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Dear Commissioners,

I am a citizen severely concerned about climate change and the impact all fracking and pipelines have on our local ecosystems, our environments, our lives, and the lives of future generations.

A 2017 study by researchers at the Northeast Climate Science Center and Climate System Research Center at U. Mass Amherst found that the Northeastern U.S. is the fastest-warming region in the lower 48 states, heating at a rate 50 percent faster than the global average. According to the Union of Concerned Scientists, "Records from the mid-twentieth century through 2000 show that the number of snow-covered days across the Northeast has decreased significantly." The shrinking snowpack and increased runoff will worsen as temperatures continue to rise. Further reducing our water supply by moving water out of the basin and exposing our remaining water to fracking waste contamination should not be permitted, especially when those practices support the fossil fuel production that is exacerbating warming in the first place.

When a site is developed for gas well development, the change is dramatic, essentially transforming the land to an industrial landscape. The result is destruction of acres of vegetation (8.8 acres per well pad in 2011 with 30 acres of forest impacts due to edge effects, more than double that is the trend today), soil compaction and destruction of the natural land contours, alterations to watershed drainage patterns, and hydrologically connected systems such as wetlands and vernal pools. Habitats and complex ecosystems are disrupted or lost. 85% of the Upper Delaware where the Marcellus Shale is located is forested. Forest destruction and fragmentation in turn destroys the ability of the forest ecosystem to capture, clean, and infiltrate precipitation, removes the trees that sequester carbon, reduces biodiversity, encourages invasive species, and destroys vital habitat. Changes to stream water quality occur where gas drilling and related activities are located. For instance, a publication of the Proceedings of the National Academy of Sciences found streams adjacent to gas wells are negatively impacted by runoff and sedimentation (Total Suspended Solids), harming benthic life, fish and wildlife and causing streams to be eroded and destabilized. DRBC follows the state's stormwater rules where a project is located, leaving loopholes in current nonpoint source laws that allow fracking activities to

escape strict oversight. This would be a recipe for disaster if fracking were to occur, which is why it must be banned in the Delaware River Watershed.

The newly released Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, 5th Edition speaks to the simple fact that you cannot completely protect people from fracking operations. We cannot prevent accidents from happening. As documented many times handling wastewater in the Delaware basin will cause impacts and contamination. It is not a question of if but when and where.

Sincerely,

Jimmy Hannigan