

**APPENDIX I for CHAPTER I**

**LOCAL LAW FILING**

**NEW YORK STATE DEPARTMENT OF STATE**  
41 State Street,  
Albany NY 12231

**Town of Rensselaerville**

**LOCAL LAW NO. 3 OF THE YEAR 2011**

A Local Law entitled "Gas Drilling Moratorium Law of 2011 of the Town of Rensselaerville"

A local law establishing a one year moratorium on applications, approvals or drilling for natural gas in the Town of Rensselaerville.

**Be it enacted by the Town Board of the Town of Rensselaerville as follows:**

Section 1. Title:

This law shall be known as the Gas Drilling Moratorium Law of 2011 of the Town of Rensselaerville.

Section 2. Purpose and Intent:

The purpose of this law is to establish a one-year moratorium to temporarily suspend the administrative review, approval process and/or drilling activities associated with the production of natural gas on lands located in the Town of Rensselaerville for either new or pending proposals or activities regarding gas drilling. Pursuant to the statutory powers vested in the Town of Rensselaerville to regulate and control land use and to protect the health, safety and welfare of its residents, the Town Board of the Town of Rensselaerville hereby declares a one year moratorium on the drilling for or extraction of natural gas within that subterranean area known as the Marcellus Shale or any other shale deposits located on or under land in the Town of Rensselaerville by the process commonly known as high-volume hydraulic fracturing.

The Town Board is aware of the current controversy surrounding the process of high-volume hydraulic fracturing. It realizes that there may be a number of reasons to support the use of that process, but that there have also been many issues of concern raised by persons opposed to it. In addition, the Town Board is very concerned regarding issues about such process that may have a significant negative effect on the Town's water supply, its roads and safety due to the high volume of truck traffic such process generates, property values, the Town's community character and the quality of life of its residents.

The Town Board is also aware that the State of New York is currently evaluating this process and its effect on the environment and that no final determination has been made by the State as to how this process will be regulated. The current State ban on this drilling process may expire soon and the Town Board wants to have the time necessary to investigate the issues involved before and after evaluation of how any State regulation may affect the Town of Rensselaerville. The Board knows that a determination of the policy that should be in effect in Rensselaerville concerning this issue will involve reconciliation of scientific and engineering information not within the usual expertise of the Board. This policy may involve the affect of increased truck traffic on the rural roads , reduction of property values within the Town, and the question of whether the extraction of natural gas by the process of high-volume hydraulic fracturing within the Town is compatible with the Town's community character and the Comprehensive Plan of the Town. The Town Board of the Town desires to address, in a careful manner, the question of if, and under what circumstances, the process of hydraulic fracturing should be allowed in this Town. The Town Board will now proceed in the process of considering various options relating to this issue.

The Town Board finds and determines that it needs the period of time covered by the moratorium imposed hereby in order to investigate and carefully study the question, draft proposed amendments to the Town Code, make appropriate changes to the draft, schedule and hold the required public hearing on the Local Law, perform an appropriate environmental review of the Local Law, comply with applicable provisions of law, adopt the Local Law, and file a copy of the Local Law, as adopted, with the Secretary of State of the State of New York.

### Section 3. Authority:

This moratorium extension is enacted by the Town Board of the Town of Rensselaerville pursuant to its authority to adopt local laws under the New York State Constitution Article IX, the Town Law and section 10 of the Municipal Home Rule Law.

Section 4. Moratorium Imposed:

For the period of one (1) year immediately following the effective date of this local law, there is a moratorium on all applications or activities on or under land that would have as the result the drilling for or extraction of natural gas within the Town of Rensselaerville from that subterranean area known as the Marcellus Shale or any other shale by the process known as hydraulic fracturing.

During the time periods in which the moratorium remains in effect, no approvals, permits, actions or decisions shall be made or issued by any Board or official of the Town of Rensselaerville with respect to any such applications for gas drilling. This moratorium shall apply to all such applications, whether pending or received prior to the effective date of this law. No such applications seeking approvals or permits for any such activities shall be accepted by any Board or official of the Town of Rensselaerville and no person, company, entity of any kind shall engage in such drilling activities for natural gas while this law remains in effect.

Section 5. Effect of Moratorium:

While this Local Law remains in effect, no Board, body or official of the Town shall accept for review, continue to review, hold a hearing upon, make any decision upon, or issue any permit or approval upon any application or proposal for the uses, projects or developments set forth in Section 4 above. Any statutory or locally-enacted time periods for processing and making decisions on all aspects of the aforesaid applications are hereby suspended and stayed while this Local Law is in effect. No person, corporation, or other entity shall undertake any site preparation, including but not limited to clearing, grading, and filling, or construction activities, with respect to any application, proposed land use, subdivision, or development that is subject to this moratorium.

Section 6. Enforcement:

This local law shall be enforced by the Code Enforcement Officer of the Town of Rensselaerville or such other individual(s) as designated by the Town Board. It shall be the duty of the enforcement individual to advise the Town Board of all matters pertaining to the enforcement of this local law and to keep all records necessary and appropriate to such enforcement.

Section 7. Violations:

Any person, firm, entity or corporation violating any of the provisions of this local law shall be guilty of an offense and upon conviction thereof, shall be subject to civil penalties in the amount of one hundred dollars (\$100.00) for each day such violation exists and/or an action for injunctive or equitable relief.

Section 8. Supersession:

To the extent that this local law is inconsistent with any state statute or regulation, it is the intent of this law to supersede such statutes or regulations. This supersession applies with respect to: (i) Town Law § 268 regarding the imposition of civil penalties; (ii) Town Law § 274-a with respect to the time frames for processing applications for site plan review, (iii) Town Law § 274-b with respect to the procedures and time frames for processing applications for special use permits, and (iv) Town Law § 267 et. seq. with respect to the time frames for processing area and use variances, appeals or interpretations.

Section 9. Severability of Provisions:

Should any section or provision of this local law be declared null, void, voidable, or invalid, such finding shall not affect the validity of the remaining portions of this local law.

Section 10. Effective Date:

This local law shall take effect upon filing with the Secretary of State of the State of New York.

**End of Law**

Resolution of the Town Board of Town of Rensselaerville  
Hydro-Fracking Committee

At the regular monthly meeting of the Town Board of the Town of Rensselaerville held on December 13, 2011, the following Resolution was presented:

WHEREAS, the Town Board has created an advisory committee (referred to as the "Hydro-Fracking Committee") to investigate gas drilling in the Town of Rensselaerville and the status of State and Federal regulatory controls on gas drilling in order to recommend and assist the Town Board in developing regulations regarding gas drilling in the Town as well as to provide recommendations on this use in the Town; and

WHEREAS, the Town Board, after advertising and interviewing applicants for membership on said Committee, appointed members to said Committee;

NOW, THEREFORE, BE IT RESOLVED as follows:

1. The Town of Rensselaerville Hydro-Fracking Committee is hereby officially created and shall have a maximum of 5 members.
2. The term of each member will end on December 31, 2012. The Chairperson of the Committee is John Mormile.
3. A quorum of the Committee shall be necessary for it to hold and conduct meetings and a majority of its membership shall constitute a quorum. All decisions or acts of the Committee shall be accomplished by vote of a majority of its membership.
4. The Committee may meet at a frequency and on particular days or nights as it will decide but all meetings of the Committee must follow the Open Meetings Law and be duly noticed and open to the public.
5. In recognition of the current gas drilling moratorium in effect and due to expire in December, 2012, the Committee shall report to the Town Board from time to time as to its progress and any recommendations it may have on gas drilling and the hydraulic fracturing technique of extraction as applicable to the Town of Rensselaerville, including but not limited to adoption of Town laws, regulations and/or policies with respect to same.
6. The Committee shall have no decision-making authority that will bind the Town Board or the Town of Rensselaerville to any policy, act or future action. The Committee's specific authority is to provide the Town Board with non-binding recommendations on the aforesaid topics.
7. The Committee, or any Committee member, is not authorized to contact or hold itself, him or herself out as an official of the Town, any vendor, contractor, or supplier of the Town or any governmental agency without the express authorization of the Town Board.

Upon motion made by Supervisor Dermody, seconded by Councilwoman Cooke, the foregoing Resolution was duly adopted by the Town Board on December 13, 2011 by a majority vote of a majority of its members.

**APPENDIX IV for CHAPTER IV**

# RIVERKEEPER APPENDIX 1

## CASE STUDIES

### IMPACTS AND INCIDENTS INVOLVING HIGH-VOLUME HYDRAULIC FRACTURING FROM ACROSS THE COUNTRY

#### Executive Summary

Since the summer of 2008 Riverkeeper has tracked the prospect of industrial gas drilling in New York State. While gas drilling in New York is not new, what is new is the magnitude, scope, and location of the proposed drilling method of high-volume hydraulic fracturing. Indeed, industrial gas drilling throughout the Marcellus Shale and other shale reserves in New York has the potential to impact the environment and communities dramatically.

To assist in analyzing the DSGEIS and to understand what impacts New Yorkers might expect from this industrial gas drilling activity, the experience from other states where high-volume hydraulic fracturing occurs is very instructive. To that end, Riverkeeper analyzed impacts and incidents that have occurred as a direct result of horizontal drilling using high-volume hydraulic fracturing, the very type of activity the DSGEIS attempts to study. These case studies examine impacts in the Marcellus Shale (Pennsylvania, Ohio, and West Virginia), the Barnett Shale (Texas), and gas drilling activity in Colorado and Wyoming. The case studies rely primarily on the investigations, findings, and statements of *state regulators* from these areas.

The case studies demonstrate that horizontal drilling using high-volume hydraulic fracturing results in significant adverse impacts. These impacts result from improper casing of well bores, over-pressured wells, spills and accidents, gas migration via abandoned wells, the inability of wastewater treatment plants to treat flowback and produced water, underground injection of brine wastewater, improper erosion and sediment controls, truck traffic, compressor stations, and the ordinary operation of high-volume hydraulic fracturing wells.

In Pennsylvania state regulators found that gas drilling using high-volume hydraulic fracturing has caused contaminated drinking water, polluted surface waters, polluted air, and contaminated soils. Specifically, the Pennsylvania Department of Environmental Protection (PA DEP) concluded that in one instance high-volume hydraulic fracturing “caused...gas from lower formations to enter fresh groundwater.” In another instance the PA DEP found that a well using high-volume hydraulic fracturing had “communicated with [an] abandoned gas well”, resulting in natural gas migrating to shallow groundwater and surface soils. In Ohio, state regulators found that inadequate well casing resulted in drinking water contamination and a house exploding. In the Barnett Shale, state regulators found elevated levels of benzene and other toxics in neighborhoods with nearby gas compressors.

The DEC should heed the lessons learned from other states that have experienced high-volume hydraulic fracturing. Through SEQRA, New York has the opportunity to mitigate these impacts before they occur. These case studies highlight specific problems experienced in other states, but also help illustrate areas where the DSGEIS is inadequate.

## MARCELLUS SHALE CASE STUDIES

### **I. Marcellus Shale – Introduction**

The Marcellus shale is a rock formation located approximately 5,000 to 8,000 feet below much of State of Pennsylvania, and portions of southern New York, Ohio and West Virginia.<sup>1</sup> It is believed to contain trillions of cubic feet of natural gas.<sup>2</sup> Until recently, the gas trapped within the Marcellus shale formation was thought prohibitively expensive to access.<sup>3</sup> Rising natural gas prices and advances in drilling technology – namely, the advent of the high-volume hydraulic fracturing process – sparked new interest in tapping the gas within the Marcellus shale.<sup>4</sup> Natural gas companies have used high-volume hydraulic fracturing in Pennsylvania, Ohio and West Virginia. Numerous incidents have occurred either during or after such drilling activities that have resulted in gas migration, water pollution and/or air pollution in these states. Some such incidents are described below.

### **II. Marcellus Shale Case Studies – Water Impacts**

**A. McNett Township, Lycoming County, PA.** On July 27, 2009, the Pennsylvania Department of Environmental Protection (“PA DEP”) discovered a natural gas leak involving a well drilled by East Resources.<sup>5</sup> Two water bodies, tributaries of Lycoming Creek, were affected by the release of methane gas.<sup>6</sup> Methane also impacted numerous private drinking water wells in the area, and one resident was forced to evacuate.<sup>7</sup> Additionally, access roads to the well were closed. According to a subsequent PA DEP report, “[t]he suspected cause of the leak is a casing failure of some sort.”<sup>8</sup> The company took measures to stop the leak at the source, and the area continues to be monitored by PA DEP.<sup>9</sup> Methane continues to be present in some of the private drinking water wells, and one gas extraction device was installed in a residence.<sup>10</sup> According to PA DEP, “the investigation is ongoing.”<sup>11</sup>

#### **B. Dimock Township, Susquehanna County, PA.**

1. In January 2009, there were several reports of methane gas migrating to the surface, and at least one report of a drinking water well exploding along Carter Road in Dimock, PA.<sup>12</sup>

---

<sup>1</sup> PA DEP, DEP MARCELLUS SHALE FACT SHEET 1 (2009), *available at* <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-76916/0100-FS-DEP4217.pdf>

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

<sup>3</sup> *Id.*

<sup>4</sup> *Id.*

<sup>5</sup> PA DEP, BUREAU OF OIL AND GAS MANAGEMENT, DRAFT REPORT STRAY NATURAL GAS MIGRATION ASSOCIATED WITH OIL AND GAS WELLS 3 (2009) [hereinafter “PA DEP DRAFT REPORT”], ”), *available at*, [http://www.dep.state.pa.us/dep/subject/advoun/oil\\_gas/2009/Stray%20Gas%20Migration%20Cases.pdf](http://www.dep.state.pa.us/dep/subject/advoun/oil_gas/2009/Stray%20Gas%20Migration%20Cases.pdf) (last visited Dec. 15, 2009).

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*

<sup>11</sup> PA DEP DRAFT REPORT, *supra* note 5, at 3.

<sup>12</sup> PA DEP, *DEP Continues to Analyze Dimock Water Supplies*, PA DEP Daily News Releases, Mar. 27, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5459> (last visited Dec. 12, 2009).

The PA DEP called the event a “significant gas migration,” and both free and dissolved natural gas have been found in numerous wells in the vicinity.<sup>13</sup> Upon preliminary testing, the PA DEP found that four wells in the area contained elevated levels of methane.<sup>14</sup> After further investigation, the agency discovered that nine wells contained methane, four at levels indicating a threat of explosion.<sup>15</sup> The gas migration occurred close to high-volume hydraulic fracturing sites of Cabot Oil & Gas Corporation (“Cabot”). The PA DEP noted that the “area has not experienced previous drilling and recent gas drilling in the vicinity has targeted the Marcellus Shale.” It conducted isotopic analysis in an attempt to discern the source of the stray gas.<sup>16</sup> The PA DEP determined that the gas did indeed originate in the target drilling formation of Cabot, and ruled out the possibility that the gas was produced by bacteria or originated from a shallower gas-bearing formation.<sup>17</sup>

The PA DEP issued Cabot a notice of violation on February 27, 2009, citing the company’s failure to comply with Pennsylvania’s Oil and Gas Act.<sup>18</sup> The Notice also stated that “[PA DEP’s] investigation revealed that Cabot had caused or allowed gas from lower formations to enter fresh groundwater.”<sup>19</sup> In November 2009, the PA DEP and Cabot signed a consent order resolving the violations, which requires Cabot to get PA DEP approval for any future well casing or cementing plans.<sup>20</sup> The PA DEP new release regarding the consent order stated that “DEP inspectors discovered that the well casings on some of Cabot’s natural gas wells were cemented improperly or insufficiently, allowing natural gas to migrate to groundwater.”<sup>21</sup>

2. On September 16, 2009, more incidents in Dimock, PA were linked to Cabot when the two liquid gel spills occurred at the company’s Heitsman natural gas well pad.<sup>22</sup> The spills polluted a wetland and caused a fish kill in Stevens Creek.<sup>23</sup> The PA DEP issued a notice of violation to Cabot for the spills.<sup>24</sup> In response to this event, the PA DEP stated:

---

<sup>13</sup> PA DEP DRAFT REPORT, *supra* note 5, at 3.

<sup>14</sup> PA DEP, *DEP Continuing Investigation Into High Methane Levels in Susquehanna County Wells*, PA DEP Daily News Releases, Jan. 23, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5406> (last visited Dec. 12, 2009).

<sup>15</sup> PA DEP, *supra* note 12.

<sup>16</sup> PA DEP, *supra* note 14.

<sup>17</sup> NEW YORK CITY DEP’T OF ENVTL. PROT., RAPID IMPACT ASSESSMENT REPORT: IMPACT ASSESSMENT OF NATURAL GAS PRODUCTION IN THE NEW YORK CITY WATER SUPPLY WATERSHED 53 (2009), available at [http://www.nyc.gov/html/dep/pdf/natural\\_gas\\_drilling/rapid\\_impact\\_assessment\\_091609.pdf](http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/rapid_impact_assessment_091609.pdf) [hereinafter “NYCDEP RAPID IMPACT ASSESSMENT”]; See also Notice of Violation Letter from Craig Lobbins, PA DEP Regional Manager, to Thomas Liberatore, Cabot Oil & Gas Corporation, Vice President (Feb. 27, 2009) (on file with the Pace Environmental Litigation Clinic).

<sup>18</sup> Notice of Violation Letter from Craig Lobbins, Regional Manager of the PA DEP, to Thomas Liberatore, Vice President of Cabot Oil & Gas Corporation (Feb. 27, 2009) (on file with the Pace Environmental Litigation Clinic).

<sup>19</sup> *Id.*

<sup>20</sup> PA DEP, *DEP Reaches Agreement with Cabot to Prevent Gas Migration, Restore Water Supplies in Dimock Township*, PA DEP Daily News Releases, Nov. 4, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5722> (last visited Dec. 13, 2009).

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

<sup>22</sup> PA DEP, *DEP Issues Violation Notice to Cabot Oil and Gas*, PA DEP Daily News Releases, Sept. 23, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5676> (last visited Dec. 13, 2009).

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

the notice of violation cites Cabot for an unpermitted discharge of polluting substances, an unpermitted discharge of residual waste, two unpermitted encroachments on Stevens Creek, not containing polluting substances at the well site, and an unpermitted discharge of industrial waste. These were violations of the Pennsylvania Clean Streams Law, Pennsylvania Solid Waste Management Act, the Dam Safety and Encroachments Act, and the Oil and Gas Act.<sup>25</sup>

The two spills involved a lubricant gel used in the high-volume hydraulic fracturing process and totaled over 8,000 gallons.<sup>26</sup> According to Cabot, the releases were caused by failed pipe connections.<sup>27</sup> In addition, a third spill occurred on September 22, 2009 at the same site.<sup>28</sup> This subsequent spill involved 420 gallons of the same lubricant gel.<sup>29</sup>

Following these three spills, on September 25, 2009, PA DEP ordered Cabot to cease all high-volume hydraulic fracturing activities until the company “completes a number of important engineering and safety tasks.”<sup>30</sup> PA DEP fined Cabot \$56,650 and on October 16, 2009, allowed Cabot to resume high-volume hydraulic fracturing activities after it submitted the required documents to PA DEP.<sup>31</sup>

**C. Foster Township, McKean County, PA.** In April 2009, drilling activities conducted by Schreiner Oil & Gas impacted at least seven drinking water supplies along Hedgehog Lane in Foster, PA.<sup>32</sup> Stray gas became evident in numerous wells and residents complained. Two of the affected water supplies contained methane and five had iron and manganese above established drinking water standards.<sup>33</sup> After investigating, the PA DEP found that “the stray gas occurrence is a result of 26 recently drilled wells, four of which had excessive pressure at the surface casing seat and others that had no cement returns.”<sup>34</sup> The PA DEP also issued Schreiner a notice of violation regarding this incident for failing to submit well records.<sup>35</sup> Prior to that notice, the PA DEP

had issued three notices of violation to Schreiner pertaining to drilling on Hedgehog Lane. On November 13, DEP cited Schreiner for over-pressured wells. On February 19, DEP issued a notice of violation for pit violations and failure to

---

<sup>25</sup> *Id.*

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

<sup>27</sup> *Id.*

<sup>28</sup> PA DEP, *supra* note 22.

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

<sup>30</sup> PA DEP, *DEP Orders Cabot Oil and Gas to Cease All Gas Well Fracking in Susquehanna County*, PA DEP Daily News Releases, Sept. 25, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5678> (last visited Dec. 13, 2009).

<sup>31</sup> PA DEP, *DEP Fines Cabot Oil and Gas Corp. \$56,650 for Susquehanna County Spills*, PA DEP Daily News Releases, Oct. 22, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5705> (last visited Dec. 13, 2009).

<sup>32</sup> PA DEP, *DEP Identifies Responsibility for Bradford Township Gas Migration/Water Supply Problems* PA DEP Daily News Releases, May 5, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5494> (last visited Dec. 12, 2009).

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

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

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

post a well permit. On March 20, DEP cited Schreiner for new over-pressured wells and failure to submit well records.<sup>36</sup>

**D. Hamlin Township, McKean County, PA.** In September 2007, a migration of natural gas caused “a change in water quality and a minor explosion in a community water well.”<sup>37</sup> Additionally, combustible gas was discovered in several private water wells within Kushequa village.<sup>38</sup> The PA DEP determined through an investigation that a specific over-pressured gas well was the cause of the stray gas release.<sup>39</sup> Also, “additional production casing was placed in the suspect well to permanently resolve the problem.”<sup>40</sup> The responsible party was issued a Consent Order and Civil Assessment and must plug 15 orphan wells adjacent to the affected water wells.<sup>41</sup> PA DEP has stated that “[a] small percentage of abandoned wells leak oil or acidic water from mines, which contaminates streams and drinking water supplies.”<sup>42</sup>

**E. Knox Township, Jefferson County, PA.** On April 18, 2009, fugitive gas began escaping from a domestic drinking water well in Knox, PA.<sup>43</sup> An investigation ensued and the PA DEP also discovered combustible gas in an adjacent drinking water well.<sup>44</sup> The PA DEP believes that the likely cause of the fugitive gas migration is a recently drilled neighboring gas well.<sup>45</sup> The PA DEP is also investigating three additional reports of water quality issues that could be associated with the recent high-volume hydraulic fracturing activities in the area.<sup>46</sup>

**F. Liberty Township, McKean County, PA.** In January 2008, PA DEP responded to a complaint regarding fugitive gas in a domestic drinking water well in Liberty, PA.<sup>47</sup> Further investigation revealed that two nearby recently drilled gas wells were over-pressured, “exceeding the amount of allowable pressure on the casing seat.”<sup>48</sup> The operator of the wells “placed packers and additional production casing . . . thereby eliminating pressure on the casing seat. The water well was aggressively pumped and over time the amount of combustible gas in the well bore decreased significantly.”<sup>49</sup> When the amount of gas decreased to an allowable amount, the wells were brought back into production.<sup>50</sup>

---

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

<sup>37</sup> PA DEP DRAFT REPORT, *supra* note 5, at 4.

<sup>38</sup> *Id.*

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

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

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

<sup>42</sup> PA DEP, *Governor Rendell Says PA Protecting Communities, Miners from Abandoned Oil, Gas Wells – Says \$2.3 Million Will Plug 150 Abandoned Wells, Safeguard Public Health, Drinking Water*, PA DEP Daily News Releases, Sept. 19, 2007, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=4748> (last visited Dec. 15, 2009).

<sup>43</sup> PA DEP DRAFT REPORT, *supra* note 5, at 4.

<sup>44</sup> *Id.*

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

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

<sup>47</sup> PA DEP DRAFT REPORT, *supra* note 5, at 5.

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

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

<sup>50</sup> *Id.*

**G. Hamlin Township, McKean County, PA.** In June 2006 the PA DEP responded to two water quality and diminution complaints in Hamlin, PA.<sup>51</sup> It found that “a change in water quality was evident.”<sup>52</sup> The PA DEP also noted that “over-pressured conditions” had been present at a recently drilled nearby gas well.<sup>53</sup> Subsequently, the operator drilled new drinking water wells for the impacted residents; however, gas was encountered during the drilling process.<sup>54</sup> When the operator then placed additional production casing into the gas well, the PA DEP noted a marked decrease in the amount of gas in the recently drilled water wells.<sup>55</sup> The problem has since diminished.<sup>56</sup>

**H. Alexander Investigation, Washington County, PA.** In September 2006, a migration of natural gas impacted several private drinking water supplies and surface soils in Washington County, PA.<sup>57</sup> PA DEP determined that a well that had been recently drilled using high-volume hydraulic fracturing had “communicated with [an] abandoned gas well.”<sup>58</sup> As a result, the natural gas migrated to shallow groundwater and surface soils in the area.<sup>59</sup> Investigation by the PA DEP revealed that fracturing activity at the recently drilled well had “created [a] pathway to [the] abandoned well and [caused] further migration into the shallow groundwater system.”<sup>60</sup>

**I. Howe Township, Forest County, PA.** In June 2005, stray natural gas entered two springs that serve as domestic water supplies to residents of Howe, PA.<sup>61</sup> The area has a long history of oil and gas drilling activity.<sup>62</sup> PA DEP discovered that the gas migration began close to the same time when two gas wells, located more than 3000 feet away, were being drilled using high-volume hydraulic fracturing.<sup>63</sup> According to the PA DEP, the “new gas wells are in regulatory compliance and additional measures were taken to prevent a gas migration.”<sup>64</sup> All efforts to more definitively identify the cause of the migration have been unsuccessful.<sup>65</sup>

**J. Monongahela River, TDS violations:** On October 11, 2008 the PA DEP first determined that the levels of total dissolved solids (“TDS”) in the Monongahela River exceeded federal and state water quality standards.<sup>66</sup> On October 22, 2008, the PA DEP announced that it would begin

---

<sup>51</sup> PA DEP DRAFT REPORT, *supra* note 5, at 6.

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

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

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

<sup>57</sup> PA DEP DRAFT REPORT, *supra* note 5, at 7-8.

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> PA DEP DRAFT REPORT, *supra* note 5, at 8.

<sup>61</sup> *Id.* at 12.

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

<sup>63</sup> *Id.*

<sup>64</sup> PA DEP DRAFT REPORT, *supra* note 5, at 12-13.

<sup>65</sup> *Id.* at 13.

<sup>66</sup> PA DEP, *Total Dissolved Solids in Monongahela River Drop Significantly Below State, Federal Limits*, PA DEP Daily News Releases, Jan. 21, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5404> (last visited Dec. 12, 2009).

investigating the source of these “unusually high” levels of TDS.<sup>67</sup> In order to immediately address the problem, the PA DEP directed

all sewage treatment plants accepting gas well drilling wastewater, and which discharge to the Monongahela River or its tributaries, to drastically reduce the volume of gas well drilling wastewater they accept to one percent of their daily flow. Currently gas well drilling wastewater constitutes up to 20 percent of those plants daily flow. The restrictions will reduce the volume of drilling wastewater treated by 90 to 95 percent.<sup>68</sup>

PA DEP traced the high TDS levels to “delivery of highly mineralized wastewater to municipal wastewater treatment plants from natural gas drilling operations.”<sup>69</sup> A New York City DEP report noted that “[w]ater samples analyzed downstream of several wastewater treatment plant discharges in the Monongahela indicated TDS levels nearly twice the allowable limit and nearly five times average levels.”<sup>70</sup>

On August 7, 2009, the PA DEP announced that TDS levels in the Monongahela River again exceeded drinking water quality standards.<sup>71</sup> And again on October 14, 2009, the PA DEP made the same announcement.<sup>72</sup>

**K. Cogan House Township and Mifflin Township, Lycoming County, PA.** On May 30, 2008 the PA DEP ordered Range Resources – Appalachia, LLC and Chief Oil and Gas, LLC to cease their surface water withdrawals from local streams due to violations of Pennsylvania’s Clean Streams Law.<sup>73</sup> PA DEP’s Regional Office Director stated that “[high-volume hydraulic fracturing] can often times consume millions of gallons of water. In the course of their operations, neither Range Resources nor Chief Oil and Gas have taken the necessary precautions to protect nearby streams from pollution or impairment during the drilling process.”<sup>74</sup> The companies were within the jurisdiction of the Susquehanna River Basin Commission, and were required to obtain water withdrawal permits, but failed to do so.<sup>75</sup> The cease orders remain in effect until each company acquires all necessary permits.<sup>76</sup>

---

<sup>67</sup> PA DEP, *DEP Investigates Source of Elevated Total Dissolved Solids in Monongahela River*, PA DEP Daily News Releases, Oct. 22, 2008, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5337> (last visited Dec. 12, 2009).

<sup>68</sup> *Id.*

<sup>69</sup> NYCDEP RAPID IMPACT ASSESSMENT, *supra* note 17, at 54.

<sup>70</sup> *Id.*

<sup>71</sup> PA DEP, *DEP Detects Elevated Levels of Total Dissolved Solids in Monongahela River*, PA DEP Daily News Releases, Aug. 7, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5619> (last visited Dec. 12, 2009).

<sup>72</sup> PA DEP, *DEP Detects Total Dissolved Solids Over Standards in Monongahela River*, PA DEP Daily News Releases, Oct. 14, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5694> (last visited Dec. 12, 2009).

<sup>73</sup> NYCDEP RAPID IMPACT ASSESSMENT, *supra* note 17, at 55.

<sup>74</sup> PA DEP, *DEP Orders Partial Shutdown of Two Natural Gas Drilling Operations in Lycoming County* PA DEP Daily News Releases, May 30, 2008, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5079> (last visited Dec. 12, 2009).

<sup>75</sup> *Id.* NYCDEP RAPID IMPACT ASSESSMENT, *supra* note 17, at 55.

<sup>76</sup> PA DEP, *supra* note 74.

**L. Athens Township, Bradford County, PA.** In January 2005, Columbia Natural Resources, LLC violated Pennsylvania environmental regulations when it failed to implement proper erosion and sedimentation control measures along a road it constructed in connection with its natural gas drilling activities.<sup>77</sup> This resulted in contamination of two waterways and a wetland in Athens, PA.<sup>78</sup> Columbia also filled a portion of the wetland without obtaining a permit from PA DEP, another violation.<sup>79</sup> On June 24, 2005, PA DEP fined the company \$6,500 for its violations.<sup>80</sup>

**M. Bainbridge Township, Geauga County, OH.** On December 15, 2007 an explosion occurred inside a home in Bainbridge, OH.<sup>81</sup> Two residents in the home were not injured but the structure was damaged significantly.<sup>82</sup> After investigation, the Ohio Department of Natural Resources (“Ohio DNR”) determined that nearby high-volume hydraulic fracturing operations, conducted by Ohio Valley Energy Systems Corp. (“OVESC”), caused the explosion.<sup>83</sup> According to an April 16, 2009 Order from the Ohio DNR, OVESC began drilling the English No. 1 natural gas well in the area on October 18, 2007.<sup>84</sup> The investigation further revealed that:

Accumulation and confinement of deep, high-pressure gas in the surface-production casing annulus of the English No. 1 well, between November 16 and December 15, 2007, resulted in over-pressurization of the annulus. This over-pressurized condition resulted in the invasion, or migration of natural gas from the annulus of the well into natural fractures in the bedrock below the base of the cemented surface casing. This gas migrated vertically through fractures into the overlying aquifers, discharged or exited the aquifers through local water wells, and entered some inhabited structures in the area in varying concentrations through groundwater.<sup>85</sup>

In addition to the explosion, the drilling operations led to significant water contamination in the area. According to the Ohio DNR, this specific event contaminated “22 domestic and one public water supply.”<sup>86</sup> A letter from the Ohio Department of Health regarding well sampling in

---

<sup>77</sup> PA DEP, *DEP Fines West Virginia Company \$6,500 For Environmental Violations in Bradford County* PA DEP Daily News Releases, June 24, 2005, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=3503> (last visited Dec. 13, 2009).

<sup>78</sup> *Id.*

<sup>79</sup> *Id.*

<sup>80</sup> *Id.*

<sup>81</sup> Letter from John F. Husted, Chief of the Ohio Department of Natural Resources, Division of Mineral Resource Management (Aug. 28, 2008), available at [http://www.dnr.state.oh.us/Portals/11/bainbridge/cover\\_letter.pdf](http://www.dnr.state.oh.us/Portals/11/bainbridge/cover_letter.pdf). See also OHIO DEP’T OF NATURAL RES., DIVISION OF MINERAL RES. MGMT., REPORT ON THE INVESTIGATION OF THE NATURAL GAS INVASION IN BAINBRIDGE TOWNSHIP OF GEAUGA COUNTY OHIO 3 (2008), available at <http://www.dnr.state.oh.us/Portals/11/bainbridge/report.pdf> [hereinafter “REPORT ON BAINBRIDGE INVESTIGATION”].

<sup>82</sup> REPORT ON BAINBRIDGE INVESTIGATION, *supra* note 81, at 3.

<sup>83</sup> See Ohio DNR, Order by the Chief to Ohio Valley Energy Systems Corp., Apr. 14, 2008, available at <http://ohiodnr.com/portals/11/bainbridge/2009-order-by-chief.pdf>. See also Ohio DNR, Order by the Chief to Ohio Valley Energy Systems Corp., Apr. 16, 2008, available at <http://ohiodnr.com/portals/11/bainbridge/2009-order-by-chief-2.pdf>. See also REPORT ON BAINBRIDGE INVESTIGATION, *supra* note 81, at 3.

<sup>84</sup> ODNR, Order by the Chief to Ohio Valley Energy Systems Corp., Apr. 16, 2008, *supra* note 83, ¶ 2.

<sup>85</sup> *Id.* ¶ 4.

<sup>86</sup> REPORT ON BAINBRIDGE INVESTIGATION, *supra* note 81, at 4.

the area after the event stated that “of the 78 wells sampled, 45 had measurable levels of dissolved methane in the water. Many of the 78 wells sampled had iron, manganese, and less commonly aluminum and total dissolved solids, at levels exceeding U.S. EPA Secondary Maximum Contaminant Levels.”<sup>87</sup> In response to this incident, the Ohio DNR directed OVESC to (i) remedy inadequate primary cementing of the production casing of English Well No. 1; (ii) isolate the deep high-pressure gas zones that were the source of the overpressurization of the aquifers; and (iii) eliminate the confinement of annular gas which caused the build-up of pressure.<sup>88</sup> The Ohio DNR’s report on this event states that:

[r]emedial cementing operations completed by OVESC in mid-December, 2007 have effectively isolated and sealed deep, high-pressure gas bearing zones. As a result, natural gas from deep formations can no longer migrate up the surface-production casing annulus of the English #1 well and migrate into local aquifers.<sup>89</sup>

**N. Dunkard Creek, Monongalia County, WV.** On September 1, 2009 a substantial fish kill in Dunkard Creek, along the West Virginia- Pennsylvania border, was reported to the West Virginia Department of Environmental Protection (“WV DEP”).<sup>90</sup> According to PA DEP over “30 stream miles” in PA and WV were “impacted by a discharge, originating from West Virginia, and contains high levels of total dissolved solids (TDS)”; “at least 16 species of freshwater mussels and at least 18 species of fish were killed by this pollution event in Dunkard Creek.”<sup>91</sup> Agencies in both West Virginia and Pennsylvania investigated the incident, which was traced to a bloom of golden algae in the creek.<sup>92</sup> The Creek is in a heavy oil and gas drilling area, and the WV DEP has received numerous complaints from residents who suspect that companies are illegally dumping oil and gas drilling waste into the waterway.<sup>93</sup>

### III. Marcellus Shale Case Studies – Air and Soil Impacts.

**A. McCalmont Township, Jefferson County, PA.** In April 2008 PA DEP was informed of “a large fugitive expression” in Little Sandy Creek in McCalmont, PA.<sup>94</sup> Amounts of combustible natural gas were discovered in the basement of a nearby residence upon

<sup>87</sup> Letter from Robert C. Frey, Ph.D., Chief of the Health Assessment Section of the Ohio Bureau of Environmental Health, Ohio Department of Health to Scott Kell, Deputy Chief of the Ohio Department of Natural Resources Division of Mineral Resource Management (Sept. 10, 2008), *available at* <http://www.dnr.state.oh.us/bainbridge/tabid/20484/Default.aspx> (last visited Dec. 16, 2009) and [http://www.dnr.state.oh.us/Portals/11/bainbridge/10-31-08\\_resident\\_mailing\\_odh\\_letter.pdf](http://www.dnr.state.oh.us/Portals/11/bainbridge/10-31-08_resident_mailing_odh_letter.pdf) (last visited Dec. 16, 2009).

<sup>88</sup> REPORT ON BAINBRIDGE INVESTIGATION, *supra* note 80, at 5.

<sup>89</sup> *Id.*

<sup>90</sup> News Release, WV DEP, DEP Actively Investigating Dunkard Creek Fish Kill (Sept. 21, 2009), *available at* [http://www.wvdep.org/Docs/18246\\_Sept\\_21\\_2009\\_press\\_release.pdf](http://www.wvdep.org/Docs/18246_Sept_21_2009_press_release.pdf).

<sup>91</sup> PA DEP, DEP, *Fish and Boat Commission Monitoring Dunkard Creek Fish Kill*, PA DEP Daily News Releases, Sept. 18, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5671> (last visited Dec. 13, 2009).

<sup>92</sup> News Release, WVDEP, Update on Dunkard Creek Fish Kill Investigation (Oct. 5, 2009), *available at* [http://www.wvdep.org/Docs/18245\\_October\\_5\\_2009\\_press\\_release.pdf](http://www.wvdep.org/Docs/18245_October_5_2009_press_release.pdf). See also Patrick Campbell, WV DEP Presentation on “Dunkard Creek Aquatic Wildlife Kills, September, 2009” (Oct. 9, 2009) *available at* [http://www.wvdep.org/Docs/18239\\_dunkardaqlkillpvc.pdf](http://www.wvdep.org/Docs/18239_dunkardaqlkillpvc.pdf).

<sup>93</sup> PA DEP, *supra* note 90.

<sup>94</sup> PA DEP DRAFT REPORT, *supra* note 5, at 4.

investigation.<sup>95</sup> PA DEP determined that the gas was entering the house “through an un-sealed sump opening in the concrete floor of the basement.”<sup>96</sup> Additionally, the investigation revealed “two recently drilled gas wells were over-pressured and were producing from different geologic strata.”<sup>97</sup> PA DEP conducted isotopic analysis of the wells which indicated that one of the wells was the probable source.<sup>98</sup> The residence continued to be monitored and the amount of gas in the sump was determined to be decreasing.<sup>99</sup>

**B. Dimock Township, Susquehanna County, PA.** There have been two reports of “diesel fuel leaking from tanks at high-volume hydraulic fracturing drilling operations run by Cabot Oil & Gas Corp. near Dimock Township in northeastern Pennsylvania.”<sup>100</sup> The first leak was caused by “a loose fitting on a tank and resulted in approximately 800 gallons of diesel entering a wetland located approximately 350 feet from the tank.”<sup>101</sup> The second leak resulted in “approximately 100 gallons of diesel resulting in soil contamination.”<sup>102</sup> PA DEP directed that the soil be removed and “indicated there was no suspected groundwater contamination.”<sup>103</sup>

**C. Millcreek Township, Erie County, PA.** A gas migration episode in November and December of 2007 caused residents of Walnut Creek in Millcreek, PA to be evacuated from their homes for over two months.<sup>104</sup> Fugitive gas was discovered in the soil and “natural gas levels in and around homes . . . were found to be at explosive levels.”<sup>105</sup> PA DEP investigations and isotopic analysis of the gas revealed that recently drilled gas wells in the area caused the migration.<sup>106</sup> PA DEP assessed a \$32,000 civil penalty against First Alliance Church for this gas migration, which kept five families out of their homes for 39 days. First Alliance Church had hired a contractor to drill for natural gas on its property.<sup>107</sup>

#### IV. Marcellus Shale Case Studies – Permit/Regulatory Violations.

**A. U.S. Energy Cease & Desist Order.** On July 10, 2009, PA DEP issued a cease and desist order against U.S. Energy Development Inc. “for persistent and repeated violations of environmental laws and regulations.”<sup>108</sup> The order prohibits U.S. Energy “from conducting all earth disturbance, drilling and hydro-fracturing operations.”<sup>109</sup> The basis of the order is the

---

<sup>95</sup> *Id.*

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

<sup>97</sup> *Id.*

<sup>98</sup> *Id.*

<sup>99</sup> *Id.*

<sup>100</sup> NYCDEP RAPID IMPACT ASSESSMENT, *supra* note 17, at 54.

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

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

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

<sup>104</sup> PA DEP DRAFT REPORT, *supra* note 5, at 5.

<sup>105</sup> PA DEP, *DEP Assesses Penalty for 2007 Gas Migration That Forced Evacuation in Erie County*, PA DEP Daily News Releases, July 8, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5569> (last visited Dec. 13, 2009).

<sup>106</sup> PA DEP DRAFT REPORT, *supra* note 5, at 5-6.

<sup>107</sup> PA DEP, *supra* note 104.

<sup>108</sup> PA DEP, *DEP Orders U.S. Energy to Cease Drilling Operations Throughout Pennsylvania*, PA DEP Daily News Releases, July 10, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5574> (last visited Dec. 12, 2009).

<sup>109</sup> *Id.*

company's 302 violations since August 2007, 197 of which remain unresolved.<sup>110</sup> The violations included "failure to implement measures to prevent accelerated erosion, unpermitted discharges, failure to restore well sites, encroachments into streams and wetlands without obtaining required permits, and failure to plug abandoned wells."<sup>111</sup> The cease and desist order was later lifted when a consent agreement was signed in which PA DEP assessed U.S. Energy a \$200,000 civil penalty and required it to work under an environmental management plan.<sup>112</sup>

**B. Revocation of Permits Issued to Ultra Resources Inc. and Fortuna Energy Inc.** On October 28, 2009, PA DEP revoked three erosion and sedimentation control permits issued to Ultra Resources Inc. and Fortuna Energy Inc. because of technical deficiencies.<sup>113</sup> The deficiencies, namely the failure to provide for best management practices and some inaccurate calculations, were discovered after the permits had been approved.<sup>114</sup> The Chesapeake Bay Foundation challenged the permits, causing PA DEP to re-examine and subsequently revoke them.<sup>115</sup>

**C. Synd Enterprises and Vertical Resources Cease & Desist Order.** On December 12, 2006, PA DEP issued a cease and desist order to the owners of Synd Enterprises, Inc. and Vertical Resources.<sup>116</sup> The companies had "continued and numerous violations" of Pennsylvania law and had "shown a lack of ability or intention to comply with the provisions of the commonwealth's environmental laws."<sup>117</sup> Additionally PA DEP sought civil penalties of \$657,040 to perform cleanup activities and plug wells.<sup>118</sup> Among the violations cited in the order were "over-pressured wells that cause gas migration and contaminate groundwater; failure to implement erosion and sedimentation controls at well sites which has caused accelerated erosion; unpermitted discharges of brine onto the ground; and encroachments into floodways and streams without permits."<sup>119</sup>

On June 15, 2007, the PA DEP and Synd entered into a consent agreement whereby the owners of Synd had to pay a \$400,000 civil penalty and "must refrain from owning or operating any future oil and gas operations in the commonwealth and must dissolve their other active companies here."<sup>120</sup>

---

<sup>110</sup> *Id.*

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

<sup>112</sup> PA DEP, *DEP Reaches Agreement with U.S. Energy*, PA DEP Daily News Releases, Aug. 12, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5624> (last visited Dec. 12, 2009).

<sup>113</sup> PA DEP, *DEP Revokes Erosion and Sedimentation Control Permits for Two Gas Companies*, PA DEP Daily News Releases, Oct. 28, 2009, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=5710> (last visited Dec. 12, 2009).

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

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

<sup>116</sup> PA DEP, *DEP Seeks \$657,040 Civil Penalty Against New York Company For Environmental Damage in Allegheny National Forest*, PA DEP Daily News Releases, Jan. 11, 2007, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=4367> (last visited Dec. 13, 2009).

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

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

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

<sup>120</sup> PA DEP, *DEP Fines Oil and Gas Operator \$400,000 For Violations*, PA DEP Daily News Releases, June 15, 2007, <http://www.ahs2.dep.state.pa.us/newsreleases/default.asp?ID=4549> (last visited Dec. 13, 2009).

## BARNETT SHALE CASE STUDIES

### I. Introduction

The Barnett Shale is substantially similar geologically to the Marcellus Shale formation. The Barnett Shale underlies the cities of Dallas and Fort Worth and surrounding counties, covering approximately 5,000 square miles.<sup>121</sup> Because the Barnett Shale underlies the city of Fort Worth, Texas, the impact of drilling and exploration is felt somewhat differently than the effects of Marcellus drilling, which occurs in more rural areas. There are approximately 12,000 gas wells and 1,300 natural gas compressors operating in the Barnett Shale.<sup>122</sup> Since large-scale horizontal drilling began in the Barnett in 2002, there have been reports of water pollution, air pollution, geological disturbances, and impact on human health and wildlife linked to high-volume hydraulic fracturing drilling practices.<sup>123</sup>

### II. Barnett Shale Case Studies – Water Impacts

**A. City of Midland, Midland County, TX.** In April 2009, a private well in Midland, Texas, was confirmed to be contaminated with fifty times the acceptable level of hexavalent chromium.<sup>124</sup> The Texas Commission on Environmental Quality (TCEQ) has tested about 240 wells and added filters to 42, where hexavalent chromium levels were found to exceed safe levels.<sup>125</sup> The source of this chromium-6 contamination has not been determined, but the TCEQ is investigating a link to natural gas drilling in the area.<sup>126</sup> Specifically, TCEQ made a connection to Schlumberger gas facilities in the area. In a press statement, the company denied that a source had been determined, but stated that the source was likely an adjacent operation. The TCEQ held public meetings in May and July 2009 to provide information on remediation to residents, but still has not identified a source.<sup>127</sup> The TCEQ has referred the area to the EPA for inclusion on the National Priorities List.<sup>128</sup>

---

<sup>121</sup> Texas Commission on Environmental Quality, Barnett Shale Geological Area, <http://www.tceq.state.tx.us/implementation/barnettshale> (last visited Dec. 14, 2009).

<sup>122</sup> *Health Issues Follow Natural Gas Drilling in Texas*, NPR, Nov. 3, 2009, <http://www.npr.org/templates/story/story.php?storyId=120043996> (last visited Nov. 13, 2009).

<sup>123</sup> Until recently, drilling in the Barnett Shale was limited to bigger regional and national energy companies. On December 14, 2009, Exxon Mobil Corp. announced that it would acquire Texas-based XTO Energy in a \$31 billion deal. <http://www.eenews.net/cw/2009/12/15/1> (last visited Dec. 15, 2009).

<sup>124</sup> *EPA grants extension for further testing of chromium contaminated area*, Midland Reporter-Telegram, Dec. 3, 2009. [http://www.mywesttexas.com/articles/2009/12/03/news/top\\_stories/epa\\_grants\\_extension\\_for\\_testing\\_of\\_chromium.txt](http://www.mywesttexas.com/articles/2009/12/03/news/top_stories/epa_grants_extension_for_testing_of_chromium.txt) (last visited Dec. 16, 2009).

<sup>125</sup> Texas Commission on Environmental Quality, *Cleanup in Midland County: West County Road 112, Midland, TX*, <http://www.tceq.state.tx.us/remediation/sites/cr112.html> (last visited Dec. 16, 2009).

<sup>126</sup> Texas Commission on Environmental Quality, *West County Road-112 Groundwater Plume Midland County, Texas, Site Update September 2009*, <http://www.tceq.state.tx.us/assets/public/remediation/variousremediationsites/westcr112/092409meeting.pdf> (last visited Dec. 16, 2009).

<sup>127</sup> Texas Commission on Environmental Quality, *TCEQ Holds Public Meeting on Water Well Contamination*, [http://www.tceq.state.tx.us/comm\\_exec/communication/media/05-09midlandmeeting.html](http://www.tceq.state.tx.us/comm_exec/communication/media/05-09midlandmeeting.html) (last visited Dec. 16, 2009); Texas Commission on Environmental Quality, *TCEQ Holds Public Meeting on Water Well Contamination*,

### III. Barnett Shale Case Studies – Air Impacts

**A. Town of DISH, Denton County, TX.** Reports of human illness and animal deaths led the town of DISH, Texas to spend 15% of its \$70,000 annual budget on an air quality study of the effects of gas wells and compressor stations within the town and just across town lines.<sup>129</sup> The study, conducted in August 2009 by an independent environmental consulting firm, found the “presence in high concentrations of carcinogenic and neurotoxin compounds in ambient air near and/or on residential properties.”<sup>130</sup> The compounds found “were in excess of what would normally be anticipated in ambient air” in communities like these.<sup>131</sup> These compounds included benzene, xylene, carbon disulfide, naphthalene, dimethyl disulphide, methyl ethyl disulphide, and pyridine metabolites.<sup>132</sup> Many of the compounds were found in levels that exceeded either short or long term Effects Screening Levels established by the TCEQ.<sup>133</sup>

**B. Dallas-Fort Worth, Denton and Dallas Counties, TX.** The Dallas-Fort Worth area has seen a dramatic impact on its air quality from natural gas drilling in the Barnett Shale. A report by Al Amendariz of Southern Methodist University, and now EPA Region 6 Regional Administrator, found that the pollutant emissions from natural gas drilling activities per day surpassed those produced by all of the vehicle traffic in the Dallas-Fort Worth region.<sup>134</sup>

In addition to the independent study undertaken by Dish, the Texas Commission on Environmental Quality (TCEQ) is conducting a large-scale air monitoring program.<sup>135</sup> The initial results of that study found benzene levels in the air around Fort Worth to exceed short-term limits. Because benzene is a human carcinogen and the Barnett Shale gas is thought to be fairly “dry” the excessive levels are alarming to regulators. While the TCEQ is continuing its monitoring, officials have referred the findings to the EPA. The TCEQ met with the eight biggest operators in the Barnett Shale, and asked them to

---

[http://www.tceq.state.tx.us/comm\\_exec/communication/media/06-09midlandchrome2.html](http://www.tceq.state.tx.us/comm_exec/communication/media/06-09midlandchrome2.html) (last visited Dec. 16, 2009).

<sup>128</sup> EPA, *Search Superfund Site Information, West CR 112 Groundwater*, <http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0606992> (last visited Dec. 16, 2009).

<sup>129</sup> *State Tests Air Around Drilling And Pipeline Sites*, KERA, Oct. 14, 2009, <http://www.publicbroadcasting.net/keranews/newsmain/article/0/1/1566121/North.Texas/State.Tests.Air.Around.Drilling.And.Pipeline.Sites> (last visited Nov. 12, 2009).

<sup>130</sup> Wolf Eagle Environmental, *DISH Air Study Results*, Sept. 15, 2009 at 9, available at, [http://www.townofdish.com/objects/DISH\\_Air\\_Study.pdf](http://www.townofdish.com/objects/DISH_Air_Study.pdf) (last visited Nov. 12, 2009).

<sup>131</sup> *Id.*

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

<sup>133</sup> *State Tests Air Around Drilling and Pipeline Sites*, KERA.

<sup>134</sup> Al Amendariz, *Emissions from Natural Gas Production in Barnett Shale Area and Opportunities for Cost-Effective Improvements*, Jan. 26, 2009, [http://www.edf.org/documents/9235\\_Barnett\\_Shale\\_Report.pdf](http://www.edf.org/documents/9235_Barnett_Shale_Report.pdf). (last visited Nov. 13, 2009).

<sup>135</sup> *Cancer-causing toxin found in air near gas facilities*, WFAA, Oct. 30, 2009, [http://www.wfaa.com/sharedcontent/dws/wfaa/latestnews/stories/wfaa091029\\_mo\\_drilling.2669d39e4.html](http://www.wfaa.com/sharedcontent/dws/wfaa/latestnews/stories/wfaa091029_mo_drilling.2669d39e4.html) (last visited Nov. 13, 2009).

voluntarily reduce emissions from drilling operations after the TCEQ investigation found hydrocarbon vapors escaping from drilling machinery and storage tanks, and significant levels of benzene in some locations.<sup>136</sup> The TCEQ is expected to release the results of the study in late 2009 or early 2010.<sup>137</sup>

The TCEQ Toxicology Division issued a memo on October 27, 2009 reviewing the health effects documented in the DISH report.<sup>138</sup> The memo “strongly” recommended additional sampling in the area.<sup>139</sup> While the memo stated that the monitored concentrations of benzene in DISH did not exceed short-term limits, it also concluded that “the monitored concentrations of benzene at several of the sampling locations could pose a long-term health risk to residents if representative of normal and prolonged ambient conditions.”<sup>140</sup>

The City of Fort Worth has been inquiring into the effects of drilling activity on the air quality around Fort Worth. Most recently, on December 8, 2009 the TCEQ and Fort Worth Department of Environmental Management presented information regarding ongoing investigative efforts to the Fort Worth City Council.<sup>141</sup>

#### IV. Barnett Shale Case Studies – Geological Impacts

**A. City of Cleburne, Johnson County, TX.** In addition to the effects on air quality and related health impacts, gas drilling in the Barnett has been linked to minor earthquakes in the Fort Worth region.<sup>142</sup> Since the beginning of 2008, the Dallas-Fort Worth area has experienced at least 18 earthquakes. In the town of Cleburne, less than thirty miles from Fort Worth.

At least seven earthquakes were documented in Cleburne alone between June and July 2009, with another possible earthquake reported on September 30, 2009. While a formal link has not been established, it is suspected that there is a link between disposing of gas drilling wastewater and the quakes.<sup>143</sup> The town of Cleburne had not registered an

---

<sup>136</sup> *State worried about air pollution near Barnett Shale wells*, Fort Worth Star-Telegram, Nov. 22, 2009, <http://www.star-telegram.com/804/story/1782464.html> (last visited Nov. 22, 2009).

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

<sup>138</sup> Texas Commission on Environmental Quality, *Health Effects Review of Ambient Air Monitoring Data Collected by Wolf Eagle Environmental Engineers and Consultants for DISH, TX*, October 27, 2009, [http://www.tceq.state.tx.us/assets/public/implementation/barnett\\_shale/healthEffectsReview.pdf](http://www.tceq.state.tx.us/assets/public/implementation/barnett_shale/healthEffectsReview.pdf) (last visited Dec. 14, 2009).

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

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

<sup>141</sup> Fort Worth City Council, *Pre-Council Agenda*, Dec. 8, 2009, [http://www.fortworthgov.org/council\\_packet/create\\_precouncil\\_agenda.asp?mode=V](http://www.fortworthgov.org/council_packet/create_precouncil_agenda.asp?mode=V) (last visited Dec. 14, 2009). Video of the meeting is available at [http://fortworthgov.granicus.com/ViewPublisher.php?view\\_id=2](http://fortworthgov.granicus.com/ViewPublisher.php?view_id=2) (last visited Dec. 15, 2009).

<sup>142</sup> *Is Drilling to Blame for Texas Quakes?*, NPR, June 30, 2009, <http://www.npr.org/templates/transcript/transcript.php?storyId=106059425> (last visited Nov. 13, 2009).

<sup>143</sup> *Cleburne quakes probably related to gas drilling, expert says*, Dallas Morning News, June 8, 2009, <http://www.dallasnews.com/sharedcontent/dws/dn/latestnews/stories/060909dnmetquakes.40620de.html> (last visited Nov. 13, 2009).

earthquake in its 142-year history, prior to the June quakes.<sup>144</sup> A research team at Southern Methodist University is monitoring seismic activity around the Cleburne area. It is suspected that the quakes may be linked to the underground injection of wastewater from the hydraulic fracturing process. Chesapeake Energy closed two of its salt water disposal wells in the area after the quakes.<sup>145</sup>

---

<sup>144</sup> *Temblors Rattle Texas Town*, Wall Street Journal, June 12, 2009  
<http://online.wsj.com/article/SB124476331270108225.html>. (last visited Nov. 13, 2009).

<sup>145</sup> *Chesapeake shuts two re-injection wells down as a precaution*. Cleburne Times-Review. Aug. 14, 2009,  
[http://www.cleburnetimesreview.com/local/local\\_story\\_226123755.html](http://www.cleburnetimesreview.com/local/local_story_226123755.html). (last visited Nov. 13, 2009).

## WYOMING AND COLORADO CASE STUDIES

### I. Wyoming and Colorado Case Studies – Water Impacts

**A. Pavillion, Fremont County, WY.** In response to complaints of foul odors and taste in residential wells, EPA Region 8 funded an investigation into the source and nature of the contamination.<sup>146</sup> The report considered data collected from residential and municipal wells in Pavillion, Wyoming in March and May 2009. The report found heightened levels of hazardous contaminants in a number of drinking water wells, including the same chemicals used in a nearby hydraulic fracturing operation.<sup>147</sup> EPA found that oil and gas activity in the region was a potential source of contamination, and that the agency would be working with gas producer EnCana in the area to mitigate the effects of drilling on the water supply.<sup>148</sup> The Pavillion area is currently being considered for addition to the National Priorities List.<sup>149</sup>

**B. Garfield County, CO.** A report prepared for Garfield County, CO found a correlation between increased levels of methane and chloride in groundwater in areas proximate to gas drilling activity.<sup>150</sup> The report elaborated that the positive correlation between drilling activity and increased levels of dissolved methane in the groundwater suggested, “drilling and production activities are the cause.”<sup>151</sup>

The Colorado Oil and Gas Conservation Commission (COGCC) reports an ongoing problem with ground water contamination in Garfield County.<sup>152</sup> The COGCC has required EnCana, the gas producer in that region, to remediate this contamination and provide quarterly reports on the state of the groundwater. The COGCC reports that methane and BTEX (benzene, toluene, ethylbenzene, and total xylenes) have been the principal forms of contamination.<sup>153</sup>

---

<sup>146</sup> URS Operating Services, Inc., Site Inspection – Analytical Results Report, Pavillion Area Groundwater Investigation Site. CERCLIS ID# WYN000802735. Aug. 2009, [http://www.earthworksaction.org/pubs-others/EPA\\_2009\\_Pavillion\\_Groundwater\\_Report.pdf](http://www.earthworksaction.org/pubs-others/EPA_2009_Pavillion_Groundwater_Report.pdf) (last visited Dec. 16, 2009).

<sup>147</sup> *Id.*

<sup>148</sup> EPA Region 8, *Pavillion Groundwater Investigation, Pavillion Wyoming, Phase I Sampling Results* (PowerPoint Presentation) Aug. 11, 2009, [http://www.earthworksaction.org/pubs-others/EPA\\_2009\\_Pavillion\\_Groundwater.ppt](http://www.earthworksaction.org/pubs-others/EPA_2009_Pavillion_Groundwater.ppt) (last visited Dec. 15, 2009).

<sup>149</sup> EPA, *Search Superfund Site Information, Pavillion Area Ground Water Study*, <http://cfpub.epa.gov/supercpad/cursites/csitiinfo.cfm?id=0802735> (last visited Dec. 16, 2009).

<sup>150</sup> Review of Phase II Hydrogeologic Study, Prepared for Garfield County. Geoffrey Tyne. Dec. 20, 2009. <http://www.garfield-county.com/Index.aspx?page=1143> (last visited Dec. 15, 2009).

<sup>151</sup> *Id.*

<sup>152</sup> Colorado Oil and Gas Conservation Commission, *FY 2008-2009 Report to the Water Quality Control Commission and Watery Quality Control Division of the Colorado Department of Public Health and Environment*, Nov. 2009, [http://cogcc.state.co.us/Library/WQCC\\_WQCD\\_AnnualReports/WQCC08\\_09RPT.pdf](http://cogcc.state.co.us/Library/WQCC_WQCD_AnnualReports/WQCC08_09RPT.pdf) (last visited Dec. 16, 2009).

<sup>153</sup> *Id.*



# Risky Business: An Analysis of Marcellus Shale Gas Drilling Violations in Pennsylvania 2008-2011

Erika Staaf, PennEnvironment Research & Policy Center  
February 2012

Marcellus Shale gas drilling is expanding rapidly across Pennsylvania. And with it, drilling companies regularly continue to violate Pennsylvania's cornerstone environmental laws – laws that aim to protect the Commonwealth's natural heritage and the public's health.

In the worst scenarios, such as a 2011 Chesapeake Appalachia liquid storage tank explosion in Avella, Washington County<sup>1</sup> or a 2011 Chesapeake Energy well blowout in Bradford County, these violations threaten the surrounding environment and can put human health and safety at risk.<sup>2</sup> Others put surrounding ecosystems at risk, such as a 2010 Anadarko E&P Company LP drilling mud spill at a drilling site in Sproul State Forest.<sup>3</sup>

Using records obtained by the Pennsylvania Department of Environmental Protection (PADEP), the PennEnvironment Research and Policy Center identified a total of **3,355 violations of environmental laws** by 64 different Marcellus Shale gas drilling companies between January 1, 2008 and December 31, 2011. Of these violations, the PennEnvironment Research and Policy Center identified **nearly 2,392 violations that likely posed a direct threat to our environment and were not reporting or paperwork violations.**

Moreover, the PennEnvironment Research and Policy Center believes these numbers offer a conservative view of environmental violations taking place across the Commonwealth by Marcellus Shale gas drilling companies. This data only includes violations discovered by PADEP's enforcement staff. Yet based upon the number of wells drilled and limited PADEP enforcement staff, further violations that have gone undetected are likely.

Our analysis of data collected and reported by PADEP between 2008 and 2011 found the following:

- The greatest numbers of environmental violations were related to improper erosion and sedimentation plans: 625 (26% of all violations likely to impact the environment). The

<sup>1</sup> "3 Injured In Washington Co. Gas Well Blast." *WPXI*. February 24, 2011.

<sup>2</sup> "Gas Drilling Emergency in Bradford County." Jim Hamill and Sarah Buynovksy. *WNEP*. April 20, 2011.

<sup>3</sup> "Spill in state forest moves gas drilling moratorium debate." Robert Swift. *The Times-Tribune*. March 30, 2010.

second greatest number involved faulty pollution prevention techniques: 550 (23% of violations likely to impact the environment).

- The top five operators for total number of violations were, in order, Cabot Oil and Gas Corp. with 412; Chesapeake Appalachia, LLC with 393; Chief Oil and Gas, LLC with 313; Talisman Energy USA, Inc. with 303; and East Resources, Inc. with 170.
- The top five operators for average number of violations per well drilled were, in order, Guardian Exploration, LLC with an average of 11 violations per well drilled; AB Resources PA, LLC with 9; JW Operating Co. with 5.3; Flatirons Development, LLC with 4.67 and Novus Operating, LLC with 4.63.
- Between 2008 and 2011, on average, Pennsylvania saw more than two violations per day uncovered by PADEP, roughly 1.5 of which had the greatest potential to impact the environment.

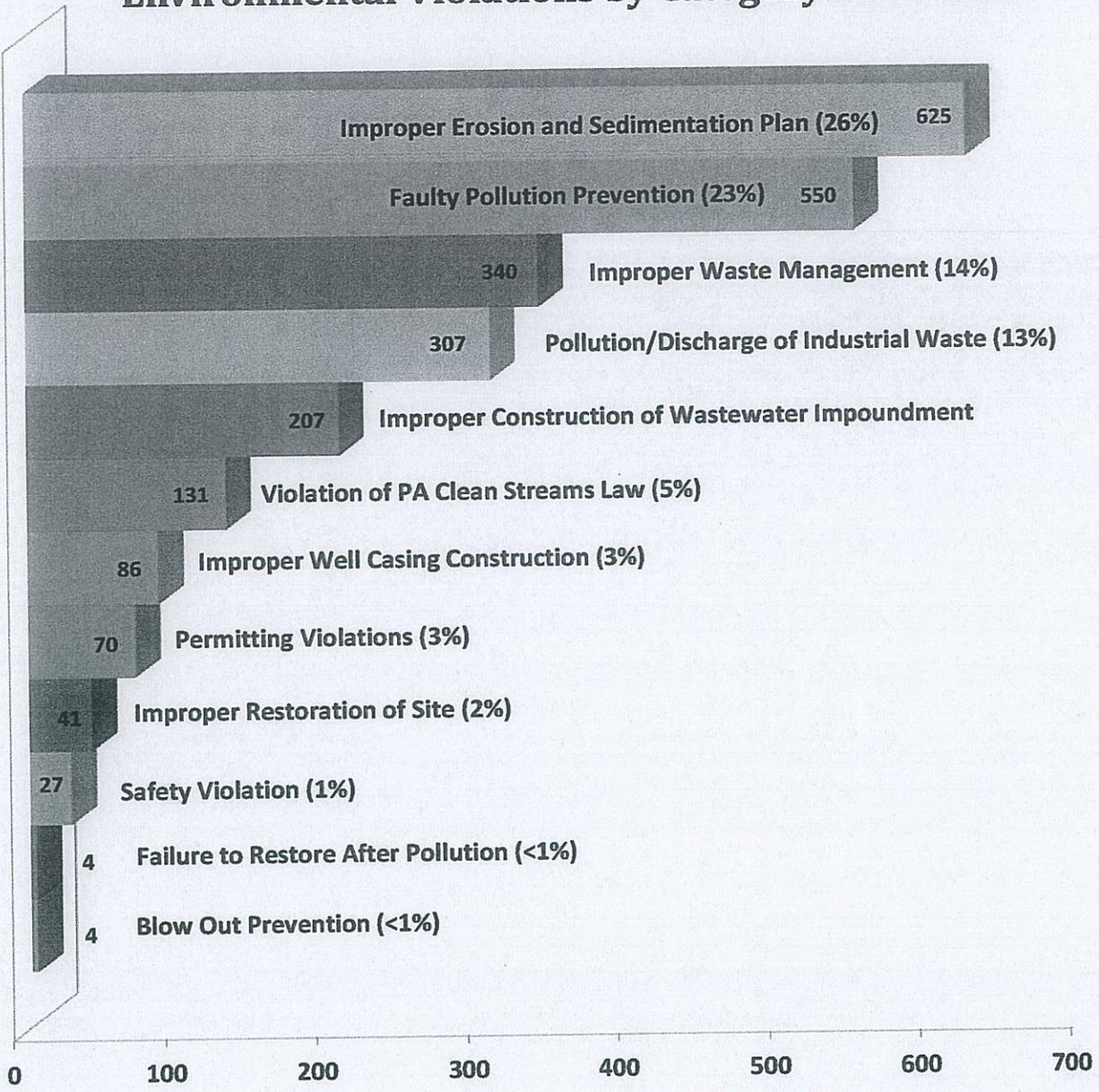
PennEnvironment Research and Policy Center identified 963 violations (29% of all violations) that seemed less likely to directly endanger the environment or the safety of communities. This report focuses on the violations that have the greatest potential for directly impacting the Commonwealth's environment.

This analysis demonstrates that Marcellus Shale gas drilling companies are either unable or unwilling to comply with basic environmental laws that have been put in place to protect the health and environment of Pennsylvanians. This points to a need for state leaders to halt additional shale gas extraction through all legally viable means until and unless gas operators can prove the practice is safe for the environment and public health. Until that happens, PennEnvironment Research and Policy Center believes the following policy handles must be implemented in order to stop the rampant rate of environmental violations that drilling companies commit in Pennsylvania each year.

- Increase mandatory minimum penalties for polluters that violate our environmental laws. There must be stronger incentives to protect our environment and the public's health.
- Update and increase the bonding requirements for gas drilling companies in order to cover the full cost of completing a gas well. This must include preparing for worst case scenarios and accidents as well as the potential long-term environmental effects from Marcellus Shale gas drilling. Pennsylvania's taxpayers should not be left footing the bill for an expensive BP-like disaster related to gas drilling in the Commonwealth, or an expensive legacy of pollution similar to that left by coal mining.
- Put areas that supply our drinking water, critical wildlife habitat and ecosystems, and our state forests and other public lands completely off limits to drilling.
- All private well owners within a half-mile of a drilling site should be notified prior to the submittal of a drilling permit application. Every private well owner should be given the opportunity to have their well water tested—at the expense of the industry, not the land owner or taxpayers, prior to application.
- Increase funding to PADEP and other state agencies to ensure they can properly enforce our environmental and public health laws. This enforcement should include:
  - Implementing more regular inspection of all drilling sites, especially at critical times (when wells are being sealed, for example); and
  - An inspection of erosion and sedimentation controls and plans prior to the start of any drilling.

Figure 1

## Environmental Violations by Category 2008-2011



## Pennsylvania Violations by Operator and Year 2008-2011

Table 1

Operator	2008	2009	2010	2011	Marcellus Wells Drilled	Violations
CABOT OIL & GAS CORP	61	75	115	161	213	412
CHESAPEAKE APPALACHIA LLC	7	113	134	139	576	393
CHIEF OIL & GAS LLC	11	33	176	93	132	313
TALISMAN ENERGY USA INC	7	112	154	30	590	303
EAST RESOURCES INC	18	95	57		0	170
RANGE RESOURCES APPALACHIA LLC	34	11	40	78	479	163
XTO ENERGY INC		15	66	78	53	159
ANADARKO E&P CO LP	1	8	80	64	289	153
ULTRA RESOURCES INC		19	47	67	53	133
SENECA RESOURCES CORP		21	45	34	122	100
PA GEN ENERGY CO LLC	4	16	41	24	80	85
WILLIAMS PRODUCTION APPALACHIA LLC			8	65	115	73
EOG RESOURCES INC	12	16	24	14	164	66
ATLAS RESOURCES LLC	7	33	18	3	283	61
J W OPERATING CO	3	27	22	1	10	53
SOUTHWESTERN ENERGY PROD CO	8		13	32	71	53
CARRIZO (MARCELLUS) LLC				44	57	44
EXCO RESOURCES PA INC	1	2	17	21	47	41
EQT PRODUCTION CO		1	19	19	144	39
CITRUS ENERGY CORP		5	27	6	20	38
SWEPI LP			1	37	119	38
NOVUS OPERATING LLC		2	17	18	8	37
ENERGY CORP OF AMER	4	13	13	5	67	35
EXCO RESOURCES PA LLC				33	44	33
EAST RESOURCES MGMT LLC			22	8	300	30
ALTA OPR CO LLC		7	22		0	29
RICE DRILLING B LLC		1	7	19	19	27
PHILLIPS EXPLORATION INC	6	8	3	5	28	22
REX ENERGY OPERATING CORPORATION		3	12	3	62	18
TURM OIL INC	15	2			0	17
STONE ENERGY CORP	7	3	5		7	15
PENN VIRGINIA OIL & GAS CORP			8	7	8	15

MDS ENERGY LTD		6	6	3	18	15
FLATIRONS DEVELOPMENT LLC			1	13	3	14
CHEVRON APPALACHIA LLC				14	96	14
TRIANA ENERGY LLC				13	19	13
GUARDIAN EXPLORATION LLC	4		7		1	11
CNX GAS CO LLC		1	5	5	99	11
TANGLEWOOD EXPL LLC		3	4	3	12	10
AB RESOURCES PA LLC	5	4			1	9
ANTERO RESOURCES APPALACHIAN CORP			7	1	3	8
HESS CORP			6	2	3	8
SAMSON RES CO		6	2		3	8
BLX INC		1	2	4	16	7
ATLAS RESOURCES INC	7				0	7
BURKLAND WILLIAM S		6			0	6
ENERPLUS RES (USA) CORP			5		3	5
SM ENERGY CO		1	1	3	3	5
SNYDER BROS INC		1	3	1	57	5
CARRIZO OIL & GAS INC			2	1	1	3
BURNETT OIL CO INC			3		4	3
ALPHA SHALE RES LP				3	10	3
CONSOL GAS CO	3				57	3
BAKER GAS INC			3		0	3
BELDEN & BLAKE CORP		2			1	2
GREAT PLAINS OPER LLC DBA GREAT MTN				2	1	2
PATRIOT EXPLORATION CORP				2	1	2
VICTORY ENERGY CORP	2				0	2
ANSCHUTZ EXPLORATION CORP		2			0	2
WILLIAM MCINTIRE COAL OIL & GAS			1		1	1
LONGFELLOW ENERGY LP			1		2	1
VISTA OPR INC	1				2	1
DL RESOURCES INC	1				0	1
POWER GAS MKT & TRANS INC	1				0	1
(UNKNOWN)			1		0	1
AMER OIL AND GAS LLC					1	0
ENCANA OIL AND GAS USA INC					2	0
HUNT MARCELLUS OPERATING CO LLC					7	0
MARATHON OIL CO					2	0
MTN V OIL & GAS CORP					1	0

NORTHEAST NATURAL ENERGY LLC					3	0
PDC MOUNTAINER LLC					1	0
TRUE OIL LLC					2	0
<b>TOTAL</b>	<b>230</b>	<b>674</b>	<b>1,273</b>	<b>1,178</b>	<b>4,596</b>	<b>3,355</b>

## Pennsylvania Violations per Well Drilled 2008-2011

Table 2

Operator	Marcellus Wells Drilled	Violations	Violations/ Well Drilled
GUARDIAN EXPLORATION LLC	1	11	11.00
AB RESOURCES PA LLC	1	9	9.00
J W OPERATING CO	10	53	5.30
FLATIRONS DEVELOPMENT LLC	3	14	4.67
NOVUS OPERATING LLC	8	37	4.63
CARRIZO OIL & GAS INC	1	3	3.00
XTO ENERGY INC	53	159	3.00
ANTERO RESOURCES APPALACHIAN CORP	3	8	2.67
HESS CORP	3	8	2.67
SAMSON RES CO	3	8	2.67
ULTRA RESOURCES INC	53	133	2.51
CHIEF OIL & GAS LLC	132	313	2.37
STONE ENERGY CORP	7	15	2.14
BELDEN & BLAKE CORP	1	2	2.00
GREAT PLAINS OPER LLC DBA GREAT MTN	1	2	2.00
PATRIOT EXPLORATION CORP	1	2	2.00
CABOT OIL & GAS CORP	213	412	1.93
CITRUS ENERGY CORP	20	38	1.90
PENN VIRGINIA OIL & GAS CORP	8	15	1.88
ENERPLUS RES (USA) CORP	3	5	1.67
SM ENERGY CO	3	5	1.67
RICE DRILLING B LLC	19	27	1.42
PA GEN ENERGY CO LLC	80	85	1.06
WILLIAM MCINTIRE COAL OIL & GAS	1	1	1.00
EXCO RESOURCES PA INC	47	41	0.87
MDS ENERGY LTD	18	15	0.83
TANGLEWOOD EXPL LLC	12	10	0.83

SENECA RESOURCES CORP	122	100	0.82
PHILLIPS EXPLORATION INC	28	22	0.79
CARRIZO (MARCELLUS) LLC	57	44	0.77
BURNETT OIL CO INC	4	3	0.75
EXCO RESOURCES PA LLC	44	33	0.75
SOUTHWESTERN ENERGY PROD CO	71	53	0.75
TRIANA ENERGY LLC	19	13	0.68
CHESAPEAKE APPALACHIA LLC	576	393	0.68
WILLIAMS PRODUCTION APPALACHIA LLC	115	73	0.63
ANADARKO E&P CO LP	289	153	0.53
ENERGY CORP OF AMER	67	35	0.52
TALISMAN ENERGY USA INC	590	303	0.51
LONGFELLOW ENERGY LP	2	1	0.50
VISTA OPR INC	2	1	0.50
BLX INC	16	7	0.44
EOG RESOURCES INC	164	66	0.40
RANGE RESOURCES APPALACHIA LLC	479	163	0.34
SWEPI LP	119	38	0.32
ALPHA SHALE RES LP	10	3	0.30
REX ENERGY OPERATING CORPORATION	62	18	0.29
EQT PRODUCTION CO	144	39	0.27
ATLAS RESOURCES LLC	283	61	0.22
CHEVRON APPALACHIA LLC	96	14	0.15
CNX GAS CO LLC	99	11	0.11
EAST RESOURCES MGMT LLC	300	30	0.10
SNYDER BROS INC	57	5	0.09
CONSOL GAS CO	57	3	0.05
AMER OIL AND GAS LLC	1	0	0.00
ENCANA OIL AND GAS USA INC	2	0	0.00
HUNT MARCELLUS OPERATING CO LLC	7	0	0.00
MARATHON OIL CO	2	0	0.00
MTN V OIL & GAS CORP	1	0	0.00
NORTHEAST NATURAL ENERGY LLC	3	0	0.00
PDC MOUNTAINER LLC	1	0	0.00
TRUE OIL LLC	2	0	0.00
EAST RESOURCES INC	0	170	
ALTA OPR CO LLC	0	29	
TURM OIL INC	0	17	
ATLAS RESOURCES INC	0	7	
BURKLAND WILLIAM S	0	6	

<b>BAKER GAS INC</b>	0	3	
<b>VICTORY ENERGY CORP</b>	0	2	
<b>ANSCHUTZ EXPLORATION CORP</b>	0	2	
<b>DL RESOURCES INC</b>	0	1	
<b>POWER GAS MKT &amp; TRANS INC</b>	0	1	
<b>(UNKNOWN)</b>	0	1	
<b>TOTAL</b>	<b>4,596</b>	<b>3,355</b>	



CHAUTAUQUA COUNTY DEPARTMENT OF HEALTH  
DIVISION OF ENVIRONMENTAL HEALTH SERVICES  
HALL R CLOTHIER BUILDING MAYVILLE, NEW YORK 14757-1027  
(716) 753-4481, FAX (716) 753-4344

MARK W. THOMAS  
County Executive

ROBERT BERKE, M.D.  
Commissioner of Health

STEVEN M. JOHNSON, P.  
Director of Environmental  
Health Services

July 30, 2004

Re: Impacts of Gas Well Drilling to Drinking Water Wells

Dear [REDACTED],

In response to your request regarding potential impacts of oil and gas well drilling to nearby water wells, I offer the following comments.

As you know, the New York State Department of Environmental Conservation (NYS DEC) regulates oil and gas well drilling in the state. The regulations that govern the industry were prepared in 1972 and no major changes have been made since then. There have been some efforts to substantially revise these regulations, most recently in 1998, but they were never finalized. New York regulations do not contain any requirements for offset distances between an oil and gas well and private water wells. They do require that oil and gas wells be located at least 1000 feet away from a public water supply well. This would include the Jamestown Audubon's well. In addition the current regulations do not include any provisions that cover stimulating or hydraulically fracturing the gas reservoirs (i.e. hydro-fracturing).

A representative I spoke with at the NYS DEC Division of Minerals insists that the potential for drinking water well contamination by oil and gas well drilling is almost non-existent. However, this Department has investigated numerous complaints of potential contamination problems resulting from oil and gas well drilling activities. Most of these investigations took place in the 1970s and '80s during the oil and gas drilling boom. They can be categorized into two groups: surface water contamination caused by above ground drilling-related activities, and suspected ground water contamination of private drinking water wells associated with drilling and hydro-fracturing. One of the most widespread problems was in the Levant area in the Town of Poland in the early 1980s where methane gas was intruding into water wells. In response to this, the Health Department began to keep detailed records of complaints received of water well problems suspected of being caused by oil and gas well drilling. The Department responded to 120 of these complaints between 1986 and 1988. As drilling activity decreased, so did the complaints, we responded to only nine from 1989 to 1990 and, over the past 12 years since I've been with the Department, we have received about a dozen such complaints. Those complaints that were reported are probably just a fraction of actual problems that occurred.

The Pennsylvania Department of Environmental Protection (PA DEP) has much more stringent regulations with respect to oil and gas well drilling. They require that oil and gas wells be drilled at least 500 feet away from private drinking water wells and at least 1000 feet away from public water supply wells. If oil and gas wells are to be drilled within 1000 feet of a private well, then the water well must be

July 30, 2004

Page 2

tested by the drilling company before the gas well is drilled and again between three and four weeks after the well is completed for a number of baseline chemicals. If the oil and gas well is located within a known ground water recharge area of a public water supply well, that water well must also be tested as noted above.

A colleague with our Department contacted a senior engineer in PA DEP who indicated that they have confirmed numerous instances where water wells had been negatively impacted by oil and gas well drilling. These impacts were seen in parts of the state that have a similar geologic setting as our county, namely in the Allegheny Plateau. A detailed review of our files found correspondence from the United States Geological Survey (USGS) regarding the likelihood of oil and gas well drilling to contaminate nearby water wells with methane gas. This was in response to the previously mentioned problem in Levant. The USGS noted that methane gas could "migrate into water wells at considerable distances from the gas wells where the gas encountered the [rock] fracture system. The problem is not unique to Chautauqua County. Similar problems occur in northwest Pennsylvania and northern Ohio as far west as Cleveland and Sandusky." The close of the letter reads: "In conclusion, the most likely source of the [methane] gas is the open boreholes of the producing gas wells." I've attached a copy of this letter as it also makes recommendations about how to reduce the contamination potential.

If the Jamestown Audubon Society pursues a lease with an oil and gas drilling company, I recommend that you take the following precautions to minimize the possibility of ground water contamination. It is also important to consider that most oil and gas wells drilled in the county, there are about 5000 of them, have had no known impact to our water resources.

- Require a 1000 ft setback from the Jamestown Audubon water well and reasonable setbacks from private water wells, either 500 or 1000 ft at your discretion (if directional drilling is used then the setback should consider the location of both the wellhead and the well bottom).
- Conduct baseline water quality sampling in the Jamestown Audubon well and surrounding private water wells for: iron, manganese, chlorides, sodium, barium, total dissolved solids, pH, turbidity, bacteria and methane/ethane. Water samples should be collected and analyzed by a NYSDOH certified laboratory. This could be made a requirement of the drilling company in the lease.
- Hire a consultant who is knowledgeable about oil and gas well drilling who could provide comments on the land lease, site plans and drilling plans, and also provides drilling inspection.
- Place adequate restrictions and safeguards in the lease to protect ground- and surface-water quality including the preparation and implementation of a storm water management plan that includes on-site erosion control measures.

Please note that an area surrounding the Route 62 - Riverside Road intersection has been mapped by the USGS (Miller, 1988) as overlying a "principal aquifer." New York State DEC oil and gas well drilling regulations state, "The casing and cementing practices above are designed for typical surface casing cementing. The Department will require additional measures for wells drilled in environmentally or technically sensitive areas (i.e. primary or principal aquifers). NYS DEC oil and gas well regulations can be found at <http://www.dec.state.ny.us/website/dmn/welltrg.htm>.

July 30, 2004

  
Page 3

Should you or the Board of Directors of the Jamestown Audubon have any questions regarding this correspondence, or you would like to review any of the information cited herein, feel free to contact me at 753-4481.

Very truly yours,

*Bill*

William T. Boria  
Water Resource Specialist

Encl.



# United States Department of the Interior

GEOLOGICAL SURVEY

WATER RESOURCES DIVISION  
POST OFFICE BOX 1669  
ALBANY, NEW YORK 12201

NEW YORK DISTRICT  
(518) 472-3107

October 29, 1984

Hon. Stan Lundine  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Congressman Lundine:

We have reviewed the several reports pertaining to the "methane-gas problem" in Chautauqua County in response to your request of July 30, 1984. At your suggestion, we contacted your District Representative, Pat Kinney, who graciously supplied us with consultant reports, oral statements, and some leads to more information. Most recently, we received the New York State Department of Environmental Conservation's (NYSDEC) initial report on the incident. We feel that field investigations by the State and consultants are sufficient to allow interpretation and evaluation of their conclusions.

Despite some discrepancies in the reports and a lack of certain data we offer the following comments, which include those of a member of our Geologic Division, Oil and Gas Resources. Our comments are:

- 1) Natural gas is present in abundance in the black upper Devonian gas shales. It has been provided commercially in Chautauqua County since 1821. This gas moves from the organic material in the black shales into fractures where it may accumulate under considerable pressure. It may also migrate vertically for hundreds or thousands of feet laterally or vertically if a system of interconnected fractured exists to permit this migration.

Waterwells and springs commonly release some natural gas in the northern part of Chautauqua County where the Devonian gas shales are near the surface. Natural gas bubbles up in Lake Erie and gas seeps are common in many localities in the streams draining into Lake Erie.

- 2) The most likely source of the gas is shale bedrock, from which gas is migrating upward into shallow permeable zones through the uncased sections of producing gas wells. Commonly, some 2,000 feet of Devonian shale bedrock is left uncased and uncemented between the cement cap above the gas-producing Medina formation and the cemented-in surface casing.

- 7) The natural presence of fractures (joints, bedding planes, faults) in all rock enables migration of fluids or gases, and the direction of flow depends on the pressure gradients. Thus, increased gradient changes induced by drilling activities, earthquakes, or injection pressures can cause a change in the movement of fluids or gases.
- 8) Marsh or swamp gas is found in wetland sediments. It seems unlikely that such gas would migrate laterally in unconsolidated material because it can readily diffuse upward to the atmosphere, especially in an area of permeable surficial material, where precipitation can readily recharge the formation in which the gas is being generated.
- 9) The chemical analyses of the gas emitted from the soil are too variable to be conclusive. It would have helped to analyze gas from the well waters involved to see if gas were entering at deeper zones.

In conclusion, the most likely source of the gas is the open boreholes of the producing gas wells. We understand it is standard practice that gas wells are completed without a cemented outer casing that extends to the producing horizon. It would seem prudent to reconsider this practice because of the risk of migration of any encountered gas (always under pressure) and associated brines in an uncased hole.

We will keep abreast of the situation through contact with NYSDEC headquarters and your District Representative.

For The District Chief,

Sincerely yours,

*Roger M. Waller*

Roger Waller

District Ground Water Specialist

RW:cm

cc: Kinney

DAVID A. PATERSON  
GOVERNOR



STATE OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
ALBANY, NEW YORK 12233-1010

ALEXANDER B. GRANNIS  
COMMISSIONER

DEC 30 2009

Honorable William L. Parment  
New York State Assembly  
547 Legislative Office Building  
Albany, NY 12248

Dear Assemblyman Parment: *Bill,*

Thank you for your inquiry regarding the November 8, 2009 article in the *Binghamton Press & Sun-Bulletin* entitled: "Natural gas quest: state files show 270 drilling accidents in past 30 years." I welcome this opportunity to provide you with the facts which, in my view, demonstrate the success of DEC's Spill Response and Oil & Gas regulatory programs.

Walter Hang culled the referenced records from DEC's own on-line Spill Incident Report database, which includes reports submitted through the agency's Spill Hotline and other mechanisms. About 16,000 reports are filed each year, and the database currently contains over 350,000 reports dating back to 1979. DEC staff carefully reviewed the 270 reports compiled by Walter that are referenced in several news articles, including the one you mentioned, and determined the following:

Well Drilling Incidents:

- Contrary to the headline, only 10 of the 270 incidents occurred during well drilling activity, 7 of which were at gas well sites, 2 of which were at a single oil well site, and the final one at a solution salt mining well. To put this into context, about 10,400 wells regulated under Article 23 of the Environmental Conservation Law have been drilled in New York since January 1, 1979.

Of the 9 reported incidents relating to oil or gas well drilling over the past 30-year period, only 1 involved methane migration and home evacuations. Likewise, only 1 drilling incident was reported as an explosion. (A second incident reported as an explosion was actually an oil stock tank fire that started as the result of a lightning strike.)

Production Site Incidents:

- Only 44 of the incidents occurred at natural gas well production sites i.e., after the well drilling and any stimulation were completed. Another 106 occurred at oil well production sites. As you know, there are nearly 14,000 active oil and gas wells in the state. None of the incidents at production sites involved explosions, water well contamination or evacuations.

Accordingly, while the article gives the impression that there have been 270 incidents related to gas drilling and gas production sites, in fact over the 30-year period there have only been 51 such incidents reported, 7 of which occurred during well drilling and 44 of which occurred on the production site.

The remaining incidents were not related to gas drilling or gas production sites and fall into the following categories:

Incidents Unrelated to Oil and Gas Drilling:

- 53 of the 270 spills cited by Walter are completely unrelated to oil or gas drilling or production activity. These include lightning strikes, vehicle accidents, problems associated with road spreading for ice control, breaks in a chemical plant's brine supply line and gas transmission line leaks, among other things.
- 40 of the 270 spills cited by Walter occurred at abandoned well sites; abandoned wells have since been plugged at 11 of these sites by DEC or USEPA. The problem of abandoned wells (drilled and abandoned before New York had a modern regulatory program) is separate and distinct from incidents that occur at active drilling and production sites. DEC's efforts to address orphaned and abandoned wells are discussed in further detail below.
- 17 of the 270 spills cited by Walter occurred at natural gas storage facilities, most of these were brine leaks or brine tank overflows.

Summary:

Site or Activity Type	Number of Incidents 1979-2009
Oil well production sites	106
Unrelated to oil or gas drilling or production	53
Gas well production sites	44
Abandoned well sites	40
Natural gas storage facilities	17
Well drilling activity	10

Accordingly, the suggestion that there is a significant volume of gas drilling incidents that calls into question the effectiveness of state oversight is not borne out by the facts. There is always a danger in statistics that until you drill down (so to speak), they may give a wrong impression. In this case, when you consider that over the 30-year period there were more than 350,000 spill reports, 270 incidents do not indicate a significant problem. The same conclusion follows when you consider that during the time the 270 incidents occurred, over 10,000 wells were drilled. When those incidents are more closely examined, it turns out that only a handful of them actually involved gas drilling and that only a single incident led to methane migration, it is clear that there is no systemic problem and no basis for the conclusion that DEC's regulatory program is anything other than successful. On a percentage basis, spills related to gas well drilling and production over the 30-year period examined by Walter account for slightly more than .0001% of all reported spills.

News articles picking up on Walter's "findings" have cited a concern that spills in the database were reported by third parties instead of being discovered by DEC. This reveals a fundamental misunderstanding of the state's spill response program, which exists specifically to enable third parties to notify DEC of releases to the environment. Anyone can and is encouraged to report any spills they observe or suspect. In addition, spillers are obligated under both state and federal requirements to report their spills.

DEC's Spill Response staff investigates reports received through its Hotline and takes action based on the type of material spilled, the potential environmental damage and safety risks to the public. Both immediate response and continued cleanup activity vary depending on the type of material spilled and the damage caused. Not every reported spill causes damage, many are of small quantities which are quickly and easily cleaned up and some reports are of suspected spills that are never actually confirmed.

DEC oversees the process when cleanup is required. Spill Response staff takes or directs any necessary emergency measures to contain or remediate a spill. When Spill Response staff subsequently determines that another DEC program has regulatory jurisdiction over an activity and the authority to compel additional actions, that spill is referred to the pertinent program for further action and the spills database record is closed. Thus, while "cleanup standards" may not have been met at the time the case is transferred, the very purpose of the transfer is to assure that appropriate action is taken pursuant to applicable programmatic requirements.

The November 8, 2009 article also discusses the potential for methane migration associated with drilling operations, an issue that is acknowledged and addressed by both the existing 1992 Generic Environmental Impact Statement on the Oil, Gas and Solution Mining regulatory program and the draft Supplemental Generic Environmental Impact Statement released on September 30, 2009. After describing an incident in Dimock, PA, the article states "DEC spills data show the problem has a history in New York, even without the Marcellus" and cites an isolated incident in Freedom, NY as "one of the 270 cases Hang highlights." Two additional "cases" are then cited. The Freedom incident, however, is actually the only case of drilling-associated methane migration among the 270 referenced records. I note as an aside that the 270 incidents characterized in the headline as "drilling accidents" seem to all be characterized as "methane migration" in the cited paragraph, which leaves a false impression as to the nature of the incidents.

Highlighted Incidents – November 8, 2009 Article:

More details about the three events highlighted in the November 8, 2009 article are presented below. While the incidents described are very unusual, DEC's responses exemplify the effectiveness of our existing procedures and the professionalism, expertise and commitment of Department staff.

**Town of Freedom, Cattaraugus Co. (Spill #9610441; API Well ID #31-009-22657-00-00).** This incident actually occurred in 1996, not 1999 as stated in the article, and local officials commended DEC for its response. This was a serious incident that created a dangerous situation of short duration and, as noted on Walter's website, the State Supreme Court in Cattaraugus County awarded damages to affected individuals in April 2005. This was a unique incident caused by human error that in no way reflects routine operations. It was also completely unrelated to horizontal drilling or hydraulic fracturing of any type and no surface spill of hydrocarbons or other chemicals occurred.

A strong flow of gas was encountered about 2,600 feet below ground and the drilling crew determined it was unsafe to continue drilling. Well control equipment was activated and fluid was brought to the site to "kill" the well i.e., counteract the underground gas pressure. Normally in this type of emergency operation, fluid is circulated through the well, returned to the surface and re-circulated. In this case, the returned fluid was not suitable for reuse. Operations were shut down while the operator waited for more clean fluid to be brought to the site and valves on the well were closed before stable conditions had been achieved. In doing this, the operator violated basic engineering procedures. As a consequence of this action by the operator, the wellbore became pressurized which caused methane from the deep underground formation to find other routes to the ground surface. Manifestations included a pond and residential water wells in the area.

DEC's response to the operator's error included:

- immediate response by Regional Mineral Resources staff who remained on-site, coordinated communication with other agencies and directed the operator's remedial efforts day and night;
- immediate readiness by Regional Spill Response staff to address potential oil discharge (although none occurred); and
- Forest Ranger involvement in communication and coordination assistance, including overnight at the well site.

The local emergency management office, fire departments and the State Emergency Management Office also responded to this incident, and the state Office of Fire Prevention and Control and the Department of Health were kept fully informed at all times. As a safety precaution, 12 families were evacuated from their homes in the adjacent town of Yorkshire. The well was successfully brought under control by the next day, the flow of ebullient gas diminished and all but one of the families had returned to their homes by the third day. The Yorkshire Town Supervisor sent a letter to DEC on behalf of the Town Board and the community expressing commendation and gratitude for the Department's quick response and supervision.

As you may recall, concerns about ebullient gas arose in Chautauqua County in the 1980s and then-Commissioner Williams addressed the situation in a decision issued after a public meeting held in Jamestown. That decision is the foundation of our current well construction requirements, the effectiveness of which is demonstrated by the rarity of gas migration incidents. The 1996 incident described above is the most recent event of this type to have occurred in New York, although about 3,300 Article 23 wells have been safely drilled in the 13 years since then.

This type of operator error, of course, is inexcusable. Considering this is the only incident of its kind among the 270 cited in the article, it is fair to conclude that this type of operator error is both highly unusual and an aberration.

**Town of Independence, Allegany Co. (Spill #0375293; API Well ID #31-003-14571-00-00).** This event was not associated with drilling or hydraulic fracturing. A valve malfunctioned at a facility associated with an injection well that is used to dispose of brine produced at three of the operator's natural gas storage fields. It was the responsible party who reported the spill and suggested that brine may have flowed into nearby Chenunda Creek. There was no evidence, however, of a fish kill and the Environmental Conservation Officer who investigated reported that although vegetation impacts were noted on a nearby field, there was no evidence of the brine in the Creek. Correspondence in the Division of Water's file indicates that the gas storage operator voluntarily provided water treatment to two or three nearby residents to ameliorate concerns about the potential for impacts to their private wells, although no such impact was ever confirmed. Division of Water staff also reviewed plans submitted by the storage operator for improved practices to prevent future similar events.

DEC's response to this incident included:

- Immediate response and documentation by Spill Response and Law Enforcement staff; and
- Continued monitoring by Division of Water staff of the operator's follow-up actions.

The incident occurred in 2003 and there has not been a recurrence at the subject facility.

**Town of Lebanon, Madison Co. (Spill #0813694; API Well ID #31-053-26305-00-00).** A rig fire and diesel spill in Lebanon occurred on March 19, 2009. This was the drilling-related incident referenced above that was initially reported as an explosion. There were no public safety or long-term environmental impacts. This event was not related to hydraulic fracturing and occurred before any horizontal drilling took place at the site.

The well experienced an unexpected flow of natural gas to the surface and an unknown ignition source started a fire. Fuel lines on the rig melted, resulting in the release of 200 gallons of diesel fuel. Two rig workers suffered minor injuries and were treated and released by a local hospital. DEC Spill Response staff directed cleanup efforts. Cleanup included pumping of diesel fuel from an area on the ground where it had pooled; placement of absorbent materials to soak up spilled materials and protect a nearby stream; and removal of petroleum-affected soils, hay bales and organic debris. The spill record indicates that the spill did not reach the nearby stream, that all of the spilled material was recovered, that no threat to ground or surface water occurred, that all contaminated soil and debris were properly disposed of and that the remediated site met cleanup standards within two months of the spill.

DEC's response to this incident included:

- Immediate and continued involvement by Spill Response staff until cleanup was complete, including site visits, direct oversight of cleanup contractors and notification to the Madison County Health Department. The County's Director of Environmental Health later attested to the thoroughness of DEC's oversight.
- Immediate and continued involvement by Mineral Resources staff, including repeated visits to this specific well site and development of enhanced well control requirements for similar wells to be drilled in the area.

The drilling company, Norse Energy Corporation (formerly Nornew, Inc.), has drilled 14 wells in Madison and Chenango Counties since January 1, 2009, and during that time Mineral Resources staff have conducted more than 200 related field inspections. Staff is present to inspect drilling operations on a weekly or more frequent basis and has regular additional meetings and telephone contact with Norse Energy about its operations, including holidays and weekends.

Well control is discussed in the 1992 Generic Environmental Impact Statement, as is the potential for oil spills and responsibility for oil spill response. The draft Supplemental Generic Environmental Impact Statement also notes the potential environmental impacts of fuel spills at well pads and describes proposed preventative measures in considerable detail.

#### Abandoned and Orphaned Wells:

As noted above, 40 of the 270 listed spills occurred at abandoned well sites and should not, therefore, legitimately be counted among incidents that are associated with active drilling and production.

DEC has records on over 4,700 unplugged wells that are considered orphaned, i.e., they are not in active production and no responsible owner can be located. Virtually all of our orphaned wells were drilled before New York established a regulatory program; they may have never been plugged or they may have been plugged using older techniques that are not as reliable and long lasting as modern methods. There may be as many as 30,000 or more additional orphan wells drilled dating back to the 1820s for which no records exist. Staff discovers abandoned wells every year during scheduled inspections or complaint investigations. More than 600 wells are on DEC's plugging priority list.

New York has an Oil and Gas Account which was created to cover the costs of plugging problem abandoned wells. It is funded by a \$100 per well permit fee; the balance on November 30, 2009 was \$304,191. Because the funds are insufficient to fully address the problem, DEC routinely pursues other means to plug wells. This includes work with the EPA, using federal funds from the Oil Pollution Act of 1990. DEC and EPA have plugged about 300 abandoned wells during the past several years, including at 11 of the 40 abandoned sites listed in Walter's compilation. The plugging work includes site remediation and reclamation.

DEC's current regulatory program, including financial security requirements, annual reporting requirements and approval requirements for maintaining shut-in wells, is designed to prevent modern wells from becoming orphaned. Addressing orphaned wells is clearly a legitimate subject for discussion, but lumping the problems caused by orphaned wells into a report designed to cast doubt on the effectiveness of the current regulatory regime covering new drilling activity is wholly inappropriate and misleading.

Conclusion:

I appreciate your interest and confidence in DEC's regulatory oversight of natural gas drilling in New York State. While no regulatory program can completely eliminate equipment failure, human error or the possibility of accidents, I think it is clear that when put into the proper context and perspective the reported information shows that the incidence of spills and other pollution events at modern natural gas well sites is exceedingly low and, in fact, the very data Walter cites supports a conclusion that New York's regulatory program is highly effective. Requirements in place since the 1980s have successfully rendered drilling-associated methane migration so rare that there has not been a reported incident since 1996. Objective analysis also shows that when problems do occur, they are promptly and effectively addressed by DEC's Spill Response and Oil & Gas regulatory programs and staff.

Please feel free to call me directly if you have further questions or need additional information.

Sincerely,



Alexander B. Grannis

April 2, 2010

Honorable Alexander Grannis  
Commissioner  
Department of Environmental Conservation  
625 Broadway  
Albany, New York 12233-0001

Attachments: <http://www.toxicstargeting.com/MarcellusShale/documents/dec-letter>

Dear Commissioner:

I trust you have been well since we last spoke. I respectfully write today regarding a matter that warrants your immediate, urgent attention.

As you know, the Department of Environmental Conservation's (DEC) draft Supplemental Generic Environmental Impact Statement (SGEIS) regarding Marcellus Shale Horizontal Hydrofracturing is based on the fundamental belief that New York's existing oil, gas and solution mining regulations (adopted in 1992) are adequate to safeguard the environment and the public's health.

I wrote to Governor Paterson on 11/9/09 to challenge that assertion by documenting a total of 270 pollution releases associated with oil and gas activities. Those incidents involved fires, explosions, uncontrolled wastewater spills, polluted private wells and homes that had to be evacuated due to gas intrusion. Based on those findings, I requested the draft SGEIS be withdrawn and revised.

On 12/8/09, Assemblyman William L. Parment wrote to you regarding "learning what steps the Department took in response to the incidences." In your 12/30/09 response you wrote: "I welcome this opportunity to provide you with the facts which, in my view, demonstrate the success of DEC's Spill Response and Oil & Gas regulatory programs."

Your letter reports that "only ten of the 270 incidents occurred during well drilling activity...;" "Only 44 of the incidents occurred at natural gas production sites...;" "40 of the 270 spills ... occurred at abandoned well sites; abandoned wells have since been plugged at 11 of those sites;" and "17 of the 270 spills ... occurred at natural gas storage facilities, most of these were brine leaks or brine tank overflows." You also argued that these problems were relatively few in number compared to the thousands of oil and gas wells DEC has permitted. You concluded by writing: "Objective analysis also shows that when problems do occur, they are promptly and effectively addressed by DEC's Spill Response and Oil & Gas regulatory programs and staff [emphasis added]."

I write today because I do not believe your response refutes the fact that the 270 uncontrolled pollution releases document serious regulatory shortcomings. I also will dispute your belief that gas and oil problems are "promptly and effectively addressed."

#### **Natural Gas Problems Not Reported in DEC Spills Database**

All of the 270 oil and gas releases I identified in November were documented in DEC's hazardous materials spills database.

I subsequently learned the spills database does not include natural gas problems reported to health authorities in the three counties with the highest number of oil and gas wells in New York State. I also learned DEC's Division of Mineral Resources does not report all oil and gas releases to the Division of Spills.

I write today to document dozens of additional natural gas concerns that have neither been fully investigated nor remediated. These incidents reinforce grave concerns about the adequacy of DEC's gas

drilling regulations and provide further documentation that the draft SGEIS is inadequate and must be withdrawn.

#### **Chautauqua County Natural Gas Incidents**

Assemblyman Parment is from Chautauqua County, where approximately 20 percent of all oil and gas wells permitted by DEC are located (5,040 wells compared with a statewide total of 25,900 oil and gas wells). I believe the natural gas problems experienced in that county dramatically illustrate the need for more stringent DEC regulations.

I obtained through the Freedom of Information Law (FOIL) a Memorandum of Understanding (MOU) between DEC and local health authorities that notes: "first-instance visits for water well 'contamination' complaints" ... "must be referred to the local County Health Authorities ... in Allegany, Cattaraugus and Chautauqua counties." See Attachment A.

I also obtained information regarding a total of 135 natural gas and oil incidents reported to the Chautauqua County Department of Health as a result of the MOU.

Attachment B details more than 50 natural gas concerns involving brine-contaminated private water wells, homes impacted by methane gas intrusion, ignitable drinking water and improper disposal of natural gas drilling wastewater. None of these incidents is included in DEC's spills database.

Between 1983 and 2008, a total of 19 water well incidents referencing "gas" were determined to involve "confirmed brine impacts," "methane contamination," or "well possibly impacted by brine."

In addition, there were 39 water well incidents involving concerns, such as "ignitable water," "gas in water," and "brown color of water and particles in it since gas well fractured on adjoining property" where health department investigations were "inconclusive." These incidents reportedly involved inadequate laboratory testing that did not analyze for methane or no testing was conducted at all.

#### **Levant, NY**

I have attached extensive information regarding major methane gas intrusion problems involving Mr. Tim Short circa 1983 in Levant, NY. His home reportedly was impacted with explosive levels of methane. His well was impacted by methane and exploded. His drinking water was ignitable. As a result of these hazards, Mr. Short eventually abandoned his home. See Attachment C.

The Division of Mineral Resources believed Mr. Short's problems were caused by "natural phenomena," possibly marsh gas. According to local newspaper coverage, the Attorney General's Environmental Protection Bureau used "radiocarbon age-determination testing" to determine the gas on Mr. Short's property was of "petrochemical origin." His problems were never resolved.

#### **Chautauqua County Department of Health Concerns and DEC Mineral Resources**

William T. Boria, Water Resource Specialist with the Chautauqua County Health Department, wrote a 7/30/04 letter regarding "Impacts of Gas Well Drilling to Drinking Water Wells." See Attachment D. He noted:

"A representative I spoke with at the NYS DEC Division of Minerals insists that the potential for drinking water well contamination by oil and gas well drilling is almost non-existent. However, this Department has investigated numerous complaints of potential contamination problems resulting from oil and gas drilling activities."

"They can be categorized into two groups: surface water contamination caused by above ground drilling-related activities, and suspected ground water contamination of private drinking water wells associated with drilling and hydro-fracturing."

"Those complaints that were reported are probably just a fraction of actual problems that occurred."

#### **EMC Comments Regarding GEIS Adopted in 1992**

The Chautauqua County Environmental Management Council wrote to DEC in June 1988 that:

"In a number of instances in Chautauqua County, property owners have been given different responses when calling in reports of difficulties. In the case of Tim Short, tens of thousands of dollars were spent trying to prove industry did not cause his problems – the house still stands empty.

"In the case of Rhodes in Ellington, New York, people from NYSDEC agreed with the property owners that their problems were related to gas and oil drilling but the State could not tell which well was causing the problem.

"These and other people have had problems. **NONE OF THESE PEOPLE LEASED THEIR LAND FOR GAS AND OIL DRILLING** (emphasis in the original). They received no direct benefit and only very limited indirect benefit.

"Through a number of local hearings held by NYSDEC, representatives of Chautauqua County have spoken about the innocent third party that is damaged by the activity of the gas and oil industry – this damage may include water wells with gas or taste. It may mean a building with gas buildup in it. The NYSDEC has stated these people can get relief in the courts by private action. If the State cannot identify the offending well with all its skills and resources, how can a small home owner take on the task? These third party innocent damaged people should be protected. They deserve relief from the acts of industry. It is a fact that people are harmed by the actions of industry and there is no mechanism in the GEIS to propose a mitigation of their problem other than the responses we have been given that they may go to court with a private action."

These grave concerns regarding DEC's systematic failure to prevent, investigate or eliminate natural gas hazards were voiced more than 25 years ago when DEC was adopting its current natural gas regulations. See Attachment E. Those concerns remain equally valid today.

#### **Allegany County Department of Health Information for Andover, NY**

I obtained through FOIL a letter from the Allegany County Department of Health regarding a water supply well owned by Mr. David Eddy on Trapping Brook Road in Andover, NY. Mr. Eddy's well reportedly was impacted in early 2009 "... allegedly after U. S. Energy had done some gas well 'fracturing' (drilling) approximately 1,000 feet from his well, he began having water problems that included 'muddy water', 'oil' in the water, and a 'gas smell' to the water." The letter notes that Mr. Eddy contacted the DEC (POC: Brian Jandrew). See Attachment F.

I also obtained a 6/15/09 letter from U. S. Energy to DEC. See Attachment G. It reports:

"3) May 19, 2009 Culligan contacted U. S. Energy and communicated their test indicated trace amounts of oil and recommended the installation of a carbon water treatment system. U. S. Energy instructed Culligan to proceed with the installation.

"5) May 20, 2009 U. S. Energy instructed Culligan to install a water system and agreed to pay for the installation and maintenance of the system until periodic testing proved the water was not impacted.

"6) U. S. Energy has put Mr. Eddy and his family in a hotel several nights during the initial impact. U. S. Energy has been and continues to supply the home with Culligan bottled water.

"7) U. S. Energy has offered Mr. Eddy compensation which he has refused."

It is inexplicable why this incident is not included in DEC's spills database, particularly because petroleum was reported in Mr. Eddy's drinking water. His home reportedly was contaminated with such high levels of methane that U. S. Energy paid for his family to stay in a motel. No spill number evidently was issued for this matter. His problems have never been resolved.

#### **Inadequate Reporting of Natural Gas Problems by Division of Mineral Resources**

I learned DEC's Division of Mineral Resources does not report to the Division of Spills all of the natural gas problems it identifies. I obtained through FOIL a MOU that exists between DEC's Division of Spills and its Division of Mineral Resources regarding that matter. See Attachment H. According to that MOU:

"1. Mineral Resources will handle normal spills at the well head, pipeline to the stock tank and the stock tank on the lease property.

"2. The spill unit will handle any spills off the lease site or past the stock tank.

"4. For major spills, even on a lease site, Mineral Resources will contact the spill unit.

"5. Mineral Resources will handle brine spills."

#### **Erin, NY**

Concerned homeowners brought to my attention natural gas wastewater problems in Erin, NY that they reported to DEC. See Attachment I. The Division of Mineral Resources identified violations at multiple gas well sites, including an "off-site" release of "salty over-spray" verified to have run "over pasture land and into a nearby dry stream channel." This problem was evidently not reported to the Spills Division and no spill number was issued.

In addition, "...staff discovered that water from the Meade location pit was trucked to the Wholeben #1 site for disposal/storage on July 13, 2005. Staff observed this transported water being stored at the Wholeben location in a pit with a liner that was ripped and non-functional." No spill number was evidently issued for this matter.

#### **South Geneva, NY**

I earlier documented that Chesapeake-Appalachia reportedly compensated a homeowner in South Geneva, NY for "damages" associated with a private water well that may have been impacted when a natural gas well adjoining the home was hydrofracked. See Attachment J. DEC was reportedly unaware of this problem until I publicly released information about the matter. No spill number was evidently issued for this incident.

#### **Conclusion**

DEC has never provided detailed, publicly-accessible data to document its assertion that existing gas drilling regulations are adequate to safeguard New York's environment and the public health. In contrast, the information I have publicly released supports the conclusion that the existing 1992 regulations are fundamentally inadequate and require extensive revision.

On 12/10/09, I submitted a FOIL request to DEC for "a digital copy of all oil and natural gas spills identified, investigated or managed by the Division of Mineral Resources..." On 1/6/10, DEC provided a total of 15 spills out of the 270 oil and gas releases I identified on 11/9/09. That is less than six percent of the problems I identified.

DEC also noted: "Information regarding minor 'spills' at sites inspected by Minerals staff are not entered in a searchable database and therefore cannot be located without more specific facility information. Note that 'spills' not considered to be minor by the Division of Mineral Resources are referred to the Spills Unit." The natural gas problems I bring to your attention today cannot be considered minor, yet not one is included in DEC's spills database.

In conclusion, I believe it is beyond dispute that DEC lacks the effective means to report, assess and remediate oil and gas hazards in order to safeguard New York's environment and public health. Citizens, local health officials and advocacy groups have voiced concerns about that problem for literally decades, but to no avail.

It is imperative that DEC immediately withdraw its draft SGEIS, reopen discussions regarding the scope of that regulatory proceeding and revise its draft to respond to the natural gas hazards I have documented as well as other shortcomings identified in the comments I and so many others submitted to DEC.

Unless and until these concerns are resolved with regard to all permitted oil and gas wells, the current *de facto* moratorium on Marcellus Shale horizontal hydrofracturing must be maintained. I similarly request DEC to withhold issuing any gas drilling permits pending that outcome.

With all due respect, DEC's failure to require oil and gas problems to be cleaned up in strict compliance with applicable New York law is part and parcel of its long-standing, systematic failure to clean up:

- 483 waterbodies listed on the national 303(d) Impaired Waterbody Registry, including Southern Cayuga Lake, which has exceeded clean up standards for more than 40 years;
- more than 22,000 leaking gasoline tanks and spills that do not meet clean up standards and threaten drinking water and water quality all over New York; and
- 593 Inactive Hazardous Waste Disposal Sites that are known to be "Significant threat to the public health or environment - action required."

At a minimum, it will take decades to alleviate and eliminate those problems. That is why it is critical for DEC to make sure that Marcellus shale gas drilling hazards do not exacerbate New York's existing pollution threats.

I trust you will find my letter self-explanatory, but please contact me if you have any questions I might be able to answer. Thank you for considering my request.

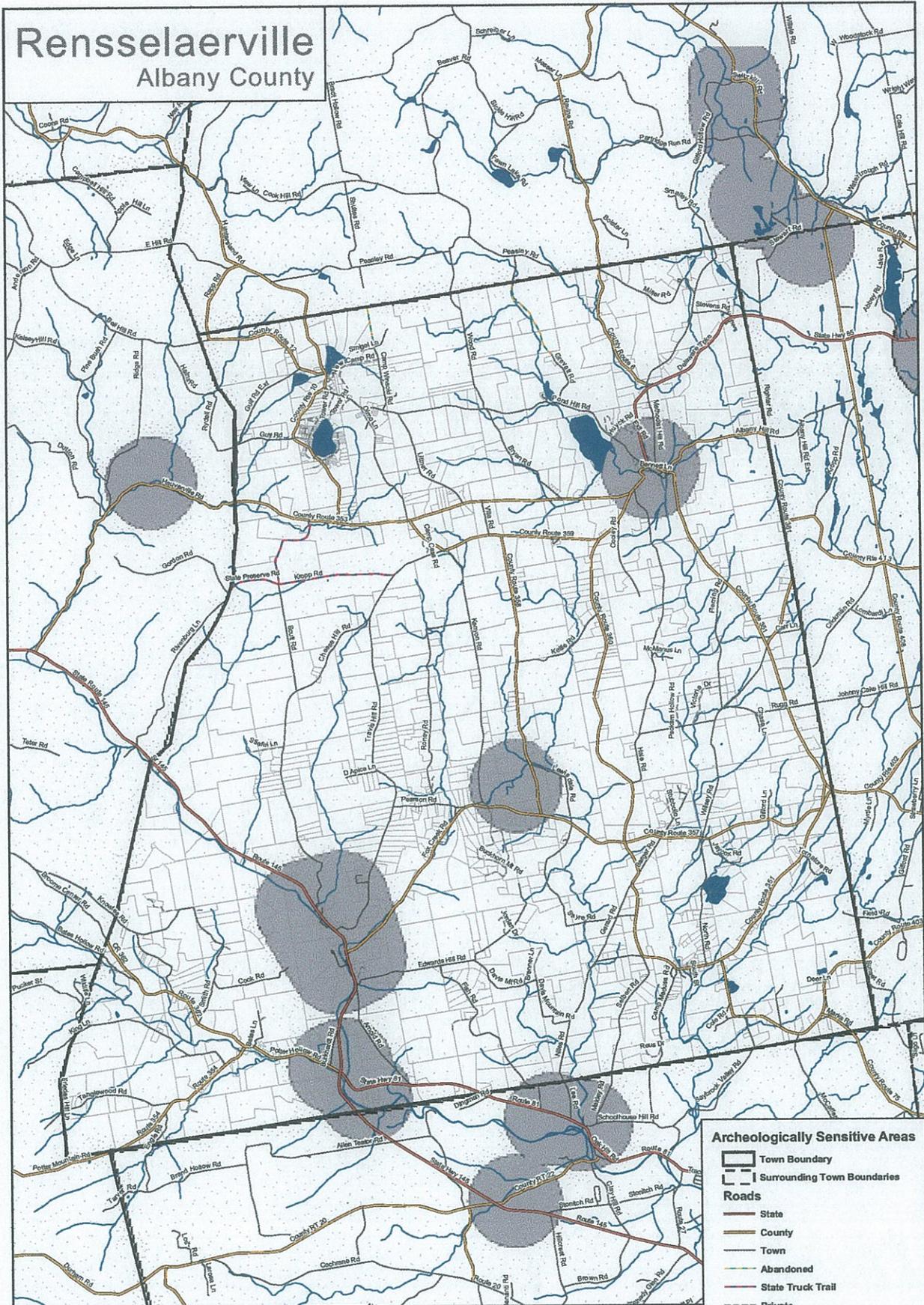
Very truly yours,

Walter Hang  
215 North Cayuga Street  
Ithaca, NY 14850

Cc: Honorable Judith Enck, US EPA Region 2 Administrator  
Honorable Michael Bloomberg, Mayor, City of New York  
Honorable Barbara Lifton, Representative, 125th Assembly District  
Honorable William Parment, Representative, 150th Assembly District  
Honorable James Gennaro, City Council Member, District 24

**APPENDIX VII for CHAPTER VII**

# Rensselaerville Albany County



**Archeologically Sensitive Areas**

- Town Boundary
- Surrounding Town Boundaries

**Roads**

- State
- County
- Town
- Abandoned
- State Truck Trail
- Private

Property Boundaries

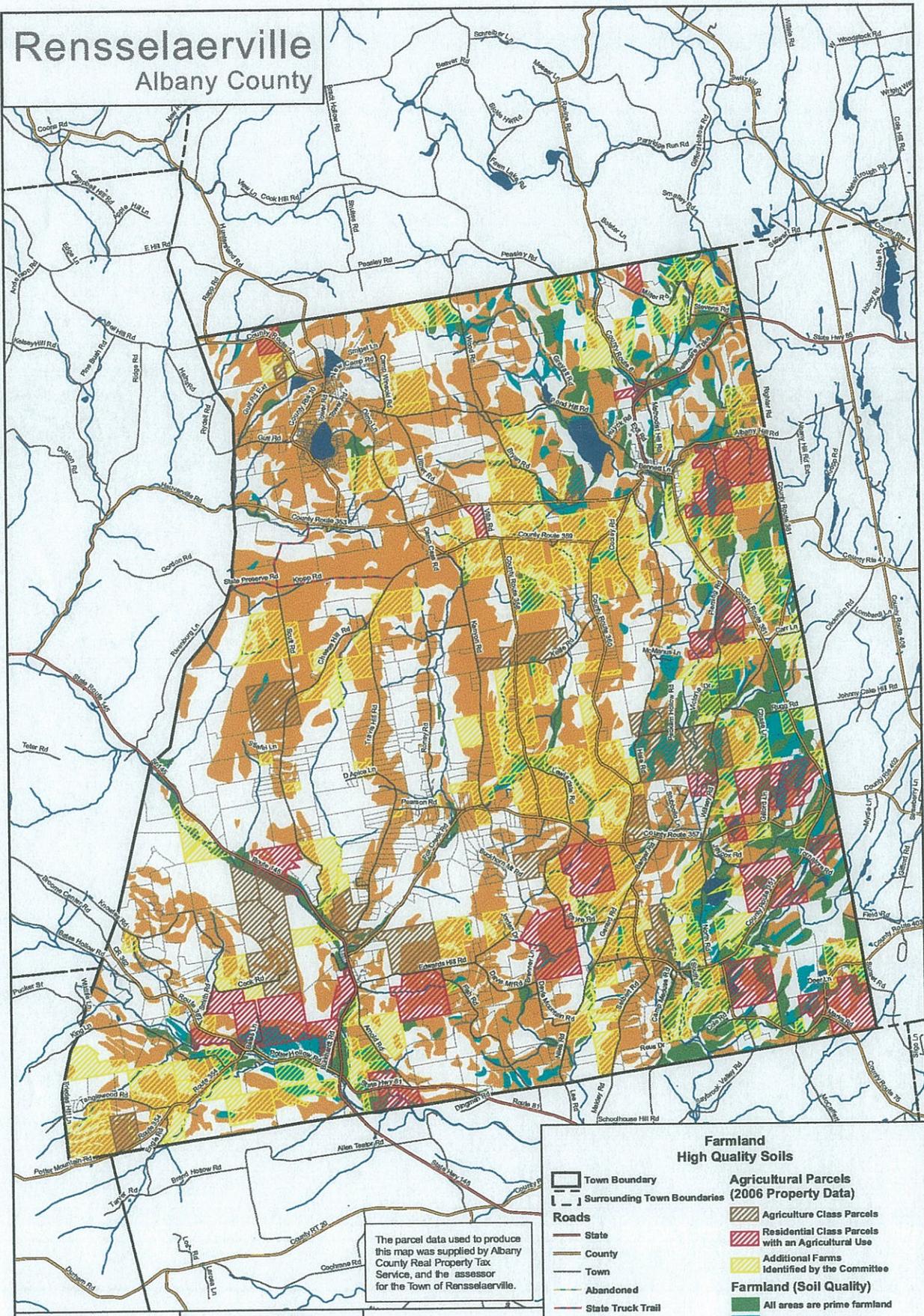
- Water
- Streams
- Archeologically Sensitive Areas

**Community Planning & Environmental Associates**  
 Nan Stabroberg, AICP - www.planningattheplaces.com  
 182 Siederberg Road, Berlin, NY 12023  
 Due Metic, Planning and GIS - www.duemetic.com

**Laberge Group**  
 ENGINEERING ARCHITECTURE SURVEYING PLANNING  
 4 Computer Drive West - Albany, New York 12205  
 www.labergegroup.com

North Arrow  
 Draft Map Date: 1-8-2007  
 Scale: 0 0.5 1 Miles

# Rensselaerville Albany County



The parcel data used to produce this map was supplied by Albany County Real Property Tax Service, and the assessor for the Town of Rensselaerville.

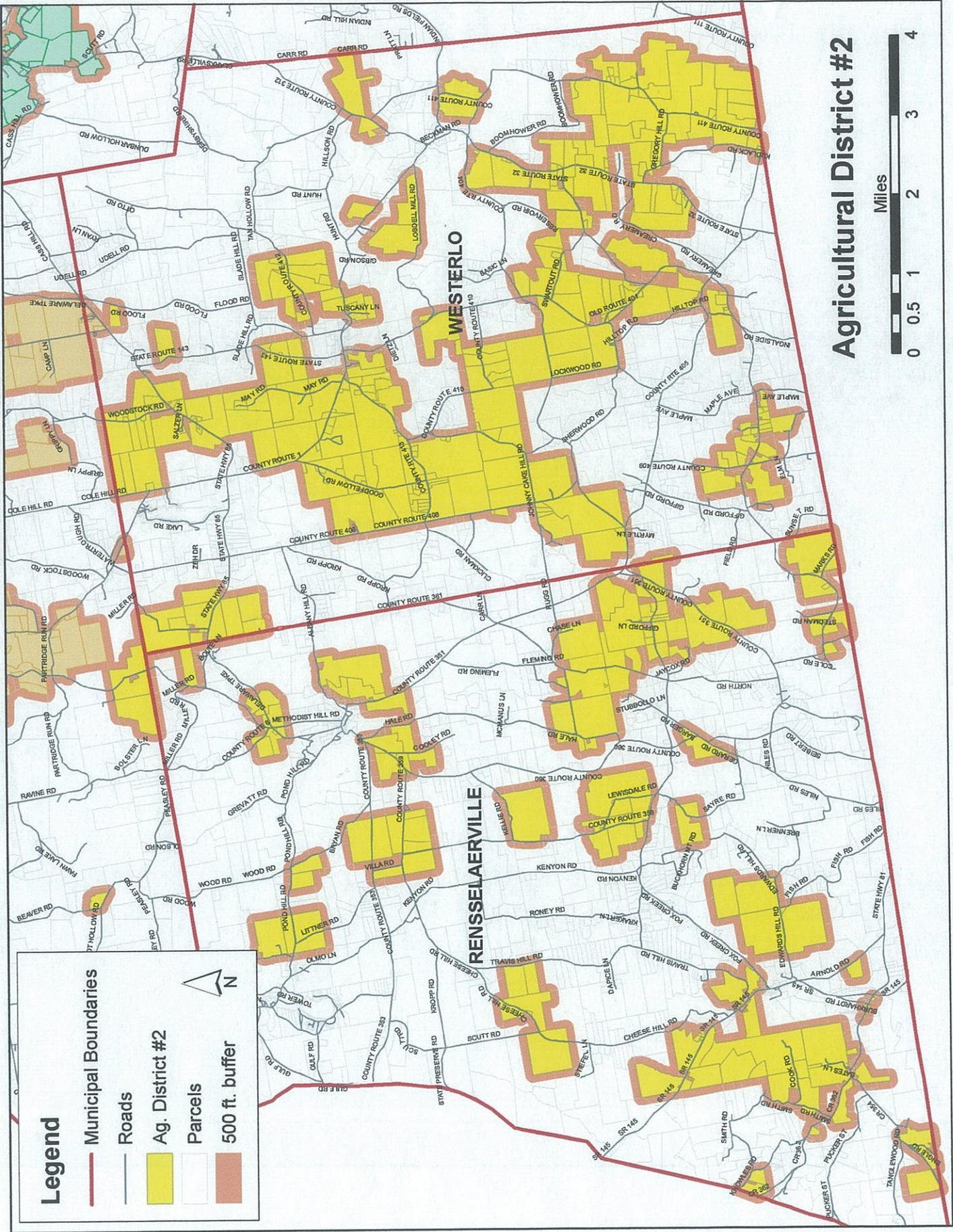
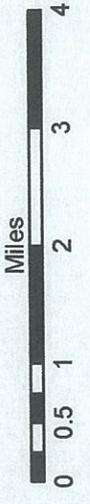
- |                                    |  |  |
|------------------------------------|--|--|
| <b>Farmland High Quality Soils</b> |  |  |
| Town Boundary                      | Agriculture Class Parcels                          |  |
| Surrounding Town Boundaries        | Residential Class Parcels with an Agricultural Use |  |
| <b>Roads</b>                       |  |  |
| State                              | Additional Farms Identified by the Committee       |  |
| County                             | <b>Farmland (Soil Quality)</b>                     |  |
| Town                               | All areas are prime farmland                       |  |
| Abandoned                          | Prime farmland if drained                          |  |
| State Truck Trail                  | Farmland of statewide importance                   |  |
| Private                            |  |  |
| Property Boundaries                |  |  |
| Water                              |  |  |
| Streams                            |  |  |

**Community Planning & Environmental Associates**  
 Nan Stalenzberg, AICP - www.planningbetterplaces.com  
 182 Stalenzberg Road, Burns, NY 12813  
 Dan Meier, Planning and GIS - www.danmeier.com

**Laberge Group**  
 ENGINEERING ARCHITECTURE SURVEYING PLANNING  
 4 Computer Drive West - Albany, New York 12205  
 www.labergegroup.com

Draft Map Date: 2-12-2007  
 0 0.5 1 Miles

# Agricultural District #2



## Legend

- Municipal Boundaries
- Roads
- Ag. District #2
- Parcels
- 500 ft. buffer





NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF MINERAL RESOURCES  
**ENVIRONMENTAL ASSESSMENT FORM**

Attachment to Drilling Permit Application

WELL NAME AND NUMBER \_\_\_\_\_

NAME OF APPLICANT \_\_\_\_\_ BUSINESS TELEPHONE NUMBER \_\_\_\_\_  
( )

ADDRESS OF APPLICANT \_\_\_\_\_

CITY/P.O. \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_

DESCRIPTION OF PROJECT (Briefly describe type of project or action)

\_\_\_\_\_

\_\_\_\_\_

**PROJECT SITE IS THE WELL SITE AND SURROUNDING AREA WHICH WILL BE DISTURBED DURING CONSTRUCTION OF SITE, ACCESS ROAD, and PIT AND ACTIVITIES DURING DRILLING AND COMPLETION AT WELLHEAD.**  
(PLEASE COMPLETE EACH QUESTION--Indicate N.A., if not applicable)

**LAND USE AND PROJECT SITE**

1. Project Dimensions. Total Area of Project Site \_\_\_\_\_ sq. ft.  
Approximate square footage for items below:

	During Construction (sq. ft.)	After Construction (sq. ft.)
a. Access Road (length x width) _____	_____	_____
b. Well Site (length x width) _____	_____	_____

Characterize Project Site Vegetation and Estimate Percentage of Each Type Before Construction:

_____ % Agricultural (cropland, hayland, pasture, vineyard, etc.)	_____ % Forested	_____ % Wetlands
_____ % Meadow or Brushland (non agricultural)	_____ % Non vegetated (rock, soil, fill)	

3. Present Land Use(s) Within 1/4 Mile of Project (Check all that apply)

<input type="checkbox"/> Rural	<input type="checkbox"/> Suburban	<input type="checkbox"/> Forest	<input type="checkbox"/> Urban	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Commercial	<input type="checkbox"/> Park/Recreation
<input type="checkbox"/> Industrial	<input type="checkbox"/> Other _____					

4. How close is the nearest residence, building, or outdoor facility of any type routinely occupied by people at least part of the day? \_\_\_\_\_ ft.

Describe \_\_\_\_\_

**ENVIRONMENTAL RESOURCES ON/NEAR PROJECT SITE**

5. The presence of certain environmental resources on or near the project site may require additional permits, approvals or mitigation measures--Is any part of the well site or access road located:

a. Over a primary or principal aquifer?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
b. Within 2,640 feet of a public water supply well?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
c. Within 150 feet of a surface municipal water supply?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
d. Within 150 feet of a lake, stream, or other public surface water body?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
e. Within an Agricultural District?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
f. Within a land parcel having a Soil and Water Conservation Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
g. In a 100 year flood plain?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
h. In a regulated wetland or its 100 foot buffer zone?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
i. In a coastal zone management area?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
j. In a Critical Environmental Area?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known
k. Does the project site contain any species of animal life that are listed as threatened or endangered?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Known

If yes, identify the species and source of information \_\_\_\_\_

l. Will proposed project significantly impact visual resources of statewide significance?  Yes  No  Not Known

If yes, identify the visual resource and source of information \_\_\_\_\_

**CULTURAL RESOURCES**

6. Are there any known archeological and/or historical resources which will be affected by drilling operations?  Yes  No  Not Known
7. Has the land within the project area been previously disturbed or altered (excavated, landscaped, filled, utilities installed)?  Yes  No  Not Known
- If answer to Number 6 or 7 is yes, briefly describe \_\_\_\_\_

**EROSION AND RECLAMATION PLANS**

8. Indicate percentage of project site within: 0-10% slope \_\_\_\_\_% 10-15% slope \_\_\_\_\_% greater than 15% slope \_\_\_\_\_%
9. Are erosion control measures needed during construction of the access road and well site?  Yes  No  Not Known
- If yes, describe and/or sketch on attached photocopy of plat \_\_\_\_\_
10. Will the topsoil which is disturbed be stockpiled for reclamation use?  Yes  No
11. Does the reclamation plan include revegetation?  Yes  No
- If yes, what plant materials will be used? \_\_\_\_\_
12. Does the reclamation plan include restoration or installation of surface or subsurface drainage features to prevent erosion or conform to a Soil and Water Conservation Plan?  Yes  No
- If yes, describe \_\_\_\_\_

**ACCESS ROAD SITING AND CONSTRUCTION**

13. Are you going to use existing or common corridors when building the access road?  Yes  No
- Locate access road on attached photocopy of plat.

**DURABLE DRILLING**

14. Anticipated length of drilling operations? \_\_\_\_\_ days.

**WASTE STORAGE AND DISPOSAL**

15. How will drilling fluids and stimulation fluids:
- a. Be contained? \_\_\_\_\_
- b. Be disposed of? \_\_\_\_\_
16. Will production brine be stored on site?  Yes  No
- If yes:  
How will it be stored? \_\_\_\_\_  
How will it be disposed of? \_\_\_\_\_
17. Will the drill cuttings and pit liner be disposed of on site?  Yes  No
- If yes, expected burial depth? \_\_\_\_\_ feet

**ADDITIONAL PERMITS**

8. Are any additional State, Local or Federal permits or approvals required for this project?  Yes  No
- |                                  | Date Application Submitted | Date Application Received |
|----------------------------------|----------------------------|---------------------------|
| Stream Disturbance Permit (DEC)  | ____/____/____             | ____/____/____            |
| Wetlands Permit (DEC or Local)   | ____/____/____             | ____/____/____            |
| Floodplain Permit (DEC or Local) | ____/____/____             | ____/____/____            |
| Other _____                      | ____/____/____             | ____/____/____            |
| _____                            | ____/____/____             | ____/____/____            |
| _____                            | ____/____/____             | ____/____/____            |

PREPARED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

NAME/TITLE (Please print) \_\_\_\_\_

REPRESENTING \_\_\_\_\_

**APPENDIX VIII for CHAPTER VIII**

## **Banning Hydrofracking Is Not A “Taking” of Property**

By Mary Jo Long, Esq. April 25, 2011

As the public sentiment grows for a ban on High Volume Hydrofracking (HVHF), lawyers and others who speak for corporate profit-making opportunities in natural gas say that laws banning or limiting gas drilling is a “taking” of property. Even some who seem to be on our side make the same claim. This claim is groundless and misguided. It is a scare tactic to prevent public pressure on our elected officials against HVHF.

### What is the Legal Status of These Claims?

1. All property in this country is held under the implied obligation that the owner’s use of it shall not be injurious to the community. There is no compensation for limiting that type of use of property, and
2. A “taking” claim does not apply if the property can be used for other purposes even if those uses are not as profitable.

### Consider the Source

The claim that the government (fed, state or local) will be sued to recover the value of lost property is made by attorneys and others supporting HVHFF as a method of gas drilling. They say that we, the taxpayers, will have to pay for the lost profits due to the government’s taking of their property. Always bear in mind that lawyers are advocates for their clients. When a Landowners’ Coalition lawyer claims that a ban will be a taking, that lawyer is making an argument in support of his client’s position. Making a claim (I’m going to sue you) doesn’t mean that a lawsuit will really happen nor that a Court will agree with the argument if an actual lawsuit is filed.

### What Is the Law on Taking Property by the Government

The Fifth Amendment to the U.S. Constitution provides certain protections to persons. Included in the protections is the phrase “nor shall private property be taken for public use without just compensation.”[i] This is the “taking” referred to by the anti-ban people. This obligation to compensate for taking private property only applied to the federal government until the 14th Amendment to the Constitution expanded the application to state governments as well. Eminent domain is the term most frequently used when a government takes a piece of property: land for a public park, a public road, a public school, etc. The owner of the land is entitled to be paid for the value of the land taken from her. Historical evidence suggests that the original intent of the takings clause did not include mere restrictions on use.

But what if the government, say through a town zoning law or a state law, BANS gas drilling without taking over title to the property where gas companies and gas leaseholders expect to drill for gas? Are governmental laws that restrict the use of the land by restricting a profit making opportunity a “taking” when actual ownership does not change?

The notion that one can do anything he wants on his property is not the law of the land. The US Supreme Court has said “all property in this country is held under the implied obligation that the owner’s use of it shall not be injurious to the community.” Mugler v. Kansas, 123 U.S. 623, 665 (1887) This principle still remains the law of the land even as Court rulings on “takings” have muddied the waters.[ii]

A town government can use its police power[iii] and zoning/land use power to restrict and prohibit uses that it considers to be detrimental to the community. The exercise of these powers does not constitute a “taking.” For example, the Town of Hempstead passed a law prohibiting gravel pit from excavating below the town’s water table. This law was upheld in Goldblatt v. Hempstead, 369 U.S. 590 (1962) as a valid use of the town’s police power. The Supreme Court conceded that the law completely prohibited a prior use by Mr. Goldblatt who had operated a gravel pit for 30 years. But the Court held that depriving the property of its most profitable use does not make the law unconstitutional, nor a taking.

The present case must be governed by principles that do not involve the power of eminent domain, in the exercise of which property may not be taken for public use without compensation. A prohibition simply upon the use of property for purposes that are declared, by valid legislation, to be injurious to the health, morals, or safety of the community, cannot, in any just sense, be deemed a taking or an appropriation of property for the public benefit. Such legislation does not disturb the owner in the control or use of his property for lawful purposes, nor restrict his right to dispose of it, but is only a declaration by the State that its use by any one, for certain forbidden purposes, is prejudicial to the public interests.” Goldblatt at p.593 quoting Mugler v. Kansas.

In 1992 the Supreme Court carved out an exception to this concept in Lucas v. S.C. Coastal Council, 505 U.S. 1003. The Supreme Court expanded the right to be compensated when new laws deprived land of all economically beneficial use. Although Lucas still owned the land, a lower court at trial had found that the property was rendered of zero value by the law which prohibited residential construction beyond a baseline on the beachfront. While the Supreme Court described these as “relatively rare situations”[iv], it has encouraged litigation. At the same time as Lucas slightly expanded the takings doctrine it also reaffirmed the principle that government does not have to pay compensation when it limits “harmful or noxious uses” of property.

It is correct that many of our prior opinions have suggested that ‘harmful or noxious uses’ of property may be proscribed by government regulation without the requirement of compensation. . . .[G]overnment may, consistent with the Takings Clause, affect property values by regulation without incurring an obligation to compensate – a reality we nowadays acknowledge explicitly with respect to the full scope of the State’s police power”[v]

The Court further acknowledged that Lucas would not be entitled to compensation even though he was deprived of all economically beneficial use if his “bundle of rights” did not include the prohibited use to begin with.[vi] Some uses of land are not a part of the

land title to begin with. When someone owns property the owner does not have the property right to have a common law nuisance. Government actions that abate common law nuisances are per se not takings. The Court acknowledged there are inherent limits on landowner rights, imposed under background principles of the State's law of property and nuisance. Thus government can still forbid deleterious uses even to the point of total takings.

Justice Scalia, who wrote the majority opinion in Lucas, says that a "total taking" of personal property would be subject to a lower standard "by reason of the State's traditionally high degree of control over commercial dealings"[vii] This means that there is no claim of a taking based on a gas lease, which is personal property rather than real property, i.e. land.

Those opposing a ban on hydrofracking base their claims of a "taking" on Lucas but subsequent cases have confirmed the narrowness of the ruling in Lucas.

- Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency, 535 U.S. 302 (2002) (Court said moratorium was not a regulatory taking);
- Palazzolo v. Rhode Island, 533 U.S. 606 (2001) (part of parcel was worth \$200,00, so was not a total taking);
- Lingle v. Chevron U.S.A. 125 S. Ct. 2655 (2005) (recognized that Takings cases were inconsistent. Tried to clarify by saying the inquiry is whether the regulation is "so onerous that its effect is tantamount to a direct appropriation or ouster" i.e. functionally equivalent to the classic taking in which government directly appropriates private property or ousts the owner from his property.);
- Gazza v. NYSDEC 89 NY 2d 603 (1999), cert. denied. (Mere diminution in value of property, however serious, is insufficient to demonstrate a taking.)

### Conclusion

1. To make a takings argument, the following conditions apply:

1. A taking claim cannot be based on an interest the owner never had, e.g. the right to create a nuisance.

2. A taking claim does not apply if the property can be used for other purposes. i.e. the economic value has not been totally extinguished. Just because the value of the property has been reduced does not mean the owner gets to claim his "expected" profits if he were allowed to fully exploit the property.

3. Personal property, such as a gas lease, has even less recognition as a taking, even if it is a total taking.

1. Property rights, as well as other rights, are limited by the neighborhood of other public interests. The highest court in NYS said in Gernatt Asphalt Products v. Town of Sardinia, 87 N.Y.2d 668 (1996):

A municipality is not obliged to permit the exploitation of any and all natural resources within the town as a permitted use if limiting that use is a reasonable exercise of its police

power to prevent damage to the rights of others and to promote the interests of the community as a whole. (at page 684)

1. The police power of the state is the power to regulate persons and property for the purpose of securing the public health, safety, welfare, comfort, peace and prosperity of the municipality and its inhabitants.

---

[i] “No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a grand jury, except in cases arising in the land or naval forces, or in the militia, when in actual service in time of war or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.”

[ii] In 1922 the Supreme Court ruled that the Pennsylvania legislature had overstepped the line by enacting a law forbidding people from removing coal from under other people’s houses and was held to effect a taking. The Court said, “While property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking.” Penn. Coal Co. v. Mahon, 260 U.S. 393, 415. In 1987 the Supreme Court in Keystone Bituminous Coal Association v. DeBenedictis, 480 U.S. 470 held that a nearly identical law was not a taking. Property is held under the implied obligation that the owner’s use of it shall not be injurious to the community. That principle, the court held, does not require compensation whenever the state asserts its power to enforce a prohibition that is injurious to the community. It is a question that “necessarily requires a weighing of private and public interests.” (pp. 491-492)

[iii] Police power is the power to regulated persons and property for the purpose of securing the public health, safety, welfare, comfort, peace and prosperity of the municipality and its inhabitants. This include prevention, suppression and abatement of public nuisances, including street nuisances and air pollution, preservation of the public peace and tranquility, protection of the public health through sanitation and disposal of waste and from the harmful effects of industrial and commercial development and proper growth of the municipality through zoning. Article IX of the NY State Constitution; Section 10 of the Municipal Home Rule Law; Section 130 of the Town Law; Section 20 of the General City Law and Section 4-412 of the Village Law.

[iv] Lucas v. South Carolina Coastal Council, at p. 1018

[v] Lucas at p. 1022-1023 citing Penn Central Transportation Co. v. New York City, 438 U.S. 104, 125 (1978)

[vi] Lucas at p. 1027.

[vii] Lucas at 1027.

**APPENDIX IX for CHAPTER IX**

**TOWN OF RENSSELAERVILLE, NEW YORK  
LOCAL LAW NO. \_\_\_\_ OF THE YEAR 2012**

**A LOCAL LAW AMENDING AND CLARIFYING THE TOWN OF  
RENSSELAERVILLE, ALBANY COUNTY, NEW YORK, ZONING ORDINANCE  
RELATIVE TO TO HEAVY INDUSTRY AND NATURAL GAS AND OIL  
EXTRACTION, COAL MINING AND COAL PROCESSING.**

**BE IT ENACTED BY THE TOWN BOARD OF THE TOWN OF  
RENSSELAERVILLE AS FOLLOWS:**

**SECTION 1. TITLE AND APPLICABILITY:**

This law shall be known as the Prohibition of Heavy Industry Law of the Town of Rensselaerville, Local Law Number \_\_\_\_ of the year 2012.

**SECTION 2. PURPOSES AND INTENTS:**

A. To promote and to protect significant resources such as water bodies, wetlands, water supplies, habitats, streams, and scenic views; and to promote and protect the order, conduct, health, safety and general welfare of the residents of the Town of Rensselaerville and the lands that lie within the Town's borders.

B. To respond to legitimate concerns of the citizens of the Town about the potential for expansion of Heavy Industry, including but not limited to natural gas extraction, within the lands of the Town of Rensselaerville.

C. To clarify, update, and amend the Town of Rensselaerville Zoning Law by, among other things relative to heavy industry and natural gas and oil extraction, coal mining and coal processing.

D. To ensure that the Town of Rensselaerville zoning laws are congruous with the Town of Rensselaerville Comprehensive Plan. Specifically to:

1. Ensure that new land uses are developed in an environmentally sustainable manner so that the Town's rural character is retained;
2. Protect groundwater resources to ensure that the quantity and quality of water is available to serve future needs.

3. Promote and protect the scenic views, cultural, agricultural and historic character of the town for its intrinsic and economic value;
4. Protect farms, prime soils, soils of statewide importance, and valuable farmlands;
5. Provide for orderly growth in accordance with the Comprehensive Plan;
6. Provide for safe roads and current acceptable levels of traffic;
7. Secure safety from explosions, fire and other dangers.
8. Protect homeowners and current business owners from heavy industrial development.

Among other things, this Local Law has been made with reasonable consideration of the Town's character and quality of life, while encouraging the most appropriate use of land.

This Local Law is intended to be of general applicability, and is intended to regulate all types of Heavy Industry, except as provided herein.

### SECTION 3. AUTHORITY:

This Local Law is adopted and enacted by the Town Board of the Town of Rensselaerville pursuant to its authority and power granted by the Constitution, Article IX and Laws of the State of New York including without limitation to Municipal Home Rule Law, Section 10, which gives authority to towns to enact laws to protect property, physical and visual environment, conduct, safety, health, and well-being of its citizens.

Further, this Local Law is adopted and enacted by the Town Board of the Town of Rensselaerville pursuant to N.Y.S. TOWN LAW § 272-a: NY Code - Section 272-A: Town Comprehensive Plan. State statutes require that all land use laws in the town must be consistent with the comprehensive plan.

### SECTION 4. DEFINITIONS:

Definitions for the Town of Rensselaerville Zoning Law is amended by adding new definitions to read as follows:

Heavy Industry: Any use or activity which generates significant volumes of smoke, odor, noise, glare, or other pollution wastes and is not compatible with other uses in the districts of the Town of Rensselaerville. Examples of "Heavy Industry" include but are not limited to: chemical manufacturing; exploration for natural gas; extraction of natural gas; natural gas processing facilities; and/or compressor stations; exploration for crude oil; extraction of crude oil; oil refineries; coal mining; and coal processing. It is expressly stated that the foregoing examples are not intended to be exhaustive and shall not be construed to limit the meaning, scope, or application of this definition solely to the activities identified in the examples.

Generic examples of uses not included in the definition of "Heavy Industry" are: dairy farms; dairy processing plant; bakery; office and communications uses; printing and

publishing; woodworking and cabinet shops; automobile repair shops; wineries and breweries; warehousing ancillary to an authorized use; truck terminals; equipment repair and maintenance facilities; helipads; parking lots and parking garages; Light Industrial and Manufacturing Operations; agriculture; excavation of earth materials; sawmills; apparel and other textile products.

Natural Gas Exploration, Extraction, or processing: The exploration for natural gas, the extraction of natural gas from the ground regardless of the extraction methods used, and/or the processing of natural gas. This definition shall specifically include, but not be limited to vertical drilling, horizontal drilling, low volume hydraulic fracturing and/or high volume hydraulic fracturing. This definition shall also be construed to encompass and include any activity or use of land which facilitates or supports natural gas exploration, extraction, or processing. Examples of activities or uses of land expressly intended to be included in this definition are set forth below:

- a. Drilling and/or installation of a new natural gas well, regardless of well type;
- b. Development of a natural gas well site and associated structures and infrastructure;
- c. Mixing, storage, treatment, and/or disposal of chemicals, wastewater, flowback, brine, cuttings, proppant or other materials used for, or in connection in any way with, the exploration for or extraction of natural gas;
- d. Installation and/or use of pipes, conduits or other material transport or gathering equipment or systems used for, or in connection in any way with the exploration for or extraction of natural gas.

It is expressly stated that the foregoing examples are not intended to be exhaustive and shall not be construed to limit the meaning, scope, or application of this definition or to limit the application of this definition solely to those activities identified in the examples.

#### SECTION 5. REGULATION:

Beginning on the effective date of this Local Law, it shall be unlawful for any person to conduct "Heavy Industry" within the Town of Rensselaerville. "Heavy Industry" is added to Article IV, Section 5. Prohibited Uses.

As an exception to the above-stated prohibition, because of its vital importance to sustaining and enhancing an agricultural community, the conduct of activities that are directly related to Agriculture, including but not limited to sap processing, milk processing, grain mills, logging, sawmills, and slaughterhouses, shall not be unlawful, notwithstanding that such conduct may comprise Heavy Industry.

#### SECTION 6. ENFORCEMENT:

Upon authorization by the Town Board, the Town may institute an action or proceeding in a court of competent jurisdiction, to prevent, restrain, enjoin, correct, or abate any violation of, or to enforce, any provision of this law.

## SECTION 7. NON-CONFORMING USES:

A. Conduct of activities and uses of land that comprise Heavy Industry lawfully in existence and ongoing as of the effective date of this Local Law, shall be considered a Non-Conforming Use and shall be allowed to continue provided such activity does not materially enlarge or expand in size or scope and further provided that if such activity ceases for a period of more than one (1) year, the Non-Conforming Use status of that activity shall terminate and the activity may not be resumed, re-started or renewed.

B. The preceding provision relating to continuation of Non-Conforming Uses shall apply to the exploration for natural gas; vertical or horizontal drilling and low or high volume hydraulic fracturing for natural gas; extraction of natural gas; natural gas processing facilities; exploration for crude oil; extraction of crude oil; oil refineries; coal mining; and coal processing as set forth hereinbelow. For the purposes of this Section 7, and solely for the ease of drafting and reading, all those uses and activities shall be referred to collectively as "natural gas, oil, and coal extraction."

C. Any leases of property for the purposes of allowing natural gas, oil, and coal operations which are being presently conducted on land in the Town as of the effective date of this law, shall be subject to the following:

### 1. Existing Leases:

a. Where a lease which allows natural gas, oil or coal extraction has been executed and where no substantive gas, oil or coal extraction activity has substantively commenced as of the effective date of this Local Law, then this Local Law shall apply in full effect and shall operate to prohibit all such activities. The existence of a lease under the circumstances described in this paragraph shall convey no vested right upon either party to the lease.

### 2. Existing Natural Gas, Oil and Coal Extraction

a. Where a lease which allows natural gas, oil or coal extraction has been executed, and where substantive natural gas, oil or coal mining extraction activity is occurring as of the effective date of this law, and those activities are being conducted pursuant to valid permits issued by the New York State Department of Environmental Conservation or other regulating agencies, in that case the activity shall be considered a Non-Conforming Use and shall be allowed to continue.

b. Upon the depletion of any natural gas or oil well or coal mine which is allowed to remain in operation pursuant to this provision, or upon any other termination of the natural gas, oil or coal extraction activity for a period of more than one (1) year, the Non-Conforming Use status of that activity shall terminate and the activity may not be resumed, re-started or renewed.

c. Further no natural gas, oil or coal extraction activity allowed to remain in operation pursuant to this provision shall be permitted to enlarge or expand after the effective date of this Local Law.

**SECTION 8. SEVERABILITY:**

If any specific part or provision or standard of this Local Law, or the application thereof to any person or circumstance, be adjudged invalid by any court of competent jurisdiction, such judgment shall be confined in its operation to the part, provision or application directly involved in the controversy in which such judgment shall have been rendered and shall not affect or impair the validity of the remainder of this Local Law or the application thereof to other persons or circumstances, and the Town Board hereby declares that it would have enacted this Local Law, or the remainder thereof.

**SECTION 9. INTERPRETATION OR CONFLICT WITH OTHER LAWS**

In the interpretation and application, the provisions of this Local Law shall be held to be minimum requirements adopted for the promotion of the public health, safety, or general welfare. Whenever the requirements of this Local Law are inconsistent with the requirement of any other lawfully adopted rules, regulations, ordinances or local laws, the more restrictive provisions, or those imposing the higher standards, shall govern.

**SECTION 10. EFFECTIVE DATE:**

This Local Law shall take effect immediately upon filing with the Office of the Secretary of the State of the State of New York, in accordance with the applicable provisions of law, and specifically Article 3, Section 27 of the New York State Municipal Home Rule Law.

**End of Law**

