HYDRAULIC FRACTURING AND NORTH CAROLINA SHALE GAS

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North Carolina’s Shale Gas Potential
Hydraulic Fracturing Process

- Land-clearing, construction of infrastructure
- Drilling (vertically and then horizontally)
- Casing and cementing the well
- Perforating the well
- Hydraulic fracturing: Injection of fracturing fluids at high pressure to fracture the shale formation
- Producing the natural gas
- Well closure/site reclamation
Hydraulic Fracturing Fluid

- 98.5 percent to 99 percent water and sand
- Typically 6-12 chemicals used to condition the water
- Purposes: control bacteria, reduce resistance
- Chemicals used vary by company and site location
- Studies by EPA, State of New York, and others have identified hundreds of chemicals used in fracturing fluids
Potential Environmental Impacts

- Water supply
- Groundwater contamination
- Waste storage and disposal
- Air quality
- Earthquakes
Current N.C. Law

- N.C. Oil and Gas Conservation Act (1945)
- Permit from DENR
- Bond (limited to well closure)
- G.S. 113-393 prohibits horizontal drilling
- Oil and gas rules (15A NCAC 05D) do not address modern production methods
Federal Regulation of Gas Production

- Oil and gas drilling waste exempt from RCRA and CERCLA
- Injection of fracturing fluids exempt from Underground Injection Control provisions of Safe Drinking Water Act
- Activities exempt from Clean Water Act stormwater permitting
- In April, EPA adopted the first Clean Air Act rules for oil and gas production activities, including standards for gas wells.
Gaps in Statutes and Rules

- No regulation of water withdrawals
- Lack of appropriate standards for transportation, storage and disposal of drilling wastes
- Current well construction standards inappropriate for high pressure injection/horizontal drilling
- Existing stormwater rules may not apply
- Lack of well siting standards
- Limited bonding requirements
Recommendations of N.C Oil and Gas Study

- Strengthen well construction standards to address the additional pressures of hydraulic fracturing and horizontal drilling

- Develop setback requirements and identify areas where oil and gas activities should be prohibited.
  - Consider setbacks from streams, water supply wells, property boundaries, etc.
    - Address location of wells in water supply watersheds, wetlands, floodplains, on public lands (such as parks) and other sensitive areas.
Recommendations, continued

- Develop a state stormwater regulatory program for oil and gas drilling sites
- Develop specific standards for management of oil and gas wastes
- Require full disclosure of hydraulic fracturing constituents (with trade secret exemption for public disclosure)
- Prohibit the use of diesel fuel in hydraulic fracturing fluids
Recommendations, continued

- Require drillers to have an approved water and wastewater management plan before drilling
- Limit water withdrawals to no more than 20 percent of the 7Q10 flow and prohibit withdrawals during drought and low flow periods
- Maintain prohibition on underground injection of drilling wastes
Recommendations, continued

- Ensure state agencies, local first responders and industry are prepared to respond to a well blowout, chemical spill or other emergency
- Address the distribution of revenues from oil and gas excise taxes and fees to support the oil and gas regulatory program, fund environmental initiatives and support local governments impacted by the industry
Recommendations, continued

- Address the natural gas industry’s liability for environmental contamination caused by exploration and development (particularly groundwater contamination)
- Provide opportunity for public participation in developing specific standards
Study Limitations

- Lack of detailed information on extent and richness of shale gas resource in NC
- Uncertainty affects assessment of environmental and economic impacts
- Timeframe prevented consideration of ongoing studies by EPA and others
- No comprehensive study of long-term health effects
Next Steps

Final Report May 1 2012

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