

Explanatory note:

The following document is a report I prepared on gas drilling in the Marcellus Shale. People who have been paying attention to this issue will most likely not find anything new in this report. My “target audience” was the the Cortland County Legislature because it has done almost nothing about this issue. My intent was to increase the awareness of the legislators by citing documents published by “official” agencies rather than grassroots links or anecdotal sources. I felt this would be seen as more credible. I distributed the report to the Cortland County Legislature and read a 5 minute summary at their 8/27/09 meeting during the Privileges of the Floor segment of the agenda. Because only comments pertinent to agenda items are allowed I made reference to them in the introduction.

The three main sources I used were:

*Potential Development of the Natural Gas Resources in the Marcellus Shale*  
from the National Park Service

*Marcellus Shale: What Local Government Officials Need to Know*  
from Penn State University College of Agricultural Sciences

*Observations Concerning The Role of Local Government in Relation to Natural Gas Exploration and Production in the Marcellus Shale*  
from the Southern Tier East Regional Planning Development Board

Links to these and other sources are included at the end of the report.

I also added a draft resolution from Senator Seward. It seeks to get local governments to become more involved with the SEQR permitting process. Some have criticized this resolution as being weak for a variety of reasons but, again, I felt his name adds credibility. Passing such a resolution is a relatively easy first step for a governmental body to take and would hopefully lead to taking some ownership of the issue.

A post-script: The day following my presentation to the County Legislature, the Cortland Standard, our county's only daily newspaper, devoted its entire editorial to the issue of gas drilling, referencing my report numerous times, and urging the Legislature to take action.

Jim Weiss  
Marathon, NY  
8/28/09

Complete Text of Report on Gas Drilling Submitted to Cortland County Legislature  
August 27, 2009

(A summary/abstract of this report will be presented during Privileges of the Floor)

Jim Weiss, Chairman, Planning Board of the Town of Freetown

( HYPERLINK "mailto:jandjweiss@frontiernet.net" [jandjweiss@frontiernet.net](mailto:jandjweiss@frontiernet.net))

Hello. My name is Jim Weiss. I have been a resident of Cortland County for 30 years and for the past 15 years have served as the Chairman of the Planning Board in the Town of Freetown.

The following pages are a report I have prepared for you about a topic that may prove to have serious, long term, and far reaching consequences for the residents, environment, and quality of life in Cortland County.

This topic relates to several items on tonight's agenda. Item 9 speaks to the issue of Fire and Emergency Management. Items 19 and 20 propose mechanisms to minimize potential adverse impacts of exploiting energy extraction through wind farming in Cortland County. And finally, item 22 extends financial support to the County Chamber of Commerce for offering "a variety of quality of life programs and projects in the area[s] of tourism" as well as in other areas.

### **Introduction**

The topic is the imminent and large increase in exploration, drilling, and extraction of natural gas from the Marcellus shale which underlies all of Cortland County. Let me just say at the outset that this is not about keeping the new wave of gas drilling out of Cortland County. Drilling is coming. What is at question is whether Cortland County will undertake the necessary preparations now to ensure that gas extraction is done with a maximum of safeguards to protect the environment and quality of life of which we are rightly proud, as reflected in item 22 on tonight's agenda.

I will briefly outline some of the concerns for you and then discuss what options we as a County may wish to pursue. The concerns described here are not hypothetical. They are based on real experiences that have taken place in other gas mining states including Wyoming, Texas, and Pennsylvania.

### **Horizontal ("Unconventional") Drilling**

Although gas drilling has been going on for many years in New York State and Cortland County, this round brings with it a whole new set of concerns. Whereas as previous wells were drilled in only a vertical direction, the new mining techniques, after drilling a deep vertical bore, turn 90 degrees and drill horizontally. The conventional vertical bore technique exposes a "pay zone" of 50 to 300 feet, horizontal drilling can extend up to a mile . Whereas conventional oil and gas wells result in 1-1/2 to 3 acres of disturbance at the drill site, Marcellus well sites are likely to range from 4 to 6 acres. Unconventional

development [can involve] drilling numerous wells in a repeatable manner that captures economies of scale.” These reservoirs produce over 30 years or more. (National Park Service report p.2-4). (References cited in this report are listed on the last page.)

### **Well Spacing**

“It is conceivable that over the course of many years wells could be drilled on every available spacing unit. A spacing unit is the number of acres per well required to efficiently develop the natural gas resource. In most cases, state regulatory agencies initially define allowable spacing units. This often results in wells being spaced closer together over time. The spacing histories of the Barnett, Fayetteville, Antrim, New Albany, Ohio, and Woodford shales all trend from larger to smaller spacing units. For the Marcellus Shale, it is reasonable to expect 320-acre or 160-acre spacing initially, and eventually some areas experiencing infill drilling to 80-acre or even 40-acre spacing should drilling be economic” (National Park Service). Currently there are projections of several thousand wells being developed in Broome County.

### **Water Issues**

Hydrofracturing A major concern with well drilling is the potential impact on water quality - both surface water and ground water. In order for horizontal drilling to reach gas pockets, the well bore must be injected with water pumped in at very high pressure to fracture the shale, a process known as “hydrofracturing” or “fracking” for short. To this water are added numerous chemicals to create a fracking fluid known as “slick water”. Conventional drilling used to be regulated by the 1974 federal Clean Water Drinking Act. But in 2005 Congress passed the so-called “Haliburton Loophole” which exempts gas drilling from meeting the requirements of the 1974 law.

### Fracking Fluid

“Because the industry is exempt from federal regulations requiring full disclosure, the exact contents and concentrations of fracking fluid has been something of a mystery. Industry officials have successfully argued that sharing precise concentrations and recipes would give away trade secrets. Nevertheless, some information is available.

In response to a recent Freedom of Information Request, the DEC released the names of 48 hazardous substances used in preliminary development of the Marcellus Shale in upstate communities, including the Southern Tier and Finger Lakes areas. Most of them are flammable or explosive and many are caustic. The agents typically include an assortment of tongue-twisting chemicals - some documented in more detail than others on the MSDS sheets - that fall into different categories serving various purposes.

Friction reducers and surfactants, for example, reduce resistance involved with pushing large quantities of fluid over great distances in tight spaces. Biocides kill organisms that interfere with production. Scale inhibitors reduce buildup in pipes and casings. Products like SandWedge have particles that lodge into tiny bedrock fractures to allow gas to flow freely over years or decades.” (Binghamton Press, 8/17/09)  
Many of these agents are highly toxic in small concentrations. Gas drillers cite low

concentrations of chemicals make them safe. But 0.1% of a million gallons (see “Water Volume” below) is still 1000 gallons of additive.

“Fracture fluids typically contain materials such as demulsifiers, corrosion inhibitors, friction reducers, clay stabilizers, scale inhibitors, biocides, breaker aids, mutual solvents, alcohols, surfactants, anti-foam agents, defoamers, viscosity stabilizers, iron control agents, diverters, emulsifiers, foamers, oxygen scavengers, pH control agents, and buffers. An appropriate concern in all cases is that companies must utilize proper surface casing design and cementing to isolate and protect aquifers from downhole pathways of contamination. It is equally important that operators monitor casing pressures throughout the life of a well to identify and correct any downhole leaks that might establish a pathway. The state regulations of New York, Pennsylvania, Ohio, and West Virginia have safeguards in place for the protection of aquifers. However, the oversight capacity of agencies strained by a substantial increase in drilling activity is a legitimate concern”(National Park Service). It is anticipated that the NYS DEC will receive 40,000 drilling applications over the next five years, with a staff of 19 people to oversee compliance.

Water VolumeA hydrofracking well uses up to 5 million gallons of fluid. (Just for comparison, the entire city of Binghamton uses 6 million gallons of water per day; Cortland City uses 1.5 million.) In addition, over the 20-30 year use of the well, repeated fracking operations are required. Obviously, with the extensive operations planned, there is potential for spills and contamination of streams and underground aquifers in the immediate vicinity of drilling. But there is also the issue of consumption and disposal. Clearly local aquifers cannot sustain this level of consumption. And where will the used fracking fluid be disposed of? These are issues of vital concern to Cortland County.

It is likely that much of this water will have to be trucked in and out of the drilling site. That will inevitably put a serious burden on local roads.

### **Roads**

In its report, the National Park Service projects the following road use per well:

“Drill Pad and Road Construction Equipment – 10 to 45 truckloads

Drilling Rig – 30 truckloads

Drilling Fluid and Materials – 25 to 50 truckloads

Drilling Equipment (casing, drill pipe, etc.) 25 to 50 truckloads

Completion Rig - 15 truckloads

Completion Fluid and Materials – 10 to 20 truckloads

Completion Equipment – (pipe, wellhead) 5 truckloads

Fracture Stimulation Fluids and Materials – 100 to 1000 truckloads

Fracture Stimulation Equipment (pump trucks, tanks) – 100 to 150 truckloads.

Refracturing wells after 3 or 4 years has proven effective in the Barnett Shale of Texas. If this practice extends to the Marcellus Shale, then truck traffic will have few lulls” (Nat. Park Serv).

The above table shows a potential use of 1365 truck trips per well.

*“Control of Oversize Vehicles on Town Roads – Although a remote location is not a prerequisite for drilling natural gas wells, the size requirements for drilling sites [i.e. a spacing unit], usually 40 acres or more, pretty much guarantees that well sites will be in very rural settings. This means that site access will usually be by town roads. Even though drilling rigs will come to a site in pieces, the individual parts never-the-less will be long and heavy.*

Usually the more remote town roads are built for light duty use and may not be able to accommodate oversized loads. Heavy loads can damage culverts and small bridges while tall loads may damage overhanging trees. Where very long loads are involved the “swing” of the load around corners might be obstructed by roadside features including fences and telephone poles. In addition to the public access on town or county highways, most drilling sites will require local access roads or driveways for direct access. The location and design of such driveways should be reviewed to assure that at the point of entry onto the public highways they do not constitute a traffic hazard or cause storm drainage problems.”

“It is not unreasonable for a town, in consultation with its highway superintendent, to enact by local law, regulations concerning weight limits and size regulations which require the operator of oversized loads to verify turning clearances at intersections sharp curves or switchbacks, and weight bearing strengths of culverts and bridges along the course their vehicles will travel from main state highways to drilling sites. As part of these regulations there could be provisions requiring suitable protection to roadways and neighboring property which might be affected by the movement of large and heavy vehicles and equipment” (Southern Tier East Regional Planning Development Board).

“Local governments do have the option of requiring companies to post a bond, but this requires careful planning ahead of time in order to achieve this, and the local government must be diligent about following procedures to recover costs if the gas company causes damage” (Penn State)

It is also worth noting that in some operations truck traffic continues 24 hours a day. There have been cases reported of truck traffic so dense that it interfered with local residential use including school buses. Traffic accidents are a potential problem.,

### **Fire and Accident Preparedness and Emergency Response**

Experiences in other states have shown that serious accidents can occur. These include spills of hazardous chemicals, fires, and explosions of natural gas. This raises the question: will local emergency response teams, fire departments, and hazardous waste response teams be able to meet these challenges? In this regard, item #9 on tonight’s agenda, Fire and Emergency Management is particularly relevant.

**Damage to Habitat** This operation entails clearing of forest and extensive bulldozing of land, with several potential impacts :

Habitat fragmentation—Fragmentation will decrease habitat quality for many wildlife species that are dependent on deep forest habitat; it is also associated with an increased spread of nonnative and invasive plants, causing further habitat degradation for native plants and animals.

Aesthetics and recreation—heightened noise and the effects of drilling may affect the aesthetics and recreational value of a resource for both nonconsumptive (e.g., hiking, birding) and consumptive (e.g., fishing, hunting) recreational use. This may affect communities that are promoting natural- resource-based tourism.” (Penn State report) -

Stormwater Runoff In addition to the well site itself, “the construction of access roads, drainage ditches, and the location of other facilities which may be associated with but not officially a part of the drilling site may [may require local regulation] for the control of stormwater runoff” (Southern Tier East Regional Planning Development Board).

## **Other Potential Impacts**

### Air Pollution

Hydrofracking pumps and compressors run 24 hours a day. They use up to 150 gallons of diesel fuel per hour. The noxious exhaust from these engines will affect the air quality of farms, schools, and homes downwind from the drilling site.

### Noise Pollution

“Drilling operations can be noisy especially in areas such as most rural environs where the ambient or background noise is so low that any noise is discernable at a great distance. Clearly if a drilling operation is going on 24-hours a day this can disturb sleep patterns and could have an adverse effect on livestock in any nearby agricultural district” (Southern Tier East Regional Planning Development Board). Twenty four hour per day truck traffic also can add significant stress.

### Light Pollution

Again, because a drilling rig operates 24 hours per day and is essentially a 5 acre industrial site, there is a large amount of outdoor lighting. “Local regulations can require shields or deflectors which limit the emission of direct light. Local regulations of outdoor lighting require specialized monitoring equipment and a certain degree of expertise” (Southern Tier East Regional Planning Development Board).

### Crime

Because workers on a drilling rig are largely a transient population, experiences in other states have shown “an increase in crime, particularly nonviolent crimes such as driving under the influence and drug violations” (Penn State).

### Property Values

Many of the adverse impacts of gas drilling can substantially depress the market value of leased properties or properties in the vicinity of gas mining operations. Over time, this can in turn affect the assessed valuation of properties and the corresponding tax revenues. This would present a real burden to local municipalities.

### Cortland County’s Reputation as a Recreation and Tourism Destination

Cortland County prides itself as a recreation and tourism destination with diverse offerings all year round. How will Cortland’s reputation as a desirable tourism destination will be affected by extensive mining operations?

## **The current status of gas well regulation in NYS**

Gas drilling in NYS has most recently been regulated under the 1995 Generic Environmental Impact Statement (GEIS). Because of all the new issues associated with hydrofracking, the DEC is preparing a supplemental GEIS (SGEIS) scheduled to be released in September.

After the release of the SGEIS there is a 30 day comment period, (hopefully extended to 60 or 90 days), sometime after which the DEC will issue its final document. Issuing of well drilling permits could very well start early in 2010. Clearly, there is little time for local governments to get involved.

In the past, the DEC has preempted most regulatory authority over gas drilling including zoning, noise, water, site plan review and other ordinances (Environmental Conservation Law Section 23-0303).

While counties have little direct regulatory authority in gas drilling, the towns have retained one important area - the use of local roads. Whether other areas of regulation by towns may apply will not be known until the SGEIS is released. How well rural towns in Cortland County are equipped to develop road use ordinances and permitting procedures is questionable.

On July 28, 2009 the Cortland branch of the Soil and Water Conservation Service (SWCD) held a workshop for town and county officials titled "A Proactive Municipal Response to Natural Gas Development". The presenters were two experts in the field, Kimberly Roe, an environmental attorney and Mark Millspaugh, an environmental engineer. Both speakers emphasized repeatedly the importance of local governments and agencies to get involved with the process NOW. An essential means to accomplish this is for these entities to become Involved Agencies so that they can participate in the Coordinated Review when permits are issued. It is through the Coordinated Review that local concerns are addressed. How local governments can become Involved Agencies is explained further below.

### **What Can Cortland County Do?**

Adopt resolution: Attached to this report is a draft resolution made available from the office of Senator Jim Seward. By passing this resolution local agencies (County Legislature, Town Councils, County Planning Board, Town Planning Boards, etc.) can exert pressure on the DEC to include themselves, or support the inclusion of other groups, as **Involved Agencies** in the permitting process relating to gas drilling operations. (The DEC is the Lead Agency.) This would guarantee a "place at the table" to ensure that local concerns are addressed and that local ordinances or permits, such as for road usage, are adhered to. (Apparently, according to the presenters at the SWCD workshop, it is highly unusual for a local government to be turned down as an Involved Agency in the Coordinated Review process required under the State Environmental Quality Review Act [SEQR]).

Contact the DEC to extend the comment period on the SGEIS from 30 days to 90 days and urge local governments and agencies to do the same.

Form a Task Force As the County considers adopting item #19 and #20 in tonight's agenda, it is demonstrating the importance of protecting our environment with regard to wind farming. Hopefully, based on the information I have presented in this report, you will also see the importance of engaging the gas drilling issue with a correspondingly proactive approach. As the Marcellus Shale underlies the entire county, the potential for widespread impact is very real. 150,00 acres, or approximately one half of the County has been leased for gas drilling.

Facilitate a coordinated response by local governments. It is obvious that most rural towns in Cortland County do not have a lot resources to research this issue, review documents from the state, draft ordinances or permitting processes, etc. While the County may actually have little direct regulatory authority in gas drilling, it could serve as a facilitator for the towns. It makes little sense for each town do undertake this individually. It would be a waste of precious resources. In addition, having a consistent, coordinated approach among the towns would be more practical and potentially easier to enforce. County level involvement could facilitate the dissemination of important documents, notices, or other information to town officials, as well as assist towns in responding to the DEC SGEIS. A County Task Force could aid greatly in this function, possibly assisted by the County Planning Department, the SWCD office, or some other agency. "[County] planning boards provide extensive technical support to town and village planning boards in performing their local review authority, and provide educational services to local governments and the public at large on planning related topics" (Southern Tier East Regional Planning Development Board).

Encourage Towns to become proactive on this issue now.

Support Assembly Bill A8748 Contact our assembly representatives (Barbara Lifton and Gary Finch). This bill seeks to ensure safe drilling practices and hold drillers financially liable for damages ( [HYPERLINK](#)

["http://assembly.state.ny.us/leg/?bn=A08748"](http://assembly.state.ny.us/leg/?bn=A08748)

<http://assembly.state.ny.us/leg/?bn=A08748>)

Urge the NYS Legislature to require a Code of Ethics for gas drillers as they have for Wind Energy Companies

Support Congressional Bills H.R. 2766 and S.1215 which would repeal the 2005 exemption from the Safe Water Drinking Act for the gas drilling industry (Congressman Arcuri and Senators Schumer and Gillibrand)

Educate yourselves on the issues. Use the accompanying list of websites or Google Marcellus gas drilling for more information.

## References Cited in this Report and Other Information Resources on Gas Drilling

**Otsego County** - a very extensive website on their preparations

HYPERLINK "<http://www.otsegocounty.com/depts/pln/NaturalGasLeasing.htm>"

<http://www.otsegocounty.com/depts/pln/NaturalGasLeasing.htm>

**Sullivan County.** The website below is for Sullivan County. Enter "Gas Drilling" in search window

HYPERLINK "<http://www.co.sullivan.ny.us>" <http://www.co.sullivan.ny.us/>

**Southern Tier East Regional Planning Development Board** (Cortland County is one of six counties served))

Report on Drilling in the Marcellus Shale. Go to their web site, then click on Document Library in the menu bar, then type in "Marcellus" or "Marcellus Shale" which will give you a link to Technical Paper #08-07:

*"Observations Concerning The Role of Local Government in Relation to Natural Gas Exploration and Production in the Marcellus Shale"*

HYPERLINK "<http://www.steny.org>" <http://www.steny.org/>

**Tompkins County** Environmental Management Council

HYPERLINK "<http://www.co.tompkins.ny.us/emc/GasDrilling2008.htm>"

<http://www.co.tompkins.ny.us/emc/GasDrilling2008.htm>

**National Park Service** Report: *"Potential Development of the Natural Gas Resources in the Marcellus Shale"*

Go to National Park Service at the website below and enter "Marcellus Shale" in search window.

HYPERLINK "<http://www.nps.gov>" [www.nps.gov](http://www.nps.gov)

Recent coverage on Gas Drilling in the *Binghamton Press*. Type "fracking fluids" in search window

HYPERLINK "<http://www.pressconnects.com>" <http://www.pressconnects.com/>

*Marcellus Shale: What Local Government Officials Need to Know*

A report on Marcellus Gas Drilling by **Penn State University College of Agricultural Sciences**

HYPERLINK

"<http://downloads.cas.psu.edu/naturalgas/pdf/MarcellusShaleWhatLocalGovernmentOfficialsneedtoknow.pdf>"

<http://downloads.cas.psu.edu/naturalgas/pdf/MarcellusShaleWhatLocalGovernmentOfficialsneedtoknow.pdf>

Some statements from **Senator Seward's** Office. Enter "Gas Drilling" in search window

HYPERLINK "<http://www.nysenate.gov/senator/james-l-seward>" <http://www.nysenate.gov/senator/james-l-seward>

## Appendix

Senator Jim Seward's Draft Resolution on Local Government Participation

### DRAFT MODEL RESOLUTION

RESOLUTION, URGING DEPARTMENT OF ENVIRONMENTAL CONSERVATION COMMISSIONER GRANNIS TO PROMULGATE REGULATIONS REQUIRING THAT LOCAL GOVERNMENTS BE DESIGNATED AS INVOLVED AGENCIES FOR STATE ENVIRONMENTAL QUALITY REVIEW ACT PROCEEDINGS RELATING TO NATURAL GAS PERMIT APPLICATIONS FOR PROPOSED SITES WITHIN THE BOUNDARIES OF THE LOCAL GOVERNMENTS; AND THAT LOCAL GOVERNMENTS' VIEWS BE SOUGHT AND GIVEN SIGNIFICANT WEIGHT AND DETERMINATION RELATING TO NATURAL GAS PERMIT APPLICATIONS ARE MADE

WHEREAS, It is estimated that the geologic rock bed known as Marcellus Shale may contain up to several trillion cubic feet of natural gas;

WHEREAS, Dramatic increases in the price of crude oil and the corresponding need to reduce our nation's dependence on foreign oil have resulted in a tremendous increase in interest and activity relating to natural gas exploration and drilling;

WHEREAS, Municipalities in which natural gas drilling is proposed should be consulted regarding natural gas permit applications and the comments of municipalities should be considered and given significant weight when determinations relating to natural gas applications are made;

NOW, THEREFORE, BE IT RESOLVED, that the (local legislative body here) requests that the Department of Environmental Conservation promulgate regulations to require that local government be designated as involved agencies for State Environmental Quality Review Act (SEQRA) proceedings relating to natural gas applications for proposed sites within the boundaries of the local governments and that local governments' views be solicited and given significant weight when determinations relating to natural gas applications are made; and be it further

RESOLVED, that copies of this resolution shall be forwarded to: Governor David Paterson, (insert appropriate appropriate state legislators), and Commissioner Alexander P. Grannis, New York State Department of Conservation.

Seal

Clerk