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Environmental Quality Board
P.O. Box 8477
Harrisburg, PA 17105

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ENVIRONMENTAL QUALITY BOARD

(Express mail: Rachel Carson State Office Building, 16th Floor, 400 Market Street, Harrisburg, PA 17105-2301)

RegComments@state.pa.us

Re: 25 PA Code Ch. 95 Wastewater Treatment Requirements

Dear Environmental Quality Board Members,

I support action by PADEP to protect our streams, rivers and water supply from high-TDS discharges, especially from the burgeoning flow of gas drilling wastewater. The proposed standards for TDS, sulfate and chloride are a first step that must not be weakened. However, these standards do not go far enough and additional protective measures need to be taken by PADEP now to prevent further degradation of the State's waterways and water resources.

1. PADEP should stop issuing gas drilling permits immediately since there are NO discharge standards in place at this time for Total Dissolved Solids, chloride and sulfate. PADEP should not allow new gas wells to be drilled, producing millions of gallons of wastewater, when protective standards are not yet in place.
2. No new wastewater plants should be permitted by PADEP until protective standards are implemented. The interim policy of PADEP, which is permitting new plants with effluent standards well in excess of those being proposed, is damaging our streams, rivers and water supplies. Our better quality streams, that don't have TDS saturation problems yet, are being pushed for these high-TDS discharges in the interim, which is contrary to anti-degradation goals and ruining the state's best waterways. We can't degrade our waterways because industry doesn't want to wait to drill and discharge. Further, existing plants that are discharging must be required to upgrade their treatment systems to the new effluent standards as well in order for the state to wrestle control of already degraded waterways. Sewage plants that are simply diluting gas drilling wastewater with their sewage flows must be stopped now and required to modify their permits and systems if they want to accept this waste stream. Until protective discharge standards are implemented, PADEP must stop issuing all new wastewater plant permits and all dischargers must be brought into compliance with these protective standards.
3. PADEP must use real data to set standards, not averages. The proposed TDS, chloride, and sulfate standards all use a monthly average to meet a maximum daily requirement. This means they can discharge more than the level allowed on a given day as long as they don't exceed it on average over a month's time. Can we overdraw our bank accounts by writing checks when we don't have the funds available as long as we meet an average balance each month? No. PADEP must require an INSTANTANEOUS measurement to prove compliance so the standards adopted are never exceeded or we will see excursions.
4. The amount of water being consumed at the well bore (lost underground during well development and fracturing), re-used, and carried to each discharge facility, is not being adequately tracked. The depletive loss of fresh water, 2-9 millions of gallons per gas well, will take its toll on our water resources and the discharge of the wastewater will

also. We need this data to accomplish effective water resource planning and management. Discharge standards should require an accurate accounting by industry of the quantities of fresh water, re-used or recycled water and discharged wastewater.

5. The background level in a receiving water body of TDS, chloride and sulfate must be considered for individual discharges. If the existing level of these pollutants is already high, then the effluent standard for that discharge must be adjusted to protect in-stream quality and the strictest standard applied (DRBC uses 133% of background). When existing in-stream levels of TDS are high, the applicability threshold must be removed and all TDS discharges regulated in order to not further impair the receiving waterway.
6. PADEP must set standards that are protective of aquatic life. Analysis must be done to set standards that do not harm the living communities of our streams and rivers. It is not established that 500 mg/L will not harm aquatic life; some aquatic life are more sensitive and show adverse impacts 350 mg/L or even less. [Kaiser Engineers, California, *Final Report to the State of California, San Francisco Bay-Delta Water Quality Control Program*, State of California, Sacramento, CA (1969)]. These river inhabitants cannot escape; they breathe the water they live in. We need to protect Pennsylvania's fish and aquatic life by requiring a protective effluent standard and by considering background quality in receiving waterways and not allowing mixing zones that are hazardous to fish and aquatic life and the ecosystems which they are part of.
7. The proposed regulations leave many problems unaddressed. There is no attempt to regulate the recycling or re-use of flowback and hydraulic fracturing fluids that are produced at the gas well site; some companies are already reusing these fluids and the concentrations and amounts of contaminants in these fluids are not being tracked or regulated—this is a HUGE loophole that must be closed to protect our water quality. Discharge standards should be applied to re-used fluids.
8. Whole effluent toxicity testing, both chronic and acute, must be required for all discharges in order to assess the toxicity of the waste stream. Due to the variable nature of gas drilling wastewater, continuous sampling and monitoring of the constituents of the wastewater must be required, and treatment adjusted based on the components present.
9. An unaddressed issue that needs urgent attention is the presence of constituents in gas drilling wastewater that are not addressed by this proposed rulemaking. Natural gas drilling wastewater is loaded with toxics. In fact, the U.S. Department of Energy says that natural gas drilling wastewater is ten times more toxic than oil drilling wastewater. (U.S. Dept. of Energy, Argonne National Laboratory, "A White Paper Describing Produced Water from Production of Crude Oil, Natural Gas, and Coal Bed Methane", January 2004, p. 4) The New York State Department of Environmental Conservation (NYSDEC) reported that at least 260 "unique chemicals" are used in hydraulic fracturing of the Marcellus shale in Pennsylvania and West Virginia, including formaldehyde, methanol, benzene and benzene derivatives and distillates, glutaraldehyde, ethylene oxide and at least 40 compounds with undisclosed chemicals (New York State Department of Environmental Conservation, Division of Mineral Resources, "Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas, and Solution Mining Regulatory Program", September 2009, 5-35 and 5-45).

And hundreds of chemical hazards are contained in the flowback or "produced water" after the well is hydraulically fractured. Among the known hazardous constituents are bromide, arsenic, and other metals, benzene and other volatile organic compounds, and

radionuclides from Naturally Occurring Radioactive Materials (NORMs) in dangerous amounts, according to NYSDEC. (NYSDEC Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas, and Solution Mining Regulatory Program (DSGEIS), 2009, Tables 5-8 and 5-9, p. 5-109)

For example, despite the fact that PADEP recognizes in its rulemaking that bromide is recognized as a key parameter of concern because it can produce brominated disinfection byproducts that are a drinking water hazard because they can cause cancer, bromide is not being regulated in this rulemaking or in any other rulemaking. Another example is benzene, a known carcinogen regulated by EPA that is present in both flowback due to its presence in deep geologic formations and in hydraulic fracturing fluid, posing a human health risk that cries for controls; yet, benzene is not addressed in this rulemaking either. A third example are NORMs – radium 226, a highly dangerous derivative of uranium, was found by NYSDEC to be in Marcellus wastewater in amounts thousands of times greater than is considered safe in drinking water. (NYSDEC Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas, and Solution Mining Regulatory Program (DSGEIS), 2009, Tables 5-8 and 5-9, p. 5-109) These and other radionuclide's must be regulated in order to protect water quality, whether in the water column or in solids.

These and the hundreds of other pollutants in gas drilling wastewater need to be included in Chapter 95 rulemaking in order to protect our streams, rivers, and water supplies from degradation and pollution.

I request that PADEP stop issuing all natural gas development permits, including drilling permits and wastewater discharge permits, and that the discharge of gas drilling and other high-TDS wastewater cease until protective effluent standards are adopted by PADEP that will prevent pollution and degradation of the Commonwealth's waterways, water resources, and water supplies.

Thank you for your consideration of my concerns.

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