Chairman Sturla, Representative Kula, and other distinguished members of the House Majority Policy Committee, my name is John Walliser and I am a Vice President with the Pennsylvania Environmental Council (PEC). I would like to thank you for the opportunity to discuss water resource issues in the context of development of the Marcellus Shale formation in the Commonwealth.

PEC is a statewide nonprofit organization that, for four decades, has advanced innovative and consensus based solutions to environmental challenges at both the policy and project level. With offices and staff throughout the state, we are keenly aware of the pace and extent of Marcellus Shale development on both public and private lands.

For that very reason, last week PEC sponsored a two day Marcellus Shale Policy Conference¹ (Conference) in Pittsburgh with representatives from industry, regulatory agencies, and environmental and community interests. We also invited representatives from other shale gas states to provide additional perspective and experiences. The purpose of the Conference was to (1) identify the prominent environmental issues associated with current and future Marcellus Shale development; (2) assess Pennsylvania’s current regulation and oversight in light of those identified issues; and (3) after input from Conference participants, generate recommendations for advancing a regulatory regime in Pennsylvania that is both supportive of industry and protective of communities and our environment. We are currently developing those recommendations, and will submit a formal report to members of the General Assembly and Governor in the near future.

I would like to share with the Committee the primary water quantity and quality issues identified during our Conference. Given the large volumes of water used in shale gas extraction, water quantity and quality are inherently linked and should not be considered independently. In the interest of time, I will summarize the issues in three categories following the cycle of water used during development of the Shale play.

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¹ Please see http://www.pecmarcellus.org/ for Conference information and materials.
Withdrawal of Water

Pennsylvania is an uneven landscape with respect to managing water withdrawals for personal, commercial and industrial use. There is no direct authority for the state to comprehensively manage water quantity other than general reporting requirements pursuant to the Water Resources Planning Act of 2002. Considering that each Marcellus Shale well requires, on average, between 2 to 7 million gallons of water for extraction activities, and even conservative estimates forecast tens of thousands of wells sited within Pennsylvania, consistent water management is of paramount concern.

At this time the Delaware and Susquehanna River Basin Commissions – created through multi-state compacts – are active in addressing water management issues in response to Marcellus Shale activities. In fact, the Delaware River Basin Commission (DRBC) has issued a temporary moratorium on permit review and approvals until new regulations are established for the natural gas industry.

The western part of the state is covered by the Ohio River Valley Water Sanitation Commission, but that commission is focused on pollution abatement and does not regulate water use or quantity issues. While the Department of Environmental Protection (DEP) does require submission of a Water Management Plan in the initial permitting phase of well development, those plans are performed pursuant to general guidance and are limited in scope.

The Susquehanna River Basin Commission (SRBC) has been the most proactive in establishing a comprehensive management program in response to Marcellus Shale development, and has done so in partnership with industry. In fact, SRBC’s program could serve as a model for Pennsylvania statewide. SRBC has established a review process that accounts for evaluation of cumulative impacts, including multiple withdrawals within individual watersheds; aquatic resource surveys and ecologically-based flow analysis; and ongoing compliance by industry. SRBC has also established a remote water quality monitoring network and public website 2 on pending and approved projects – further promoting informed decision making and transparency.

These factors are precisely what a state program should involve. However, as mentioned earlier any statewide program would require new statutory authority and would need to work in concert with established SRBC and DRBC regulatory programs.

To their credit, industry is actively pursuing ways to reduce demand for fresh water withdrawals including the reuse of post-fracking flowback water as well as the potential use of abandoned mine drainage for fracking operations. If fully realized these efforts can bring many benefits and reduce demand on freshwater resources, but they too have their own set of challenges and should not be seen as a solution for broader withdrawal management concerns.

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2 [http://www.srbc.net/wrp/Default.aspx](http://www.srbc.net/wrp/Default.aspx)
Siting and Use

Once water is transferred and used at a well site, a new set of considerations come into play. Chief among these is on-site storage of frack, flowback, and ultimately produced waters. Because these resultant waters contain numerous additives and contaminants, they warrant additional controls.

Flowback and produced waters are stored on-site in either steel tanks or pit impoundments, and we have already witnessed impoundment incidents in Dimock Township in Susquehanna County and Hopewell Township in Washington County. Other states are taking specific steps to prevent these types of incidents. In the Generic Environmental Impact Statement developed by New York for oil and gas activities, impoundments would only be allowed for a very limited duration unless stored water was for reuse. West Virginia will require well operators to inspect impoundments every three days and have emergency response plans in place prior to operation.

Pennsylvania currently does not require any surface or groundwater monitoring for flowback and produced water impoundments. Steps taken in other states may be instructive given the unprecedented increase in impoundment and storage use in Pennsylvania.

Another issue that has been raised is contamination of private water supplies from drilling activities. A critical information gap exists with respect to this particular issue – we do not have baseline data to identify or confirm impacts from drilling activities. Pennsylvania does not have standards in place for establishing or operating private water wells. In addition, well operators are not required to conduct or report baseline evaluations of water supplies surrounding a well site prior to drilling activity. Thus, we do not know if problems were in existence before well development occurs, or what the true nature and extent of any resulting impacts might be. There are water supply baseline requirements in other regulatory programs – for example, underground mining operations – that could provide better certainty for all involved parties.

Additional discussion has focused upon the sufficiency of well casing and cement standards for the protection of water supplies, and in fact DEP has been actively engaged in developing amendments to 25 PA Code Chapter 78. These proposed revisions – which include updated material and design specifications as well as performance testing – will be considered by the Environmental Quality Board next Monday (May 17th); if approved they will then proceed to the Independent Regulatory Review Commission.

We have also witnessed leakage of frack and flowback water from human error, equipment malfunction, poor siting of equipment, and other operational causes. It is critical that credible inspection and enforcement is set by the state. Further, it is incumbent upon the industry to develop and consistently deploy best management practices for day-to-day operations, including the activities of subcontractors.
Disposal

Without question the most pressing discussion relating to water quality has been total dissolved solids and the disposal of flowback and produced wastewater from well operations. Wastewater from well operations can be several times (and can be up to ten times) saltier than sea water, and can be up to one-third dissolved solids.

This is another area where DEP has been working on revisions to its regulatory program; the agency will be presenting proposed rulemaking to the Environmental Quality Board on Monday May 17th. When thinking about this particular issue, it is important to take a step back and consider the broader picture first.

The fact is that even before the development of a single Marcellus Shale well, our waterways are already significantly impaired. According to the 2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report recently released by DEP, more than 19,000 miles of Pennsylvania’s rivers and streams do not meet clean water standards for drinking or fishing. 5,510 miles are polluted by abandoned mine drainage, which itself can stress assimilative capacity for dissolved solids. An additional 9,769 miles are affected by other nonpoint source pollution, including agricultural and stormwater runoff. There are no inexpensive or immediate solutions to these problems; estimates are that the remediation costs of abandoned mine drainage alone exceed $1 billion.

Wastewater from Marcellus Shale operations only compounds the challenge for our waterways, many of which have limited assimilative capacity for total dissolved solids. The vast majority of public wastewater facilities do not have the capacity to treat flowback and produced wastewater other than through dilution (which does not reduce the mass loading of total dissolved solids), nor do any public drinking water facilities have the capability to treat total dissolved solids in their source water.

The natural gas industry has made tremendous strides in recycling flowback water, but against the rapid expansion of well development in our state the overall volume of wastewater is still increasing. The rivers and streams that provide our drinking water and support our commerce and industry must be protected; in fact, they must be restored from current impairments. While there are very real costs involved, effective abatement or treatment of the increasing volume of flowback wastewater from the Marcellus Shale play is not optional for Pennsylvania.

Other Considerations

There are other water quality issues that deserve brief mention, including erosion & sedimentation controls and the siting of well infrastructure near surface waters or in floodplains. These issues can be managed pursuant to existing regulations, but these regulations must be fully

applied and enforced. As we have seen in successful permit challenge and revocations last year, this has not been the case and must change immediately.

This touches upon a broader concern reflected by these comments – we must ensure that DEP has sufficient authority and capacity to properly manage Marcellus Shale development in Pennsylvania, and that the agency fully utilizes existing protections. Pennsylvania currently does not have a complete regulatory structure to manage the full cycle of water use and disposal in relation to Marcellus Shale development. In addition, DEP has experienced severe budget and staffing cuts over the past few years, and while staff have been added to the Oil & Gas Program the same can not be said of DEP’s water protection programs. We cannot ask the agency to do more with less.

**Conclusion**

The Marcellus Shale play brings very real benefits and challenges to Pennsylvania. We have seen how the industry can be a tremendous driver of innovation and pollution prevention; we have also seen what is possible when there is a lack of regulation, or when protections are not followed or enforced. Pennsylvania has been here before. We as a Commonwealth still bear the legacy, and continue to pay the costs, of past resource extraction. Marcellus Shale development is going to happen. We need to do it right, and do it right now.

PEC will be delivering our findings from the Marcellus Shale Policy Conference in the very near future, and we hope to work collaboratively with the General Assembly, Administration, industry, and other interested parties in developing an effective, consistent, and complete regulatory program for Pennsylvania.

Let me conclude by again thanking the Committee for the opportunity to comment on this important and pressing matter.