

TOMPKINS COUNTY WATER RESOURCES COUNCIL

**April 19, 2010
Excerpt of Meeting Minutes**

Bradford County Scenario – Mike Lovegreen, Manager of the Bradford County Conservation District, was present. He said Marcellus Shale gas leases started in Bradford County, and they now have 400 wells. A County Advisory Committee was formed, and they sent a contingent to the Barnett Shale area of Texas to learn about hydrofracturing. The main market for Marcellus Shale natural gas will be the US northeast urban core. Some delivery lines exist, as they bring gas from Texas and states in between to the northeast. An expansion line will run west to east in Pennsylvania to connect with existing delivery lines. The Marcellus Shale “sweet spot” is in Bradford County and the portion of New York State that abuts it, where the shale thickness is about 800 feet. Geologists’ estimates of the quantity of natural gas available in the Marcellus Shale keep increasing. Exploration and drilling technologies continue to evolve, with geologists conducting three-dimensional studies through seismic testing and topography studies. Hydrofracturing provides greater access with a smaller footprint, but is a continuous, 24/7 operation. There is a real possibility that subsequent fracturing will be needed as fractures close, and this could mean 12 horizontal drills from one pad. Mike reviewed the typical components of a pad and the drilling process. He stressed this is a very water intensive process, and in Pennsylvania they are seeing companies sometimes pipe water part way to the site, then truck it the rest of the way. Each horizontal vein requires approximately 1,000 truck trips, so each pad would require 6,000 truck trips of fresh water, and when it’s needed it’s all needed in just a few days.

Mike reviewed the drilling stages, saying the state of Pennsylvania defines the fresh water level for a drill site, then the well bore casing must extend 75’ beyond that level. The water used to fracture the shale must include something to hold the fractures open (a “proppant”), which is usually sand. In Pennsylvania, the drilling companies must provide information on additives to the state, but that info is not public. Although the water being used for the hydrofracturing process is 99.375% fresh water, the flowback contains heavy metals, radioactive materials, calcium, and brine, and requires off-site treatment. Right now, drillers are only getting 30 to 40% of the injected water back as flowback. The industry is starting to re-use flowback two or three times before shipping it for treatment. Sludge from storage pits can be encapsulated in concrete and buried on site in Pennsylvania.

Pennsylvania has an encroachment act regarding wetlands, dams and flood management, and this applies to drilling. Disposal of heavy metals is part of their solid waste management law. PA also has a clean streams law, but gas drilling is exempt from sediment and erosion laws. In 2008 only 63 gas drilling permits were issued. But so far in 2010, 1,400 permits have been issued.

Mike reviewed the major challenges being faced in his region. Water source: most is coming from the Susquehanna River in Bradford County. Erosion and sediment: these are poorly managed, in part because a drilling permit application must be approved or denied within 15 days. Transportation of hazardous materials: this is governed by another agency. Water treatment after drilling: this is governed by yet another agency. Storage impoundments: wastewater disposal is a big problem, and they are now seeing proposals to build brine treatment plants. Floodplain regulations: difficult to enforce. Unpaved roads and extensive damage to county roads: companies seem to be agreeable to posting bonds for road repairs, and municipalities can require transportation permits, but damage is substantial. Threatened and endangered species: do not receive adequate protection. Distance regulations for drilling: these should exist for distances from buildings, streams and wetlands. (A separate problem is that some municipalities allow building near a capped well.) Drinking water: most companies are doing testing of drinking water sources near drilling sites for their own protection, but may not release info to residents and may not have adequate range of pollutants in the baseline tests. Lease problems: Mike characterized this as an “incredible range” of lease problems in Bradford County, but didn’t go into them. Housing: workers have filled all vacant housing and have driven rents up. It was agreed to proceed with Committee Reports, then return to questions on this topic.

Gas Drilling Comment Period -- Marjory Rinaldo-Lee asked about the low percentage of flowback fluid, and Mike Lovegreen said they would have to wait and see if the percentage remains low, but Pennsylvania has no method set up to track this. Jose Lozano asked about access to geological information, and Mike said the details are proprietary, although some independent firms are conducting studies and selling the information. Carol Chock asked what Mike would recommend doing differently if they could do it over. Mike said Pennsylvania regulations were considered cumbersome, and drilling is exempt from some. Under the current system, municipalities receive no notice of permits issued. Carol asked for his comments on density. Mike said lease payments had huge differences – whatever a “landman” could talk a property owner into signing. Then the companies traded leases around to acquire blocks and started building pipelines for freshwater delivery. Once they begin drilling, that “locks up” all leases in a block. Now they are drilling like gangbusters, with 25 rigs currently operating in Bradford County. Some residents can see 15 wells from their homes. The community reaction to all of this, and the reluctance of residents to share their lease signing and royalty information, especially price, has led to the situation being studied by two sociologists. There was thermal pollution in one of the streams, and the public still wanted water withdrawals for hydrofracturing so they could get income from their leases. Cindy Schulte asked about the size of the pits in the slides, and Mike was not sure of their capacity, but reiterated that concentrated waste needs special treatment. Lynn Leopold asked about radioactive contamination, and Mike said it is addressed as hazardous waste. Elaine Quaroni asked if the communities get any income. Mike said local municipalities cannot tax the drilling companies, per Pennsylvania law. The only municipal controls are for floodplains and zoning (and most rural communities do not want zoning). If a municipality enacts regulations for roads, they will need to do inspections. Mike noted that occasionally roads need to be closed and they have been fortunate that residents on blocked roads have not needed emergency services. He said some companies are trying to work with communities because they will have to be here for years. In all, there are over 80 different companies operating in Pennsylvania.