Increasing Pressure for Groundwater Sources for Natural Gas Development in the Headwaters of the Susquehanna River Basin

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As natural gas development activities increase in the Susquehanna River Basin...

...there is an increasing demand for new water supplies in the Basin’s headwaters.
Susquehanna River Basin Commission (SRBC)

- Regulatory water resource management agency.

- Supports and encourages the sustainable use of water for the enhancement of public welfare and economic growth.

- Applies innovative, science-based methods to uniformly regulate projects.
Natural Gas Industry in Headwater Settings

- Since 2008, the natural gas industry has significantly expanded its drilling efforts in the Susquehanna River Basin.

- Drilling and development (hydraulic fracturing) of natural gas wells requires large volumes of water.
Much of the natural gas development activities are in areas that contain many of the Susquehanna River Basin’s most pristine and sensitive headwaters.
Importance of Headwaters

- Headwaters provide high quality water and habitat for healthy functioning ecosystems.
Importance of Headwaters (con’t)

- Fish depend upon headwater streams for spawning and nursery areas
Importance of Headwaters (cont’d)

- Headwaters provide dilution flow for many impaired downstream waters.
Importance of Groundwater in Headwater Settings

- Groundwater provides the majority of baseflow to headwater streams; especially, during low flow and drought conditions.
- The reduction or removal of baseflow can dramatically alter the natural hydrologic regime and severely impact the sensitive headwater environment.
SRBC Groundwater Application Process

- Site & Install Test/Production Well
- Submit Aquifer Testing Plan
- Conduct Aquifer Test
- Submit Application to SRBC for Review & Approval
Aquifer Testing Challenges in Headwater Settings

- Remote settings with rugged terrain
- Limited groundwater monitoring
- Stream geomorphology
- Test water recirculation
- Time-of-year restrictions
SRBC Staff Application Review

- Review Aquifer Test Results
- Groundwater Availability Analysis
- Environmental Screening
- Aquatic Resource Survey
- Passby Flow Determination
- Member Jurisdiction Coordination
- Recommend Commission Action
Protective Approval Conditions

- Pumping Restrictions
- System Withdrawal Limits
- Operational Monitoring
- Passby Flow Requirements
Passby Flow Conditions

- Prescribed quantity of flow that must be allowed to pass the anticipated point of impact at any time during which a withdrawal is occurring.

- Based on stream characterization and expected impacts.

- Render the source “interruptible”.
Summary

- Natural gas industry is expanding its drilling efforts in the Susquehanna River Basin.

- Increasing pressure on the water resources of the Basin’s sensitive headwaters for development of new water supplies.

- Aquifer testing is required to determine the sustainable yield of the well, evaluate the aquifer, and demonstrate that the requested withdrawal will not cause adverse impacts to other users and the environment.

- For sustainable groundwater projects, SRBC may ensure protection of the water resources with approval conditions that can significantly limit production capacity of the source.

- Project sponsors often find that highly restricted withdrawals can not provide enough water to be an economically viable source.
The Increasing Pressure for Groundwater Sources for Natural Gas Development in the Headwaters of the Susquehanna River Basin

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