West Virginia Chapter
PO Box 4142
Morgantown, WV 26504

April 17, 2009

WV Department of Environmental Protection
Public Information Office
601 57th Street SE
Charleston, WV 25304

Re: Comments on the Draft Industry Guidance Document for Gas Well Drilling/Completion, Large Water Volume Fracture Treatments

Dear WV DEP:

Thank you for the opportunity to comment on your Draft Guidance Document.

General comments:

The intent of the document is laudatory, but the name “guidance” indicates its inadequacy in addressing the need for statutory regulations to protect our land and water resources from contamination. This is most notable in the sections on Water Use/Withdrawal and Water Disposal where the language in many instances contains the words “should” and “may” instead of “shall” and “must.” By contrast, the section on Site Construction includes the requisite words of authority, where it refers to the requirements of the OOG Erosion and Sediment Control Manual.

Though we question the adequacy of these regulations in detailed comments below, the Erosion and Sediment Control Manual specifies required standards to be followed, and requires that approval and documentation be obtained to deviate from the standards. In contrast, the Water Use/Withdrawal and Water Disposal sections of the Guidance Document contain vague and general suggestions with no sanction against disregarding those suggestions, and no required notification to the DEP that the suggestions are not being followed.

Detailed comments:

Water Use/Withdrawal paragraph 1. The requirement for users of water resources whose withdrawals exceed 750,000 gallons per month is reporting only and after the fact. This does not provide the needed forewarning to citizens in the area of a proposed well, who are most familiar with, and dependent on, water resources, to comment before a permit is issued. Even Marcellus wells not expected to exceed this volume will exceed the 5000 barrels that trigger the Addendum. As noted below in our notes on the Addendum, the water volume needed is considerably variable and historically almost always 1 million gallons or more. It seems difficult, if not impossible, for the DEP to adequately administer an operation that begins without reporting water usage data, under the assumption that it would use less that 750,000 gallons, but then exceeds that volume during operation. Therefore, all Marcellus wells should be covered by the additional requirements, which require the Addendum, and the Addendum should be available to the public.

Water Use/Withdrawal paragraph 2 states: "In no case shall the operator withdraw water from ground or surface waters at volumes beyond which the waters can sustain." Additional specifics are needed to make this statement meaningful; i.e.: Who determines what is beyond what the waters can sustain? How is it determined? Who determines whether the withdrawals are beyond this? This process should be evaluated and monitored by DEP personnel to guarantee the sustainability of the water resources in question.

The next sentence contains the words, "a general rule of thumb" for determining sustainable stream flows. This language is vague and leaves the door open to interpretations more advantageous to operating expediency than to protecting the water resources. In addition, the limit of withdrawals during low flow conditions to no more than 10% of a stream's flow doesn't take into consideration that multiple drillers may withdraw from the same source presenting a problem of accumulation of withdrawals to an unsustainable amount. There is also the problem of how an operator will determine 10% of the "flow" in contrast to 10% of what looks like a lot of water that is just standing.

The last two sentences are fraught with language that continues to leave the door open for misuse of water resources. For example: "operators ***as a rule should*** seek larger stream sources for water supply and avoid headwater streams during the drier months of the year." And: "Operators ***should*** contact DEP for low flow information.." But what if they don't? What is to prevent an operator from depleting a headwater stream and saying, "Well, yeah, we should have found a larger stream, but we didn't have time," or "it was too expensive," or "we decided the extra truck traffic would have been worse." Or what if an operator thinks there will be plenty of water, but the drilling takes longer than expected, and a low flow condition sets in? What prevents the operator from continuing to use the water he needs? What repercussions are there for depleting a stream? The language in this paragraph does not constitute a statutory protection of surface water resources from unsustainable use.

Finally, there is no guidance on sustainable use of groundwater.

Water Use/Withdrawal paragraph 4 states: "Stream access when pumping from streams must also be carefully considered," but no guidance is provided about protecting stream bank stability or erosion control. The last sentence continues the lack of statutory requirement. "Boat launch ramps and other public access points ***could*** be damaged by heavy loading or excessive use and ***should*** be avoided." But what if an operator damages a public river access and says there were no other opportunities, and he didn't think it would cause damage? Operators should be instructed that it is illegal to use recreational boat ramps built with federal funds for commercial purposes

Site Construction paragraph 1 acknowledges that Marcellus drilling sites "are likely to result in considerably larger well sites than historically have been constructed" and therefore not covered by the current Soil Erosion and Sediment Control Field Manual of the Office of Oil and Gas. The Guidance Document directs operators to the Construction and Stormwater Manual, but this manual exempts drilling. Regulations in the Soil Erosion and Sediment Control Field Manual of the OOG should be extended to cover Marcellus drilling sites.

Site Construction paragraph 2 states: "the operator will be required to conduct regular inspections of all pits and ponds with a capacity greater than 5000 bbl." What expertise is necessary for proper inspection of pits? What criteria does the inspection follow; i.e. what is the inspection looking for or protecting against? And, due to the questionable content of the fracking fluids, all Marcellus drilling pits of any size should be carefully monitored.

Site Construction paragraph 5 states: "Due to the quality and quantity of the pit fluids, land application will not be a viable disposal option in many instances." Again, the last phrase, "in many instances" leaves the door open to the alternate action of land application. Who makes this determination? By what criteria?

In the Water Disposal section, it is unclear which type of waste water – drilling brine, fracking fluids or production water – is being discussed for which type of disposal, or if they are considered together.

Water Disposal paragraph 1 states: "thousands of barrels of this fluid ***may*** need proper treatment and disposal." To reiterate above comments, this language is improperly vague. It is self-evident that the fluid ***must have*** proper treatment and disposal, and the language should reflect this.

Water Disposal paragraph 2 continues in this vein: "While land application may generally be an option on smaller, shallower wells, it ***may not be practical*** in dealing with the volume of water expected at these sites." What volume of water will indicate what is practical? Who will decide?

Water Disposal paragraph 2 states: "This practice (UIC) is generally recognized as being environmentally sound and has proven effective for the past 25 years." The phrase "generally recognized" leaves room for those who have been troubled by this *out of site out of mind* attitude. Problems from underground processes can take many years to become apparent. Have there been any problems that have been suggested to be the result of UIC? Does the phrase "proven effective" refer to scientific studies? Can you cite them?

Water Disposal paragraph 3: Recycling of fracture fluids is a positive step in reducing water consumption, but may present additional challenges in regulating the treatment and final disposal.

The Water Disposal section states that, "Currently there are limited options (for disposal)" (paragraph 1) and though "underground injection control (UIC) may be the best option" (paragraph 2), "WV has only two permitted commercial UIC wells available." Does the WV DEP have a plan for addressing the lack of sufficient UIC wells to handle the waste water? Will permits for drilling be withheld until sufficient UIC wells exist?

We submit that land application is not a viable option, and drilling permits should be limited to the number that can be accommodated by available UIC facilities or other proper treatment facilities.

Regarding what constitutes a ***proper*** treatment facility, since the total dissolved solids (TDS) in drilling brine cannot be removed by ordinary treatment plants, but can only be diluted; and, since WV has no limit on TDS in streams and rivers where the treated waste water would be released; therefore, ordinary publicly owned treatment works should not be an option.

Well Work Permit Application Addendum item 5) asks for the ***approximate*** amount of water to be used (emphasis added). A Congressional Research Service report on Marcellus Shale Gas Development from October 14, 2008 (see attached) on page 14 states that, "Typical projects use 1-3 million gallons of water… Large projects may require up to 5 million gallons of water…Moreover; the wells may be refractured several times, thus requiring additional water." With this variation in water use, any single figure could be off by several hundred percent.

This possibility, combined with the vagueness about who or how sustainable water resources will be determined in paragraph 2 of the Water Use/Withdrawal section of the Document, leads to the likelihood that a water availability crisis could arise during a drilling project. It seems more sensible to avoid a situation where jobs and financial viability of a gas company are pitted against maintaining sustainable water resources by assuming a need at a larger volume, such as 5 million gallons. An operator could indicate where the first 2 million gallons (or other initial increment) will come from, and where successive withdrawals will come from if needed. If it subsequently appears that the assumed volume will be exceeded, the DEP should require a new addendum and

evaluation to determine that water resources are still sustainable before additional withdrawals are made.

It seems obvious that the Addendum should apply to all Marcellus wells, as well as other wells employing the same techniques and potential volumes of water.

Additional comments:

The possible contamination of groundwater from fracking fluids is a concern that is not adequately addressed by the Guidance Document. The exact contents of fracking fluids used at a particular well site may vary, but the *EPA's list of Fracking Fluids* (see attached) includes some highly toxic chemicals. Material Safety Data Sheets on the chemicals in fracking fluids are required to be at sites and on trucks carrying them in case of spills. The DEP should require disclosure of the information regarding these chemicals on the permit so the information is available to the public. Surface owners in particular should have access to this information.

35CSR4-16.4.h states: "All drilling pits and alternative overflow prevention facilities shall be constructed, maintained, and reclaimed so as not to be left in such condition as to constitute a hazard or to prevent use of the surface for agricultural purposes after the expiration of the six (6) month or extended period for reclamation prescribed by W. Va. Code 22-6-30.

Because of the possibility of the toxic content of pits where fracking fluids have been contained, the only way to avoid constituting a hazard is for the liner and contents to be removed as hazardous waste and taken to a hazardous waste facility.

If one assumes that the only use of the surface of a reclaimed pit is for agricultural purposes, the specifications in the WV Erosion and Sediment Control Field Manual do not indicate how far below the surface the contents of a reclaimed pit must be, but the drawings indicate they could be as close as a foot or two from the surface Plowing for crops might be possible without disturbing the buried waste, but fence building, which usually involves a depth of three feet or so would penetrate the waste. Consideration of long term use of the land raises more serious concerns. What protection is there against a new landowner, 30 or 40 years from now, after the well is capped, selecting the nice flat piece of land for a house site, a guest cabin or a root cellar?

By WV law we are prohibited from burying household waste.

33CSR1.6 states: Lawful Disposal of Solid Waste Required. -- Solid waste must be disposed, processed, stored, transferred, or recycled only at permitted solid waste facilities as described in this rule, and in compliance with W. Va. Code §22C-4-10.

Burial of potentially hazardous material should be regarded with the same or greater concern than household waste. The onsite burial of one fracking fluid pit is objectionable, but the prospect of hundreds or even thousands is an unthinkable legacy to leave for future generations.

A report from the Geological Resources Division Natural Resource Program Center of the National Park Service titled Potential Development of the Natural Gas Resources in the Marcellus Shale (see attached) addresses the many impacts of concern. In Appendix 2, page 16 under the Resource Concern of Groundwater, the mitigation techniques are:

Good casing/cementing practices for drilling and plugging
Well monitoring during production
Liners under storage tanks
Closed-loop Mud Systems
Offsite Disposal of Waste Berms and Liners

We submit that the water resources for our homes and communities in West Virginia deserve as much protection as our National Parks.

Many areas in the eastern counties of West Virginia have a karst geology. Drilling in karst presents special problems. Although measures are taken to prevent contamination of groundwater, drilling can disturb the circulation of water in successive layers of caves, and it can affect wells and springs further from the drilling than statute recognizes as the responsibility of the driller.

Due to the natural reluctance of a profit making interest to accept responsibility for an expensive remediation, the burden of proof is usually passed to the injured landowner. This could be prohibitively expensive and virtually impossible to prove, because no one can see underground.

For this reason, karst areas should have special consideration and protection, such as:

1. Any and all water problems (springs or wells) in a contiguous karst area should automatically be eligible for remediation.
2. A special deposit for reclamation should be required in advance of granting permission to drill in a karst area.
3. A contiguous “karst area” should be determined by an independent expert in karst geology.

Concerned citizens have attended numerous public meetings with DEP officials and Gas industry representatives where they raised issues about water withdrawals and wastewater disposal. The gas industry representatives have assured us that they follow the laws of the state. But this Guidance Document is not law. Statutory regulations are needed to adequately protect West Virginia water resources from the possible impacts of Marcellus shale drilling. While WV DEP officials are to be commended for attempting to address concerns with this document, they should acknowledge the lack of, and need for, enforceable statute to protect water resources.

We appreciate the opportunity to comment on this Industry Guidance Document. Please include these comments and attachments as part of the administrative record for this matter. We request notification of any additional materials on guidance or

regulations regarding Marcellus shale drilling. We have also mailed a hardcopy version of this comment letter. If you have any questions about our comments, please feel free to contact me at HC 64 Box 281, Hillsboro, WV 24946; phone 304-653-4277; email blittle@citynet.net.

Sincerely,

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