Comments on the

Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program

Well Permit Issuance for Horizontal Drilling And High-Volume Hydraulic Fracturing (HDHVHF) to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs

Senator Antoine M. Thompson
Chair, NYS Senate Environmental Conservation Committee
December 31, 2009

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Executive Summary

As Chair of the New York State Senate Environmental Conservation Committee, I am proud of New York's reputation as a State with high environmental standards designed to guard public health and protect our state's magnificent natural environment for future generations. As the Senator representing the 60th District, which includes the impoverished cities of Buffalo and Niagara Falls, I am acutely aware of the need to create and sustain jobs and wealth across New York State.

It is my goal in presenting these comments to balance and promote both a clean environment and sustainable economic development as New York State considers the introduction of Horizontal Drilling And High-Volume Hydraulic Fracturing (HDHVHF) in the Marcellus and Utica shale layers deep below the farms, countryside, villages and towns of our great state.

I have developed these comments after personally visiting both model drilling sites and impacted communities in neighboring Pennsylvania, after hosting an Albany Roundtable where drillers, environmentalists and elected officials had a chance to sit together and discuss the myriad issues and interests involved, and after studying dozens of articles and studies related to this process.

I am recommending the following in my DSGEIS comments:

- **A second comment period should be conducted after public comments on the DSGEIS have been integrated and before the final draft of the SGEIS is released.** There are currently too many unanswered questions and not enough public understanding of the issues to proceed to a final SGEIS. With Congressional urging, the United States Environmental Protection Agency (USEPA) is taking a second look at its decision to exempt HDHVHF from federal regulation. Incidents in Pennsylvania, which have resulted in contamination of water supplies, have raised questions about the drilling process. Public awareness across the state is very uneven, as the extent of the geographical area where impacts are likely to occur is not well understood. If this industry is to be successful in New York, there needs to be a successful SGEIS process where the public has a chance to help frame the safeguards that are needed. A second draft comment period would serve that interest well.
- **The DEC needs to educate the diverse geographic areas of New York State on their relation to the process.** Officials and residents of much of the state have paid little attention to the SGEIS process because they haven't been impacted by drilling companies seeking leases in their area. The DEC needs to define which areas of the state can expect which impacts before local officials can weigh the significance of this process for their area.
- **Cumulative impacts must be explored.** It is a difficult process to project the future impacts of an action as large as the proposed drilling regime. But if the final SGEIS is to serve its legal purpose, it must be based on the richest possible understanding of the cumulative impacts of the proposed action. The current draft of the document is

particularly lacking in this area, and if the public is to have intelligent input, the cumulative impacts must be defined more completely.

- **Full cost data should be part of the analysis.** The economic and social costs of an action are valid issues under New York's State Environmental Quality Review Act. In an issue which is so suffused with the creation of wealth, it is important to look closely at which costs will be borne by those who will be drilling to tap the State's natural resources and which costs will be externalized and therefore paid by landowners and taxpayers.

I am hopeful that the comments offered in this document will enrich the dialogue going forward on this issue and be part of a successful process that serves the best interest of the people of New York State.

General Comments

As Chair of the New York State Senate Environmental Conservation Committee, I have been diligently investigating the issues surrounding the introduction of Horizontal Drilling And High-Volume Hydraulic Fracturing (HDHVHF) in New York State. On Nov 10th, 2009 I held a Marcellus Shale Roundtable in Albany, where over 30 attendees from the gas industry and the environmental community held a discussion on the relevant issues. Senator Perkins and Assembly Members Englebright, LuPardo, and Gunther also took part in the roundtable.

To get a first hand look at both sides of the issue, on December 14, 2009 I traveled to Pennsylvania for a tour of both Chesapeake Energy Co. drilling sites and a meeting with residents of Dimock, PA, a community that has experienced problems which resulted in a Pennsylvania Department of Environmental Protection consent agreement with Cabot Oil and Gas.

I am convinced that the introduction of drilling in the Marcellus Shale represents a crucial moment for both the economy and environment of the State of New York. I believe we need to approach this moment deliberately, with eyes wide open, and with as much information at our disposal as we can muster.

I commend the New York Department of Environmental Conservation (NYSDEC) for the enormous effort that went into the Draft Supplemental Generic Environmental Impact Statement (DSGEIS). This was clearly a massive research project on their part and the DSGEIS is a strong start in the process of defining the issues and coming to the best possible solutions. I also commend citizens and industry representatives who have contributed hundreds of insightful comments that have come through my office to date. I believe that melding the efforts of DEC with the many valid concerns coming from communities and sources throughout the state and the nation can eventually result in an approach that is in the best interests of the citizens and the environment of New York State.

As a result of my investigations and a review of the DSGEIS, I offer the following general recommendations, to be followed by specific responses to the Nine Chapters of the DSGEIS:

1. A second comment period should be conducted before the Final Supplemental Generic Environmental Impact Statement (SGEIS) is released for comment

Substantial concerns have been raised regarding this DSGEIS. Both Assembly Chair Robert Sweeny and I unsuccessfully requested extensions of the public comment period past the DEC's original 30-day extension. The complexities of the environmental issues under consideration, the depth of public concern, the lack of awareness in many areas of the state and the importance of "getting it right", all point to the need for a thorough, deliberate and unrushed DSGEIS process.

It is anticipated that thousands of pages of comments on the DSGEIS will be received. I request the DEC to strongly consider a 2nd comment period once staff has processed these comments in the next draft of the DSGEIS. I recommend giving the citizens a second opportunity to comment after their concerns have been weighed and integrated by the DEC, a process that will hopefully provide a substantially broadened and strengthened document. In the meantime, Congress and the USEPA should have progressed in their consideration of the impacts of Horizontal Drilling And High-Volume Hydraulic Fracturing (HDHVHF). I also recommend an education campaign for local officials throughout the state, giving them a chance to consider a better-defined picture of the impacts of HDHVHF for their local area (see recommendation 2 below).

Given the possibility that the above factors will provide a stronger perspective for viewing the DSGEIS, I believe a second comment period is warranted, and in the best interests of the people of the State of New York. The gas in New York's low permeability shale will stay where it is; there is no need to rush a process with such profound implications for the health, environment and economy of New York and it citizens.

EPA reconsideration

In a process that many consider suspect, hydraulic fracturing was exempted from the Safe Drinking Water Act (SDWA), as part of the 2005 Federal Energy Policy Act. Other forms of underground injection are regulated by the EPA to protect groundwater, but this exemption left the regulation of hydro fracturing largely up to the states.

On October 30, 2009 the U.S. House of Representatives approved a provision authored by Congressman Maurice Hinchey (D-NY) that formally urged the U.S. Environmental Protection Agency (EPA) to conduct a new study on the risks that hydraulic fracturing poses to drinking water supplies.

"While natural gas certainly has an important role in our national energy policy, it's imperative that we take every step possible to ensure that our drinking water supplies are not contaminated or adversely impacted in any way," Hinchey said. *"This legislation puts Congress on record in support of a new, comprehensive study that will examine the impact that hydraulic fracking really has on our water supplies. The study results will put us in a position to take any further steps that are necessary to protect our drinking water supplies from the chemical concoctions being pumped into the ground by energy companies."*

In addition the EPA has been investigating reports of possible drilling-related drinking water contamination inWyoming, including the discovery of compounds used in hydrofracturing in well water. According to a report on the website of the Western Business Roundtable:

"U.S. EPA's initial investigation into drinking water contamination in central Wyoming has found contamination in more than a quarter of wells tested, leading some local residents to call for a moratorium on certain oil and gas activities in the area.

EPA began sampling in March as part of a Superfund investigation in the Pavillion, Wyo., area in response to concerns from local landowners about changes in water quality and quantity following EnCana Corp.'s increased gas development in the area. EPA's investigation found 11 of 39 wells were contaminated and confirmed the presence of 2-butoxyethanol (2-BE) phosphate, as well as methane, adamantanes (a form of hydrocarbon) and six other chemical compounds of concern.

Luke Chavez, EPA's chief Superfund investigator on the project, said EPA has not determined the source of the contamination yet. 'We can't rule anything out,' he said.

There have been several cases of polluted water in which fracking has been blamed, but those cases relied on landowners' anecdotes rather than scientific evidence."

http://www.westernroundtable.com/article+details.aspx?smid=6719&ArticleID=2436&reftab=965&t=EPA-investigates-water-contamination-in-Wyoming

The reemergence of the USEPA in the realm of HDHVHF regulation could be a game changer. It is important to investigate and estimate when the issues of drinking water contamination and federal regulation are going to be resolved. If either is to happen soon, an evaluation of their potential to impact regulation in New York should be undertaken and consideration should be given to waiting for the results before proceeding further with the DSGEIS process.

Dimock, PA Consent Order

On September 25, 2009 the Pennsylvania Department of Environmental Protection ordered Cabot Oil and Gas Corp. to stop hydro fracturing gas wells in Susquehanna County, PA, following a series of wastewater spills. On November 4, 2009, a consent order and agreement was reached, in relation to migrating gas that affected thirteen water supplies in a nine square mile area in Dimock Township. In addition, Cabot was assessed a $120,000 civil penalty for violations of the Oil and Gas Act, the Solid Waste Management Act and the Clean Streams Law.

Subsequently, on November 20, 2009, fifteen families living in Dimock announced the filing of a civil lawsuit in Federal Court. The suit calls for the repair of damage that has occurred to the families, their homes and their properties as a consequence of Cabot's gas drilling operations.

The case can be made that the mitigation measures developed in the NYS DSGEIS would rule out Dimock style pollution in New York. I urge the DEC to make that case in the next draft of the DSGEIS and to allow the public to examine DEC's analysis. A public debate on the ability of New York's rules to protect us all from a real life example of what has gone wrong in low permeability shale drilling can only strengthen the protections that are eventually adopted.

Such an analysis would include a finding as to how frequently well casings are not cemented properly in the gas drilling industry. It would also examine the source of benzene pollution in Dimock. In addition, it would look at incidents that have reportedly led to drilling related methane contamination of water wells in at least seven Pennsylvania counties since 2004. In

2006, these incidents reportedly led Pennsylvania to hire a full-time inspector dedicated to the issue. In one reported case, methane was detected in water sampled over a 15 square mile area. http://www.propublica.org/feature/water-problems-from-drilling-are-more-frequent-than-officials-said-731

New Data

During the gestation period for the DS, the Ithaca, NY organization Toxics Targeting scanned the DEC's Spill Incidents database and reported that there were 270 files documenting gas production incidents including wastewater spills, well contamination, explosions methane migration and ecological damage since 1978. These files document fires, explosions, wastewater spills, well contamination and ecological damage related to gas drilling over the past thirty years. The report of these files has been widely circulated among those interested in the HDHVHF question. It will be important for NYSDEC to respond with an analysis of these files and for the public to have a chance to examine and responds to that analysis.
http://www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=2

2. Geographically Defined Public Outreach is Needed

In my October letter to Commissioner Grannis requesting an extension of the comment period on the DSGEIS, I also requested a series of public hearings on the document and the issues involved. I believe there are serious problems with the public outreach process followed to date in that the area in question is not clearly defined in the DSGEIS.

One item in particular that most local and state officials may not be aware of is the fact that with this DSGEIS, the State intends to "occupy the field" of regulating HDHVHF. Local officials will have no effective role in the permitting process for HDHVHF projects. Residents, and even local planning bodies, will not have input on the siting of wells in their community. New York is a strong home rule State, and the proposed regulatory scheme of this DSGEIS goes against the grain of that tradition. It is important for the public to understand this fact and to have a chance to respond.

In addition, it is not entirely what the scope of this document is meant to be. There are diagrams within the document that show the Marcellus and Ontario Shale Fairways, and there are sections of the document that mention specific Counties in the process. However, these elements are buried in the document and are not well-defined.

In other places the document appears to be claiming that the SGEIS will apply to all of New York State even though there are strong indications that most counties are not prospects for HDHVHF.

If, in fact, the DSGEIS is meant to cover all of New York, then the watersheds of Lakes Erie and Ontario are included. In that case, the governments of Canada, Ontario and Quebec would need

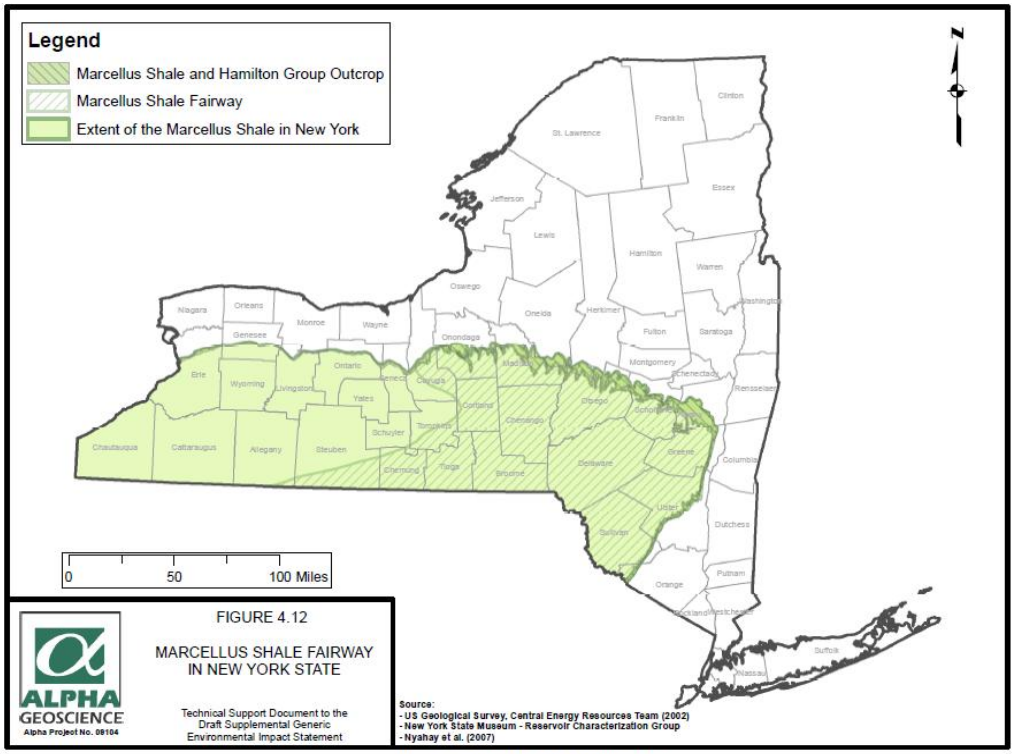
to be considered interested parties given the possibility, however remote, that contaminants from the drilling process, might enter and contaminate International or even Canadian waters.

I have developed the spreadsheet below that sets the stage for showing the projected impact of HDHVHF on the 17 watersheds in New York State, and by extension, the Counties within the State. I believe a watershed approach is the right one to take, because ultimately this process is about protecting New York's watersheds and the bounty they provide to New York's citizens.

I urge the DEC to take this spreadsheet, make any corrections and additions, and send the information along to all county executives and state legislators as well as to the New York Conference of Mayors and the Association of Towns of the State of New York so they all will have a better grasp on the importance of this issue for their districts.

I also urge the DEC to make clearer their intentions for the scope of this document. How are communities outside the Marcellus and Utica fairways likely to be impacted by the DSGEIS? Unless the scope of this document is made clearer, I don't believe that officials in Erie County, for example, would be anything but surprised if an application was made for an HDHVHF drilling permit and they learned that they had very little oversight on the project due to an SGEIS they were not involved with.

Shale Fairways in New York State



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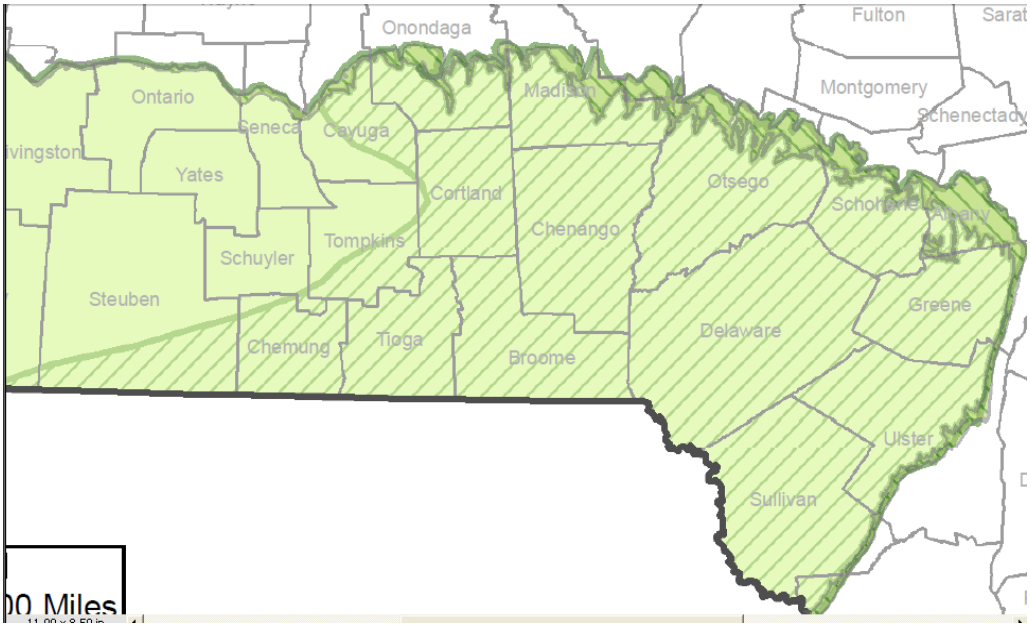
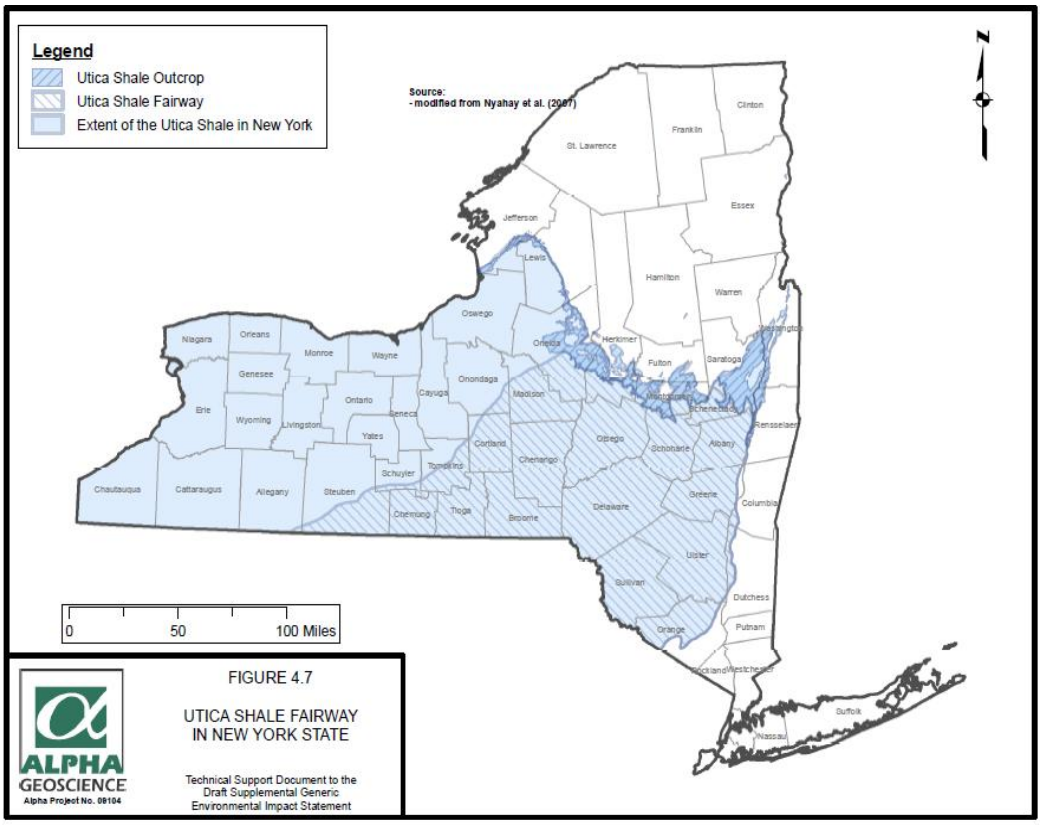
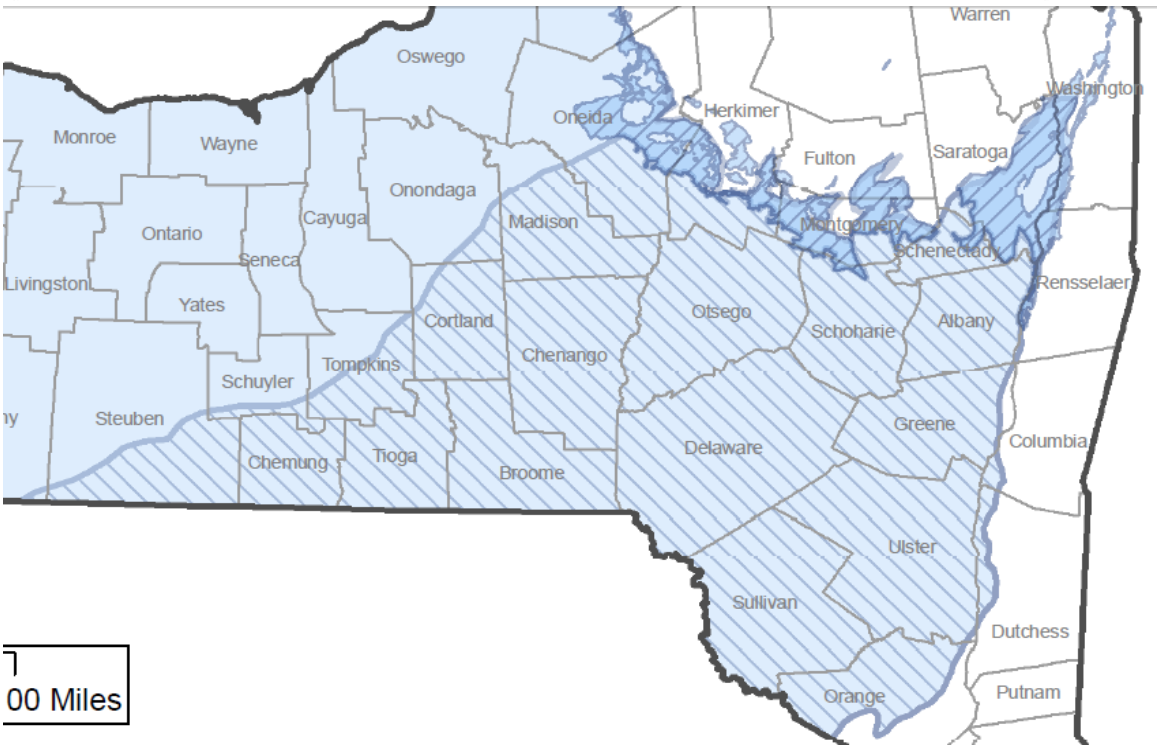


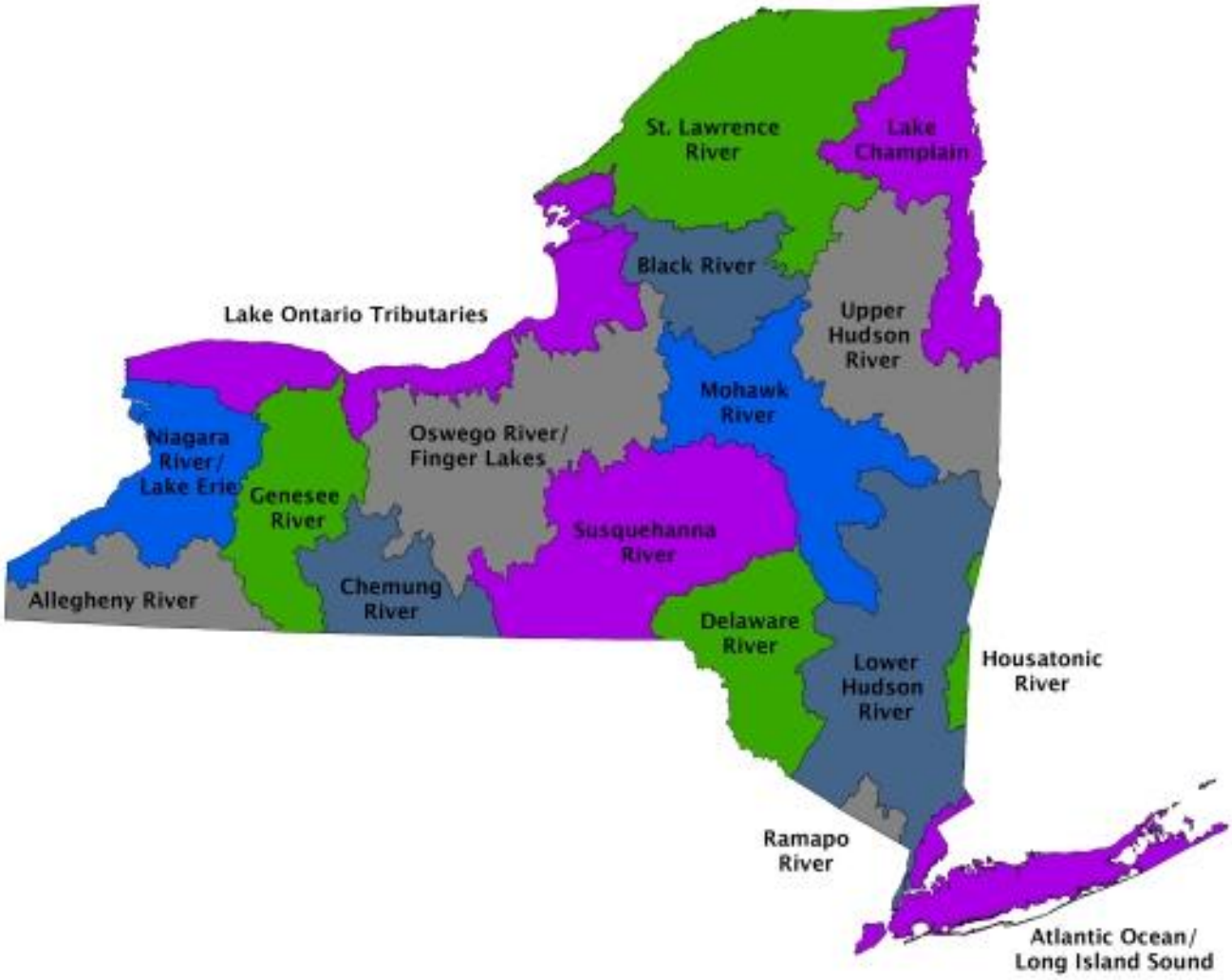




NYS Watersheds

Management, Monitoring and Assessment

New York State is divided into 17 watersheds, or drainage basins, which are the basis for management, monitoring, and assessment activities. Click on a watershed on the map below, or use the links in the left column, to go to information and assessment reports about that watershed.



http://www.dec.ny.gov/lands/60135.html

1. Table showing New York's Watersheds as related to the Marcellus Shale Fairway (% estimated from maps). It would be helpful for DEC to add the Utica Shale Fairway, and fill in the impact columns, so this table could be used to educate local officials on the potential for HDHVHF to impact their area.

Watershed	County	% of Cnty within this watershed	% of Cnty within this watershed that is within the Marcellus Fairway	Potential for Drilling Impacts	Potential to be a source for water withdrawal	Potential site for waste water processing	In a seismic fault area	% of roads and bridges in need of repair
Allegheny River			0%					
	Cattaraugus	~80%	0%					
	Allegany	~20%	0%					
	Chautauqua	~80%	0%					
Atlantic Ocean/Long Island Sound			0%					
	Kings	100%	0%					
	Bronx	~80%	0%					
	Nassau	100%	0%					
	New York	not clear on map	0%					
	Queens	100%	0%					
	Suffolk	100%	0%					
	Westchester	~45%	0%					
Black River			0%					
	Jefferson	~15%	0%					
	Hamilton	~15%	0%					
	Herkimer	~40%	0%					
	Lewis	~55%	0%					
	Oneida	~13%	0%					
Chemung River			~45%					
	Chemung	~80%	~90%					
	Steuben	~80%	~20%					
	Schuyler	~25%	~5%					
	Allegany	~10%	0%					
	Yates	~5%	0%					
	Ontario	~2%	0%					
	Livingston	~5%	0%					
Delaware River			~95%					
	Sullivan	~90%	100%					
	Delaware	~75%	100%					
	Orange	~17%	~5%					
	Ulster	~15%	~50%					
	Broome	~10%	100%					
	Greene	5%	~85%					
	Schoharie	~1%	~80%					
	Chenango	~1%	100%					
Genesee River			~5%					
	Livingston	~95%	0%					
	Allegany	~70%	0%					
	Monroe	~30%	0%					
	Genesee	~45%	0%					
	Wyoming	~60%	0%					
	Ontario	~20%	0%					
	Orleans	~3%	0%					
	Steuben	~7%	~20%					
	Cattaraugus	~3%	0%					
Housatonic River			0%					
	Dutchess	~15%	0%					
	Columbia	~3%	0%					

2. Table showing New York's Watersheds as related to the Marcellus Shale Fairway (% estimated from maps). It would be helpful for DEC to add the Utica Shale Fairway, and fill in the impact columns, so this table could be used to educate local officials on the potential for HDHVHF to impact their area.

Watershed	County	% of Cnty within this watershed	% of Cnty within this watershed that is within the Marcellus Fairway	Potential for Drilling Impacts	Potential to be a source for water withdrawal	Potential site for waste water processing	In a seismic fault area	% of roads and bridges in need of repair
Lake Champlain			0%					
	Clinton	~90%	0%					
	Essex	~50%	0%					
	Franklin	~20%	0%					
	Warren	~20%	0%					
	Washington	~50%	0%					
Lake Ontario and Minor Tributaries			0%					
	Jefferson	~60%	0%					
	Orleans	~97%	0%					
	Ontario	~3%	0%					
	Oswego	~55%	0%					
	Wayne	~45%	0%					
	Monroe	~70%	0%					
	Niagara	~55%	0%					
	Cayuga	~10%	0%					
	Lewis	~10%	0%					
Lower Hudson			~40%					
	Westchester	~55%	0%					
	Putnam	100%	0%					
	Orange	~80%	~5%					
	Ulster	~85%	~50%					
	Columbia	~97%	0%					
	Albany	~70%	~60%					
	Dutchess	~85%	0%					
	Greene	~55%	~85%					
	Rensselaer	~60%	0%					
	New York	not clear on map	0%					
	Bronx	~20%	0%					
	Rockland	~40%	0%					
	Sullivan	~10%	~90%					
	Schoharie	~9%	~80%					
	Schenectady	~40%	0%					
Mohawk River			~25%					
	Montgomery	100%	0%					
	Schoharie	~90%	~80%					
	Schenectady	~60%	0%					
	Greene	~40%	~85%					
	Fulton	~70%	0%					
	Herkimer	~45%	0%					
	Oneida	~35%	~7%					
	Albany	~30%	~40%					
	Saratoga	~15%	0%					
	Delaware	~5%	100%					
	Otsego	~3%	~90%					
	Hamilton	~15%	0%					
	Madison	~5%	~75%					
	Lewis	~3%	0%					

3. Table showing New York's Watersheds as related to the Marcellus Shale Fairway (% estimated from maps). It would be helpful for DEC to add the Utica Shale Fairway, and fill in the impact columns, so this table could be used to educate local officials on the potential for HDHVHF to impact their area.

Watershed	County	% of Cnty within this watershed	% of Cnty within this watershed that is within the Marcellus Fairway	Potential for Drilling Impacts	Potential to be a source for water withdrawal	Potential site for waste water processing	In a seismic fault area	% of roads and bridges in need of repair
Niagara River/Lake Erie			0%					
	Erie	100%	0%					
	Niagara	~45%	0%					
	Genesee	~55%	0%					
	Wyoming	~40%	0%					
	Cattaraugus	~17%	0%					
	Chautauqua	~20%	0%					
Oswego River/Finger Lakes			~45%					
	Seneca	100%	0%					
	Onondaga	~85%	~50%					
	Cayuga	~90%	~60%					
	Tompkins	~70%	~40%					
	Schuyler	~55%	~5%					
	Yates	~95%	0%					
	Ontario	~75%	0%					
	Oswego	~45%	0%					
	Oneida	~45%	0%					
	Madison	~40%	~75%					
	Wayne	~55%	0%					
	Lewis	~10%	0%					
	Cortland	~5%	100%					
	Chemung	~5%	~90%					
	Steuben	~13%	~20%					
Ramapo			0%					
	Rockland	~60%	0%					
	Orange	~13%	0%					
Saint Lawrence River			0%					
	Saint Lawrence	100%	0%					
	Franklin	~80%	0%					
	Jefferson	~35%	0%					
	Lewis	~22%	0%					
	Herkimer	~10%	0%					
	Hamilton	~20%	0%					
	Essex	~5%	0%					
	Clinton	~10%	0%					
Susquehanna River			~90%					
	Broome	~90%	100%					
	Chenango	~99%	100%					
	Cortland	~95%	100%					
	Otsego	~97%	~90%					
	Tioga	100%	0%					
	Delaware	~20%	100%					
	Madison	~55%	~75%					
	Chemung	~15%	~90%					
	Schuyler	~20%	~5%					
	Tompkins	~30%	~40%					
	Onondaga	~15%	~50%					
	Oneida	~7%	~7%					
	Herkimer	~15%	0%					
	Schoharie	~10%	~80%					
Upper Hudson River			0%					
	Saratoga	~85%	0%					
	Washington	~50%	0%					
	Warren	~80%	0%					
	Essex	~45%	0%					
	Hamilton	~50%	0%					
	Rensselaer	~40%	0%					
	Fulton	~30%	0%					

NYC interests and Upstate's interests

Regarding watersheds, much has been made, and rightfully so, of the importance of protecting New York City's water supply. Chesapeake Energy has pledged not to drill in the New York City Watershed. In November and December the New York City Council and the City's acting Environmental Commissioner, Steven Lawitts, called for a ban on drilling in watersheds that supply the City's drinking water

New York could lose its USEPA exemption from drinking-water filtration requirements if its water quality is impacted by chemicals or silt from HDHVHF. The costs for a new filtration plant have been estimated in the $10 billion range.

This is a crucial issue that needs to be addressed as part of the DSGEIS process and it is clear that much more research and discussion needs to take place unless the DEC wishes to force a premature end to this debate.

At the same time, protests other important concerns need to be addressed, including:

- The jobs upstate that would be created if drilling proceeds as proposed
- The income to property owners which in many cases could contribute to saving family farms
- The protection of Allegany State Park, the locus of wilderness experiences for Western NY and much of the Southern Tier.
- The impacts that a contamination incident could have on the economy of Tomkins County, much of whose economy is based on attracting students to the pristine environment around Cornell University
- The possible impacts of HDHVHF on drinking water if contamination happens within the Lake Erie or Ontario watersheds
- The impact of potential contamination on rural communities where well water is a staple.

3. Cumulative Impacts Must be Explored

As part of the next phase of the DSGEIS process, I request DEC to construct an HDHVHF full build out model to project estimated ranges for the following factors, among others:

- Number of wells to be completed in NY as a result permitting HDHVHF
- Projected impact of increased drilling on consumer prices in New York State
- Net energy produced after energy spent on production
- Miles of pipeline needing to be built
- Gas to be produced annually from HDHVHF
- Green house gases (GHG) emitted in the process of producing the gas
- GHG emitted in the use of the produced gas
- GHG emitted vs. GHG saved by replacing dirtier fuels

- Acres cleared for drilling pads and roadways
- Trees cut down
- Leases executed
- Gallons of flowback water recycled in the fracking process
- Gallons of flowback water needing disposal
- Projected number of DEC staff needed per well to regulate properly
- DEC staff per proposed well at current staffing levels
- Industrial waste facilities projected to be built in New York to accommodate flowback water (According to the Pennsylvania Oil and Gas Association website, 12 new waste water treatment plants are proposed for Northern Pennsylvania as a result of drilling in that state)
- The impact of the proposed reclamation process by decade
- Projected jobs created
- Projected revenues and the distribution of those revenues

Of course all figures will be imperfect projections, but until ranges can be estimated the true value of the DSGEIS as a generic document that can predict and mitigate the vast majority of impacts will not be realized.

As much as possible it would be good to break down these estimates by County, and/or watershed

Setting the Rate of Gas Withdrawal – Protection of NYS Resources

Section 1.2 "Regulatory Jurisdiction" of the DSGEIS notes:

"The State of New York's official policy, enacted into law, is "to conserve, improve and protect its natural resources and environment . . ,"[2] and it is the Department's responsibility to carry out this policy. As set forth in Environmental Conservation Law ("ECL") §3-0301(1), the Department's broad authority includes, among many other things, the power to:

*•**manage natural resources to assure their protection and balanced utilization**, (emphasis added)*
•prevent and abate water, land and air pollution, and
•regulate storage, handling and transport of solids, liquids and gases to prevent pollution."

The point in bold above raises the question of how rapidly New York State should allow its natural gas reserves to be exploited, yet that question is not examined in this document. While good arguments can be made for getting as much gas out of the ground as quickly as possible, an argument can also be made that it is in the best interest of the citizens of New York to develop a phased and controlled program for using its supply of natural gas. While no one can predict the future with accuracy, it is important to plan effectively. Natural gas is seen as a transition fuel, because it emits relatively less carbon than coal and other fossil fuels when it is burned. It is

projected as a means to reduce carbon emissions while energy users in the State transition to clean, renewable fuels.

In this context, it would be important for the DSGEIS to delineate how long natural gas might be used for the transition and in what quantities it will be needed. It would also be important to project if there will be circumstances past the transition period where natural gas will still be the fuel of choice for some applications.

Given that market prices for natural gas are expected to increase as the finite supplies are used up, it is likely that natural gas will become far more valuable and expensive in the future. While New York wells will not be the sole source for gas used in-state in the future, it may be in the best interest of taxpayers and ratepayers for the gas in New York State to be used in a way that preserves adequate supplies from native sources far into the future.

New York State is embarking on ambitious weatherization programs between Federal stimulus funding, the Green Jobs/Green NY program and the authorization of Property Assisted Clean Energy green loan programs. It can be projected that 10 years from now the use of natural gas for heating purposes will be a far more efficient process than it is today. An argument can be made for holding back on production today as a way of *"minimize(ing) the waste of irreplaceable resources"* – as advised in section 1.2 of the DSGEIS.

Cumulative Greenhouse Gas Analysis

New York State is committed on behalf of its citizens and generations to come, to reducing greenhouse gas emissions. As mentioned above, natural gas has a reputation for being cleaner burning than other fossil fuels. However, this doesn't exempt the DSGEIS from needing to project a life cycle greenhouse gas emission analysis for the major drilling program the DSGEIS is preparing the state for. In the final analysis, an intelligent policy needs to be driven by good data, and part of that data surely weighs the potential carbon emission savings of using natural gas versus the carbon emissions involved in trucking and using equipment , clearing land, building and improving roads, transporting and processing waste water, and numerous other energy inputs to this process. The net result of the cumulative destruction of forest cover on greenhouse gases should also be part of the analysis

Well Density

In Dimock, PA, residents were reeling from a well density of 7 per square mile – 63 wells in 9 square miles. They also told us they were facing 14 wells per square mile if the build out proceeds as planned. A cumulative analysis of well density, broken down by County, would be very helpful for residents to understand the ultimate aesthetic, traffic, habitat destruction and other impacts to their community.

This type of analysis would be especially important for State Parks and other significant natural areas where drill pads are a significantly different landscape than the desired norm.

Will new pipelines need to be built?

Cumulative analysis would also be important in allowing the projection of how many new sections of pipeline would need to be laid, along assessing the impacts of the requisite pipelines.

4. Full Cost Data Should Be Part of the DSGEIS

One of the difficulties with weighing the costs and benefits of natural gas drilling is in measuring the degree to which some of the costs are not borne by developers and are left to taxpayers or other sectors of society to pay. While it may not be the responsibility of the DEC to develop regulations that minimize the externalization of costs, it certainly is the responsibility of the DSGEIS process to consider economic issues. The in-depth look that a cumulative analysis can give would be very helpful in framing economic policy relative to HDHVHF in New York State

According to the DEC's SEQRA handbook http://www.dec.ny.gov/permits/50602.html

"An EIS provides a means for agencies to give early consideration to environmental factors, and assists in the balancing of environmental issues with social and economic considerations in planning and decision making."

Impact on Consumer Prices

The impact of more gas drilling in New York on the prices New York consumers pay to heat their homes is a crucial issue. Given the laws of supply and demand, opening up new gas fields should have a lowering or at least a dampening effect on gas prices. It would be important for the next draft of the DSGEIS to have projections from the industry as to how much of the produced gas will be used in New York State and what the impact will be on gas bills for the average residential, commercial and industrial consumer. If industry is not projecting a positive impact of lowering consumer prices as a result of more drilling, legislative action may be necessary.

Funding Needs to Be Identified To Support NY State's Role in HDHVHF

One of the most important economic questions to be answered is to what degree will the HDHVHF process be subsidized by state residents through taxes and other hidden costs. Perhaps the most important of these costs is for the expansion of DEC's capacity to accommodate regulation of HDHVHF.

It would be important to assess the capacity of DEC and other state agencies to properly regulate gas drilling at its current level, before considering the cost of capacity increases, and I request DEC to do so in the next draft of the DSGEIS.

Two separate items raise questions regarding DEC's current capacity. In October of this year, when I chaired public hearings of the Senate Environmental Conservation Committee regarding Water Quality, James Tierney, DEC's Assistant Commissioner of Water Resources noted that:

"Even before the current state and national fiscal crisis, the Division of Water faced significant cuts to both state and federal funding. In 1990 the Division had 339 staff; today the Division has 267 staff, and at least twice the workload…Financial resources to run programs are severely constrained"

In addition, the Toxics Targeting research noted that only 60 of the 270 gas drilling incidents cited in DEC's records for New York State were uncovered in the course of DEC regulation. This raises the question of how many other incidents were not reported. It also raises the question of the effectiveness of DEC's regulation to date. Toxics Targeting official Walter Hang claims that the small percentage of incidents discovered by the DEC are "*further evidence that (DEC's) Division of Mineral Resources – with about 17 inspectors – lacks the manpower to oversee traditional well development, let alone the Marcellus.*" . This contention may or may not be true, but it will be important for it to be well-analyzed in the next draft of the DSGEIS. A methodical analysis of these DEC files as part of the next draft of the DSGEIS would be helpful in establishing the staff levels that should have been in place for current gas drilling in NYS. Only with that figure in hand will it be possible to know the levels that will needed once HDHVHF starts.

The Water Law Clinic at Cornell Law School has produced a paper documenting 187 additional tasks imposed on DEC in Chapter 7 of the DSGEIS, where mitigation measures are discussed. In addition to tasks for several divisions with DEC, Chapter 7 also mentions roles for the Susquehanna River Basin Commission, the Delaware River basin Commission, the NYS Department of Health, and the New York City Department of Environmental Protection.

A November 9, 2009 article on the Pennsylvania Oil &Gas Association website notes that "the oil and gas staff (of the Pennsylvania Department of Environmental Protection - DEP) is undergoing a 50 percent increase, growing from 61 employees to 98 at DEP offices in areas where Marcellus Shale drilling occurs.
http://www.pogam.org/news/view.asp?pID=1259

In addition, Pennsylvania wound up hiring a full time well inspector to deal with contaminated water wells, which had been found in 7 Counties since 2004.

Chapter 7 does not include likely expenses to be incurred by local jurisdictions in dealing with road issues, infrastructure, and local emergency response personnel. In the case of roads, analysis of structurally deficient or functionally obsolete roads and bridges in various Counties would be helpful in estimating possible external costs. This information should be readily available from the NYSDOT. In the case of contamination incidents, local jurisdictions may need to devote significant resources to dispute resolution on behalf of taxpayers.

Clearly an in-depth analysis of the costs to taxpayers of HDHVHF is needed, and should be provided through the DSGEIS process. Ideally a permit system that recovers those costs as fully as is practical should be proposed, either as part of the DSGEIS or concurrently with the DSGEIS process.

One suggestion that might mitigate some of the costs to the DEC came from the Cornell Law School Water Law Clinic. They recommend "delegating technical guidance in the field to the Soil and Water Conservation Districts as provided under the NYS Soil and Water Conservations Districts law."

This suggestion does beg the question of how much extra capacity resides in the Soil and Water Conservation Districts, and what expenses they will bear in the process, but it does hold some promise. The DEC should thoroughly investigate this possibility and give a detailed response in the next draft of the DSGEIS.

Environmental Justice – Lease Arrangements

One of the major complaints of the Dimock residents regarded the "landman" – the person who went through the community signing resident to leases for drilling rights. Residents say they were given bare bones leases that protected few of their rights and were told that "all your neighbors are signed up and if you don't sign we will recover the gas under your property through their wells and you will not be compensated.

I was able to examine the leases used in Dimock. They were short, inadequate, boilerplate leases that didn't address:

- Reporting of gas production to lessors
- Timetable for payment of the royalties
- An exit clause for the property owner
- The rights of new owners if the property is sold
- The importance of having a lawyer review the lease

While the issue may be peripheral to environmental concerns addressed in the DSGEIS, monitoring the fairness of arrangements made with landholders is one of the key roles state government can and should participate in. Landowner concerns should be dealt with either as part of the DSGEIS or concurrently with the DSGEIS process.

The New York State Attorney General's Office has started to take an active role in this issue. On November 24, 2009 Attorney General Cuomo announced a $192,500 settlement with Fortuna Energy, Inc. along with provisions to release hundreds of landowners from improperly extended leases with Fortuna. In an attempt to make the combined GEIS and SGEIS as comprehensive as possible and a complete source for those interested in drilling in New York State, perhaps the DEC could request the Attorney General to write an appendix to the DSGEIS outlining legal issues and protections related to gas right leases.

One of the points that came out of the discussion in Dimock is that none of the residents know of a way to monitor well production and thereby insure proper royalty payments. This issue surely needs to be addressed going forward.

Legal representation for landowners is another important issue, and requiring the signature of an attorney representing the landowner should be strongly considered,

In addition, the issue of residents' role in picking the firm that does baseline and subsequent well monitoring is one that should be directly addressed in the DSGEIS.

Finally the issue of the impact of HDHVHF on homeowners insurance is one that should be investigated and reported on in the next draft.

Environmental Justice – Leaving Individuals and Communities Whole

As policymakers, we need to be aware of the drastic impact an accident would have on leaseholders and their communities. We must consider a requirement that will make leaseholders and communities whole in case of spills and accidents that cause contamination. Learning from New York's experience with hundreds of inactive hazardous waste sites, and Pennsylvania's experience so far with HDHVHF, it would be important to have this question answered in the DSGEIS process. In addition to contamination issues, there have been several gas drilling related explosions in recent years. The DSGEIS should include a requirement for notification of local residents in the case of emergencies. There should also be a thorough examination of the potential for bonding to provide a level of security as part of the permit process for communities that may be impacted by HDHVHF.

Environmental Justice – Who Profits?

Perhaps the ultimate environmental justice question raised by HDHVHF is who will profit. It is clear that drilling companies have invested millions, if not billions, of dollars in equipment, research and training, some of which may benefit the residents of host communities. It is fair that they get a return on their investment if it is used in New York's gas fairways. But it is also clear that a great deal of wealth will be created in this process and it is fair to ask how that wealth will be distributed.

The wealth will be created from a resource that is a gift of nature, created over millions of years. In the long view, it is questionable enough that most or not all of this wealth will be taken by residents of the current century, given that they will have done no more to create the natural gas miles below the earth than the generations that have come before or the generations that will come after. It is even more questionable that the impact of the wealth will be shared among the relatively small group of landowners and drilling companies who will contract with each other in the next decade.

From an environmental justice standpoint, it would make far more sense for the wealth to be shared, in part, among all the resident of New York State as well as among landowners and drilling companies. The New Rules Project in Minneapolis, Minnesota has published a study titled **Balancing Budgets by Raising Depletion Taxes.** In this report they note that 38 states currently impose a depletion or severance tax on natural resource extraction. New York is one of only a dozen states that have no such provision. All except Iowa and South Carolina are in the Northeast.

The report estimates that New York could bring in an estimated $280 million a year with 10% gross production tax and $420 million a year if the rate was 15%. The New Rules Project notes that states currently use their depletion taxes to reimburse local jurisdictions, the state general fund, a resource related trust or reserve fund and other funds.

In addition to permit fees adequate to offset state and local expenses related to gas drilling in New York. I will be exploring the development of a depletion tax. The revenues could be used to bolster the state's tax base which would theoretically offset tax and fee increases. I would prefer that it be used instead as a direct, revenue neutral rebate on wage income taxes for New York States' workers.

The phrase "tax waste, not work" is one that will be invoked increasingly in the future as ways are sought to reduce carbon emissions and move our economy toward a greener model. It refers to the need to discourage carbon emissions and the creation of wastes, such as drilling flowback water, while encouraging the creation of green jobs.

Comments on Chapter 1 - Introduction

1.1 Description of the Proposed Action

The description is a good example of why a geographically fine-tuned outreach effort is important to undertake before the DSGEIS process can be considered complete. The text identifies some counties where HDHVHF applications have been received. It also loosely talks about the potential for drilling in other counties, including Otsego and Schoharie. Public officials and citizens in counties such as Erie can only be confused about their role in relation to HDHVHF after reading this section.

1.2 Regulatory Jurisdiction

This section specifically identifies the DEC's power to

"*manage natural resources to assure their protection and balanced utilization".*

General Comment number 3 above urges the DEC to take this power far more seriously in the next draft of the DS.

This section also notes:

ECL §23-0303(2) provides that DEC's Oil, Gas and Solution Mining Law supersedes all local laws relating to the regulation of oil and gas development except for local government jurisdiction over local roads and the right to collect real property taxes. Likewise, ECL §23-1901(2) provides for supercedure of all other laws enacted by local governments or agencies concerning the imposition of a fee on activities regulated by Article 23.

Given the fact that there are currently over 13,000 gas wells in New York State, it would be useful for the DEC to provide some guidance on how the intersection between local jurisdiction and state supercedence have played out in New York State to date, along with any insight into how that intersection may change with HD, which may be projected to impact local roads to a greater degree than drilling in conventional gas deposits.

1.3 Project Location

This section notes

"Drilling will not occur on State-owned lands which constitute the Adirondack and Catskill Forest Preserves because of the State Constitution's requirement that Forest Preserve lands be kept forever wild and not be leased or sold."

However it is silent on the issue of drilling in Allegany State Park, an issue of crucial concern for Western New Yorkers for whom Allegany is often the one and only experience of wilderness. It would be important for the issue of drilling in Allegany to be resolved before the final GEIS is adopted. Section 1.4.1 notes that under an approved SGEIS a drilling permit in state parkland

would require a site specific SEQRA determination – a fairly minor process unless citizens are able to convince the lead agency of significant potential impacts.

I would recommend that all drilling in State Parkland be either banned, or put in the same category as drilling near a municipal water supply well, where an SEIS is required. Because of the SGEIS, the SEIS would need to address only those issues not covered in the SGEIS, but the opportunity for citizens to participate in scoping and other aspects of the SEIS process should be guaranteed when dealing with a precious public resource like a state park.

1.4.3 Well Permit Applications and the Environmental Review Process

This section notes that if the SGEIS is adopted a shortened environmental assessment form (EAF) will be required to be filled out for each drilling permit, and states:

"The EAF and well drilling application form10 do not stand alone, but are supported by the four-volume GEIS, the applicant's well location plat, proposed site-specific drilling and well construction plans, Department staff's site visit, and GIS-based location screening, using the most current data available."

Left undefined are the specifics of "GIS-based location screening." It would be important to have a clear definition of that screening process in the next draft of the DS.

Comments on Chapter 2 - Description of Proposed Action

Description of Proposed Action

The proposed action is the Department of Environmental Conservation's (DEC) issuance of permits to drill, deepen, plug back or convert wells for horizontal drilling and high-volume hydraulic fracturing in the Marcellus Shale and other low-permeability natural gas reservoirs. It focuses on potential impacts of horizontal hydraulic fracturing in Marcellus Shale. While these proposed actions are essential to protecting the environment, the DSGEIS fails to provide more certain project location and environmental setting requirements from which permits may be approved or denied based on this documentation. The Department must promulgate more definite regulations to establish and enforce best practices in the industry to better protect the State's resources.

2.1 Purpose

This section states:

> *"The SGEIS will address new activities or new potential impacts not addressed by the original GEIS and will set forth practices and mitigation designed to reduce environmental impacts to the maximum extent practicable."*

Given the impact that these factors will on the SEQRA review process, DEC should identify precisely which practices will be considered during the mitigation design phase. This will better allow design companies to comply with this requirement.

2.3 Project Location

This section specifically states:

"Drilling will not occur on State-owned lands in the Adirondack and Catskill Forest Preserves because of the State Constitution's requirement that Forest Preserve lands be kept forever wild and not be leased or sold. In addition, the subsurface geology of the Adirondacks, New York City and Long Island renders drilling for hydrocarbons in those areas unlikely."

However, despite this affirmation, there exist widespread belief among residents and environmentalists that drilling may indeed occur in these areas, therefore it might be helpful for DEC to highlight this information on its website and any changes that may occur in the future regarding this provision to afford citizens the opportunity to participate in scoping and other aspects of the SEIS process when dealing with our pristine natural resources.

2.4.2 Water Quality Standards and 2.4.3 Drinking Water

As noted in the DSGEIS, groundwater and surface water classifications and quality standards in New York are established by the United States Environmental Protection Agency (USEPA) and NYSDEC. The New York City Department of Environmental Protection (NYCDEP) defers to the New York State Department of Health (NYSDOH) for water classifications and quality standards. Because the protection of drinking water sources and supplies is extremely important for the maintenance of public health, and the protection of this water use type is paramount, DEC must make sure chemical or biological substances that are inadvertently released into surface water or groundwater sources that are designated for drinking water use do not adversely impact or disqualify such usage if there are constituents that conflict with applicable standards for drinking water. Water classification and quality standards should be updated as needed.

Comments on Chapter 3 - Proposed SEQRA Review Process

Section 3: SEQRA

The proposed Environmental Assessment Form which is required along with applications prior to A) drilling the first well on a pad, B) making any changes for subsequent wells or C) refracturing an existing well, requires thorough documentation of information pertaining to hydraulic fracturing, water sources, proximities to natural resources and cultural features, proximities to water wells, fluid disposal plans, various operational specifications, identification of invasive species, and required affirmations including residential water well monitoring and access road locations. While these site specific plans are essential to protecting the environment, the Draft SGEIS provides no hard framework from which permits may be approved or denied based on this documentation. The Department must promulgate regulations to establish and enforce best practices in the industry to adequately protect the State's natural resources.

3.2.2
The information required within the Environmental Assessment Form must have a regulatory backing to guide determinations based on the information submitted.

3.2.1.3
This section defines the project size as the surface acreage affected by development, including the well pad, access roads and any other physical alteration necessary. The Department as lead agency, should work with the Public Service Commission to include information pertaining to the disturbances caused by pipeline construction within the project size to better estimate the cumulative impacts that drilling operations will have on the environment and community.

3.2.2.5
In addition to identification and permit numbers, the Fluid Disposal Plan should require that a contract has been entered into with any treatment facility proposed to receive flowback fluid from a driller regardless of location within or out of New York State.

3.2.2.7
A course to minimize the spread of invasive species must be required when a comprehensive survey submitted with the EAF addendum shows a significant presence of any species listed on the Interim List of Invasive Plant Species in New York State.

Comments on Chapter 4 - Geology

4.4 Marcellus Formation
Figure 4.7 on page 4-16 shows the Utica Fairway and figure 4-12 on page 4-23 shows the Marcellus Fairway. "Fairway" is defined on page 4-18:

"The fairway is that portion of the formation that has the potential to produce gas based on specific geologic and geochemical criteria; however, other factors, such as formation depth, make only portions of the fairway favorable for drilling."

This once again points to the need to make the scope of the DSGEIS clearer. Officials and resident s who are outside of either fairway would be justified in thinking that the DSGEIS has little to do with them after looking at these maps. DEC should be communicating on a county level as to what the potential is for drilling in each county and what other impacts might be expected if drilling takes place in nearby counties.

On page 4-17 the issue of the Marcellus shale radioactive signature is raised briefly. The implications of the 5 to 100 parts per million uranium concentration need to be fully explained.

4.4.3 Potential for Gas Production
This section estimates "a potential resource of approximately 7.5 to 9.5 tcf of gas over time in the Marcellus Shale in New York State." If accurate, this would be an important figure to start with in any cumulative analysis done in the next draft of the DSGEIS.

4.5 Seismicity in New York State
4.5.1 Background
This section states:
"The term "earthquake" is used to describe any event that is the result of a sudden release of energy in the earth's crust that generates seismic waves. Many earthquakes are too minor to be detected without sensitive equipment. Hydraulic fracturing releases energy during the fracturing process at a level substantially below that of small, naturally occurring, earthquakes."

This section examines seismic data for New York State and indicates that most of the seismic danger is outside the fairways in question. However, a more in depth treatment, or definitive statement would be helpful regarding:

- The possibility of HDHVHF ever causing damage to neighboring structures; and
- The possibility of earthquakes rupturing gas wells or gas pipelines in New York State.

4.6 Naturally Occurring Radioactive Materials (NORM) in Marcellus Shale
This section does note that Marcellus higher concentrations of radioactive uranium-238 and radium-226 than surrounding rock formations, and sates that "*activities that have the potential to*

concentrate NORM need to come under government scrutiny to ensure adequate protection." Our comments on this issue will come in response to the mitigation measures in Chapter 7.

Comments on Chapter 5 - Natural Gas Drilling and High Volume Hydraulic Fracturing

The DSGEIS proposes exploring the mass development of Marcellus Shale. Recent advances in horizontal drilling and hydraulic fracturing combined with favorable energy prices have brought much industry focus to New York State as tens of thousands of acres of gas leases have been purchased with the potential to transform much of rural New York into profitable grid work of gas fields and pipelines. DEC should require companies that produce contaminated water to obtain a removal and transport permit which identifies the category of waste transported and a verifiable final destination. DEC should make this information available on its website to alert the public of any risks to human health and the environment during this process.

Additional comments on Natural Gas Drilling and High Volume Hydraulic Fracturing:

5.1 and 5.1.1. Access Roads

The DSGEIS dictates that the size and placement of access roads is determined by the size of equipment to be transported to the well site, distance of the well pad from an existing road and the route dictated by property access rights and environmental concerns. While DEC requires access roads for the centralized compression facilities and centralized water storage facilities, the DSGEIS leaves open other important considerations which affect the placement of access roads and the environment. DEC must prohibit the placement of any access roads that does not make use of existing roads, avoid disturbing environmentally sensitive areas, or property access rights and agreements and traffic restrictions on local roads to minimize the impact to environmentally sensitive areas.

5.1 and 5.2 Well Pads

5.2.1 and 5.2.2 Well Pad Spacing Limitations

Well pad spacing requirements need to be clarified and strengthened because hydraulic fracturing could have an adverse impact on the environment and neighboring property. As the DSGEIS states, 40 acre well spacing for high-volume hydraulic fracturing is not expected to be typical for shale gas development. The DSGEIS further states that the expected approach to shale gas development in New York will be spacing units of up to 640 acres with multiple horizontal wells drilling from a common well pad. DEC should require that wherever possible developers site multiple wells on single pads to reduce the number of pads, roads, and other associated disturbances. Additionally, where it is feasible, existing infrastructure, well pads, and clearings should be used. Finally, DEC must require that spatial planning for well placement is used to avoid priority conservation habitats and reduce fragmentation.

5.1 and 5.2 Slope Limitations

Slope limitations for access roads and pad sites should be included in the DSGEIS. To the extent practicable, DEC should prohibit development in areas where the original slope exceeds 20%.

This limitation would reduce erosion impacts and prevent development in sensitive areas, which often include steep slopes.

5.2.3 Drilling Mud

As described in the DSGEIS, used drilling mud is typically reconditioned for use at a subsequent well. While this mud is managed on-site by the use of steel tanks, only some drilling rigs are equipped with closed-loop tank systems. DEC should require that all drilling rigs are equipped with closed loop tank systems so that neither used mud nor cuttings are discharged to reserve pits.

5.4.3 Fracturing Fluid

Although exposure to fracturing additives would likely only occur under a rare emergency circumstance, when such an emergency occurs it can be devastating. DEC should therefore conduct research on qualitative descriptions of potential health concerns to prevent specific exposure of these. Because health information is available for many but not all of the chemicals in the chemical categories, DEC should provide more specific assessment of health risks associated with a contamination event. This would entail an analysis based on the specific additives being used and site-specific information about exposure pathways and environmental contaminant levels. Furthermore, other chemical-specific health comparison values should be developed, based on a case-specific review of toxicity literature for the chemicals involved, including information on how potential health effects might differ (both qualitatively and quantitatively) depending on the route of exposure.

5.6.2 New York State Department of Environmental Conservation Programs for Bulk Storage

Bulk Storage regulations may apply to fracturing fluids stored in 1000-Kg or greater for a period of 90 consecutive days. These chemicals are unlikely to be stored on-site for 90 consecutive days and are therefore exempt from these regulations unless the storage period criterion is exceeded. The facility must maintain inventory records for all applicable non-stationary tanks including those that do not exceed the 90-day storage threshold. The CBS spill regulations and reporting requirements also apply regardless of the storage thresholds or exemptions and must be reported within 2 hours unless the secondary containment exception applies. Although these regulations are fairly broad, they offer limited protection to the people of New York from the harmful effects of stored waste. Therefore when drilling companies transport liquid and dry waste, they should be regulated similarly to classified hazardous industrial waste that requires a Part 364 waste transporter permit. Transporters should identify the category of waste transported and provide a signed authorization from the destination facility. In the absence of a thorough permitting system, a drilling applicant's fluid disposal plan should require verification that the applicant has a contract in place with a treatment facility, in or out of New York State, that is willing and authorized to accept flowback fluid. As Chairman of the Environmental Conservation Committee, I stand ready to work provide any legislative assistance necessary to assist in this effort.

Comments on Chapter 6 - Potential Environmental Impacts

6.1.1 Water Withdrawals:
Water withdrawals must be properly accounted for and regulated to protect the source integrity and quality of New York's water resources. Water sources outside the jurisdictions of the Susquehanna River Basin Commission (SRBC) and the Delaware River Basin Commission (DRBC) are currently subject to little regulation. The SGEIS must build on the successful water use policies and procedures of the SRBC and DRBC, and make these best practices applicable statewide to control the rate, location and timing of water withdrawals while accounting for the cumulative effect of multiple withdrawals for consumptive use in natural gas drilling. The Senate Environmental Conservation Committee is very interested in working with the Department to provide the necessary legislative support for this oversight.

6.1.1.4
Site specific mitigation considerations to protect aquatic ecosystems must be required when water withdrawal infrastructure is determined to adversely impact aquatic habitat.

Drilling Waste Products:

6.1.9/ 6.5
All drilling wastes, including cuttings, muds, brine and flowback fluids, should be fully contained on site to minimize environmental risks regardless of proximities to specific water bodies.

6.1.6
When drilling wastes are transported away from the drilling site, they should be regulated similarly to classified hazardous industrial waste that requires a Part 364 waste transporter permit. Transporters should identify the category of waste transported and provide a signed authorization from the destination facility.

6.1.6
In absence of a permit similar to Part 364 that demonstrates the receiving facility's authorization to receive waste, a drilling applicant's fluid disposal plan should require verification that the applicant has a contract in place with a treatment facility, in or out of New York State, that is willing and authorized to accept flowback fluid.

6.1.9.3
Additionally, all cuttings should be required to be disposed of in a landfill as is currently practiced by drillers in other states.

6.4

A course to minimize the spread of invasive species must be required when a comprehensive survey submitted with the EAF addendum shows a significant presence of any species listed on the Interim List of Invasive Plant Species in New York State.

6.6

The Department must lead industry practices by setting goals for methane release reductions from drilling operations, which are the largest human made emitter of the potent greenhouse gas in the United States.

6.8

The Department must ensure that controls are in place to limit worker and environmental exposure to naturally occurring radioactive materials that may accumulate to significant levels at certain build up points in the drilling process.

6.13

There is little incentive for drilling operators to reduce regional cumulative impacts from natural gas drilling and there is an even smaller grasp on what the magnitude of cumulative impacts will be. It is necessary to further study and mitigate this large unknown before operators are given carte blanche to exploit the State's environmental and community resources.

Comments on Chapter 7 - Mitigation Measures

The opening paragraph notes the "unique aspects" of HDHVHF. It would be important to define these unique aspects for the reader to clearly understand the purpose of the mitigation measures

7.1 Protecting Water Resources – page 7-2
This section notes DEC's authority to "*take into account the cumulative impact upon all of such resources in making any determination in connection with any . . . permit . . .*"

This phrase reinforces the need for a better analysis of the cumulative impacts as called for in my general comments.

7.1.1.1 NYSDEC Jurisdictions – page 7-3
This section notes to the absence of authority to regulate water withdrawals outside of Long Island, the Great Lakes St. Lawrence River Basin and the areas of New York governed by the Delaware and Susquehanna River Basin Commissions. This is a major gap and it is crucial that it be filled before HDHVHF, a process that anticipates the withdrawal of huge amounts of water, is permitted in New York State.

The legislature will be considering legislation to fill this regulatory gap in its coming session. Until such legislation is in force, it would be dangerous to begin HDHVHF in New York State.

According to the Non-profit organization Clean Water Action:
"Several streams in Western Pennsylvania were dried up by drillers who pulled out all their water. Late in 2008, industrial users and drinking water consumers along the Monongahela River were warned not to use the water because it was too polluted, in part from discharges of contaminated water from Marcellus shale wells. The Department of Environmental Protection (DEP) has documented that areas of freshwater streams have been turned to brackish water due to the high salt content of the drilling wastewater being dumped."
http://www.cleanwateraction.org/print/958

Section 7.1.1.1 also notes that:
"…a portion of the shales considered for potential high-volume fracturing are located within the Great Lakes Basin. Registration is required for non-agricultural purposes in excess of 100,000 gallons per day (30 day consecutive period)."

This section raises questions of the representation of Canadian interests in the DSGEIS process. It would be important to define the portions of shale in question, and to follow up with an analysis of which Counties are impacted in which ways by this information.

Impacts to Wetlands- Page 7-6
This section notes:
"…the placement of a structure to withdraw surface water or to withdraw groundwater within 100 feet of the wetland requires a permit. Permits for these structures can only be granted if

there is no alternative to placement within 100 feet. If there is no alternative location, a permit can only be granted if the structure has no impact on the wetlands or if that impact is outweighed by an economic and social need."

In the case of HDHVHF, the DSGEIS should provide an analysis of whether there will really be a need to build that close to a wetland in New York.

Page 7-7 point 2)
There is a typo – a word appears to be missing after "impacts shall"

Page 7-8
The first paragraph raises the question of whether water can be withdrawn from New York for drilling operations in Pennsylvania. This possibility should be analyzed with a call for a solution if DEC finds it problematic.

Table 7.1 does a good job of summarizing potential water withdrawal impacts as:

Reduced stream flow
Denigration of a stream's best use
Impacts to downstream wetlands
Impacts to fish and wildlife
Potential aquifer depletion

These impacts should be part of the cumulative analysis called for in our general comments.

7.1.1.5 Cumulative Water Withdrawal Impacts - page 7-22
This section contains tentative language regarding use of the Natural Flow Regime Method – "is an option", "could be addressed". In the next draft of the DSGEIS it would be important for decision on methodology to have been made and for the public to have more definitive proposals to respond to.

7.1.2.2 Industrial Activities page 7-25
This section refers to partial site remediation and mentions regarding. From observed well sites in Pennsylvania it will be important to have strong measures to assure that the well site is returned to its original contours, as sites there were leveled during the drilling operation.

7.1.3.1 Drilling Rig Fuel Tank and Tank Refilling Activities – page 7-27
"To the extent practical, the Department will encourage operators to position the tank more than 500 feet from these water resources."

Should be changed to

"To the extent practical, the Department will ***require*** *operators to position the tank more than 500 feet from these water resources."*

7.1.3.4 Flowback Water – page 7-34 -
This section notes that:

"Estimates provided in Section 5.11.1 are for 216,000 gallons to 2.7 million gallons of flowback water recovered within two to eight weeks of hydraulic fracturing a single well. The volume of flowback water that would require handling and containment on the site is variable and difficult to predict, and data regarding its likely composition are incomplete. Therefore, the Department proposes a requirement that flowback water handled at the well pad be directed to and contained in steel tanks."

This is a good proposal and should be finalized in the next draft. There are numerous problems with keeping flowback water in the open.

7.1.4 Ground Water Impacts Associated With Well Drilling and Construction - page 7-36
This section notes *"Baseline water quality testing of private wells within a specified distance of the proposed well;*" This is an important requirement to safeguard both homeowners and drillers. It needs to be specified how the testing contractor will be chosen and what rights property owners have in relation to this process. On page 7-38 it is specified that all private wells within 1,000 feet of the well pad must be tested. Environmentalists have called for a 2,000 foot perimeter. The next draft should include a 2,000 foot distance or a justification for why no drill related contamination might be discovered past 1,000 feet. 7-38 also puts a one year time limit on the follow up testing to private wells. This time limit should be justified.

This section also describes the conditions of a wellbore that is adequately set up to prevent ground water contamination. It would helpful in this section to identify the factors that DEC will be looking at to confirm the adequacy of the various features mentioned in order to give the public and drillers a better understanding of what is expected, and to give the public a realistic grasp of the dangers and safeguards involved. Ground water contamination is one of the greatest public fears in relation to HDHVHF and it needs to be addressed as thoroughly as possible in this document.

7.1.5 Hydraulic Fracturing Procedure – page 7-48
This section notes:
"As explained in Section 6.1.5.2, the conclusion that harm to freshwater aquifers from fracturing fluid migration is not reasonably anticipated is contingent upon the presence of certain natural conditions, including 1,000 feet of vertical separation between the bottom of a potential aquifer and the top of the target fracture zone."

It is frequently acknowledged among those working on water quality issues that ground water is a relatively poorly understood medium. DEC should explain the reliability of methods used to estimate the distance between the top of the target fracture zone and the bottom of potential aquifers.

7.1.6 Waste Transport - page 7-50

7.1.6.1 Drilling and Production Waste Tracking Form

"Because of the anticipated high volume of flowback water compared to traditional operations, the paucity of reliable data regarding flowback water and production brine composition, NORM concerns, the number of wells that may be drilled and the current limited disposal options, the Department will require that a Drilling and Production Waste Tracking Form be completed and maintained by generators, haulers and receivers of all flowback water associated with activities addressed by this Supplement. The record-keeping requirements and level of detail will be similar to what is presently required for medical waste. The form will be required regardless of whether waste is taken to a treatment facility, disposal well, centralized surface impoundment, another well pad, a landfill, or elsewhere."

The paucity of reliable data is important to recognize. It would be important for the public to be able to investigate the proposed tracking form as part of the next draft of the DSGEIS

7.1.6.2 Road Spreading
Produced Brine 7-50

While "production fluid" may be well defined elsewhere in the DSGEIS, it would be important for it to be defined in this paragraph along with brief description of how toxins or contaminants might enter this fluid. Rightly or wrongly, water and fluids used the HDHVHF process are widely suspected as dangerous among those who are listening to the public debate on HDHVHF. Unless road spreading of these fluids is better understood, it will be a very unpopular alternative and could easily hurt the reputation of the drilling industry.

7.1.7 Centralized Flowback Water Surface Impoundments page 7-51

It is not clear how allowing surface impoundments squares with the requirement in 7.1.3.4 to keep flowback water in steel tanks. This needs to be clarified in the next draft. If surface impoundments are indeed going to be allowed, in addition to the mitigation measures listed, it would be important to address the issue of mosquito breeding as instances of West Nile Virus are reported to have been traced to surface impoundments in the Western US.

7.1.8.1 Treatment Facilities POTWs- -page 7-57
This section references a list of POTWs that might be suitable for disposal of flowback water. A subsequent article from ProPublica.org claims to have investigated the cited POTWs and found that only 3 of 109 of the listed facilities they were able to reach expressed a willingness to consider taking Marcellus shale wastewater. They also claim that

"Of the 11 out -of-state plants the DEC listed as options, nine can't take any more wastewater. Two declined to answer questions for this story.

Of the six injection wells that operate in New York, only one is licensed to accept oil and gas wastewater. It's owned by Lenape Resources Inc., which uses it exclusively for wastewater from its own gas fields."
www.timesunion.com/AspStories/story.asp?storyID=882817&TextPage=4#ixzz0b6CBMrQj

It would be important for DEC to respond to these claims in the next draft of the DSGEIS. Unless recycling technology and efficiency is greatly improved, or this article is way off base, safe flowback disposal could present a major bottle neck for the HDHVHF in NY State.

Private Treatment Facilities 7-59
This section implies that there are no private treatment facilities currently operating in New York State. If true, this needs to be stated definitively. According to the Pennsylvania Oil and Gas Association, the Pennsylvania DEP is reviewing applications for 12 new waste water treatment plants proposed for Northern Pennsylvania as a result of gas drilling in that state.
http://www.pogam.org/news/view.asp?pID=1267

Assessing the probability of the need for an in-state treatment facility should be undertaken, to the degree possible. If it is highly likely, or even moderately likely, that facility could be a significant part of the unsegmented review this DSGEIS represents.

7.1.10 Protecting New York City's Subsurface Water Supply Infrastructure - page 7-63

This section makes two related claims. The first is that bureaucracy will make drilling in the NYC watershed difficult,

"The web of interrelated regulatory requirements is likely to present significant practical challenges to an operator wishing to engage in high volume hydraulic fracturing within the bounds of the New York City Watershed."

The second is that:

"…the City's water supply is adequately protected regarding water quality and quantity, and that the possibility of high-volume hydraulic fracturing presents no realistic threat to the Filtration Avoidance Determination."

As both the New York City Council and the City's Environmental Commissioner have called for bans on drilling within the watershed, the next draft of this document should contain very interesting text on this issue.

One possible solution that would seem to be in the interests of the industry is to recommend a sensitive area designation for the next draft that would preclude drilling in the New York City watershed, local and state parks, including Allegany State Park, and watersheds adjacent to the Great Lakes, along with other areas identified in comments submitted on this draft. Such a designation would clear the field by taking out very controversial areas that aren't likely to be

developed without prolonged struggles and would allow the debate to become more focused on the merits of the technology.

7.1.12.2 Setbacks from Surface Water Resources 7-69

The requirement that wells must be 150 feet from surface water bodies implies that horizontal hydrofracturing will be taking place directly under surface water bodies. The next draft should note that fact and provide justification for this practice as protective of the surface water body. On page 7-71 it notes that other states have setbacks from surface water of between 100 and 350 feet. The next draft should include a rational for why a shorter distance is acceptable in New York State.

7.2 Protecting Floodplains

This section allows for the placement of wells within a 100 year floodplain if surface impoundment is not used. There is no projection of the likely contamination, or lack thereof, if a well site is flooded. This discussion needs to be far more developed in the next draft.

7.6 Mitigating Greenhouse Gas Emissions

This section, doing a good job of describing some of the GHG parameters involved with drilling, need to be more proscriptive in the next draft.

8 Mitigating Naturally Occurring Radioactive Material (NORM) Impacts 7-98

This section notes:

"To date, no state has assessed the occurrence of NORM from longer duration drilling operations at multi-well sites and larger accumulations of shale cuttings from horizontal drilling."

While NORM may well be quite low for most drilling wastes, it is noted on page 7-102 that *"Existing data from drilling in the Marcellus formation in other States, and from within NYS for wells that were not hydraulically fractured, shows significant variability in NORM content. This variability appears to occur both between wells in different portions of the formation and at a given well over time."*

7.10.4 Mitigating Noise Impacts - Conclusion – page 7-108

This section notes:

"Drilling operations are the noisiest phase of development and usually continue 24 hours a day. Noise sources during the drilling phase include various drilling rig operations, pipe handling, compressors, and operations of trucks, backhoes, tractors and cement mixing. In most instances, the closest receptor is the residence of the property owner where the well is located and the owner has agreed to the disturbance by entering into a voluntary lease agreement with the well operator."

The above assumes a property owner who is relatively sophisticated and educated on the impacts of noise. According to the residents, that was certainly not the case in Dimock. Between the DEC and the Attorney General's Office, surely a more compassionate and preventive policy can be developed for educating lessors before problems occur.

Comments on Chapter 8 - Permit Process and Regulatory Coordination

The DSGEIS suggests that wastewater will be processed through POWT pre-treatment programs across the state in accordance with strict adherence to individual permit requirements. DEC must conduct proper inventory of the actual capacity of these treatment plants to take wastewater in relation to the thousands of wells require for horizontal hydraulic fracking and impose stiff penalties for treatment plants who dump illegally to avoid permit limitations. Funding and staffing at DEC to ensure sites are in compliance with their permit and other DEC regulations. As Chair of the Senate Standing Committee on Environmental Conservation I am very interested in working with the Department to provide the necessary legislative support for this oversight.

Additional comments on Permit Process and Regulatory Coordination:

8.1 Agency Roles

The table identifying agency roles is over simplified and does not seem to fully address the potential roles of the given agencies. Also, funding streams should be identified. While the document fairly specifically identified public input, the burden it places on local health departments is unreasonable given their financial constraints on these departments. Legislative action is required.

8.1.1.1. SEQRA Participation

The proposed Environmental Assessment Form which is required along with applications prior to
A) drilling the first well on a pad,
B) making any changes for subsequent wells or
C) refracturing an existing well,
requires thorough documentation of information pertaining to hydraulic fracturing, water sources, proximities to natural resources and cultural features, proximities to water wells, fluid disposal plans, various operational specifications, identification of invasive species, and required affirmations including residential water well monitoring and access road locations. While these site specific plans are essential to protecting the environment, the Draft SGEIS provides no hard framework from which permits may be approved or denied based on this documentation. The Department must promulgate regulations to establish and enforce best practices in the industry to adequately protect the State's natural resources.

8.1.1.1.4 Regulatory Coordination

In the DSGEIS, DEC does not clearly define regulatory controls and procedures in the effective manner to the public or to the partnering/involved agencies. Two examples are in Section 8.1.1.4 and 8.1.1.5 where the phrase "The Department strongly encourages operators…" is used. DEC should revise the DSGEIS to clarify requirements and minimize confusion or possible dependence on the good will or intentions of the permit applicant.

Additionally, the term "well operator" is used throughout the draft but should be defined or changed.

Finally, DEC, as the permitting agency, should be responsible for records management pertaining to all aspects of the drilling permit process.

8.1.1.5 Road Use Agreements

In the DSGEIS, DEC strongly encourages operators to attain road use agreements with governing local authorities. Though the Department does not have the authority to require, review or approve road use agreements or trucking plans, the proposed Supplementary Permit Conditions for High-Volume Hydraulic Fracturing require a road use agreement or trucking plan to be filed with the Department for informational purposes prior to site disturbance. As Chair of the Senate Standing Committee on Environmental Conservation I strongly endorse this effort and am willing to provide technical assistance to assist in this effort to the extent possible.

8.2.1 Permit Conditions

The proposed permit program conditions section envisions a robust and comprehensive program. However, DEC has failed to account for the need to periodically review and incorporate new technical processes that minimize impacts. The permitting program should encourage alternatives processes. In addition, permit conditions should be reviewed periodically to incorporate technical processes and other developments that minimize potential impacts to the environment and human health.

8.3.1. Reconsideration

Every three years, DEC should review and if necessary revise permit conditions to reflect technological advances that may be available to limit the environmental impacts of natural gas drilling in Marcellus Shale. Data is not currently available in many areas that the DSGEIS addresses. A three-year review also allows new information to be reviewed and permit conditions to be changed as needed to address new technologies and mitigate the cumulative effect of natural gas drilling on the environmental health, public health, and quality of life in New York State.

8.3.2 High-Volume Re-Fracturing

In the DSGEIS, because of the potential associated disturbance and impacts, DEC has determined that high-volume re-fracturing will require submission of the EAF Addendum and DEC's approval after review of the planned fracturing procedures and products, water source, proposed site disturbance and layout, and fluid disposal plans, a site inspection by DEC staff, and a determination of whether any other DEC permits are required. If stormwater permit coverage has been terminated, then it must be re-attained prior to any site disturbance associated with high-volume re-fracturing. In order to adequately administer the program, review permit applications, enforce regulations, and monitor drilling activity and associated impacts, the DEC will need additional staff. DEC and other agencies may also require resources for enhanced modeling and monitoring activities. The existing fee structure for oil and gas well permitting should be revisited and updated in order to adequately address these resource needs.

Comments on Chapter 9 - Alternatives

9.2

The onset of hydraulic fracturing technology has produced a groundswell of new drilling activity in Texas, Pennsylvania and other States. DEC should reevaluate the use of a phased approach to hydrofrack permitting that takes into account the cumulative effects of water withdrawals, surface disturbances, flowback fluid disposal, air emissions and road construction amongst other environmental impacts. A worst case scenario model could be developed in light of the many unknowns that make a phased approach difficult to plan. This model could then be scaled downward to establish a manageable rate of development based on environmental capacities and available infrastructure. The difficulty in undertaking such an approach should not prohibit its use in favor of establishing no restrictions on development rates.

9.3.1

The chemical components of fracturing fluid pose a contamination risk to surface and groundwater as well as the surrounding environment during various stages of use, recovery and transport. The DSGEIS proposes to require full disclosure of all chemical additives. In order to further mitigate this risk, the Department must also limit the use of the most harmful additives, encourage the use of 'Green' additives, and require drillers to utilize products that pose the least environmental risk. An approval process for green chemical alternatives must be established on the Federal or State level to address this need.

APPENDICES

Appendix 1: Commissioner's Editorial on Marcellus Shale

The following editorial by DEC Commissioner Pete Grannis appeared in several New York State newspapers beginning August 11, 2008

Across New York's Southern Tier and Catskill Foothills, there is talk about a modern-day gold rush for natural gas. Drillers are hurrying to lease rights from New Yorkers to tap into the Marcellus Shale formation, a rich natural gas reserve that may contain trillions of cubic feet of natural gas worth a fortune.

While this exploration could increase supplies of natural gas, expand the tax base and boost the upstate economy, it can also have significant environmental impacts. In public forums already held across the state, Governor David A. Paterson's administration has heard the community concerns, particularly about environmental protection. The DEC shares those concerns, and is fully committed to ensuring that this drilling will only proceed in an environmentally responsible way.

Governor Paterson recently approved a bill that extends uniform gas well spacing rules and establishes boundary setbacks to protect the interests of adjacent property owners. This new law has been widely misreported as allowing a new type of drilling, or somehow making it easier to get the environmental permits necessary for drilling. In fact, the new law only addresses well spacing. It authorizes nothing new or in any way reduces the environmental review needed before a drilling permit is issued.

In signing the spacing bill, the Governor directed DEC to supplement the existing generic environmental impact statement governing drilling to specifically address horizontal natural gas drilling in the Marcellus Shale. In plain terms, this will be an evaluation with full public participation - including meetings across the Southern Tier -- that takes a comprehensive look at all the possible environmental consequences of the proposed drilling.

Oil and gas drilling in New York has been around since the 19th century and is an important

industry, with hundreds of drilling permits issued every year. Because wells in New York are so tightly regulated, with a full complement of environmental protections, many people don't even realize that there are approximately 13,000 active oil and gas wells in the state. DEC's Mineral Resources professional staff - averaging 22 years experience per person - review each drilling application for environmental compliance before any drilling is permitted, inspect actual drilling operations, and enforce strict restoration rules when drilling is completed. As a result of New York's rigorous regulatory process, the types of problems that have occurred in states without such strong environmental laws and rigorous regulations haven't happened here.

When the drilling companies seeking to tap the Marcellus formation started approaching local landowners, DEC staff began a public outreach program, to provide information about leasing and the proposed drilling. The technology proposed for Marcellus Shale drilling is called horizontal or directional drilling. This technology is not new to New York - for many years we have had numerous horizontal wells permitted in the state. What is new, however, is the scale of the proposed horizontal drilling in the Marcellus Shale, and this raises significant issues, which will be addressed comprehensively and publicly as we supplement the generic environmental impact statement. Before any permits are issued for horizontal wells in the Marcellus formation we will know what is going into and coming out of the ground. We will know how the large quantities of water needed for these operations will be managed and stored in order to protect our critical water resources. And we will know how any wastewater will be properly treated and disposed of.

The people of the Southern Tier and the Catskills love their land. Governor Paterson and I understand and share their feelings. As we move forward to address the potential drilling in the Marcellus Shale, DEC will be there, working in partnership with local communities, to ensure that our precious land, air, water and natural resources are fully protected.

Appendix 2: EPA: Chemicals in water might be result of fracking

http://coloradoindependent.com/36601/epa-chemicals-in-water-might-be-result-of-fracking

EPA: Chemicals in water might be result of fracking

As in Colo., industry-guarded secrets surrounding gas fracturing make it difficult for Wyo. residents to get answers

By Abrahm Lustgarten/Pro Publica 8/27/09 7:34 AM

Federal environment officials investigating drinking water contamination near the ranching town of Pavillion, Wyo., have found that at least three water wells contain a chemical used in the natural gas drilling process of hydraulic fracturing. Scientists also found traces of other contaminants, including oil, gas or metals, in 11 of 39 wells tested there since March.

Louis Meeks' well water contains methane gas, hydrocarbons, lead and copper. The drilling company Encana supplies Meeks with drinking water. (Abrahm Lustgarten/ProPublica)

The study, which is being conducted under the Environmental Protection Agency's Superfund program, is the first time the EPA has undertaken its own water analysis in response to complaints of contamination in drilling areas, and it could be pivotal in the national debate over the role of natural gas in America's energy policy.

Abundant gas reserves are being aggressively developed in 31 states, including New York and Pennsylvania. Congress is mulling a bill that aims to protect those water resources from hydraulic fracturing, the process in which fluids and sand are injected under high pressure to break up rock and release gas. But the industry says environmental regulation is unnecessary because it is impossible for fracturing fluids to reach underground water supplies and no such case has ever been proven.

Scientists in Wyoming will continue testing this fall to determine the level of chemicals in the water and exactly where they came from. If they find that the contamination did result from drilling, the placid plains arching up to the Wind River Range would become the first site where fracturing fluids have been scientifically linked to groundwater contamination.

In interviews with ProPublica and at a public meeting this month in Pavillion's community hall, officials spoke cautiously about their preliminary findings. They were careful to say they're investigating a broad array of sources for the contamination, including agricultural activity. They said the contaminant causing the most concern – a compound called 2-butoxyethanol, known as 2-BE – can be found in some common household cleaners, not just in fracturing fluids.

But those same EPA officials also said they had found no pesticides – a signature of agricultural contamination – and no indication that any industry or activity besides drilling could be to blame. Other than farming, there is no industry in the immediate area.

Error! Unknown switch argument.

In Pavillion, a town of about 160 people in the heart of the Wind River Indian Reservation, the gas wells are crowded close together in an ecologically vivid area packed with large wetlands and home to 10 threatened or endangered species. Beneath the ground, according to the U.S. Geological Survey, the earth is a complex system of folded crusts containing at least 30 water-bearing aquifer layers.

EPA officials told residents that some of the substances found in their water may have been poured down a sink drain. But according to EPA investigation documents, most of the water wells were flushed three times before they were tested in order to rid them of anything that wasn't flowing through the aquifer itself. That means the contaminants found in Pavillion would

have had to work their way from a sink not only into the well but deep into the aquifer at significant concentrations in order to be detected. An independent drinking water expert with decades of experience in central Wyoming, Doyle Ward, dismissed such an explanations as "less than a one in a million" chance.

Some of the EPA's most cautious scientists are beginning to agree.

"It starts to finger-point stronger and stronger to the source being somehow related to the gas development, including, but not necessarily conclusively, hydraulic fracturing itself," said Nathan Wiser, an EPA scientist and hydraulic fracturing expert who oversees enforcement for the underground injection control program under the Safe Drinking Water Act in the Rocky Mountain region. The investigation "could certainly have a focusing effect on a lot of folks in the Pavillion area as a nexus between hydraulic fracturing and water contamination."

The Superfund investigation follows a series of complaints by residents in the Pavillion area, some stemming back 15 years, that their water wells turned sour and reeked of fuel vapors shortly after drilling took place nearby. Several of those residents shared their stories with ProPublica, while other information was found through court and local records. Several years ago, one resident's animals went blind and died after drinking from a well. In two current cases, a resident's well water shows small pooling oil slicks on the surface, and a woman is coping with a mysterious nervous system disorder: Her family blames arsenic and metals found in her water. In two of those cases, the Canadian drilling company EnCana, which bought most of the area's wells after they were drilled and assumed liability for them, is either supplying fresh drinking water to the residents or has purchased the land. In the third case, a drilling company bought by EnCana, Tom Brown Inc., had previously reached an out-of-court settlement to provide water filtering.

Though the drilling companies have repeatedly compensated residents with the worst cases of contamination, they have not acknowledged any fault in causing the pollution. An EnCana spokesman, Doug Hock, told ProPublica the company wants “to better understand the science and the source of the compounds” found in the water near Pavillion before he would speculate on whether the company was responsible.

Precise details about the nature and cause of the contamination, as well as the extent of the plume running in the aquifer beneath this region 150 miles east of Jackson Hole, have been difficult for scientists to collect. That’s in part because the identity of the chemicals used by the gas industry for drilling and fracturing are protected as trade secrets, and because the EPA, based on an exemption passed under the 2005 Energy Policy Act, does not have authority to investigate the fracturing process under the Safe Drinking Water Act. Using the Superfund program gave the agency extra authority to investigate the Pavillion reports, including the right to subpoena the secret information if it needs to. It also unlocked funding to pay for the research.

EPA officials have repeatedly said that disclosure of the fluids used in fracking – something that would be required if the bill being debated in Congress were passed – would enable them to investigate contamination incidents faster, more conclusively and for less money. The current study, which is expected to end next spring, has already cost $130,000.

About 65 people, many in jeans, boots and 10-gallon hats, filled Pavillion's community hall on Aug. 11 to hear the EPA's findings. They were told that a range of contaminants, including arsenic, copper, vanadium and methane gas were found in the water. Many of these substances are found in various fluids used at drilling sites.

Of particular concern were compounds called adamantanes, a natural hydrocarbon found in gas that can be used to fingerprint its origin, and 2-BE, listed as a common fracturing fluid in the EPA's 2004 research report on hydraulic fracturing. That compound, which EPA scientists in Wyoming said they identified with 97 percent certainty, was suspected by some environmental groups in a 2004 drilling-related contamination case in Colorado, also involving EnCana.

EPA investigators explained that because they had no idea what to test for, they were relegated to an exhaustive process of scanning water samples for spikes in unidentified compounds and then running those compounds like fingerprints through a criminal database for matches against a vast library of unregulated and understudied substances. That is how they found the adamantanes and 2-BE.

An EnCana representative told the crowd that the company was as concerned about the contamination as the residents were, and pledged to help the EPA in its investigation.

Some people seemed confounded by what they were hearing.

"How in god's name can the oil industry dump sh*t in our drinking water and not tell us what it is?" shouted Alan Hofer, who lives near the center of the sites being investigated by the EPA.

"If they'd tell us what they were using then you could go out and test for things and it would make it a lot easier, right?" asked Jim Van Dorn, who represents Wyoming Rural Water, a nonprofit that advises utilities and private well owners on water management.

"Exactly," said Luke Chavez, the EPA's chief Superfund investigator on the project. "That's our idea too."

Now that the EPA has found a chemical used in fracturing fluids in Pavillion's drinking water, Chavez said the next step in the research is to ask EnCana for a list of the chemicals it uses

and then do more sampling using that list. (An EnCana spokesman told ProPublica the company will supply any information that the EPA requires.) The EPA is also working with area health departments, a toxicologist and a representative from the Centers for Disease Control's Agency for Toxic Substances and Disease Registry to assess health risks, he said.

Depending on what they find, the investigation in Wyoming could have broad implications. Before hydraulic fracturing was exempted from the Safe Drinking Water Act in 2005, the EPA assessed the process and concluded it did not pose a threat to drinking water. That study, however, did not involve field research or water testing and has been criticized as incomplete. This spring, EPA administrator Lisa Jackson called some of the contamination reports "startling" and told members of Congress that it is time to take another look. The Pavillion investigation, according to Chavez, is just that.

"If there is a problem, maybe we don't have the tools, or the laws, to deal with it," Chavez said. "That's one of the things that could come out of this process."

This story was produced by ProPublica.

Appendix 3: Notes from Nov. 10, 2009 Marcellus Shale Roundtable

Senator Thompson
Marcellus Shale Roundtable – NOV 10th, 2009
Senators Thompson, Perkins
MoA Englebright, Lupardo, Gunther

DEC Draft SGEIS – agree to extend comment period

Neal Woodworth

- Concerns about:
  - the impacts on Surface waters
  - Public lands
  - Protection of State Parks
  - Proposal for Drilling in Allegany State Park (evidenced by the impacts seen on the PA side)
  - Forest Fragmentation

Jean Neubeck

- Prepared technical support documents for DEC
- Centralized well pad rather than multiple
- "Small impact" after drilling
- Positive about horizontal drilling

Chesapeake Drilling

- 1 well pad per 640 acres
- Multiple for vertical
- 6% of gas used in NYS is domestic
- Most comes from Gulf of Mexico or Canada

Stanley Scobey

- Not a short-term disturbance (30-45 days)

Bill Cooke (CCE)

- Agree with Woodworth
- Rural Landowners face enormous pressures
- The Frac is radioactive
- How to Treat
- Federal Law limits the liability – landowner is liable
- Banks have concerns about holding the mortgage
- Affects future sales
- Rush could be catastrophic

Senator Thompson: Will advise on other issues (i.e. private property rights) that are not under the direct jurisdiction of the EnCon committee

Cooke suggests a moratorium until the Legislature can absorb these complex issues.

Seth Johnson (NRDC)

- Costs of building filtration in NYC watershed could be 10s of billions
- Proposes a ban on drilling in Ecological Areas (too sensitive)
- Drilling will be acceptable in some areas with stringent regulations

Rick Hessey (Fortuna Energy)

- Natural Gas cost
- New York State pays a premium for natural gas – 20% more
- Industry's obligation is to address the fear of the unknown
- 5 to 10 acres of surface disturbance for 640 acres subsurface
- What occurs on top of horizontal? (Texas: drilling under the Dallas/Fort Worth Airport)
- Impacts on Neighbors
    - Setbacks
    - Subsurface trespass
    - Neighbor's gas is NOT at risk

MoA Gunther

- Questions about the toxicity of the frac fluid and noise. Ability to use "Green" frac fluid.

Haliburton

- Continue to develop more efficient fluid
- Use of ultra violets to minimize need for bacteriacides
- Do not put Benzene in product

Senator Thompson: Requests a visit to a site.

Sustainable Otsego

- Calling for a ban on High volume hydrofracking
- It is important to see a well in full production
- Concern about water quality
- Need a comprehensive study of cause and effect
- State should consider a prohibition on this technique
- Study/Report done by TOXICS TARGETING
- Restore Home Rule

NYH20

- In Texas – high levels of carcinogens in the Air
- EPA ruled that the air in Colorado would be measured cumulatively
- Air impacts need to be added
- 35 miles of Dunkirk Creek(?)

Laurie Schnek (Independent Hydrogeologist)

- The work can be done safely

- Highlights the need for trained hydrogeologists

Susan Riha
- More restrictions on chemicals
- biocides are a real concern
- Unclear about full containment of drilling waste and flowback
- Initial drilling is the most critical time
- Question about the impacts of exposure to fracking fluid over time
- Frac fluid still needs to be transported and disposed
- 3 million gallons of fluid / well – 20% of the fluid comes back
- Fully containerized – Re-use?
- Proposal to build a dedicated treatment plant

David Warner (NYC DEP)
- The NYC watershed provides water for ½ of the State's population
- Environmental impacts of induced growth(?)
- Impacts to NYC's infrastructure

QUESTION: Mayor or City Council position?
- Council is considering a resolution
- Mayor has expressed a "high-level" of concern

Marion Rose (Croton Watershed)
- DSGEIS should be scrapped
- Fails to address cumulative impacts, particularly for air
- Forest Fragmentation – will not be regenerated
- Long term threats to the aquifer
- All of the chemicals should be revealed as well as their combined impacts
- Suggests rulemaking
- Suggests legislation that is protective of health, safety, local economies, and the environment

MoA Lupardo – EPA is taking a look at the fluids
- Propane has been used for fracking.
- Haliburton doesn't yet know if it will be effective.

Al Appleton
1. Quick Checklist
2. Control of the underground
3. Control of the fluid that involuntarily kicks back
4. Spills
5. Discharge of fracking fluids into surface water
6. Impacts on lands
7. Ozone (air pollution)
8. Social impacts
    a. 24 hour operation
    b. Noise & Lights
    c. Lack of impact fees
9. Externalization of costs

10. Exaggerated benefits

- Entire DSGEIS is a "sham" until you get to enforcement
- Assumptions are a "fantasy."
- Impose fees and put in place restrictions until enforcement is in place.
- Could require double filtration
- Toxics + Salts
- What about the failures?
- "The worst EIS in draft form."
- The purpose of the chemicals is to hold the sand in solution.
- Three other sources of natural gas
    - Liquefied Natural Gas
    - Natural Gas from _____ Bay
    - Loss of Natural Gas in transport
- DSGEIS did not consider alternatives

Chesapeake Energy

- Announced commitment not to develop previously leased acreage in NYS watershed
- Supports a fee structure

NYC DEP

- Chesapeake's decision is positive but not binding.

Neal Woodworth (Adirondack Mountain Club)

- Allegany National Forest
- 12,000 Wells
- Industry at its worst
- Wetlands Contamination
- Contamination of Bradford's water supply

Rick Hessey – Fortuna

Success in Tioga County and on PA state lands

Stan Scobee

- Missing Constituencies: Native America, Municipal Officials
- Native Land Claims – Who owns the subsurface rights?
- Archaeological issues
- Pipelines – all should be regulated
- Setbacks: Previous 100 feet
- FHA: 300 feet from active drilling site
- Questions about effects on homeowners insurance

John Holca (IOGA)

- Asked for more information
- Most of the pipelines will be regulated by the federal government and the Public Service Commission
- Low Pressuer Pipelines
- 125 psi: Determinant is the pressure not the size

Brad Vickers (Chenango Co)

- The pipeline issue should be addressed in the DSGEIS

Joe Lavine
Zoning issues?

Roger Downs (Sierra Club)
134 plants with pre-treatment
3 are accepting wastewater

Katherine Nadeau (Environmental Advocates)

- Provide DEC with permitting and Enforcement
- The Division of Mineral Resources has 17 staff
- Need more staff in the Division of Water
- A.8784 (Sweeney) - Requires permit holders to test groundwater prior to and after drilling wells for oil and natural gas
- Legislation to establish a surface water baseline
- Legislation to establish liability for drillers (Valesky)
- Duane/Brennan bill

Adriano
Mortgages in Jeopardy if land is leased for drilling
See:
http://www.pressconnects.com/apps/pbcs.dll/article?AID=/200911152115/NEWS01/911150388

Bill Cooke (CCE)

- The Legislature is going to have to take an active role
- "Do the Math" cumulative impacts
- Propose a temporary moratorium to give the Legislature time to prepare an adequate response.

MoA Lupardo

- Meeting with the Public Service Commission
- Staffing issues
- Transmission needs to be in place prior to drilling

MoA Englebright

- Concerned about Public Parks / Watersheds

Chesapeake

- Focusing on the Southern Tier
- Believe that it can be done in ANY watershed
- None of the Companies flowback into open pits
- Seeks to re-use old waters
- Does not support a moratorium

??

- DEC should push back comment period until end of January, 2010
- Staffing issue MUST be addressed
- How can we pay for it?
- Enforcement & Mineral Resources

Jean Neubeck
- Recommends that policy makers visit a site
- Private Industry will deal with the wastewater

Pat Rush (League of Women Voters)
- DEC should develop a strict set of regulations to mitigate the numerous impacts
- DEC needs more staff

James Pitts
- Environmental Justice concerns
- Share the Economic Opportunity
- Health Impact Statements

Deb Nasar (Rail Industry)
- Supports the Natural Gas Industry
- Include a rail option for transport of the wastewater
- Legislation should support private industry

Appendix 4: Release on NY Attorney General's Settlement with Fortuna Energy

ENERGY ALLOWING N.Y. LANDOWNERS TO NEGOTIATE NEW NATURAL GAS LEASES

Natural gas drilling company agrees to stop misleading tactics to unilaterally extend leases on New Yorkers' properties

Fortuna Energy, Inc. will allow hundreds of landowners out of the improperly extended leases and will pay $192,500 in settlement

ALBANY, N.Y. (November 24, 2009) - Attorney General Andrew M. Cuomo today announced that his office has reached an agreement with Fortuna Energy, Inc. (Fortuna) that will allow customers who were misled and ended up extending their natural gas leases with the company to renegotiate their terms. The settlement also stops Fortuna from employing industry-prevalent misleading and deceptive tactics to secure leases from New York landowners.

The company also agreed to pay $192,500 to the state in connection with the settlement.

"Drilling companies will not be permitted to use misleading letters and dubious legal claims to bully landowners," said Attorney General Andrew Cuomo. "Many of these companies use their size and extensive resources to manipulate individual property owners who often cannot afford to hire a private attorney. This land-grab practice must stop. Today's settlement is a good first step, as Fortuna is the first company to agree to stop these practices. My office will continue to investigate the activities of other drilling companies to ensure that New Yorkers who were wrongly pressured into lease extensions will have a chance to renegotiate their leases."

Fortuna is one of the largest natural gas exploration companies in New York and engages in a natural gas drilling technique called horizontal, high-volume hydraulic fracturing ("horizontal drilling"). To do so, these companies obtain leases from landowners which authorize them to conduct operations on the landowners' properties, with a lease typically expiring after five years if no operations are ongoing on the property.

Beginning in April 2009, Fortuna sent letters to hundreds of landowners whose natural gas leases with the company were about to expire. These letters falsely stated that Fortuna had the right to extend these leases without the permission of the landowners. Specifically, Fortuna falsely claimed that the leases contained provisions that allowed Fortuna to put the lease on hold until the company could obtain the required horizontal drilling permits from the New York State Department of Environmental Conservation. In fact, most landowners' leases contained no such provisions.

After setting forth these false claims, Fortuna's letters then instructed landowners that if they did not agree to a three-year extension of the lease with a small percentage increase in royalty payments, the company would file a notice with the appropriate county clerk of records declaring that the term

of the lease was halted and obtain a lien against the property. These liens prevented landowners from freely negotiating drilling rights with other companies.

As a result of the Attorney General's settlement, Fortuna has agreed to rescind the letters it sent to landowners. In addition, Fortuna will remove any liens placed on the land of New York property owner whose leases have expired and whose leases did not clearly disclose that they could be extended. Landowners who agreed to a lease extension as a result of Fortuna's letter will be given the opportunity to cancel that extension. Fortuna will contact all affected landowners.

The Attorney General commended Fortuna for its cooperation in the investigation and willingness to take corrective action.

Dean Norton, President of New York Farm Bureau, said, "Farmers actively preserve as working agricultural landscapes over seven million acres of land in New York, including increasingly valuable mineral rights in areas such as the Marcellus Shale. New York Farm Bureau applauds the agreement between the Attorney General and Fortuna as an excellent example of cooperation that will greatly benefit farmers and landowners who signed contracts many years ago with little knowledge, and allow both parties to negotiate with better information."

Nick Schoonover, Chairman of the Tioga Landowners Coalition, which represents 1,400 families and more than 102,000 acres in the Southern Tier, said, "Attorney General Cuomo's involvement in this issue is a welcome addition that has produced positive results. He has been a vital partner to help protect landowners and to keep drilling companies honest. His office's understanding of landowners' rights and tenacity to protect residents is a great asset and I look forward to continuing to work with his office to further protect New York's property-owning families."

The case was handled by Assistant Attorney General Michael J. Danaher, Jr. under the supervision of Assistant Attorney General-in-Charge of the Binghamton Regional Office Dennis C. McCabe and Deputy Attorney General for Regional Affairs J. David Sampson.

Appendix 5: Ithaca Town Board Resolution

REGULAR MEETING OF THE ITHACA TOWN BOARD

MONDAY, DECEMBER 7, 2009

TB RESOLUTION NO. 2009-: REQUEST TO GOVERNOR DAVID A. PATERSON to Withdraw the draft Supplemental Generic Environmental Impact Statement Related to Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop Marcellus Shale and Other Low-Permeability Gas Reservoirs

WHEREAS, the Town of Ithaca, a community in Tompkins County with a population exceeding 19,000, is wholly located above a portion of the Marcellus Shale formation, a low-permeability rock formation estimated to contain reserves of natural gas; and

WHEREAS, recent technological developments including horizontal drilling and high-volume hydraulic fracturing have enabled energy exploration companies to potentially exploit this resource in New York State, including the Town of Ithaca; and

WHEREAS, the Town of Ithaca recognizes the need for interim energy sources as our state and country transition to widespread economical renewable energy use; and

WHEREAS, the Town of Ithaca recognizes that, if properly regulated, the development of natural gas resources in New York State could present some communities and residents with financial benefit; and

WHEREAS, the Town of Ithaca also realizes that the aforementioned potential financial benefits could easily be offset by unforeseen and preventable damage to the Upstate economy, including the tourism, wine, agriculture and education industries, should development of natural gas resources be allowed to continue in a largely unregulated manner; and

WHEREAS, land-use planning in the Town of Ithaca is guided by a Comprehensive Plan and Zoning Ordinance; and

WHEREAS, in addition to residential, commercial and industrial zones, the Town of Ithaca is also comprised of sizable areas either prioritized for conservation or unsuitable for surface disturbance, including 3,161 acres of Conservation Zone, 4,295 acres of Unique Natural Areas, 502 acres of NWI or NYSDEC wetlands, 1,072 acres of State and Town parklands, 2,128 acres of hydric soils, 4,642 acres of Agricultural Districts, 9,557 acres of undeveloped forest, brush and meadow, and contains lands in excess of 15% slope totaling 18% of its total land mass; and

WHEREAS, through the Comprehensive Plan process, Town of Ithaca residents have overwhelmingly identified environmental protection as a top priority for consideration in land-use and growth management policies; and

WHEREAS, the Town of Ithaca has historically taken an active role in the siting and permitting of development within its borders, including the proliferation of industry; and

WHEREAS, it is generally recognized that NYSDEC has assumed *de facto* siting and permitting authority related to the exploration and extraction of natural gas; and

WHEREAS, Town of Ithaca taxpayers have expended millions of dollars developing, maintaining and protecting clean drinking water sources, and water resources from Six Mile Creek, Fall Creek and Cayuga Lake within the Town of Ithaca supply water to an estimated 50,000 people; and

WHEREAS, Town of Ithaca taxpayers have expended millions of dollars developing, maintaining and upgrading advanced wastewater processing facilities including biological processes that are not designed to treat fracturing fluid and wastewater from natural gas operations; and

WHEREAS, the process of hydraulic fracturing involves the use, retention and disposal of millions of gallons of fracturing fluid and wastewater that is high in dissolved solids and contains toxic and radioactive materials, some of which are not subject to public disclosure requirements; and

WHEREAS, there are no requirements for closed, above-ground storage facilities, nor pre-treatment requirements, for the fracturing fluid and wastewater generated during the fracturing process; and

WHEREAS, the United States Environmental Protection Agency may be preparing to undertake an investigation of the impacts of hydraulic fracturing on the environment; and

WHEREAS, there have been hundreds of reported spills, fires and contaminated water supplies related to conventional vertical well drilling in New York State, and surface contamination related to the retention and disposal of fracturing fluid and wastewater from natural gas operations; and

WHEREAS, staff resources of the NYSDEC Division of Mineral Resources, Bureau of Oil and Gas Regulation are dangerously inadequate to manage current drilling activities in New York State and, so, are not sufficient to handle the widespread proliferation of deep well horizontal drilling and hydraulic fracturing; and

WHEREAS, the proposed fee structure related to permitting new wells would not provide finances adequate to staff NYSDEC to the degree necessary to process and manage an onslaught of new and more complicated drilling operations, thereby potentially creating a taxpayer subsidy for the oil and gas industry; and

WHEREAS, there is no strict liability requirement for natural gas drilling waste releases by energy companies, potentially shifting the financial burden of remediating contamination related to drilling and extraction to taxpayers; and

WHEREAS, New York State's Spill Remediation Fund may only be available for emergency response related to oil spills, excluding emergencies related to natural gas; and

WHEREAS, reporting requirements for uncontrolled oil and gas releases are currently insufficient and could be made similar to those for leaking underground storage tanks; and

WHEREAS, according to NYSDOT, New York State and Tompkins County reportedly contain the same alarmingly high percentage (37%) of structurally deficient or functionally obsolete bridges; and

WHEREAS, the widespread development of natural gas resources in New York State would involve the regular transport of heavy equipment and routine hauling of large volumes of hydraulic fluid and hydraulic fracturing wastewater over state, county and municipal roads and bridges, creating potentially dangerous conditions and a financial burden for taxpayers; and

WHEREAS, foreknowledge of the siting of industrial facilities related to natural gas development is critical to acquiring an understanding of future road usage for bonding and planning purposes, and no such advance notification requirement exists; and

WHEREAS, a comprehensive analysis of the statewide impacts of natural gas development utilizing a "full build-out" scenario has not been done; and

WHEREAS, the Town of Ithaca has a responsibility to preserve and protect its natural resources, water resources, infrastructure, and residents' quality of life.

NOW, THEREFORE BE IT

RESOLVED, that the Town of Ithaca Board hereby requests that the Honorable David A. Paterson, Governor, withdraw from SEQRA review the *Draft Supplemental Generic Environmental Impact Statement On The Oil, Gas and Solution Mining Regulatory Program- Well Permit Issuance for Horizontal Drilling And High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs,* as the aggregate protection provided therein is inadequate to safeguard the public health, environment and economy of New York State.

BE IT FURTHER RESOLVED, that the Town Board of the Town of Ithaca requests that no new permits be issued for horizontal drilling and deep well hydraulic fracturing until the aforementioned and following regulatory issues are addressed:

1. Allow municipal control over permitting, siting and certain construction and operational parameters in accordance with a municipality's land-use regulations and local laws.
2. Require closed storage and pre-treatment of fracturing fluid and wastewater from natural gas operations. Prohibit surface storage and surface disposal of fracturing fluid and wastewater from natural gas operations.
3. Require complete public disclosure of fracturing fluid and drilling wastewater constituents.
4. Require independent baseline water quality testing of potentially impacted public and private drinking water sources, financed by energy companies.
5. Mandate setbacks from private and public water sources that are adequate to protect them from uncontrolled releases of gas and hydraulic fluid, which, according to NYSDEC historical spills data, can migrate thousands of feet in minutes.
6. Impose strict reporting requirements for uncontrolled oil and gas releases consistent with New York State Navigation Law.
7. Impose strict financial liability on energy companies for environmental remediation costs.
8. Allow access to New York State's Spills Remediation Fund for emergency clean-up related to natural gas drilling contamination releases.
9. Create a permit fee structure to finance adequate staffing at NYSDEC and training of local emergency response personnel.
10. Require energy companies to post performance bonds or acquire pollution clean-up insurance prior to initiating site work.
11. Require disclosure of development plans far enough in advance to allow for planning and bonding for bridge and roadway use.
12. Conduct a comprehensive analysis of statewide impacts of natural gas development, using a "full build-out" scenario based on the maximum allowable wells per acre.

BE IT FURTHER RESOLVED, that a copy of this resolution shall be sent to Governor Paterson, NYSDEC Commissioner Grannis, State Senators Winner, Seward, and Nozzolio, State Assembly Speaker Silver, State Assemblywoman Lifton, Chair of State Senate Committee on Environmental Conservation Thompson, Chair of State Assembly Committee on Environmental Conservation Sweeney, State Attorney General Cuomo, U.S. Representatives Hinchey and Arcuri, U.S. Senators Schumer and Gillibrand, Mayor of Binghamton Matthew T. Ryan, New York State Association of Towns and Municipal Officials and Clerks.

MOVED:

SECONDED:

VOTE:

Supervisor Engman

Councilwoman Leary

Councilman Stein

Councilman Goodman

Councilman Levine

Councilwoman Hunter

Councilman DePaolo