewise require the gas drilling companies to disclose the chemicals they use.<sup>66</sup>

Currently, the lack of Federal regulation has left it up to the states to oversee the drilling process. New York’s current relevant regulations date from the 1980s and do not contemplate the range of potential environmental impacts arising out the horizontal hydraulic drilling process in New York’s Marcellus Shale.<sup>67</sup> Turning to the role of the Department of Environmental Conservation (“DEC”), the DEC issues permits for gas drilling to oil and gas companies.<sup>68</sup> This practice is not new. The DEC website also states that it values public input to review specific environmental permit applications, such as well drilling applications, by searching

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<sup>65</sup> See Matt Fair, *Delaware River Basin Gas Drilling Through ‘Fracking’ Process Draws Criticism*, THE TIMES (Mar. 27, 2011), available at [http://www.nj.com/mercer/index.ssf/2011/03/rift\\_over\\_gas\\_drilling\\_roils\\_w.html](http://www.nj.com/mercer/index.ssf/2011/03/rift_over_gas_drilling_roils_w.html).

<sup>66</sup> S. 1215, 111th Cong. (2009), available at <http://www.govtrack.us/congress/billtext.xpd?bill=s111-1215>. See also Abraham Lustgarten, *FRAC Act—Congress Introduces Twin Bills to Control Drilling and Protect Drinking Water*, PROPUBLICA (June 9, 2009), available at <http://www.propublica.org/article/frac-act-congress-introduces-bills-to-control-drilling-609>. See also *The Halliburton Loophole*, supra note 6; *What’s Missing from the FRAC Act*, UN-NATURAL-GAS.ORG WEBLOG (May 21, 2010), <http://un-naturalgas.org/weblog/2010/05/whats-missing-from-the-frac-act/> (according to citizen activist Anne Marie Garti, the Frac Act does not go far enough since “the proposed bill will not protect most land area of the US because many aquifers, especially in the northeast, do not flow into a public water supply of 25+ users, and whether they would be capable of supplying municipal water in the future is open to interpretation. The required flow rate is not defined any place, and needs to be so that there is a uniform standard across the US.”).

<sup>67</sup> EarthJustice, a nationwide non-profit public interest law firm dedicated to protecting natural resources and defending the right of all people to a healthy environment, has pledged to seek injunctive action in court to ensure New York’s SGEIS meets the requirements of the State Environmental Quality Review Act. This is to avoid irreparable harm. EarthJustice has also pledged to seek a declaratory judgment involving the state administrative procedure act to determine what actions count for regulations and what actions count for public policy. The goal is to put consistency into the permitting process supported by comprehensive regulations to back them up.

<sup>68</sup> See New York State Department of Environmental Conservation: SEQR—Environmental Impact Assessment in New York State, <http://www.dec.ny.gov/permits/357.html> (last visited Mar. 17, 2011).

the DEC permits applications database.<sup>69</sup> The Environmental Conservation law under SEQR states that:

[i]n adopting [state environmental quality review], it was the legislature's intention that all agencies conduct their affairs with an awareness that they are stewards of the air, water, land, and living resources, and that they have an obligation to protect the environment for the use and enjoyment of this and all future generations.<sup>70</sup>

The SEQR process provides for public input into the approval of important projects, such as unconventional gas drilling in the Marcellus Shale.<sup>71</sup> The existing draft Generic Environmental Impact Statement<sup>72</sup> supplements an underlying analysis that dates back to 1992. The Draft SGEIS, on which the public commented in 2009, did not include a cumulative review of the impacts of hydraulic natural gas development, statewide, over time.<sup>73</sup> Citizens seeking an understanding of such cumulative impacts upon our state's natural resources and their upstate agricultural or tourist based businesses can be expected to seek a second opportunity to review and comment on the DEC's findings when they are released.<sup>74</sup>

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<sup>69</sup> *Id.*

<sup>70</sup> New York State Environmental Quality Review Act, 6 N.Y.C.R.R. § 617 et. seq. (2000).

<sup>71</sup> See generally New York State Department of Environmental Conservation, Introduction to SEQR, <http://www.dec.ny.gov/permits/6208.html> (last visited Mar. 17, 2011).

<sup>72</sup> See Draft SGEIS, *supra* note 3.

<sup>73</sup> *Doctor Ron Bishop's Comments on Draft Supplemental GEIS*, UNNATURAL-GAS.ORG WEBLOG (Mar. 13, 2010), <http://un-naturalgas.org/weblog/2010/03/dr-ron-bishops-comments-on-draft-supplemental-geis/>. The Draft SGEIS contains a section on Regional Cumulative Impacts. See Draft SGEIS, *supra* note 3, at § 6.13.2.1 (Sept. 30, 2009). It states generally, however, that postulating cumulative impacts remain a challenge since each shale play is unique and the "timing, rate and pattern of development, on either a statewide or local basis, are very difficult to accurately predict." *Id.* It concludes that aside from mitigation measures, any limitation on development "is more appropriately considered in the context of policy making, primarily at the local level, outside of the SGEIS." *Id.*

<sup>74</sup> The need to evaluate the horizontal hydraulic fracturing process on a regional and cumulative basis was underscored in a January 26, 2011 article reporting that state officials were holding a public hearing to learn about the financial impacts to the water quality of the Chesapeake Bay and other related waterways from natural gas drilling. See Elizabeth Gibson, *Chesapeake Bay, Marcellus Shale Environmental Issues Could Collide at Hearing at Capitol*, PATRIOT NEWS (Jan. 26, 2011), available at [http://www.pennlive.com/midstate/index.ssf/2011/01/chesapeake\\_bay\\_marcellus\\_shale.html](http://www.pennlive.com/midstate/index.ssf/2011/01/chesapeake_bay_marcellus_shale.html). This development aimed to correct the previous oversight on the part of the EPA to consider and include the adverse environmental impacts of Marcellus Shale drilling on pollution in the Chesapeake Bay when it issued its December 29, 2010 clean-up bill to Pennsylvania, even though the Susquehanna River Basin, which leads to the Chesapeake Bay, begins in shale country and is where the majority of drilling occurs. *Id.*

Current state regulations treat each well as a separate entity with multiple wells on a single well-pad.<sup>75</sup> There is no mechanism for addressing the cumulative effects of this gas development process, which is planned to take place all over upstate New York resulting in thousands, possibly tens of thousands, of wells. In addition, New York has no coherent plan to address the disposal of large scale drilling waste.<sup>76</sup> To frack a well requires two to nine million gallons of water each time and each well is fracked multiple times.<sup>77</sup> This, multiplied by thousands of wells, results in an almost incalculable output of contaminated wastewater. Unfortunately, New York lacks proper waste treatment facilities to handle the chemicals and radioactivity, so the contaminated water has no safe place to go.<sup>78</sup>

In an example of rulemaking, the DEC, pursuant to New York State law, circulated for public comment its proposed ten-year strategic forest management plan, which left open the prospect of fragmenting state forests to allow for shale gas development.<sup>79</sup> Scholarly analyses of the proposed plan were prepared by experts, circulated to lay public participants for review and comment, and

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<sup>75</sup> Sindig, *supra* note 9. See also Siobhan Hughes, *Shale-Drilling Fight Comes to Head at EPA Forum in NY*, WALL ST. J., Sept. 13, 2010. While no express limitation is given in the Draft SGEIS, it states that at current drilling rates, it is expected that no more than ten wells per pad could be drilled, completed and hooked up in any 12-month period. See Draft SGEIS, *supra* note 3, at § 6.5.1.4. Robert Puls, the EPA's technical lead on the Agency's high-profile study, has stated publicly that companies drill as many as sixteen wells from a single pad. See Siobhan Hughes, *Shale-Drilling Fight Comes to Head at EPA Forum in NY*, WALL ST. J., Sept. 13, 2010.

<sup>76</sup> Lustgarten, *supra* note 23.

<sup>77</sup> DELAWARE RIVERKEEPER, *The Truth About Natural Shale Gas Extraction in the Upper Delaware River Watershed*, [http://www.delawareriverkeeper.org/resources/Factsheets/Natural\\_Gas\\_Extraction\\_What\\_you\\_need\\_to\\_know.pdf](http://www.delawareriverkeeper.org/resources/Factsheets/Natural_Gas_Extraction_What_you_need_to_know.pdf) (last visited Mar. 24, 2011).

<sup>78</sup> Lustgarten, *supra* note 23. Reports that drilling companies seeking to conserve water used in the fracking process have recycled the frack water for multiple uses, raises the question as to whether naturally occurring radioactive materials, such as uranium and radium, which we know become technically enhanced from a single frack job, can become concentrated or supercharged after undergoing multiple frack jobs with reuse of the same water. [This observation, posed for further investigation, is attributed to toxicologist, Dr. David Brown, affiliated with Environmental and Human Health, Inc.]. See also Ian Urbana, *Wastewater Recycling No Cure-All in Gas Process*, N.Y. TIMES (Mar. 1, 2011), available at <http://www.nytimes.com/2011/03/02/us/02gas.html>. This in-depth article cites to Pennsylvania state records of wastewater containing uranium and radium coming from fracked wells which was sent to nine different towns across Pennsylvania to be spread on roads to suppress dust (and in rainy conditions, becoming susceptible of mixing with storm water runoff into nearby rivers and streams). *Id.* Laboratory tests by the drilling company show levels of radioactivity substantially in excess of drinking water standards for these same radioactive materials. *Id.*

<sup>79</sup> Jon Campbell, *DEC Plan May Expand Gas Drilling in State Forests*, STARGAZETTE.COM (Jan. 22, 2011), <http://www.stargazette.com/article/20110122/NEWS01/101220357/DEC-plan-may-expand-gas-drilling-state-forests>.

thereafter submitted to the DEC for consideration by the October 29, 2010 public comment deadline.<sup>80</sup>

There may be hope on the horizon. The watersheds that supply drinking water to the New York metropolitan area and the Syracuse region have received particular attention in the fierce debate over whether and to what extent New York should allow drilling in the Marcellus Shale. Thirty-six percent of the Delaware River Basin, which supplies drinking water to down state New Yorkers, sits atop the Marcellus Shale.<sup>81</sup> Regulations issued from the New York DEC announced that a separate environmental impact review process would be required for companies seeking to drill for natural gas in the Catskill-Delaware Watershed, which provides ninety percent of the drinking water to nine million people, as well as the Skaneateles Lake Watershed, which supplies drinking water to more than 200,000 people in and around Syracuse.<sup>82</sup> While officials in both regions have sought an outright ban on drilling in these regions, former DEC Commissioner Pete Grannis commented that an outright ban would be a challenge since eighty percent of the land is privately owned.<sup>83</sup>

The New York legislature is considering changes to New York's Environmental Conservation Law with introduction of a bill affecting water withdrawal.<sup>84</sup> The bill establishes a permitting program so that every designated facility in New York (outside of the DRBC jurisdictions, which will retain their own process) that has a capacity to withdraw 100,000 GPD of water (or more) from any water source (including aquifers) must apply for a DEC permit.<sup>85</sup> Accordingly, frackers would constitute one of the many types of

<sup>80</sup> *Id.* The strategic plan for state forest management, finalized on December 29, 2010, makes drilling subject to the outcome of determinations by the DEC and the EPA, as to the permissibility and scope of the drilling process, both of which are currently in progress. Assuming a positive outcome for drillers, the state's right to lease gas rights to commercial drillers beneath certain state forest land will be subject to a public hearing on each such lease.

<sup>81</sup> See *Natural Gas Drilling in the Delaware River Basin*, *supra* note 59.

<sup>82</sup> *Skaneateles Lake Hydrofracking Regulations*, NEWSCHANNEL 9 (Apr. 23, 2010), available at <http://www.9wsyr.com/news/local/story/Skaneateles-Lake-hydrofracking-regulations/Hphzd72tiEeQV4toqq3Yg.csp>.

<sup>83</sup> *Id.*

<sup>84</sup> See A.5318A (N.Y. 2011) (proposed Feb. 15, 2011) (an Act to amend the Environmental Conservation Law in relation to regulating the use of the state's water sources), available at <http://www.open.nysenate.gov/legislation/bill/A5318A-2011.com>. See E-mail from Katherine Nadeau, Water and Resources Program Director, Environmental Advocates of New York, to Elisabeth N. Radow, Attorney with Cuddy & Feder LLP (Jan. 2011) (on file with author); see also E-mail from Assemblyman George Latimer to Elisabeth N. Radow, Attorney with Cuddy & Feder LLP (Jan. 25, 2011) (on file with author).

<sup>85</sup> *Id.*

facilities that would have to submit to DEC regulation, where none on point previously existed. The DEC would draft regulations permitting a program in accordance with the New York State Administrative Procedure Act, which provides for public participation, including public hearings and public comment.<sup>86</sup> This is in contrast, for example, to the state of Pennsylvania, which lacks a water withdrawal permitting requirement, and outside the regions governed by the Susquehanna and Delaware River Basin Commissions, leaves open to gas drilling companies the right to freely back up their trucks to public waterways and drain as much water as they like for private commercial gain.<sup>87</sup>

Finally, the New York State Senate and Assembly passed a moratorium on drilling, which was vetoed in December 2010 by former Governor David Paterson, coupled with the issuance of an executive order maintaining the defacto moratorium on horizontal hydraulic fracturing until July 2011 but permitting its precursor—vertical well drilling.<sup>88</sup> 2011 will continue with action from drilling advocates, on the one hand, seeking a prompt end to DEC's environmental review process and a cautious contingent, on the other hand, that awaits the outcome of a thorough EPA review of the impacts of the drilling process on our drinking water.

Even assuming comprehensive federal, state and local laws, rules and regulations are put in place, ongoing oversight and enforcement from the DEC, essential to this process, are now at real risk. In Autumn 2010, former Governor David Paterson issued to then-DEC Commissioner Pete Grannis a gubernatorial demand that Grannis fire 209 staff in addition to the twenty percent of the scientists, engineers and enforcement officials mandated over the previous few years.<sup>89</sup> This additional labor cut included a further

<sup>86</sup> *Id.*

<sup>87</sup> 25 PA. CODE §§ 110.1–110.604 (2008), available at [http://www.pacode.com/secure/data/025/chapter110/025\\_0110.pdf](http://www.pacode.com/secure/data/025/chapter110/025_0110.pdf). See also Fair, *supra* note 55.

<sup>88</sup> See Lissa Harris, *Paterson's Answer on Gas Drilling Moratorium: None of the Above*, WATERSHED POST (Dec. 12, 2010), <http://www.watershedpost.com/2010/patersons-answer-gas-drilling-moratorium-none-above>. By executive order, dated January 1, 2011, Governor Andrew M. Cuomo continued Governor Paterson's executive order. See State of New York, Executive Chamber, *Executive Order, No. 2 Review, Continuation and Expiration of Prior Executive Orders*, available at <http://www.governor.ny.gov/executiveorder/2>.

<sup>89</sup> See *Firing of Grannis Draws Criticism*, BUFFALONEWS.COM (Oct. 23, 2010), <http://www.buffalonews.com/city/capital-connection/albany/article228651.ece>. Pete Grannis, Commissioner of the DEC, was subsequently fired by Paterson after a memo Mr. Grannis had prepared was leaked stating that the 209 staff cuts Paterson demanded on top of the 260 lost to early-retirement incentives would seriously impede the agency's effectiveness. See Marie C. Baca, *Leaked Memo Depicts Bare-Bones Regulatory Environment for NY Gas Drilling*, PROPUBLICA

reduction of regulators and inspectors to oversee the anticipated gas drilling in the Marcellus Shale.<sup>90</sup> Meaningful laws with insufficient internal self-monitoring and lacking external, regulatory oversight and enforcement helps no one.<sup>91</sup>

New York State has much to learn from the EPA's oversights. The Energy Policy Act's amendment of the Safe Water Drinking Act excluding regulation of hydraulic fracturing expressly left intact the EPA's regulation of the use of diesel fuel as an additive to the chemical cocktail used for fracking.<sup>92</sup> A congressional investigation commenced in February 2010, which included letters to fourteen companies seeking disclosure of the fracking chemicals they used, resulted in twelve companies reporting use of 32.2 million gallons of diesel fuel, or fluids containing diesel fuel, in their fracking process from 2005 to 2009, across nineteen states, with approximately one-half used in Texas.<sup>93</sup> None sought permits.<sup>94</sup> Lee Fuller, spokesman for the Independent Petroleum Association of America said no permits were sought because the EPA never followed up by creating rules and procedures for obtaining such permits and submitting them for public comment.<sup>95</sup> A court battle has now erupted with the gas companies challenging whether the EPA's web post asserting that diesel-based hydraulic fracturing comes under the auspices of its "underground injection program," which requires companies to obtain permits, amounted to new

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(Oct. 26, 2010), <http://www.propublica.org/article/leaked-memo-depicts-bare-bones-regulatory-environment-for-ny-gas-drilling>.

<sup>90</sup> Baca, *supra* note 89.

<sup>91</sup> Lessons from the April 20, 2010, Deepwater Horizon explosion in the Gulf of Mexico should leave no doubt about the need for strict adherence to safety measures throughout the drilling process, including the soundness of engineering design, the structural integrity of well casings, regular maintenance, effectively communicated emergency protocol and consistent third party regulatory oversight and enforcement. See David Barstow et al., *Deepwater Horizon's Final Hours*, N.Y. TIMES (Dec. 25, 2010), available at <http://www.nytimes.com/2010/12/26/us/26spill.html>.

<sup>92</sup> See EPA, REGULATION OF HYDRAULIC FRACTURING BY THE OFFICE OF WATER, available at [http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells\\_hydroreg.cfm](http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_hydroreg.cfm) (last visited Apr. 3, 2011). See also Tom Zeller Jr., *Gas Drilling Technique is Labeled Violation*, N.Y. TIMES (Jan. 31, 2011), available at <http://www.nytimes.com/2011/02/01/business/energy-environment/01gas.html>.

<sup>93</sup> See Committee on Energy & Finance, *Waxman, Markey, and DeGette Investigation Finds Continued Use of Diesel in Hydraulic Fracturing Fluids* (Jan. 31, 2011), <http://democrats.energycommerce.house.gov/index.php?q=news/waxman-markey-and-degette-investigation-finds-continued-use-of-diesel-in-hydraulic-fracturing-f>.

<sup>94</sup> *Id.*

<sup>95</sup> See Zeller Jr., *supra* note 92.

rule-making that circumvented requirements for notice and public commentary.<sup>96</sup>

### III. PUBLIC PARTICIPATION AND CONFLICT PREVENTION

In the documentary *Gasland*,<sup>97</sup> Dimock, Pennsylvania residents set their methane-laden water on fire from a well tainted by fracking.<sup>98</sup> Residents there and in other states visited by filmmaker Josh Fox speak of brain lesions, irreversible nerve damage and environmental contamination that rendered their property worthless. The current torrent of citizen action and public participation throughout New York State advocating to integrate best management practices through non-negotiable rules and enforcement is intended to avoid such incidents.<sup>99</sup> Certainly, property owners with shale gas rights want to be able to receive income under their leases while not materially or permanently impairing property value. Keeping in mind that these citizens have openly expressed the wish to preserve water, air and road quality and minimize noise, among other considerations, there is a unity of interest of all parties, at least to a reasonable degree, where these issues are concerned. Laying a groundwork in advance through public participation can both preserve natural resources for future generations and

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<sup>96</sup> *Id.*

<sup>97</sup> See *GASLAND*, <http://www.gaslandthemovie.com/> (last visited Mar. 20, 2011).

<sup>98</sup> Ana Campoy & Daniel Gilbert, *Battle Over Gas-Tainted Well Water*, WALL ST. J. (Dec. 17, 2010), available at <http://online.wsj.com/article/SB10001424052748704098304576021852120669280.html> (on December 16, 2010, "Cabot Oil & Gas Corp., a natural gas drilling company in Dimock, agreed to pay \$4.1 million to residents with contaminated water and install water-treatment systems in their homes."). See also Christopher Bateman, *A Colossal Fracking Mess*, VANITY FAIR (June 21, 2010), available at <http://www.vanityfair.com/business/features/2010/06/fracking-in-pennsylvania-201006>.

<sup>99</sup> See generally Julia M. Wondollock et al., *Teetering at the Top of the Ladder: The Experience of Citizen Group Participants in Alternative Dispute Resolution Processes*, 39 SOC. PERSP. 249 (1996). To ensure what is agreed to is upheld and enforced, participants must continue to monitor methods of implementation of agreements reached through a collaborative process. Thus making a binding versus a non-binding agreement reflects a better use of public participation resources so as to avoid circumstances where implementation depends upon the discretion of the involved public agency. Considering further, that a change in agency personnel with no historical knowledge of the origins of an agreement can jeopardize hard won outcomes, binding approaches are preferable as is a committed citizen force to maintain ties with the parties after the agreement is forged to monitor that implementation is ongoing. *Id.* at 259. Media coverage can potentially improve a group's influence by attracting public attention to issues and concerns as has been demonstrated with the success of Josh Fox's documentary, *Gasland*.

likewise prevent otherwise reasonably foreseeable protracted and costly litigation.

Typically, in the dispute resolution arena, parties convene to address a previous disagreement that has resulted in financial damage or other harm. The following discussion focuses on the role of public participation to address identified competing interests, find unity of interests where they exist, and *prevent* undesirable, expensive, and potentially irreversible outcomes through shared data and information that effectively educate all interested parties and result in establishing comprehensive legislation, rule making and other enforceable methodologies. "Public participation" is defined as "any of several 'mechanisms' intentionally instituted to involve the lay public or their representatives in administrative decisionmaking."<sup>100</sup> This includes the town meeting where citizens express their opinions, formal mediated negotiations in which parties write regulations, advisory committees, citizen juries, and focus groups.<sup>101</sup> At the most basic level, when people experience disrespect and exclusion from any process warranting their input, communication often breaks down. Financial and personal harm can result and outcomes suffer. Public participation in this preventative posture aims to avoid such undesirable outcomes before they ripen. Applying public participation as a form of dispute prevention in the context of natural gas development presents a formidable challenge because the size and scope of the issue extends well beyond the location where the citizens reside. This is a national issue involving federal, state and local laws, many of which cannot be directly addressed by all citizens in the group. In addition, even with a focus solely on New York state, variability among citizen expectation can compromise strategies seeking an outcome which serves the best interests of all as opposed to the best interests of the many or the few.

"Program budgets, regulatory power, and staff are usually the principal drivers behind implementation, and public participation is simply one piece of a decisionmaking process along the way."<sup>102</sup> The role of public participation in the governmental decision-making processes calls for a balancing act between responsiveness and control;<sup>103</sup> process is of paramount importance. Applying the high-

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<sup>100</sup> THOMAS C. BEIERLE & JERRY CAYFORD, *DEMOCRACY IN PRACTICE: PUBLIC PARTICIPATION IN ENVIRONMENTAL DECISIONS* 6 (2002).

<sup>101</sup> *Id.*

<sup>102</sup> *Id.* at 62.

<sup>103</sup> *Id.* at 69.

est and best use of public participation in a precautionary, rather than reactionary, mode calls for foresight and resourcefulness—two characteristics not necessarily required in the context of after-the-fact dispute resolution.

Public participation balances the power relationship between decision makers and communities affected by the decisions. Public involvement at all critical stages of a process, such as natural gas development, can reshape the way an agency or enforcement arm performs its function by redefining issues and requiring consideration of a broader range of alternatives. Critically, citizen input also helps to legitimize the outcome.<sup>104</sup> Public participation consists of a multi-step ongoing process employing the skills of experts, including a variety of scientists, engineers, lawyers, policymakers, elected representatives and, of course, public participants, acting through economic development associations, non-profit public interest organizations, research institutions, advocacy groups or as unaffiliated individuals acting solo. While each participant is critical, no one discipline alone can effect the desired, all encompassing, outcome. Public participation requires a diverse chorus. One might think of it as a relay race which involves passing the baton back and forth between participants.

As recognized by Wondolleck, Mairing and Crowfoot,<sup>105</sup> when public participation consists of unfunded or under-funded citizen groups comprised of volunteers with family responsibilities pitted against well-funded, generously staffed governmental agencies, equitable outcomes suffer.<sup>106</sup> The most successful efforts are

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<sup>104</sup> According to the International Association for Public Participation, public participation should:

1. Communicate the interests and meet the process needs of the participants;
2. Actively seek out and facilitate the involvement of those potentially affected;
3. Involve participants in defining how they participate;
4. Provide participants with the information they need to participate in a meaningful way; and
5. Communicate to participants how their input affects the decision or outcome.

See *IAP Core Values*, iap2, <http://www.iap2.org/displaycommon.cfm?an=4> (last visited Mar. 20, 2011).

<sup>105</sup> See generally Wondolleck et al., *supra* note 99.

<sup>106</sup> *Id.* at 252. Twenty years after Sherry Arnstein's article, *A Ladder of Citizen Participation*, with its eighth rung culminating in "citizen control," the authors add to the process a three rung extension to scale as they participate in an "alternative forum." *Id.* at 251. Citizen groups must determine whether or not they truly want to participate in such a collaborative process by evaluating alternative resources and abilities. *Id.* This includes determining the goal, how to achieve the goal and whether collaboration with other interest groups is consistent with their typical approach. *Id.* Other considerations include the potential costs and gains for the organization. *Id.* at 252. In the typical multi-party collaborative setting, consideration must be given to

those in which citizens have some sort of requisite skills and the energy and resources to devote to the process: they choose representatives carefully and work hard to maintain constituent support; they are flexible and creative in their problem-solving efforts; they plan for implementation of agreements; and, moreover, they have the opportunity and ability to make an informed choice about their participation in the process.<sup>107</sup> Citizen participation can lead to an increased understanding of environmental concerns in government decision-making, best optimized with participants who are knowledgeable as to the relevant process, organizational power, defined interests and options and strategies for achieving their goals.<sup>108</sup>

Of course, there can be great ambivalence on the part of decisionmakers to expose the decision-making process to public scrutiny or to endure public involvement. For example, increased public participation can result in diminishing the real or perceived power of the planner, administrator or politician, thus giving rise to resistance from those making the decisions to engage the public in the process.<sup>109</sup> Eric Poncelet, in *Personal Transformation In Multi-Stakeholder Environmental Partnerships*,<sup>110</sup> recognizes, at first blush, the friction among the government, business and environmental community over what constitutes the appropriate use, care and rights of the natural environment.<sup>111</sup> “Complicating this background of conflictual relations are prevailing systems of governance which, some critics charge, continue to be marked by insufficient transparency, poor accountability, and less than adequate participation from actors outside of government.”<sup>112</sup> Further, with respect to the public participation that does exist, it tends to be dominated by special interests and a ‘squeaky wheel’ dynamic where political preference goes to whomever yells the loudest. The multi-stakeholder environmental partnership seeks to overcome this friction-based interactivity with collaborative decision-making. It is distinguished from typical dispute resolution

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whether the other organizations are committed to working toward a satisfactory collaborative resolution. *Id.* However, a well-structured coalition of citizen interest groups with a common goal can provide a more powerful force than each group acting on its own. *Id.* at 258.

<sup>107</sup> *Id.* at 261.

<sup>108</sup> *Id.*

<sup>109</sup> ROGER SIDWAY, *RESOLVING ENVIRONMENTAL DISPUTES: FROM CONFLICT TO CONSENSUS* 116–17 (2005) (citing Sewell & Coppock who wrote of “the challenge of accommodating mounting political pressure for greater degrees of public participation.”).

<sup>110</sup> See generally Eric C. Poncelet, *Personal Transformation in Multistakeholder Environmental Partnerships*, 34 *POL’Y SCI.* 273 (2001).

<sup>111</sup> *Id.* at 275.

<sup>112</sup> *Id.* (citing Baker and Fiorino).

where a pre-existing, well defined conflict prevails; its role is more proactive in orientation and is generally “focused on addressing problems in situations where common environmental concerns prevail.”<sup>113</sup>

At its most fundamental level, multi-stakeholder environmental partnerships “offer the chance for actors of diverse histories, interests, and perspectives to come together and cooperate.”<sup>114</sup> Thus, in the case of gas drilling, business, government, and private citizens can bring to a collaborative effort their respective wish lists for economic growth in a context of environmental safety and sustainability.

A case study illustrating multi-stakeholder environmental participation relating to improved U.S. natural resource management practices examined a partnership initiated in the early 1990s by business representatives seeking to enhance efficiencies and control costs of regulating industry pollution.<sup>115</sup> “These individuals all believed that effective, long term, revision of this system would require a process of open dialogue and cooperation among a wide range of stakeholders,”<sup>116</sup> which they proceeded to put in place for the next three years. The findings showed that the collaborative process among business, government and public participants resulted in “transformations in the participants’ subjective understandings of, and relationships to, each other, themselves, and environmental action.”<sup>117</sup> One example relates to the partnerships’ consensus:

on the role of stewardship . . . as an ethic *and* as a practice, both of which are deemed necessary to insure a treatment of natural resources capable of sustaining their benefits for future generations, and neither of which is seen as precluding the other. The participants thus redefined stewardship as a function not only of moral values but of economic policies and environmental regulation as well.<sup>118</sup>

The transformative change experienced by the participants was based upon listening over speaking, expression of opinions, and a strong sense of cohesion among the participating actors. One of the environmental NGO members stated, “my personal

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<sup>113</sup> *Id.* at 276.

<sup>114</sup> *Id.* at 277.

<sup>115</sup> *Id.* at 280.

<sup>116</sup> Poncelet, *supra* note 110, at 280.

<sup>117</sup> *Id.* at 284.

<sup>118</sup> *Id.* at 287.

bias is that the greatest toxin in the country today is cynicism and an increasing sense of alienation and despair that will ultimately destroy the democratic experience if we don't figure out alternatives based on hopefulness."<sup>119</sup> Public participation processes in which the dialogue manifests in open communication, collaborative interaction and transformed individual perspectives results in a greater likelihood of reasoned outcomes, which ultimately account for the common and varied interests of all involved parties.

The decision-making process occurs over time in an evolving international landscape regarding the boom or bust economic forecast of the drilling investment itself, growing numbers of incidents of environmental and human catastrophes, states and private parties in growing need of revenue and the resulting politics. "In some cases, the mere passage of time changes the context of decision-making so much that implementation of decisions forged through a public participation process no longer make sense. Changed economic conditions, political parties, or other issues can make decisions irrelevant, inappropriate or unsupported in the new situation."<sup>120</sup> Given the inevitable shifts in supply and demand contrasted with the absolute certainty that cutting safety corners creates irreversible risks to environmental and human health for which corporate dollars can never adequately compensate, the policies we pronounce and the rules we make require nothing less than strict adherence to safety standards; and with that, policies and rules which foresee the worst case scenarios, every step of the way, while operating in a real world context of finite dollars and ever diminishing natural resources. This balancing act is most challenging in its own right and not one to be impeded by imbalances of power among the interested parties. Neither should it be mistaken as an anti-capitalist statement; but should be embraced as a democratic imperative for a magnificent planet in decline.<sup>121</sup> With public and private revenue derived from natural gas extraction estimated in the billions, balanced against the unknown cost and cumulative impact of such a widespread practice on environmental and human health, the stage has been set for ongoing public participation.

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<sup>119</sup> *Id.* at 289.

<sup>120</sup> BEIERLE & CAYFORD, *supra* note 100, at 61.

<sup>121</sup> Even environmentally-concerned shareholders of nine oil and gas companies filed resolutions seeking more transparency about company operations and seeking to reduce water, air and soil pollution. See Alyce Lomax, *Shareholders Demand Some Fracking Answers*, THE MOTLEY FOOL (Jan. 21, 2011), <http://www.fool.com/investing/general/2011/01/21/shareholders-demand-some-fracking-answers.aspx>.

## IV. CURRENT CITIZEN ACTION

Citizen action, self-initiated activity, picks up where public participation leaves off. Instantaneous communication through use of the Internet effectively facilitates geographically broad-based citizen action for citizen groups consisting of volunteers and other non-governmental actors. Public forums and surveys perform an effective role, as well. In the absence of adequate federal, state, and local regulation, citizen action groups have formed both upstate and downstate to address the benefits and risks of natural gas drilling. For example, in June 2010, 12,000 e-mails were sent during an e-mail campaign by or on behalf of upstate property owners to state lawmakers, urging them to oppose the then proposed moratorium on drilling.<sup>122</sup>

On October 5, 2010, the Croton Watershed Clean Water Coalition with eighteen other regional environmental and citizen-based groups, collaborated to sponsor a public educational forum on the risks of natural gas development as demonstrated by individuals' actual experiences in other states.<sup>123</sup> Forum participants were asked to remain engaged in the process by sponsoring their own educational forum as well as letter-writing on key legislative measures. A Google search will underscore the abundance of citizen action devoted to this topic.

Landowners in the Marcellus Shale region have used the Internet to come together to take action to protect themselves and their neighbors. New York State law exempts oil and gas companies from local zoning or "home rule" controls unless a municipality takes affirmative steps to test the state preemption to provide otherwise, such as "no drilling" within a certain distance of a hospital or school.<sup>124</sup> Pursuant to New York's oil, gas and solution mining law, due to an established practice called compulsory

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<sup>122</sup> See *Press Release: New Yorkers Who Support Safe Natural Gas Exploration Appeal to Legislature in Doves* (June 25, 2010), <http://www.marcellusfacts.com/blog/new-yorkers-who-support-safe-natural-gas-exploration-appeal-to-legislature-in-doves>.

<sup>123</sup> *Croton Watershed Clean Water Coalition, Inc. Invitation to Screening of Gasland* (Sept. 29, 2010) (on file with author).

<sup>124</sup> See N.Y. ENVTL. CONSERV. § 23-0303 (Consol. 2011) ("The provisions of this article shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries; but shall not supersede local government jurisdiction over local roads or the rights of local governments under the real property tax law."). See also Michelle L. Kennedy, *The Exercise of Local Control Over Gas Extraction*, available at <http://63.134.196.109/documents/LocalControlOverMineralExtraction-M.Kennedy1-26-11.pdf> (last visited Mar. 30, 2011). See also Margil & Price, *supra* note 27. On October 12, 2010, Licking Township, Pennsylvania, population 500, defied state law by unanimously passing an ordinance which bans corporations from

integration, gas companies can install pipes and access natural gas from property owners who do not wish to participate if sixty percent or more other property owners in the designated well area agree to participate.<sup>125</sup> Also, gas pipeline companies typically negotiate easement agreements to lay pipes on private property.<sup>126</sup> Upstate joint landowner coalitions seek to act on behalf of individual property owners to obtain the best price for easement grants by their members who want to participate.<sup>127</sup> Certain pipeline companies have opted to deal directly with the individual property owners, offering minimal payments or the threat of acquiring the easement through eminent domain, if the property owner does not go along.<sup>128</sup> Other urban citizens, with no leasing rights, object to placement of pipes in sensitive areas.<sup>129</sup> Citizen action groups on the pro and con side of drilling have brought attention to these legal realities seeking recognition in processes which involve them or their property where the existing underlying laws and procedures may or would otherwise deprive them of a voice.<sup>130</sup>

The Civil Society Institute, a not-for-profit think tank claiming no ties to the natural gas industry, conducted a national survey as to whether “Americans think natural gas is as ‘clean’ as it is touted [to be] by the energy industry.”<sup>131</sup> Between November 26 and 28, 2010, 1,012 adults, consisting of 501 men and 511 women, ages 18 and older, residing in the continental United States, were surveyed on fracking. Survey results reflected that “more than three out of four Americans (78 percent) would ‘strongly’ (49 percent) or

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dumping fracking wastewater within its borders. On the topic, township supervisor chairman Robertson was quoted to say

when it comes to land use issues and the preservation of important resources, the local community is best suited to set priorities as they feel impacts most acutely . . . People have the right to determine what is suitable for the community, as they are most directly affected by intended or unintended consequences of resource extraction.

*Id.*

<sup>125</sup> See Alex Halperin, *Drill, Maybe Drill*, THE AMERICAN PROSPECT (Apr. 14, 2010), available at [http://www.prospect.org/cs/articles?article=drill\\_maybe\\_drill](http://www.prospect.org/cs/articles?article=drill_maybe_drill).

<sup>126</sup> See *Marcellus Shale—Appalachian Basin Natural Gas Play*, GEOLOGY.COM, <http://geology.com/articles/marcellus-shale.shtml> (last visited Mar. 25, 2011).

<sup>127</sup> See Halperin, *supra* note 125; see also Tom Wilber, *Landowners Rejecting Plan For Gas Pipeline*, ITHACA JOURNAL.COM (Feb. 23, 2010, 9:13 PM), <http://www.theithacajournal.com/article/20100223/NEWS01/2230364/Landowners-rejecting-plan-gas-pipeline>.

<sup>128</sup> Wilber, *supra* note 127.

<sup>129</sup> *Id.*

<sup>130</sup> *Id.*

<sup>131</sup> See *Survey: Drinking Water Pollution Concerns Fueling Awareness Among Americans of “Fracking” Used to Extract Natural Gas*, CIVIL SOCIETY INSTITUTE (Dec. 21, 2010), <http://www.civilsocietyinstitute.org/media/a122110release.cfm>.

‘somewhat’ (29 percent) support ‘tighter public disclosure requirements as well as studies of the health and environmental consequences of the chemicals used in natural gas drilling.’<sup>132</sup> “More disclosure is supported across party lines by Republicans (74 percent), Independents (72 percent), and Democrats (85 percent).”<sup>133</sup> This survey finding supports passage of the Federal Frac Act (currently sitting dormant in Congress), which would require gas companies to disclose the chemicals they use in fracking. Another survey finding showed:

[n]early three out of five (72 percent) Americans say that they would tell their Member of Congress, governor or state lawmaker the following: “When it comes to energy production that requires large amounts of water or where water quality is in jeopardy as a result of the energy production, my vote would be for coming down on the side of the public’s health and the environment. We should favor cleaner energy sources that use the least water and involve the lowest possible risk to the public and the environment.”<sup>134</sup>

Pam Solo, founder and president of Civil Society Institute, remarked, “The message from our new survey is clear: Americans of all political persuasions prefer to see clean energy development that protects water supplies over traditional fossil fuel production that endangers safe drinking water and human health.”<sup>135</sup>

Notwithstanding the myriad of formidable activist groups involved, effective communication among those groups has been lacking. Without a central database, participants expend human capital reinventing the wheel based upon their limited knowledge. Ellen Ferretti of the Pennsylvania Environmental Council and Coordinator of the Pocono Forest & Waters Conservation Landscape Initiative, explained at the January 27, 2011 State of Pennsylvania Senate Republican Committee hearing that:

drilling activity can have a number of significant [social and environmental] impacts . . . “However, when you attempt to truly account for these individual impacts, you will discover a void created by the lack of comprehensiveness or coordinated system to gather and employ factual data and information relative to all aspects of the industry; from planning and land development to cumulative impacts,” said Ferretti. “Into that void goes all manner of speculation, misinformation and mistrust—when com-

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<sup>132</sup> *Id.*

<sup>133</sup> *Id.*

<sup>134</sup> *Id.*

<sup>135</sup> *Id.*

bined with what limited factual data and information we have, the result is nothing less than rampant confusion,” said Ferretti. “Elimination of this void would create a solid core upon which to build the foundation for a cooperative growth of community and industry while also serving to better protect the environment and human health.”<sup>136</sup>

This testimony supports the observations which led the Center for Healthy Environments and Communities (“CHEC”) of the University of Pittsburgh Graduate School of Public Health, the Foundation for PA Watersheds, and the Heinz endowments, in July 2010, to establish Fractraker, a powerful online mapping tool that allows citizen action to transcend the barriers of time, distance, budget and local expertise to create a level playing stage of Goliath meets Goliath proportion, and, in the words of Ellen Ferretti, a “‘comprehensiveness or coordinated system . . . relative to all aspects of the [shale gas drilling] industry, from planning to local development to cumulative impacts.’”<sup>137</sup>

Fractracker.org is a free, two-part Internet website system overseen by CHEC, which consists of a web-log (“blog”) and a potentially, ever expanding data tool that collects and provides up to date information about shale gas drilling.<sup>138</sup> The blog presents important topical information to a general user with posts made by the administrator as well as images that have been sent to CHEC from public participants regarding their experiences with Marcellus Shale gas extraction.<sup>139</sup> The blog also includes a search tool, scrolling list of most recent datasets, an archive of blog posts and a list of contributors.<sup>140</sup> The data tool is a web-based Public Participation Geographic Information System (“PPGIS”) focusing on the natural gas industry, using volunteered geographic information and allowing registered users to visualize the information.<sup>141</sup> A concurrent storied-blog serves as the portal to the PPGIS tool, and synthesizes and translates storied data to further engage geographical and issue-based populations.<sup>142</sup>

Fractracker enables people to better assess documented and predicted environmental impacts and correlate them with the geographic location of wells drilled and accompanying production fa-

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<sup>136</sup> Hess, *supra* note 32.

<sup>137</sup> *Id.*

<sup>138</sup> See Fractracker, <http://www.fractracker.org/> (last visited Mar. 17, 2011).

<sup>139</sup> *Id.*

<sup>140</sup> *Id.*

<sup>141</sup> *Id.*

<sup>142</sup> *Id.*

cilities. For the first time, people across many disciplines located in varying geographic regions can collaborate directly in the collection and analysis of data that track these impacts across the Marcellus Shale play. Any individual with relevant information can participate in this powerful information-sharing tool. Topics can include: a road, bridge or other infrastructure degradation in one's municipality as a result of the heavy truck traffic; results of water or air quality testing; an increase in the rates of drunk driving relating to the influx of an out-of-town work force; a spill or leak on one's property; impacts of drilling on human health; or questions about the gas extraction process in one's region. The list goes on. The GIS mapping component makes possible locating information, such as industry violation sites or emergency sites, overlaid atop mapped drill site locations. The information collected and displayed on Fractracker can then be used for research and advocacy purposes.<sup>143</sup> Citizens, government and business interests alike, engaged in the preventative planning process can access, obtain, and share information from the Fractracker database for use to create, in the words of Ellen Ferretti, "a foundation for a cooperative growth of community and industry while also serving to better protect the environment and human health."<sup>144</sup>

Ongoing opportunities for citizen action arise out of the current dearth of federal and state legislative oversight connected to drilling for natural gas. Environmental organizations such as Sierra Club and Natural Resources Defense Council, among others, post on their websites legislative action alerts for citizens to use for letter writing to elected representatives.<sup>145</sup> Action alliance groups such as Shaleshock.org and un-naturalgas.org post on their websites events listings and action opportunities for citizens seeking to protect the environment and human health from risks related to gas drilling in the Marcellus Shale play.<sup>146</sup>

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<sup>143</sup> *Id.*

<sup>144</sup> Hess, *supra* note 32.

<sup>145</sup> See Sierra Club, <http://www.sierraclub.org> (last visited Mar. 20, 2011); Natural Resources Defense Council, <http://www.nrdc.org/> (last visited Mar. 20, 2011).

<sup>146</sup> See Shaleshock, <http://www.shaleshock.org> (last visited Apr. 3, 2011); Un-Natural Gas, <http://www.un-naturalgas.org> (last visited Apr. 3, 2011).

## CONCLUSION

What comes next? We must balance the intentions of and outcomes for those in New York who seek to access Marcellus Shale gas for commercial gain, with those who seek to protect other natural resources, such as air, water and the soil that grows our food. Each participating sector—business, government and private citizen—can collaborate to manifest and transform our collective role as ‘stewards’ of the environment to establish statutory mandates that create cooperation and reliable regulatory enforcement and further establish appropriate funding streams from gas companies seeking the privilege of doing business in New York. To this end, the political process will continue with public hearings and opportunities for public comment; however, thanks to interactive library websites such as Fractracker, the value of these meetings will shift to one where parties involved share the power more equally, with the right questions asked and answered in advance and, with supporting back-up data in hand. Preventative planning and rulemaking (and remedial measures, where required) involving citizen participants can proceed beyond stake-holding to shared outcome-building that best accounts for the needs of all interested parties: citizens, business, government and, in the end, our Planet Earth.

The best way to predict the future is to create it. Consider this an appeal to you—the student, scholar, scientist, parent, professor, politician, practitioner, company officer, conservationist, property owner, citizen or passer-by. Each of us can do our part to save energy. Walk more, drive less. Consume less, in general. As author and conservationist Bill McKibben puts it in his book *Eaarth*, “we’ll need, chief among all things, to get smaller and centralized, to focus not on growth but on maintenance, on a controlled decline from the perilous heights to which we’ve climbed.”<sup>147</sup> To that I will add: use the participatory form of government to make our views known. Every voice counts. Please, never forget that. In whatever capacity you find yourself, care, openly and for the long-term, about our magnificent state, our country, and the only planet hospitable to humankind.<sup>148</sup>

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<sup>147</sup> BILL MCKIBBEN, *EAARTH: MAKING A LIFE ON A TOUGH NEW PLANET* 204 (2010).

<sup>148</sup> Issues for consideration to achieve the goal of safe drilling include the following:

- A severance tax, with tax revenues added to the state’s general budget or used to offset costs of property restoration such as damage to roads and other infrastructure.
- Training programs and job offers to New York residents before bringing in personnel from out of state.

## APPENDIX A

*List of References Consulted by the Author***Statutes**

New York State Environmental Quality Review Act (SEQR), 5 N.Y.C.R.R. § 617 (1995) (Statutory authority: Environmental Conservation Law, §§§ 3-0301(1)(B), 3-0301(2)(M) and 8-0113).

N.Y. ENVTL. CONSERV. § 23 (Consol. 2011)

Energy Policy Act of 2005, Pub. L. 109-58, 119 Stat. 594 (enacted).

S. 1215, 111th Cong. (2009): Fracturing Responsibility and Awareness of Chemicals (FRAC) Act.

A.5318-A/S.3798 (N.Y. 2011) (proposed Feb. 15, 2011) (An Act to amend § 15-1501 of the Environmental Conservation Law).

25 PA. CODE §§ 110.1–110.604 (2008).

**Books**

ROGER SIDWAY, *RESOLVING ENVIRONMENTAL DISPUTES: FROM CONFLICT TO CONSENSUS* (2005).

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- Fair payment to property owners leasing their gas rights or granting easements.
  - Comprehensive planning of drill site location with attention paid to wild life, wild life habitat, wetlands, historical sites of significance; and life-cycle planning to account for the ongoing preservation of the health and well-being of the natural environment and human health.
    - Funding of construction, maintenance, repair and eventual removal of all facilities needed in the natural gas development process, including air and water waste treatment facilities. Property restoration and full tree replacement.
    - Employment of best management practices, including engineering updates, as developed.
    - Use of only clean energy for trucks and other operations.
    - To ensure against loss, establishment of a reserve fund based upon the number of people potentially affected by water, air or soil contamination, be it private wells or public water supplies. The fund would stay in effect for the duration of the drilling process. If funds are paid out to restore someone's water or air supply, or replace contaminated soil, the reserve fund would be replenished. To the extent reserve funds are not needed to remediate water, air or soil contamination during the gas development process, fund proceeds would be returned to the drilling company when the wells are capped and the property is fully restored.
    - To ensure compliance with all applicable statutes, rules and regulations, citizens can seek a legislative mandate requiring gas companies to fund the very regulatory and enforcement positions needed at DEC to oversee natural gas development. This would also include the additional role of trained emergency personnel on call 24/7. All positions would be funded for the duration of the natural gas development process; funds which the governor cannot re-deploy to other parts of the state budget.

[Some of the points raised here are adopted from recommendations made by Cornell University Professor Anthony Ingrafea; the rest of the considerations are recommended by the author].

THOMAS C. BEIERLE & JERRY CAYFORD, *DEMOCRACY IN PRACTICE: PUBLIC PARTICIPATION IN ENVIRONMENTAL DECISIONS* (2002).

BILL MCKIBBEN, *EARTH: MAKING A LIFE ON A TOUGH NEW PLANET* (2010).

THE WORDS OF MOHANDAS K. GHANDI (1982).

### Websites

NYS Department of Environmental Conservation, <http://www.dec.ny.gov/>.

Fractracker, <http://www.fractracker.org>.

Natural Gas Drilling in the Delaware River Basin, <http://www.state.nj.us/drbc/naturalgas.htm>.

Marcellus Shale—Appalachian Basin Natural Gas Play, <http://geology.com/>.

Un-NaturalGas.org, <http://un-naturalgas.org/>.

Blank Rome LLP, <http://www.blankrome.com/>.

EarthJustice, <http://earthjustice.org/>.

Protecting Our Waters, <http://www.protectingourwaters.com>.

Shaleshock, <http://www.shaleshock.org>.

Natural Resources Defense Council, <http://www.nrdc.org>.

Sierra Club, <http://www.sierraclub.org>.

Environmental Protection Agency, <http://www.epa.gov>.

Don't Frack with New York!, <http://dontfrackwithny.com/>.

Delaware River Basin Commission, <http://www.state.nj.us/drbc/>.

### Undated Articles

Lynn Helms, *Horizontal Drilling*, 35 N.D. DEP'T OF MINERAL RES. NEWSLETTER 1, available at <http://www.dmr.nd.gov/ndgs/newsletter/NL0308/pdfs/horizontal.pdf>.

Chenango Delaware Otsego Gas Drilling Opposition Group (CDOG), *Stop Subsidizing the Gas Industry by Exempting It from Regulations that apply to Every Other Industry*, <http://www.un-naturalgas.org/Exemptions%20are%20subsidies%20Rev%201%20MB-1.pdf>.

*The Best Energy Bill Corporations Could Buy: Summary of Industry Giveaways in the 2005 Energy Bill*, PUB. CITIZEN, [http://www.citizen.org/cmep/article\\_redirect.cfm?ID=13980](http://www.citizen.org/cmep/article_redirect.cfm?ID=13980).

DELAWARE RIVERKEEPER, *The Truth About Natural Shale Gas Extraction in the Upper Delaware River Watershed*, [http://www.delawareriverkeeper.org/resources/Factsheets/Natural\\_Gas\\_Extraction\\_What\\_you\\_need\\_to\\_know.pdf](http://www.delawareriverkeeper.org/resources/Factsheets/Natural_Gas_Extraction_What_you_need_to_know.pdf).

Catskill Citizens for Safe Energy, <http://www.catskillcitizens.org/news.cfm>.

*The Millenium Pipeline*, TIOGA GAS LEASE, <http://www.tiogagaslease.org/milleniumpipeline.html>.

*Marcellus Shale—Appalachian Basin Natural Gas Play*, GEOLOGY.COM, <http://geology.com/articles/marcellus-shale.shtml>.

*Marcellus Shale Site Development—Best Practices for Preserving Historic and Archaeological Resources*, GEOLOGY.COM, <http://geology.com/articles/marcellus-shale.shtml>.

### **Public Participation Materials**

Julia Abelson et al., *Deliberations About Deliberative Methods: Issues in the Design and Evaluation of Public Participation Process*, 57 SOC. SCI. & MED. 239 (2003).

Terry L. Cooper et al., *Citizen-Centered Collaborative Public Management*, 66 PUB. MGMT. 76–88 (2006).

Julia M. Wondolleck et al., *Teetering at the Top of the Ladder: The Experience of Citizen Group Participants in Alternative Dispute Resolution Processes*, 39 SOC. PERSP. 249 (1996).

Eric C. Poncelet, *Personal Transformation in Multistakeholder Environmental Partnerships*, 34 POL'Y SCI. 273 (2001).

Thomas Webler & Seth Tuler, *Four Perspectives on Public Participation Process in Environmental Assessment and Decision Making: Combined Results from 10 Case Studies*, 34 POL'Y STUD. J. 699 (2006).

Curtis Ventriss & Walter Keuntzel, *Central Theory and the Role of Citizen Involvement in Environmental Decisions Making: A Reexamination*, 8 INT. J. OF ORG. THEORY & BEHAV. 519 (2005).

JAMES E. CROWFOOT & JULIA WONDELLECK, ENVIRONMENTAL DISPUTES: COMMUNITY INVOLVEMENT IN CONFLICT RESOLUTION (1990).

### Other Articles

Bill Barrow, *BP Oil Spill's Health Effects Will Be Felt For Generations, Scientist Warns*, THE TIMES-PICAYUNE, Feb. 5, 2011, [http://www.nola.com/news/gulf-oil-spill/index.ssf/2011/02/bp\\_oil\\_spills\\_health\\_effects\\_w.html](http://www.nola.com/news/gulf-oil-spill/index.ssf/2011/02/bp_oil_spills_health_effects_w.html).

Tom Zeller Jr., *Gas Drilling Technique is Labeled Violation*, N.Y. TIMES, Jan. 31, 2011, <http://www.nytimes.com/2011/02/01/business/energy-environment/01gas.html>.

Kristian Boose, *Public Comment Philadelphia City Council Jan. 27, 2011 from Tracy Carluccio Deputy Director Delaware Riverkeeper Network*, PROTECTING OUR WATERS, Jan. 28, 2011, <http://protectingourwaters.wordpress.com/2011/01/28/public-comment-philadelphia-city-council-jan-27-2011-from-tracy-carluccio-deputy-director-delaware-riverkeeper-network/>.

David E. Hess, *Senate Committee Hears Challenges, Opportunities of Marcellus Shale*, PA ENVIRONMENT DIGEST, Jan. 27, 2011, <http://paenvironmentdaily.blogspot.com/2011/01/senate-committee-hears-challenges.html>.

Kristian Boose, *Public Comment Philadelphia City Council Jan. 27, 2011 from Poune Saberi; Family Physician*, PROTECTING OUR WATERS, Jan. 27, 2010, <http://protectingourwaters.wordpress.com/2011/01/27/public-comment-philadelphia-city-council-jan-27-2011-from-poune-saberi-family-physician/>.

Elizabeth Gibson, *Chesapeake Bay, Marcellus Shale Environmental Issues Could Collide at Hearing at Capitol*, PATRIOT NEWS, Jan. 26, 2011, available at [http://www.pennlive.com/midstate/index.ssf/2011/01/chesapeake\\_bay\\_marcellus\\_shale.html](http://www.pennlive.com/midstate/index.ssf/2011/01/chesapeake_bay_marcellus_shale.html).

Abrahm Lustgarten, *Climate Benefits of Natural Gas May Be Overstated*, PROPUBLICA, Jan. 25, 2011, available at <http://www.propublica.org/article/natural-gas-and-coal-pollution-gap-in-doubt>.

Jon Campbell, *DEC Plan May Expand Gas Drilling in State Forests*, STARGAZETTE.COM, Jan. 22, 2011, <http://www.stargazette.com/article/20110122/NEWS01/101220357/DEC-plan-may-expand-gas-drilling-state-forests>.

Alyce Lomax, *Shareholders Demand Some Fracking Answers*, THE MOTLEY FOOL, Jan. 21, 2011, <http://www.fool.com/investing/general/2011/01/21/shareholders-demand-some-fracking-answers.aspx>.

*Natural Gas to Help U.S. Keep Greenhouse Gas Reduction Pledge*, REUTERS.COM, Jan. 2011.

Beth Little, *Chapter Launches Marcellus Shale Campaign*, MOUNTAIN STATE SIERRAN, (Sierra Club, W. Va.), Jan. 2011, available at [http://westvirginia.sierraclub.org/newsletter/archives/2011/01/a\\_002.html](http://westvirginia.sierraclub.org/newsletter/archives/2011/01/a_002.html).

David Barstow, *In the Final Hours Aboard the Horizon, Indecision and Valor*, Dec. 26, 2010, available at <http://www.sltrib.com/sltrib/world/50938543-68/horizon-crew-blowout-members.html.csp>.

*Survey: Drinking Water Pollution Concerns Fueling Awareness Among Americans of 'Fracking' Used to Extract Natural Gas*, CIVIL SOCIETY INSTITUTE (Dec. 21, 2010), <http://www.civilsocietyinstitute.org/media/a122110release.cfm>.

Rob Cox, *Shale Gas Success Drives Down Prices*, N.Y. TIMES, Dec. 20, 2010, <http://www.nytimes.com/2010/12/21/business/21views.html>.

Ana Campoy & Daniel Gilbert, *Battle Over Gas-Tainted Well Water*, WALL ST. J., Dec. 17, 2010, <http://online.wsj.com/article/SB10001424052748704098304576021852120669280.html>.

*Paterson's Executive Order No. 41*, GDAAC (Dec. 12, 2010), <http://gdacc.wordpress.com/2010/12/12/paterson-vetos-frack-moratorium-with-an-asterisk-capitol-confidentialcomment-179125comment-179125/>.

Lissa Harris, *Paterson's Answer on Gas Drilling Moratorium: None of the Above*, WATERSHED POST, Dec. 12, 2010, <http://www.watershedpost.com/2010/patersons-answer-gas-drilling-moratorium-none-above>.

*Groups Call on Governor Patterson to Sign Fracking Timeout Bill into Law*, DAILY LIFE.COM (Dec. 10, 2010), <http://features.rr.com/article/06hO9wk5hB6Ex>.

Mireya Navarro, *N.Y. Objects to Release of Multistate Fracking Rules*, N.Y. TIMES, Dec. 9, 2010, <http://green.blogs.nytimes.com/2010/12/09/n-y-objects-to-release-of-multistate-fracking-rules/>.

Brian Nearing, *Energy Busts Create Mess*, TIMES UNION.COM, Nov. 8, 2010, <http://www.timesunion.com/default/article/Energy-busts-create-mess-801773.php>.

Mari Margil & Ben Price, *Pennsylvania Township Declares Freedom from Fracking*, YES!, Oct. 27, 2010, <http://www.yesmagazine.org/planet/pennsylvania-township-declares-freedom-from-fracking>.

*Uranium in GroundWater? Fracking Mobilizes Uranium in Marcellus Shale*, SCIENCE DAILY, Oct. 27, 2010, <http://www.sciencedaily.com/releases/2010/10/101025172926.htm>.

Marie C. Baca, *Leaked Memo Depicts Bare-Bones Regulatory Environment for NY Gas Drilling*, PROPUBLICA, Oct. 26, 2010, <http://www.propublica.org/article/leaked-memo-depicts-bare-bones-regulatory-environment-for-ny-gas-drilling>.

*Fracking Shown to Mobilize Uranium in Marcellus Shale*, ENVIRONMENT NEWS SERVICE, Oct. 25, 2010, <http://www.ens-newswire.com/ens/oct2010/2010-10-25-091.html>.

*Firing of Grannis Draws Criticism*, BUFFALONEWS.COM, Oct. 23, 2010, <http://www.buffalonews.com/city/capital-connection/albany/article228651.ece>.

Christine Buurma, *Natural Gas Futures Gain on Speculation Price Floor Was Reached*, BLOOMBERG, Oct. 8, 2010, <http://www.bloomberg.com/news/2010-10-08/natural-gas-futures-little-changed-on-mild-weather-forecasts.html>.

Holman W. Jenkins, Jr., *Americans (Sort of) Love Fracking*, WALL ST. J., Oct. 6, 2010, <http://online.wsj.com/article/SB10001424052748704469004575533911349588020.html>.

Craig Michaels, *Riverkeeper Submits Comments to EPA for Hydraulic Fracturing Study, Don't Frack With NY!*, Oct. 1, 2010, <http://dontfrackwithny.com/riverkeeper-submits-comments-to-epa-for-hydraulic-fracturing-study/>.

SUSAN LERNER & DEANNA BITETTI, COMMON CAUSE: CHEAPER ENERGY OR CLEANER DRINKING WATER: WHO IS DECIDING WHAT OUR PRIORITIES ARE? (Fall 2010).

Rose M. Baker & David L. Passmore, *Benchmarks for Assessing the Potential Impact of a Natural Gas Severance Tax on Pennsylvania Economy*, Sept. 13, 2010, available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1667022](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1667022).

James L. "Chip" Northrup, *Potential Leaks From High Pressure Hydro-Fracking of Shale* (Otsego 2000) (Sept. 8, 2010), available at [http://www.bape.gouv.qc.ca/sections/mandats/Gaz\\_de\\_schiste/documents/DM151.1.pdf](http://www.bape.gouv.qc.ca/sections/mandats/Gaz_de_schiste/documents/DM151.1.pdf).

Theo Colborn et al., *Natural Gas Operations from a Public Health Perspective*, INT'L J. HUMAN & ECOLOGICAL RISK ASSESSMENT (forthcoming), available at [http://endocrinedisruption.com/files/NaturalGasManuscriptPDF09\\_13\\_10.pdf](http://endocrinedisruption.com/files/NaturalGasManuscriptPDF09_13_10.pdf).

Al Cramblett, *Lease Offers in Harrison County*, GO MARCELLUS SHALE.COM (Aug. 31, 2010), available at <http://gomarcellusshale.com/group/harrisoncountyohio/forum/topics/lease-offers-in-harrison>.

NewsInferno, *Is Fracking Poisoning Our Food?* (Aug. 31, 2010), available at <http://www.newsinferno.com/health-concerns/is-fracking-poisoning-our-food/>.

Christopher Bateman, *A Colossal Fracking Mess*, VANITY FAIR (June 21, 2010), available at <http://www.vanityfair.com/business/features/2010/06/fracking-in-pennsylvania-201006>.

Ravi Somaiya, *Why is Dick Cheney Silent on the Oil Spill?*, NEWSWEEK (June 11, 2010), available at <http://www.newsweek.com/2010/06/10/why-haven-t-we-heard-from-dick-cheney-on-the-oil-spill.html>.

Don Hopey, *Marcellus Gas Flare May Burn for Days: Fire to be Capped by Week's End*, PITTSBURG POST-GAZETTE (June 9, 2010), available at <http://www.post-gazette.com/pg/10160/1064126-455.stm>.

Associated Press, *Pennsylvania Halts Drilling by Company After Natural Gas Accident*, SYRACUSE.COM (June 7, 2010), available at [http://www.syracuse.com/news/index.ssf/2010/06/pennsylvania\\_halts\\_drilling\\_by.html](http://www.syracuse.com/news/index.ssf/2010/06/pennsylvania_halts_drilling_by.html).

*What's Missing from the FRAC Act*, UN-NATURAL-GAS.ORG WEBLOG (May 21, 2010), available at <http://un-naturalgas.org/weblog/2010/05/whats-missing-from-the-frac-act/>.

*Skaneateles Lake Hydrofracking Regulations*, NEWSCHANNEL 9 (Apr. 23, 2010), available at <http://www.9wsyr.com/news/local/story/Skaneateles-Lake-hydrofracking-regulations/Hphzd72tiEeQVk4toqq3Yg.csp>.

Associated Press, *NY Toughens Rules, Virtually Bans Gas Drilling in Skaneateles Lake Watershed*, SYRACUSE.COM (Apr. 23, 2010), available at [http://www.syracuse.com/news/index.ssf/2010/04/ny\\_toughens\\_rules\\_on\\_gas\\_drill.html](http://www.syracuse.com/news/index.ssf/2010/04/ny_toughens_rules_on_gas_drill.html).

Doug Schneider, *Regulators Say Marcellus Shale Drilling in Watershed Will Be Closely Examined*, STARGAZETTE.COM (Apr. 23, 2010), available at <http://www.stargazette.com/article/20100423/NEWS11/100423024/Regulators-say-Marcellus-Shale-drilling-watershed-will-closely-examined>.

Jannette Barth, *Unanswered Questions About the Economic Impact of Gas Drilling in the Marcellus Shale: Don't Jump to Conclusions* (Mar. 22, 2010), available at <http://tcgasmag.org/media/Barth%20Paper%20Long%20Summary.pdf>.

Alex Halperin, *Drill, Maybe Drill*, *THE AMERICAN PROSPECT* (Apr. 14, 2010), available at [http://www.prospect.org/cs/articles?article=drill\\_maybe\\_drill](http://www.prospect.org/cs/articles?article=drill_maybe_drill).

Abrahm Lustgarten, *Is New York's Marcellus Shale Too Hot To Handle?*, *PROPUBLICA* (Nov. 9, 2009), available at <http://www.propublica.org/article/is-the-marcellus-shale-too-hot-to-handle-1109>.

*The Halliburton Loophole*, *N.Y. TIMES*, Nov. 2, 2009, available at <http://www.nytimes.com/2009/11/03/opinion/03tue3.html>.

Environmental Defense Fund, *Analysis Links Pollutants with Barnett Shale Gas and Oil Production* (Oct. 19, 2009), available at <http://www.edf.org/pressrelease.cfm?contentID=10489>.

Abrahm Lustgarten, *FRAC Act—Congress Introduces Twin Bills to Control Drilling and Protect Drinking Water*, *PROPUBLICA* (June 9, 2009), available at <http://www.propublica.org/article/frac-act-congress-introduces-bills-to-control-drilling-609>.

*Flammable Water At Colo. Home*, *CBS NEWS* (Mar. 20, 2009), available at <http://www.cbsnews.com/stories/2009/03/20/national/main4879509.shtml>.

Sue Smith-Heavenrich, *Theo Colborn Addresses Air, Water Issues Related to Gas Drilling*, *BROADER VIEW WEEKLY* (Feb. 20, 2009), available at [http://www.tiogagaslease.org/images/BVW\\_02\\_20\\_09.pdf](http://www.tiogagaslease.org/images/BVW_02_20_09.pdf).

Al Armendariz, *Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements*, (Jan. 26, 2009), available at [http://www.edf.org/documents/9235\\_Barnett\\_Shale\\_Report.pdf](http://www.edf.org/documents/9235_Barnett_Shale_Report.pdf).

Lisa Sumi, *Shale Gas: Focus on the Marcellus Shale* (May 2008), available at <http://www.earthworksaction.org/pubs/OGAPMarcellusShaleReport-6-12-08.pdf>.

*Millennium Pipeline Launches 2008 Construction*, *MILLENNIUM PIPELINE CO. LLC* (May 27, 2008), available at [http://www.millenniumpipeline.com/news\\_05\\_27\\_08.htm](http://www.millenniumpipeline.com/news_05_27_08.htm).

Renee Lewis Kosnik, *The Oil and Gas Industry's Exclusions and Exemptions to Major Environmental Statutes* (Oct. 2007), available

at <http://www.earthworksaction.org/pubs/PetroleumExemptions1c.pdf>.

Mark Ruffalo, *When Truth is Scarier than Fiction*, MARCELLUS SHALE PROTEST (Nov. 23, 2010), available at <http://www.marcellusprotest.org/mark-ruffalo-csi>.

Campbell Robertson, *Waste Wells to Be Closed In Arkansas*, N.Y. TIMES (Mar. 4, 2011), available at <http://www.nytimes.com/2011/03/05/us/05fracking.html>.

Abrahm Lustgarten, *Former Bush EPA Official Says Fracking Exemption Went Too Far; Congress Should Revisit*, PROPUBLICA (Mar. 9, 2011), available at <http://www.propublica.org/article/former-bush-epa-official-says-fracking-exemption-went-too-far>.

*Doctor Ron Bishop's Comments on Draft Supplemental GEIS*, UNNATURAL-GAS.ORG WEBLOG (Mar. 13, 2010), available at <http://unnaturalgas.org/weblog/2010/03/dr-ron-bishops-comments-on-draft-supplemental-geis/>.

Siobhan Hughes, *Shale-Drilling Fight Comes to Head at EPA Forum in NY*, WALL ST. J., Sept. 13, 2010.

Ian Urbana, *Wastewater Recycling No Cure-All in Gas Process*, N.Y. TIMES (Mar. 1, 2011), available at <http://www.nytimes.com/2011/03/02/us/02gas.html>.

Kate Sindig, Blog, *Tragic Case Well Explosion Kills Two People*, NRDC (Jul. 23, 2010), available at [http://switchboard.nrdc.org/blogs/ksindig/tragic\\_gas\\_well\\_explosion\\_kill.html](http://switchboard.nrdc.org/blogs/ksindig/tragic_gas_well_explosion_kill.html).