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Documenting Contamination of Private Water Supplies by Gas Well Drilling in New York State

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This information is provided by the nonprofit Community Science Institute (CSI) as a public service to assist landowners and others in evaluating potential risks to private wells and other water resources from horizontal gas wells that use high volume hydraulic fracturing in our region. The Community Science Institute operates a water quality testing laboratory that is certified by the New York State Department of Health – Environmental Laboratory Approval Program and is located at 284-286 Langmuir Lab in the Cornell Business and Technology Park in Ithaca, NY.

Introduction

If you are a landowner who has signed a lease with an energy company to drill a gas well on your land, or if you own land nearby, you may wonder about the possibility that water on your property, particularly your private well, might become contaminated. You probably know that gas companies have signed leases with thousands of landowners in the Southern Tier over the past ten years, and that the companies are poised to start drilling in the Marcellus Shale and other gas-bearing formations as soon as the New York State Department of Environmental Conservation approves a supplement to its 1992 Generic Environmental Impact Statement (GEIS) on oil and gas wells, probably sometime this summer (2009).

One of the main purposes of the Supplemental GEIS is to take into account the increased risks to human health and the environment that arise from the very large volumes of contaminated waste fluids that are created by the drilling of mile-long horizontal wells through gas-bearing Marcellus Shale rock and the use of high pressure hydraulic fracturing to release natural gas from the shale. A horizontal gas well generates approximately 100 times more waste fluid than an old-fashioned vertical well.

Despite New York State's current moratorium on drilling and the State's commitment to updating its GEIS for oil and gas wells, there is growing concern that New York lacks the structure to cope with the impending gas rush. For example, NYSDEC reportedly has 19 staff people to oversee thousands of oil and gas wells. Another matter of concern is that New York's few existing disposal facilities are currently near capacity and cannot handle the enormous volumes of waste fluids produced by hydraulic fracturing of horizontal gas wells.

#1. Should I be worried about contamination of my water by a gas well?

There is solid evidence that gas wells have contaminated drinking water wells in the past. However, very few systematic studies have been done, and exact numbers are hard to come by. Based on a 2007 survey of 200 private water wells in an area with extensive oil and gas well activity, Penn State Cooperative Extension estimates that in the past, roughly 8% of private water wells have experienced mild to severe impacts. Penn State points out that 8% could be an overestimate or an underestimate. It could be an overestimate because prior to stricter regulations that took effect in the 1980s, many abandoned wells were not plugged properly, and these older wells were included in the survey. It could be an underestimate because the current practice of hydraulically fracturing horizontal gas wells generates approx. 100 times more waste fluid than older vertical wells, and larger fluid volumes mean greater risk of contamination.

The bottom line is that nobody can state with confidence what the probability is that a gas well will contaminate freshwater supplies. An educated guess is that because regulations have become stricter, there will be a lower frequency of contamination than Penn State's estimate of 8%. A chance of 1% to 5% (1 in 100 to 1 in 20) would seem to be a reasonable "ballpark" estimate of the risk that a drinking water well in the vicinity of a gas well will become contaminated. The odds of contamination are probably somewhat higher if surface water such as springs, ponds and streams are included in the risk "guesstimate."

#2. If I live close to where a gas well will be drilled, is it a good idea to have my water tested before the well is drilled?

Yes! Penn State Cooperative Extension offers the following advice to landowners negotiating a lease with a gas company: "Request pre- and post-drilling testing of all drinking water supplies. Stipulate a complete list of test parameters… If you are concerned about other sources of water on your property (springs, streams, ponds, etc.) request that these water sources also be tested" (see Water Facts #28, p.7). A comprehensive pre-drilling baseline is necessary because that is the only way to establish that water quality has changed. For example, if a contaminant is found after drilling is completed, it can be argued (by the gas company's lawyers) that it could have been there in the water before the well was drilled. The only way to prove in court that it was not there is to test for it in a state-certified lab before drilling starts. Only test results from certified labs are accepted as evidence in court proceedings.You should note that there is currently no requirement for gas companies to pay for water well testing in New York State unless testing is stipulated in a lease agreement.

#3. How close to a gas well is "close?"

The Pennsylvania Department of Environmental Protection emphasizes the risk of freshwater contamination within 1,000 feet of a gas well. Given that gas wells in the Marcellus Shale can extend horizontally up to a mile (5,280 feet) from a drill site, it is possible that freshwater more than 1,000 feet from a well may also be at risk. Another consideration is that groundwater flows downhill. If groundwater contamination takes place within 1,000 feet of a gas well, a plume of contaminated groundwater could extend downgradient beyond 1,000 feet. Yet another factor are the enormous pressures that are used to hydraulically fracture gas wells. The

pressures under which fracturing fluids are injected into gas wells could disturb underground geological formations and open up pathways of contamination that cannot be predicted in advance. While such a scenario is likely to be rare, it is by no means impossible.

#4. How far in advance of drilling can I have my water tested?

The best time to do baseline testing is two months to a year before drilling starts. Water quality can change over time as a result of many factors. The closer the baseline tests are to the commencement of drilling activity, the more representative they will be of actual water quality during the drilling period, and the more valid they will be as a basis for evaluating post-drilling test results for possible impacts from the gas well.

#5. Let's assume I do baseline testing before drilling starts. How soon should I test after the well is completed to see if my water is contaminated?

In Pennsylvania, if contamination of water within 1,000 feet of a gas well is documented within six months of the well being drilled, the burden of proof is on the gas company to show that they are not responsible for the contamination. After six months, the burden of proof shifts to the landowner. For this reason, Penn State Cooperative Extension strongly recommends that testing be performed approximately two to three months after the well has been drilled and stimulated (hydraulically fractured) in order to allow sufficient time to complete the tests and initiate a complaint before the burden of proof shifts from the gas company to the landowner.

Based on information currently available to CSI, the burden of proving contamination in New York State is always on the landowner and never on the gas company.

#6. Is there any point in monitoring my water for contamination if the burden of proof is on me?

Yes. Lab tests can provide powerful evidence of contamination. Underground processes that could lead to contamination may be slow, for example, groundwater flow and the migration of natural gas through small channels in rock. It is possible that contaminants could take a year or two years or longer to reach a freshwater aquifer. Also, wells are often re-stimulated (hydraulically fractured) when their gas output falls. Some wells have been "fracked" as many as ten separate times in order to maintain production. Each fracking event injects several million more gallons of waste fluid under high pressure and therefore increases the risk of contaminating nearby freshwater. CSI suggests that New York State landowners consider a comprehensive set of water quality tests a few months before a gas well is drilled, a few months after the gas well is completed, and then every two years for the life of the gas well and for at least ten years after the well has been abandoned and plugged.

#7. How can my drinking water or pond water become contaminated by a gas well?

In New York, a gas well is drilled down about 1,500 to 2,500 feet to reach the Marcellus Shale (the depth of the shale is shallower in New York than further south in Pennsylvania). The well bore is then turned 90o and drilled horizontally for another several thousand feet through the thin layer of shale. Groundwater is typically found about 10 feet to

200 feet below the ground surface. Despite the large vertical distance separating groundwater and shale, several processes involved in drilling and stimulating gas wells can result in contamination:

1. Seismic testing: Penn State Cooperative Extensions points out that prior to drilling, gas companies often do seismic testing to determine the thickness of gasbearing shale rock and other geologic features at the drill site. A common type of seismic testing uses explosive charges in a pattern of holes approximately three inches in diameter and 20 feet deep. If a shot hole is not filled in immediately, surface water can enter the hole and contaminate groundwater. (Note: Seismic testing can also impact groundwater flow and cause reductions in water quantity.)

2. Failure of cement barrier enclosing the well: A gas well is a deep hole which passes through groundwater and into the gas-bearing shale formation. Because it is in contact with the ground surface and with geologic formations deep underground, a gas well offers a pathway for contaminants to move into groundwater from above and from below. During drilling and stimulation (hydraulic fracturing) of a well, which typically take several weeks, fracturing fluid containing a variety of toxic chemicals travels down and up the well hole under very high pressure. When the well is producing, natural gas travels up the hole. Groundwater is protected from contamination by these toxic chemicals because as the well is drilled, the well hole is surrounded by cement casings which act as a barrier so the hazardous fluids and the natural gas can't get into groundwater. On rare occasions, this protective cement barrier fails. The simplest cause of failure is human error, for example, if construction of the cement casings surrounding the well hole is rushed.

3. Leaks arising from imperfect understanding of local geology: Let's assume that the cement casing performs as expected and hazardous chemicals and natural gas do not leak from the vertical well hole into the drinking water aquifer. They may, however, find an alternative pathway to the shallow aquifer from the mile-long horizontal portion of the well hole, which is not cased in cement. The huge pressures involved in hydraulic fracturing increase the risk that waste fluid or natural gas could be forced upward from the horizontal well hole into the aquifer.

4. Improper plugging of a well when it is abandoned: Wells are abandoned when they stop producing gas at a profitable rate. Though it may take years, the cement casings surrounding the well hole will inevitably deteriorate, with the result that contaminants have an opportunity to gain access to groundwater from below and above the water table. Groundwater contamination is prevented by plugging abandoned wells. Plugging consists of pouring concrete down a well hole in such a way that when the concrete hardens, the well hole is completely filled from top to bottom, with no gaps in the concrete. Plugging must be done correctly in order to work. Because many older wells either were not plugged or were not plugged properly, they now act as conduits by which underground pollutants can migrate and contaminate groundwater.

5. Spills of recovered waste fluid: Approximately three to five million gallons of fracturing fluid are injected into each well under very high pressure to open up the tiny gas-bearing fissures in shale rock. About one-third of the waste fluid from hydraulic fracturing remains in the ground where it poses a risk of contaminating drinking water (see preceding paragraphs 2 and 3). Approximately two-thirds of the waste fluid, on the order of two to three million gallons of liquid, are recovered and disposed of. The recovered waste fluid is usually stored temporarily on-site in open pits. It is then loaded into tanker trucks

– about 200 to 300 of them -- and transported off-site to a disposal facility. New York's 1992 Generic Environmental Impact Statement describes many surface spill scenarios. The risk of surface spills is increased by the 100-fold greater volume of waste fluids and number of truck trips involved in horizontal wells in the Marcellus Shale. Gas well waste fluid kills vegetation on contact. It is lethal to aquatic life if it is spilled in streams, ponds, rivers and lakes. If it percolates down into the ground, it will pollute drinking water aquifers.

#8. What should I test my water for?

It is not possible to know in advance exactly which chemicals will get into your drinking water if the aquifer it draws from is contaminated as a result of a nearby gas well. Part of the uncertainty is because the federal Energy Policy Act of 2005 specifically exempted hydraulic fracturing fluids from the Safe Drinking Water Act and other federal environmental laws. As a result of these exemptions, energy companies are free to treat these chemicals as trade secrets. While companies provide some chemical information, they generally refuse to disclose complete lists of specific chemical names, claiming that to do so would undermine their competitive advantage. In addition to federal law shielding companies from the requirement to disclose the use of chemicals that could endanger drinking water supplies, another source of uncertainty is that the composition of fracturing fluid is not uniform. Rather, fracturing fluid is tailored to the geology of each well, and the composition can change from one well to the next.

Yet another source of uncertainty is that no one knows for sure what kinds of underground mineral formations will be encountered as the well hole is drilled. Many kinds of chemicals, for example, metals like iron, lead, and arsenic as well as naturally occurring radioactive materials (NORMs) like uranium, radium and radon can be leached from rock by drilling and fracturing fluids.

All in all, it is simply not possible to be certain about what is in gas well waste fluids and which chemicals to include in baseline testing of the water on your property. However, it is possible to make some excellent guesses based on the nature of the drilling and hydraulic fracturing processes. Contamination of groundwater and/or surface water from gas wells can be predicted to fall into several general categories based on the kinds of chemicals that are used in drilling and fracturing a well.

A. Chemicals associated with drilling the well hole

a) Acid, used to dissolve and help penetrate rock
b) Salts (brine), used to make drilling fluid more dense
c) Bulk chemicals, used to thicken drilling mud (example: guar gum, a nontoxic plant material; bentonite, a type of clay)
d) Oil and grease from machinery

B. Chemicals added to water to enhance the fracturing process

a) Surfactants (detergents), used to make water "slick" so that it flows better
b) Biocides, used to kill microorganisms that can gum up the well hole
c) Proppants, which are tiny particles of sand or similar solids used to prop open gas-containing fissures in shale so gas can diffuse into the well hole
d) Diesel fuel, used as a fracturing fluid instead of water (rarely used these days but still legal)

C. Chemicals that are often released from underground rock formations the well hole passes through, including the Marcellus Shale

a) Metals, e.g., barium, iron, manganese, calcium, arsenic, strontium, lead, cadmium, chromium, aluminum and others

b) Naturally occurring radioactive materials (NORMs) such as uranium, radium, radon and others
c) Methane (natural gas)
d) Salty water (brine) from underground pockets

D. Contamination that can result from inadequate cement casing when the well hole is drilled through a shallow groundwater aquifer

a) Chemicals associated with drilling the well hole (see A, above)
b) Bacteria from surface water that enters the aquifer through the well hole

Baseline water quality testing is an attempt to strike a balance between cost, on the one hand, and the odds of detecting contamination, on the other. It is a good idea to test for as many types of potential contaminants as you can afford. The purpose of baseline testing is to obtain evidence that chemicals associated with gas well drilling and stimulation are absent or are present at low concentrations before drilling begins. If the concentration of a contaminant increases significantly after the well is completed, it can be concluded that the contaminant was caused by the gas well. Without a baseline, the gas company can argue that a contaminant was present prior to the well being drilled and fractured or that it came from some other source. Without a pre-gas well baseline, a landowner will not have "a leg to stand on."

#9. How much does it cost for baseline testing?

The following tests of groundwater and surface water are designed to provide a baseline that can be used to evaluate whether contamination has been caused by a gas well. Tests are grouped according to general types of contamination. Some tests may detect contamination from more than one phase of drilling and fracturing activities.

<u>Tests for acid</u>
pH $10
Alkalinity $16

<u>Tests for brine</u>
Total dissolved solids $15
Chloride $18
Conductivity $10
Ammonia-nitrogen $14

<u>Tests for bulk chemicals in drilling mud</u>
Chemical oxygen demand (COD) $20
Total suspended solids $15
Turbidity $10
Biological oxygen demand (BOD) Redundant

<u>Test for oil and grease</u>
Oil and grease Optional

<u>Tests for fracking fluid additives</u>
Methylene Blue Active Substances (MBAS) (surfactants) $25
Chemical oxygen demand (COD) (see above)
Volatile Organic Compounds (VOCs) Optional

<u>Tests for underground chemicals released by drilling and hydraulic fracturing</u>
Total hardness $16
Calcium hardness $16
Barium, iron, manganese, arsenic (subcontract) $52
Gross alpha and beta radioactive particles (NORMs) (subcontract) $50
Methane (natural gas) and ethane (subcontract) $90
Chloride, conductivity (from underground pockets of brine) (see above)

<u>Tests for contamination due to inadequate aquifer protection while drilling</u>
Total coliform and E. coli bacteria Optional
Total suspended solids, turbidity (see above)
Sample processing and shipping
Flat rate to process samples for subcontracting to three other labs $25

Cost to ship samples to subcontracted labs for analyses $25

Cost of Tests Performed by CSI Lab: $185 (Volume discounts are available

Cost of tests sub-contracted by CSI to other labs: $242

Total Cost of Baseline Tests: $427

Additional fee for CSI to collect single water sample in Tompkins County $ 60

Notes

Optional tests: The test for total coliform and E. coli bacteria is optional because bacterial contamination of drinking water is a common problem that may not be due to a nearby gas well. The test costs $20. The tests for volatile organic compounds (VOCs) and oil and grease are considered optional because even if these contaminants are present, there is a good chance their concentrations will be lower than the detection limits of the standard tests. However, VOC testing is strongly recommended if diesel fuel is suspected in the fracturing fluid. VOC testing costs approximately $175.

Redundant test: The biological oxygen demand test(BOD) is redundant with the chemical oxygen demand test (COD). COD is recommended because it is quicker, easier and more definitive than BOD.

#10. Can I save money by collecting water samples myself?

No, not if you want the test results to stand up in court. In order for the test results to be admissible in legal proceedings, samples must be collected by an unbiased third party (not the landowner or the gas company) according to accepted procedures; have a verifiable chain of custody; and be tested in a lab that is certified by the state where the well is located. Usually the water sample is collected by an employee of the certified lab for a fee. The fee depends on time and distance traveled to collect the sample.

#11. How frequently should I repeat the full set of baseline tests to monitor my water for contamination?

CSI recommends that you give yourself the best possible protection and also guard against possible health risks by performing two complete sets of certified baseline tests, one within a year before the gas well is drilled and one less than six months after the well is completed. Even if no contamination is found right after the well is completed, your water remains at risk, for two reasons. First, underground contaminants may migrate slowly and require months or years to reach your aquifer, spring, pond or stream. Second, the gas company may “frack” the well several more times over the next 20 to 30 years, and each “fracking” event injects several million gallons of contaminated fluids under very high pressure, stressing the well and nearby geologic formations.

CSI recommends that the full set of certified baseline tests be repeated every time the well is hydraulically fractured or every two years, whichever comes first. Testing should continue to be repeated every two years for at least ten years after the well is abandoned and plugged. (Note that this testing frequency is generally in line with existing New York State Department of Health requirements for monitoring public drinking water supplies for possible contaminants.) Significant increases in the concentrations of one or more indicators can provide a pattern, or chemical “signature,” of contamination coming from a gas well. If experts conclude on the basis of before and

after test results that the well, spring, pond or stream on your property has been contaminated by nearby gas well activity, you should be in a strong position to demand compensation from the gas company. In addition, CSI recommends that you submit a request to the New York State Department of Environmental Conservation to pay for a comprehensive set of tests of contaminants in your water, including specific tests for the chemicals in the hydraulic fracturing fluids used in gas wells near your property, a dozen or more metals, and several specific radioactive compounds that can be released from underground rock.

A comprehensive set of tests will cost thousands of dollars. It will give you information you need in order to evaluate the long-term risks to your health and your property that result from contamination. Unfortunately, once a groundwater aquifer is contaminated, it is all but impossible to clean it up. In almost all cases, the best that can be done is to monitor and manage the health risks caused by specific contaminants.

#12. Are there any circumstances when I can collect samples myself, do fewer lab tests and save money, and maybe even do some tests on my own?

In between full sets of baseline tests, you can monitor for contamination "unofficially" on your own using a few "red flag" tests. The "red flag" tests are: pH to test for acid; conductivity to test for brine; turbidity to test for well casing leaks in the groundwater aquifer; chemical oxygen demand to test for bulk organic chemicals; calcium hardness to test for calcium; total hardness to test for other metals in addition to calcium; and heightened burning of a small flame such as a match or a candle to test for methane. You can test for two of these "red flag" indicators of contamination at home: Methane (with a match: collect sample in an air-tight jar, take to a well-ventilated room or outdoors, open and hold under a lighted match; do not light the match in a poorly ventilated room); and pH (with litmus paper). For the other "red flag" indicators, you can collect water samples yourself and drive them to the certified lab.

If a "red flag" monitoring test turns up evidence of contamination, repeat the test to be sure there's no mistake. If you confirm the result, then stop drinking the water and contract with a certified lab immediately to perform a complete set of baseline tests, again using an unbiased third party to collect the sample. If you suspect increased methane (natural gas) in your water, immediately make sure your home is well ventilated so the gas can escape and does not build up and create an explosion hazard, then immediately report the problem to your local fire department. When the test results come back from the certified lab, ask the lab to help you interpret them or to direct you to someone in the New York State Department of Environmental Conservation or the New York State Department of Health who can help you.

#13. Where can I find a certified testing lab?

Laboratories are certified by the New York State Department of Health – Environmental Laboratory Approval Program, or ELAP. To get the names and contact information for labs in your county, call your local Cornell Cooperative Extension office or your county health department. NYSDOH-ELAP maintains a list of certified labs on their website at http://www.wadsworth.org/labcert/elap/comm.html in alphabetical order by county. You will have to call the lab and ask them if they perform the specific tests you are interested in and what the lab charges for each test. Because of the wide range of chemicals involved in

potential contamination of water from gas wells, it is unlikely that any one lab, even a large one, will be certified for all the tests recommended in this FAQ sheet. However, that is not a problem. It is common practice for certified labs to subcontract with other certified labs for tests they are not able to perform themselves. CSI recommends that landowners look for a lab that will take the time to assist them in understanding and interpreting test results.

Information sources

The State of Pennsylvania appears to be ahead of New York with respect to the regulation of gas wells, laws that protect water resources, and keeping the public informed on issues related to gas wells. Two publications from Penn State Cooperative Extension provide valuable information about risks to water for landowners who have signed, or who intend to sign, leases with gas companies. While the Penn State publications are directed at leaseholders, they apply equally to landowners who live close enough to be impacted by a gas well on a leaseholder's property.

The web addresses of both Penn State publications are provided below. While excellent sources of information for landowners, the Penn State publications are less than perfect from the standpoint of baseline water testing. For example, the list of certified tests in Water Facts #28 omits several tests that are recommended in this FAQ sheet including chemical oxygen demand, ammonia-nitrogen and naturally occurring radioactive materials (NORMs). Further, it does not offer guidance on how to manage health risks if contamination is found. Finally, Water Facts #28 describes three tiers of tests on page 6, from cheap to expensive, implying that the cheap tier is sufficient for many purposes, then contradicts itself on page 7 and advises leaseholders to do all three tiers of tests on all the groundwater, springs, ponds and streams on their property. CSI agrees with Penn State's recommendation on page 7 of Water Facts #28 and believes that the safest guiding principle for water testing is that "if it's not included in pre-drilling baseline tests, it is legally invisible." Based on this principle, plus the fact that it is impossible to know for certain exactly which contaminants may end up in your water, CSI believes it is better to do a few tests too many than a few tests too few.

Some money can be saved by using "red flag" tests to monitor for contamination between regularly scheduled sets of baseline tests. While it is tempting to try to save money by doing fewer baseline tests, saving a little money runs a real risk of not being able to document contamination in court if it happens to you. Baseline testing is like an insurance policy for your water. It's expensive, but it will pay large dividends if you are one of the approximately one in one hundred to one in one twenty people whose water will probably be contaminated by a gas well.

In addition to Penn State Cooperative Extension's excellent though somewhat flawed publications, there are numerous websites that provide general information on gas wells, hydraulic fracturing, and contamination of groundwater and surface water. Unfortunately, much of the information on these websites is redundant.

A few websites are listed below.

1. Penn State Cooperative Extension, Water Facts #28, "Gas Well Drilling and Your Private Water Supply," provides an overview of what landowners can do to protect the wells, springs, ponds and streams on their property from possible contamination, http://resources.cas.psu.edu/WaterResources/pdfs/gasdrilling.pdf

2. Penn State Cooperative Extension Portable Classroom, "Natural Gas Extraction and How

to Protect Your Private Water Supply," provides information similar to Water Facts #28 but in greater depth. Purchase CD for $10 from County Cooperative Extension agents listed at http://resources.cas.psu.edu/WaterResources/pdfs/portableclassroom.pdf

3. New York State Water Resources Institute website, page on Gas Wells, offers general background, informative blog, http://wri.eas.cornell.edu/gas_wells.html

4. Selected links from New York State Water Resources Institute website (see 3, above):

a) Website of West Virginia Surface Owners' Rights Organization, "How a Gas Well is Drilled Down Into the Ground, and What Can Go Wrong," uses informative graphics to explain drilling technology, http://www.wvsoro.org/resources/how_a_well_is_drilled/index.html

b) Article in Denver Post, "Drilling Process Causes Water Supply Alarm," presents evidence that private wells are at risk of contamination from gas well waste fluids http://www.denverpost.com/breakingnews/ci_11001835

c) Map of drilling rig locations throughout the United States using a GIS Interface, http://gis.bakerhughesdirect.com/RigCounts/default2.aspx

5. Website of Oil and Gas Accountability Project, report by L. Sumi, Shale Gas: Focus on the Marcellus Shale, discusses frequency of hydraulic fracturing, http://www.earthworksaction.org/pubs/OGAPMarcellusShaleReport-6-12-08.pdf

6. Website of Dr. Theo Colborn's Endocrine Disruption Exchange, http://www.endocrinedisruption.com/home.php , pages entitled "Chemicals Used in Natural Gas Operations" offer a comprehensive list of toxic chemicals likely to be found in gas well waste fluids

7. New York State Department of Environmental Conservation's Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (GEIS), http://www.dec.ny.gov/energy/45912.html. The GEIS was prepared in the 1980s before the introduction of horizontal drilling and high volume hydraulic fracturing. A Supplemental GEIS is currently being prepared to regulate potential impacts from this new gas well technology. It remains to be seen whether the Supplemental GEIS will be up to the task.

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