

Potential Impacts of Marcellus Drilling on Water Resources

A look at the draft Supplemental Generic Environmental Impact Statement (dSGEIS)

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Because hydraulic fracturing (fracking) the Marcellus shale will require so much water, it makes sense that huge portions of the draft Supplemental Generic Environmental Impact Statement (dSGEIS) are devoted to the potential impacts on water resources and remediation of those impacts.

A single horizontal Marcellus well can require 3 to 5 million gallons of water. Given the thousands of wells expected in this region, that's a tremendous impact on water resources. Not only will millions of gallons of water be pumped out of rivers and lakes each day, but drillers will need to find ways to dispose of millions of gallons of well wastewater.

There are other issues as well: protecting the water and land from stormwater run-off, making sure drinking water near drilling areas is tested prior to drilling, and preventing contamination and degradation of water resources.

Aquifer Depletion

One concern that was raised during the public hearings on the Scoping Document was the potential for high levels of consumptive water use to deplete groundwater reserves. In Chapter 6 of the dSGEIS the Department of Environmental Conservation (DEC) acknowledges that surface water and groundwater are connected. It is possible, notes DEC, that removing an excessive volume of water from the body of water that recharges an aquifer could cause aquifer depletion.

However, DEC leaves monitoring of water withdrawals up to the Susquehanna River Basin Coalition (SRBC), a multi-state agency that oversees and permits water use in the basin. The SRBC estimates that gas drillers will use about 30 million gallons of water a day, less than 6 percent of the total use for water supplies, power generation and recreation in the basin.

Stormwater Run-off

Stormwater is one pathway for contaminants to be carried to streams, lakes and groundwater. Disturbed landscape, such as cuts for access roads, well pads, and pipeline right-of-ways contribute to run-off problems.

For this reason the DEC will require drillers in the Marcellus to develop, implement and maintain comprehensive Stormwater Pollution Prevention Plans (SWPPPs). These plans address impacts of erosion, sedimentation, contaminant discharge and nutrient pollution.

Mitigating Surface Spills at the Well Pad

Any site that will have fuel tanks on-site must file an addendum with their Environmental Assessment Form that notes distance to primary aquifer as well as public and private

water wells. DEC “encourages” operators to place fuel tanks 500 feet or more from water resources.

In addition, multi-well pad operators will have to provide secondary containment (dikes or holding ponds) for all tanks, in case of a leak. The DEC also requires that operators incorporate best management practices to minimize or eliminate pollutants in stormwater. One of the proactive practices is to have a spill-response team available to clean up any spills before they can be washed into surface water.

DEC estimates flowback (waste) water ranging from 216,000 to 2.7 million gallons per well over 2 – 8 weeks. To prevent contamination in event of a storm, they require that flowback water be directed to and contained in steel tanks.

Impacts on Groundwater

Many people expressed concern about potential groundwater contamination during the scoping hearings. DEC notes that the most common impact is short-term turbidity, or particles in the water. This can result from any aquifer penetration, not just gas drilling, and generally self-corrects over time. Migration of natural gas into groundwater is another possible impact.

To prevent groundwater contamination, DEC outlined new requirements for well casings. Operators drilling into Marcellus will have to extend their well casings at least 100 feet below the lower boundary of the freshwater zone and at least 100 feet into bedrock. They must also use pipe that is able to withstand higher pressures.

In addition, DEC requires water testing of all private wells within 1,000 feet of a well pad – 2,000 feet if there are none within the 1,000-foot radius. All results must be sent to the well owner and the county health department before drilling commences. DEC will also require additional water tests during drilling and 3 months, 6 months and 1 year after fracking is finished.

Water tests will measure coliform bacteria, lead, nitrites, turbidity and acidity as well as total dissolved solids, total suspended solids, chlorides, barium, strontium, arsenic, methane, surfactants, benzene and gross alpha and beta.

DEC and county health departments will jointly investigate all complaints of water problems.

Each week *Broader View Weekly* will review a different section of the dSGEIS. You may access the entire document at www.dec.ny.gov/energy/58440.html; print-copies will be available soon at Tompkins County Public Library (Ithaca), Candor Free Library, and Coburn Library (Owego).