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To: Reg-Comment

Subject: Arkansas Department of Environmental Quality - Support to amend Arkansas Pollution Control and Ecology Commission Regulations 5 and 6, to ban any new medium and large contained and concentrated swine operations in the Buffalo National River Watershed

Pork products are delicious. I am pro-farmer. That said, I support current efforts to amend Arkansas Pollution Control and Ecology Commission Regulations 5 and 6, to ban any new medium and large contained and concentrated swine operations in the Buffalo National River Watershed until further studies of appropriate manure storage and disposal processes can be evaluated. I believe there is a better way than the current standards to manage manure storage and disposal. **The better way: aerobic treatment systems.**

Born and reared in the Natural State, I have travelled the state. One of my favorite spots in the world is the Buffalo National River, from Boxley Bridge to Buffalo City (exact location visits depend upon the time of year and the water flow rate), which I began visiting in my childhood with family, as a Girl Scout and later as a Boy Scout Explorer. I have continued to visit and encourage others to enjoy the Buffalo National River and other beautiful outdoor, cultural and historical venues that are in the Buffalo National River Watershed. I always hire local outfitters, often stay in local accommodations rather than camping, and purchase a majority of provisions locally.

Buffalo National River Tourism

In 2012 the Buffalo National River attracted almost 1.1 million visitors, who spent \$43.78 million in communities around the river. Direct spending from visitors to the Buffalo employed 510 people in 2012.

(Source: The Ozark Society, <http://www.ozarksociety.net/wp-content/uploads/2014/05/3rd-Party-Rulemaking-Public-Comment-Information.pdf>)

Issue 1, The Main Issue: Who Pays for Remediation and Loss of Income to Affected Area Residents?

Spillage and leakage happen with anaerobic open-pit storage ponds and lagoons, in spite of Best Management Practices (BMPs.)

- Which farmer/operator, government entity or Concentrated Animal Feeding Operation (CAFO) owner (e.g., Cargill – most of whom own the hogs rather than the hogs' waste products) will pay to clean up affected areas?
- Who will reimburse local residents for damage and/or nuisance claims related to contamination?
- Who will reimburse farm and business operators for loss of income due to contamination issues?
- While there is one farm now, what happens when there are multiple Concentrated Animal Feeding Operations (CAFOs)?
- When is the contamination discovered? by whom? reporting/notification chain? requirements to report within a certain period? who is notified?
- Which CAFO and/or CAFO operator is determined responsible? how? by whom?
- What are the enforcement provisions and penalties for non-compliance?

CAFOs by nature put risk on the contracted farmer/operator: "Farmers under production contract are typically required to adhere to very specific details regarding how the hogs are raised. They do not own

the hogs that reside on their land. In order to comply with the contract specifications, farmers take on huge debts to build the facilities and often have little contract security. Production contracts are for fixed terms and are usually renewed a year at a time. After making a large investment in a confinement facility, a farmer has no guarantee from the corporate contractor that his/her contract will be renewed. Under these agreements, farmers take on most of the financial risks but under the terms of the contract have little opportunity for increased returns on their investments.”

(Source: **Michigan State University College of Law’s Animal Legal & Historical Center** website, <http://www.animallaw.info/articles/ddusiowahogfarming.htm>)

Issue 2: Nutrient Management Plan (NMP) for Manure Storage and Disposal

While I have no doubt that Arkansas farmers are good stewards of the environment, the current preferred nutrient management plans (NMPs) for hog farms in the state rely almost exclusively on anaerobic open-pit storage ponds and lagoons, which are prone to overflow during heavy rainfall, creating contamination.

The reactive- and porous-rock karst geology with irregular limestone formations in the Buffalo National River Watershed poses a particular challenge to managing subsurface groundwater. The Ozarks typically have 6 to 8 inches of topsoil, a gravel layer, then groundwater. The University of Arkansas’s area soil tests recommend no additional phosphorous for 15 of the 17 application fields in the current C&H hog CAFO NMP. “If phosphorous gets in the water, it could lead to nuisance algae, which would threaten the water quality, as well as the ecology of the river and surrounding areas, including plants, birds, and aquatic life.”

(Source: <http://www....arktimes.com/arkansas/hog-farm-near-buffalo-river-raises-concerns-for-watershed-and-community/Content?oid=3013811>)

“During anaerobic treatment of swine wastewater, the readily biodegradable organic matter was degraded, but nitrogen and phosphorus could not be removed effectively.”

(Source: : Deng, L. et al., Improvement in post-treatment of digested swine wastewater, Bioresour. Technol. (2007), doi:10.1016/j.biortech.2007.05.061)

Proposed Solution: Aerobic Treatment Systems

Aerobic Treatment Systems (ATS) “...will, when operating correctly, produce an effluent with less than 30 mg/liter BOD5, 25 mg/L TSS, and 10,000 cfu/mL fecal coliform bacteria. This is clean enough that it cannot support a biomat or "slime" layer like a septic tank. ATS effluent is relatively odorless; a properly operating system will produce effluent that smells musty, but not like sewage. Aerobic treatment is so effective at reducing odors, that it is the preferred method for reducing odor from manure produced by farms.”

(Source: http://en.wikipedia.org/wiki/Aerobic_treatment_system)

Advantages of Aerobic Manure Treatment

Advantages of aeration include the potential reduction of emissions of odor, methane (a greenhouse gas), and ammonia. Nitrification of ammonia to nitrate also has the advantage of conversion to a nitrogen form that is readily crop available, although it is also more prone to leaching. The nitrate can also be biologically converted to nitrogen gas in the presence of organic compounds, resulting in nitrogen removal from the liquid or slurry.

Disadvantages of Aerobic Manure Treatment

Disadvantages of aerobic treatment include higher capital cost for aeration equipment, higher operating cost (particularly energy for pumps or aerators), higher maintenance requirements, and possibly monitoring requirements for checking the dissolved oxygen level in the liquid.

There are various methods and types of equipment for aeration, whether in a tank reactor or in an aeration pond, and selecting the most efficient equipment and methods may be difficult. There are also various designs to maintain the aerobic bacteria in sufficient quantity, such as attached to suspended solids or on fixed media. Consultation with knowledgeable professionals is advisable.

(Source: <http://www.extension.org/pages/8843/aerobic-manure-treatment#.U5cxfvmw18k>)

Benefits seen by a North Carolina hog farmer (2,880-head finisher with about 1,500 folks who live within a square mile) “of the nutrient waste management system that he didn't anticipate, such as:

- * Less salt buildup in the pipes. ‘It used to be a big problem here and we used to use a product that reduced salt buildup in the pipes, but I don't think we even need it anymore,’ he says.

- * Much improved environment in the hog houses for man and pigs, mainly less ammonia and other gases. The shallow pits are flushed four times daily.

- * Use of medications is way down.

- * Weight gains are up significantly. Whereas before, [the farmer] was getting just over two turns of the finishing groups, he is now getting about three turns per year.

- * Death losses have decreased, losing only a handful out of each group in each of the four, curtain-sided finishing units.”

(Source: “Hog Waste Treatment System Naturally Removes Odors,” *National Hog Farmer*, January 1, 1998, http://nationalhogfarmer.com/mag/farming_hog_waste_treatment)

Conclusion

Perhaps, after study from the University of Arkansas System Division of Agriculture, the Arkansas State Legislature may consider grants to assist in funding new manure storage and disposal systems, as the “North Carolina state legislature has offered swine farmers a 90% cost-share grant to convert their lagoons to “Environmentally Superior Technologies (EST).”

(Source:

http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/5373/Ashlyn_Final.pdf?sequence=1)

I live Texas, where water management is a high priority. While I realize we're talking about water-rich Arkansas, poorly managed water can lead to increased emergency measures to access safe water. Many Texas towns and cities treat and convert sewage for use as drinking water, irrigation and manufacturing. The converted wastewater, which is pumped out to various rivers that supply downstream municipal water supplies, is “so clean that it helped bring back species some thought were gone from the area forever.”

(Source: “No Joke: Most Drinking Supplies Flush With ‘Potty Water,’” *Texas Tribune*, May 14, 2014, <http://www.texastribune.org/2014/05/14/dont-point-and-jeer-wichita-falls/>)

Solutions are available which will allow the pristine Buffalo National River Watershed to remain intact while also spurring and supporting additional economic benefits to area farmers and businesses.

Respectfully submitted,
Elizabeth Hale
Dallas, TX

Disclosure

There are no incentives for my commentary; however, I am a proud member of the Buffalo River National Partners, the Arkansas Native Plant Society, and a lifetime member of the Ozark Society.

Listed below are additional information and resources related to my commentary.

Commentary Resources

Primary Resources:

- “Understanding Concentrated Animal Feeding Operations and Their Impact on Communities” report, ©2010 **National Association of Local Boards of Health** (http://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf)
- **Michigan State University College of Law’s Animal Legal & Historical Center** website (<http://www.animallaw.info/articles/ddusiowahogfarming.htm>)
- [other resources attributed, as well as direct attributions from primary resources]

Manure Storage and Disposal

A single hog raised on a factory farm can produce up to 2 tons of wet manure per year. This means that a 2,500 head (adults only) confinement facility will generate 5,000 tons of manure per year averaging 14 tons per day—and this does not include manure from piglets. Unlike human waste, which undergoes extensive treatment to remove bacteria and other pathogens, hog waste is often stored in vast open air lagoons and eventually applied to land without any form of sewage treatment.

“Ground application of untreated manure is one of the most common disposal methods due to its low cost. It has limitations, however, such as the inability to apply manure while the ground is frozen. There are also limits as to how many nutrients from manure a land area can handle. Over application of livestock wastes can overload soil with macronutrients like nitrogen and phosphorous and micronutrients that have been added to animal feed like heavy metals (Burkholder et al., 2007).”

(Source: “Understanding Concentrated Animal Feeding Operations and Their Impact on Communities” report, ©2010 **National Association of Local Boards of Health**, http://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf)

The existing C&H hog farm in Mt. Judea, AR, is expected to produce more than two to three million gallons of manure, litter, and wastewater each year, according to the National Parks Conservation Association’s Buffalo National River website (<http://www....npca.org/parks/buffalo-national-river.html>) and the C&H nutrient management plan (<http://www....arktimes.com/arkansas/hog-farm-near-buffalo-river-raises-concerns-for-watershed-and-community/Content?oid=3013811>.)

Confined Animal Feeding Operations (CAFO) Under the Clean Water Act

The Clean Water Act targets point source pollutant discharges into the navigable waters of the United States. Designation as a point source is crucial to bring a hog confinement operation within the ambit of the permit requirements set forth in the Act. Recognizing the potential of Confined Animal Feeding Operations (CAFOs) to pollute the nation’s waterways, Congress included feedlots in the statutory definition of point sources in the Act, thereby making them subject to the National Pollutant Discharge Elimination System (NPDES) permitting system.

The term "point source" is defined as: ***any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or***

may be discharged. 33 U.S.C §1362(14). This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

To be a CAFO, a livestock must first be designated as an animal feeding operation (AFO). A hog facility is an animal feeding operation (AFO) for purposes of the Act if the facility stables or confines and feeds hogs for 45 days or more in any 12 month period where crops and vegetation are not sustained in the confinement area during the normal growing season. (40 CFR § 122.23 (1).) Secondly, a hog confinement’s CAFO designation depends upon the number of hogs raised on the site.

| <u>Animal Sector</u> | <u>Size Thresholds (number of animals):</u> | | |
|-------------------------|---------------------------------------------|-------------------------|--------------------|
| | <u>Large CAFOs</u> | <u>Medium CAFOs (1)</u> | <u>Small CAFOs</u> |
| Swine (over 55 pounds) | 2,500 or more | 750-2,500 | Less than 750 |
| Swine (under 55 pounds) | 10,000 or more | 3,000-9,999 | Less than 3,000 |

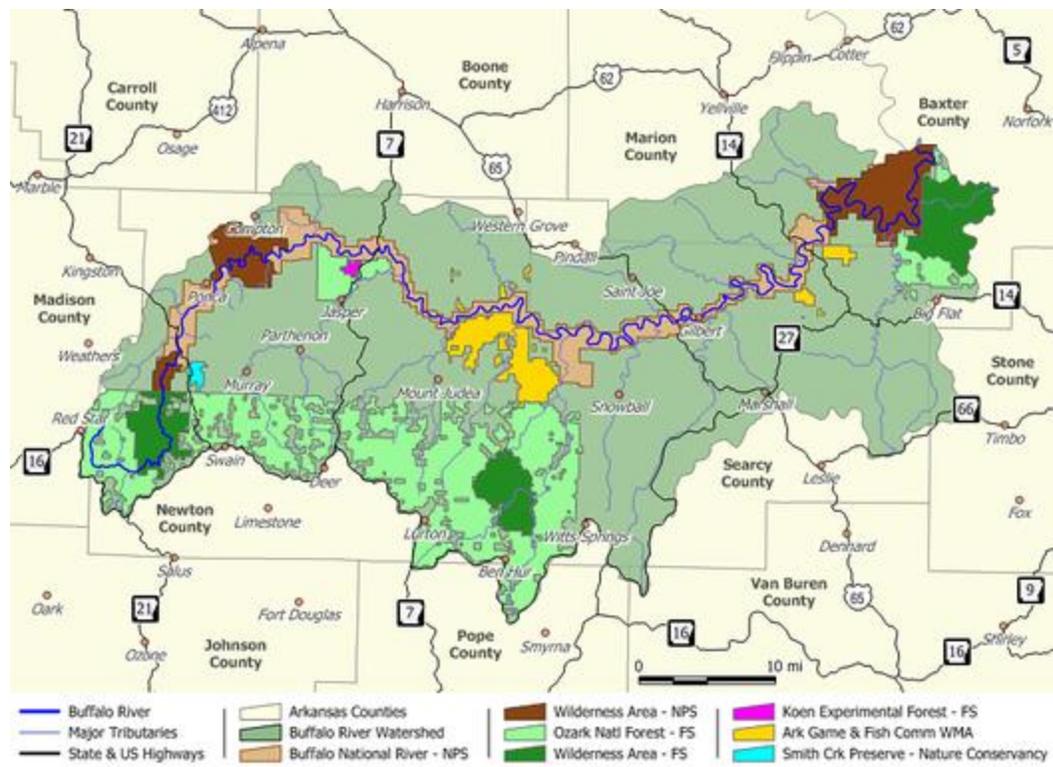
Data: **Environmental Protection Agency**

(1) Must also meet one of two “method of discharge” criteria to be defined as a CAFO or must be designated.

(2) Never a CAFO by regulatory definition, but may be designated as a CAFO on a case-by-case basis.

The Act makes the following designations relevant to hog production: an AFO that houses 2,500 swine weighing 55 pounds or more, or, 10,000 swine each weighing less than 55 pounds is designated a Large CAFO under the Act. Large CAFOs are automatically point sources under the Act and require NPDES permits if the facility has the potential to discharge effluent into the waters of the United States. A Medium CAFO is one that houses 750 to 2,499 swine each weighing 55 pounds or more; 3,000 to 9,999 swine each weighing less than 55 pounds, and either one of the following conditions are met: (A) Pollutants are discharged into waters of the United States through a man-made ditch, flushing system, or other similar man-made device; or (B) Pollutants are discharged directly into waters of the United States which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation. (40 C.F.R. 122.23(A)(B)).

Buffalo River Watershed including National River and other State Government, Federal Government, and Nature Conservancy Managed Lands



http://en.wikipedia.org/wiki/Buffalo_National_River#mediaviewer/File:Buffws.png