

In keeping with the subject of the August 6th public information meeting, the following questions pertain to regulation of gas drilling activities that were unable to be answered. For convenience, we have combined similar questions and paraphrased.

Questions regarding environmental impacts resulting from gas drilling, such as the possibility of hydraulic communication between the “frac” zone and aquifers that may result in groundwater contamination, stimulation of earthquakes, and possible leakage from fluid pits, etc., are best directed to the New York State Department of Environmental Conservation. The DEC will be amending the gas and oil drilling GEIS and holding public hearings on the draft scoping document in the early fall. The Planning Department urges all who have questions regarding environmental impacts to participate in those public hearings.

Like wise, questions regarding the economics of the natural gas market, the number and nationality of active drilling companies, etc. are not in keeping with the subject of regulation of gas drilling activities. We cannot speculate on the motivations of the gas drilling companies.

1. Can propane transmission lines be used for natural gas transmission?

We have placed a call to the Public Service Commission regarding this question and hope to have an answer soon.

For more information, contact

NYS Public Service Commission http://www.dps.state.ny.us/New_NaturalGas.html

Energy Information Administration

http://www.eia.doe.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/process.html

2. Is state land in Otsego County under lease?

According to the NYS DEC website regarding leases on state land, at the end of 2007, DEC administered 106 leases on 83,021 acres of state land in Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Cortland, Erie, Ontario, Schuyler, Seneca, Steuben, Tioga, and Tompkins Counties.

<http://www.dec.ny.gov/energy/1528.html>

3. Are there any regulations pertaining to drilling/open pits in floodplains?

Drilling in flood plains has been allowed in the past. NYS DEC reviews local government flood plain protection plans during the permitting process. NYS DEC can impose additional conditions when drilling is in a floodplain. Closed tanks for storage of frac fluid are a common permit condition in floodplains. If frac fluid is contained in tanks, there are additional requirements for anchors or tie-downs. Pipe/casing height requirements can be imposed based on the flood elevations. Drilling companies are proactively using closed tanks rather than open pits.

4. Is it true that the chemicals used in hydraulic fracturing fluids proprietary? What chemicals are used?

It has been reported that gas companies claim hydraulic fracturing fluids are proprietary (Earthworks). The EPA’s Study to Evaluate the Impacts to USDWs by Hydraulic

Fracturing of Coalbed Methane Reservoirs discusses hydraulic fracturing fluids in Chapter 4. http://www.epa.gov/OGWDW/uic/wells_coalbedmethanestudy.html (USDW = Underground Source of Drinking Water) Earthwork's Hydraulic Fracturing 101 website presents a table from the draft version of the above referenced EPA study that does not appear in the final version. (<http://www.earthworksaction.org/FracingDetails.cfm>). Earthwork's Oil and Gas Accountability Project also issued a report regarding hydraulic fracturing fluids.

According to a presentation by Linda Collart, NYS DEC Region 8 Mineral Resources Program Manager, frac fluid composition is requested as part of DEC's drilling application.

http://blogs.cce.cornell.edu/gasleasing/files/2008/07/marcellus-shale_locgovt_webinarnysdec_7-15-2008_21slides-1.pdf

According to Ted Loukides, a Mineral Resources Specialist with the NYSDEC's Division of Mineral Resources in Albany, the NYS DEC has been requesting information regarding the components of the frac fluid. The drilling companies have been supplying Material Safety Data Sheets (MSDS) for frac fluid components, including nitrogen, sand, bactericide, guar gum, clay inhibitors, and "proprietary components". Diesel fuel is not a component of frac fluids.

During the public information meeting, members of the audience said that the Dept of Energy states that fluids from gas drilling are 10 times more toxic than any other industrial process. For clarification, the Dept of Energy study reports:

"Produced water is separated from gas during the production process."

"Studies indicate that the produced waters discharged from gas/condensate platforms are about 10 times more toxic than the produced waters discharged from oil platforms"

http://s3.amazonaws.com/propublica/assets/natural_gas/doe_produced_water_2004.pdf

A point of clarification: Produced water is not the same as the fluids used in drilling operations hydrofracturing.

We recently inquired with Dr. Gary Lash, SUNY Fredonia, about the Dept of Energy study as it relates to produced water from the Marcellus and Utica Shales. The following is his response:

"You are correct in your reading of the generation of dry gas - this occurs at the highest temperatures and normally is accompanied by very little water. I am out of town for the next few days; however, I will see what I can find regarding thermal maturity and get back to you in several days."

"Essentially, elevated temperatures result in the progressive breakdown of long molecular chains of carbon, hydrogen, and oxygen. Each step is accompanied by the liberation of water. However, by the time natural gas (methane - CH₄) is

produced, much of the there is very little hydrogen and almost legible oxygen. The end result is that little or no water is produced.”

5. How are frac fluids disposed of? What if they contain radon, radium or uranium?

According to a presentation by Linda Collart, NYS DEC Region 8 Mineral Resources Program Manager, permit conditions require frac fluid be removed from the site by a part 364 waste hauler.

http://blogs.cce.cornell.edu/gasleasing/files/2008/07/marcellus-shale_loggovt_webinarnysdec_7-15-2008_21slides-1.pdf

Part 364 haulers are regulated by the Department of Solid and Hazardous Waste. Part 364 haulers are required to:

- *Identifying the type of waste transported, including any testing that may be necessary to determine whether or not the waste is hazardous;*
- *Ensuring that the waste is delivered to an authorized waste receiving facility,;*
- *Maintaining records of the amount of waste transported to each receiving facility*
- *Manifesting shipments of hazardous waste, low-level radioactive waste and regulated medical waste*
- *placarding hazardous waste shipments*

<http://www.dec.ny.gov/chemical/8785.html>

Frac fluids that may contain radon or other low-level radioactive material may also be disposed of by a Part 364 hauler.

6. What is the duration of drilling? How long until the site is reclaimed and looks like a nice “Christmas tree”? What is the average life-span of a gas well?

The duration of drilling operations is dependant on several factors, total depth, horizontal or vertical well drilling, number of horizontal bore holes to be drilled from one location, type of stimulation i.e. hydraulic fracturing, single or multiple stage stimulation, etc. For a Drilling operations can last from a one to two weeks typically operate 24 hours per day, after the drilling is complete, the drill rig is moved off the site. Other smaller trucks are then moved on the site, and the well is stimulate. Stimulation (hydraulic fracturing) typically takes a week, maybe more for horizontal wells with several phases of completion. After the stimulation is complete, other equipment is brought on site and the well is flared for approximately one month.

A permit conditions requires the drilling company to restore the land to match the preexisting contours. The NYS DEC conducts site inspections to ensure compliance with the permit condition. The permit does not have conditions regarding the preservation and spreading of topsoil or seeding and planting. Topsoil, seeding and planting are typically subject to the lease agreement.

The NYS DEC requires a drilling and completion report that will include some production information from the flaring of the well. Some of the information in the report

is considered confidential. Annual reports are also required. If the drilling company wishes to flare the well subsequent to drilling operations, or wishes to plug a well, they must file a Notice of Intent (NOI) and permits will be issued for that activity. If the drilling company wishes to drill an extension on a horizontal well, they must apply for a new drilling permit.

Regarding the life expectancy of gas wells, it maybe to early to speculate on the life expectancy of wells in the Marcellus and Utica shales, since these the development of these resources is relatively new. The Marcellus and Utica shales are often compared to the Barnett Shale in Texas. According to Truestar Petroleum Corp, Barnett Shale wells stabilize and produce for an average 20 years, with expected life in excess of 30 years.

<http://www.truestar-petroleum.com/texas.html>

In addition, multiple targets or developed zones and changes in technology may influence the life of the well.

7. How is stormwater managed?

The Clean Water Act (“CWA”), stormwater discharges from certain construction activities are unlawful unless they are authorized by a national or state permit. Natural gas drilling is exempt from the Clean Water Act. Historically, drill sites have not been required to get SPDES permits. The NYS DEC is working on a Memorandum of Understanding with the Division of Water for sites greater than five acres of disturbance.

SPDES General Construction Permits are required for the disturbance of one or more acres of land. SPDES General Construction Permits require Storm Water Pollution Prevention Plans.

The environmental assessment form (EAF) for natural gas drilling addresses slope and erosion control measures. The drilling permit includes a general permit condition that stipulates fluid containment requirements.

8. What sort of well was drilled in Cherry Valley? Was water used? From where was it taken?

According to the DEC’s online searchable database of gas wells, <http://www.dec.ny.gov/cfm/xtapps/GasOil/>, the Sheckells 1 well was drilled in Cherry Valley in July of 2007 by Covalent Energy Corp. The permit was issued four months prior. The vertical well took nine days to drill. The well targeted the Trenton Black River formation and was completed at 2950 ft below grade. A permit for the Sheckells 2 well was submitted in May of 2008. That permit has not been issued. The proposed vertical well will be 2650 ft deep and will target the Utica Shale.

The Ted Loukides from the NYS DEC conducted site inspections during the drilling. Water used for drilling and hydraulic fracturing of the well was brought in on tanker trucks. Local surface water sources were not used.

Other information obtained from NYS DEC:

The drilling permits contain a permit condition that requires drilling companies to notify local governments after the permit is issued. Lately, when permit applications are received for a location in a town where this is a new activity, the DEC *occasionally* will contact the local government prior to the issuance of the permit. The environmental conservation law pertaining to natural gas drilling also requires drilling companies to obtain all necessary permits (this would include local laws pertaining to road preservation that may require the posting of bonds).

There is no requirement that the drilling company notify towns that they may have to drive through to access the site. For example, if the well is located in New Lisbon, the drilling company may access the site from I-88 by driving through the Towns of Unadilla, Gilford, Butternuts, and Morris by way of Routes 8 and 51. New Lisbon will be notified. There is no requirement that the other four towns be notified.

When a drilling company applies for a well permit, the company proposes a unit. Horizontal wells cannot drill beyond the unit boundaries. Recent legislation reduced the unit spacing. The legislation that reduced unit spacing requirements does not mean that wells will be located more closely together. It means the spacing distance between the well bore hole and the unit boundary is reduced. The intent is to ensure efficient and economic recovery of oil and gas resources while protecting the correlative rights of mineral resource owners. The language of the legislation can be found at:
<http://assembly.state.ny.us/leg/?bn=A10526>