



IN REPLY REFER TO:
1.A.1 (BUFF)

United States Department of the Interior
NATIONAL PARK SERVICE

Buffalo National River
402 N. Walnut, Suite 136
Harrison, AR 72601

ELECTRONIC CORRESPONDENCE ONLY

September 23, 2019

Becky Keogh, Director
Arkansas Energy and Environment
Division of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Comments Submitted Electronically: regcomment@adeq.state.ar.us

Dear Director Keogh:

Thank you for the opportunity to provide comments on the draft changes the Division is proposing to Rules 5 and 6 that would institute the Governor's directive to make permanent the current moratorium on issuance of permits for medium and large swine Concentrated Animal Feeding Operations (CAFO) in the Buffalo River Watershed. Buffalo National River fully supports the proposed amendments to Rules 5 and 6 and the Governor's direction to place a permanent moratorium on medium and large Concentrated Animal Feeding Operations and Land Application Sites within the Buffalo River Watershed. We believe this is a necessary step to ensure the river is preserved for the enjoyment of present and future generations.

Public Law 92-237 directs the National Park Service (NPS) to conserve and interpret the Buffalo National River (BNR). The Buffalo River is classified by the state of Arkansas as an Outstanding National Resource Water, Extraordinary Resource Water, and Natural and Scenic Waterway. The long-term health of the Buffalo River Watershed must be taken into account as we work to protect the Buffalo River. With the majority of the watershed in private ownership, cooperative conservation is the key to protecting the Buffalo River. Buffalo National River is committed to improving dialogue and relationships with local landowners, park neighbors, and the many communities that call the Buffalo River Watershed home. Your efforts to codify the lessons learned from the potential impacts of permitted facilities within the Buffalo River Watershed are the foundation of cooperative conservation.

The current form of Rules 5 and 6 allow for the permitting of CAFOs and Land Application Sites within the Buffalo River Watershed. The proposed rule changes impact permitting of facilities located outside of the boundaries of the BNR, however, within the greater Buffalo River Watershed. Any permitted facility within proximity to the river presents a defined risk of contamination to the Buffalo River due to the karst environment throughout the area. There are

demonstrated hydrologic connections between surface operations in the watershed and the Buffalo River. Please consider the following comments as you make a final decision on finalizing Rules 5 and 6; I have included citations for your convenience.

Buffalo National River continues to have serious concerns about the impacts from CAFO operations on the waters of Big Creek and the Buffalo River. These concerns were echoed by the ADEQ 2018 draft 303d listing of the Buffalo River and the section of Big Creek adjacent to a CAFO facility and its spreading fields for *E. coli*, and lower Big Creek for dissolved oxygen impairment. As the hydrologic base level of the watershed, the Buffalo River assimilates pollutants from diverse sources within the watershed. The permitted facilities introduce nutrients and other pollutants into ground and surface waters that are critically important to the continued well-being of the river and the health and safety of those who enjoy its recreational values.

Karst conditions present persistent waste storage pond leakage and irreversible infiltration of waste products into the groundwater from spreading fields. Approximately 40% of the land in the Buffalo River Watershed is directly underlain by karst forming geologic units consisting of limestone or dolomite. Karst groundwater flow is well documented in the Buffalo River watershed^{1,2}. The underlying karst topography beneath much of the Buffalo River Watershed with features such as caves, sinkholes, sinking streams, and springs complicates the understanding of contaminant flow. Hydrologic connections through the karst plumbing, even at sites well away from the river, can allow fast transport of nutrients and other contaminants to the river's mainstem.

Best Management Practices (BMPs) are enacted at agricultural facilities to help limit their direct impact to receiving waters; however, current research^{3,4} suggest a lag-time response of many streams (and no response in others) from implementation to measurable results. One paper of particular interest⁵ notes that long-term monitoring, measured by decades, will likely be necessary to capture the responses (both water quality and ecologically) to the implementation of BMPs. Of particular interest, is an article⁶ measuring the retention and remobilization of phosphorus in karst terrain. The authors report that the karst terrain of an experimental watershed in northwest Arkansas has the ability to retain high amounts of phosphorus within the karst drainage (noted as a phosphorus sink); however, they also caution once this source is remobilized, it may become a long-term source of legacy phosphorus to surface waters. The lack of a response of water quality or biota to the current nutrient loading within the Buffalo River

¹ Brahana, J.V., C. Bitting, K. Kotic-Ficco, T. Turk, J. Murdoch, B. Thompson, and R. Quick. 2017. Utilizing fluorescent dyes to identify meaningful water-quality sampling locations and enhance understanding of groundwater flow near a hog CAFO on mantled karst – Buffalo National River, southern Ozarks.

² Aley, T. and C. Aley. 1989. Delineation and Characterization of the Recharge Area for Mitch Hill Spring, Buffalo National River, Arkansas. Ozark Underground Lab.

³ Hamilton SK. 2011. Biogeochemical time lags may delay responses of streams to ecological restoration. *Freshwater Biology*. DOI: 10.1111/j.1365-2427.2011.02685.x.

⁴ Meals DW, SA Dressing, and TE Davenport. 2010. Lag time in water quality response to best management practices: a review. *J. Environ. Qual.* 39:85-96.

⁵ Jarvie HP, AN Sharpley, PJA Withers, JT Scott, BE Haggard, and C Neal. 2013. Phosphorus mitigation to control river eutrophication: murky waters, inconvenient truths, and “postnormal” science. *J. Environ. Qual.* 42:295-304

⁶ Jarvie HP, AN Sharpley, V Brahana, T Simmons, A Price, C Neal, AJ Lawlor, D Sleep, S Thacker, and BE Haggard. 2014. Phosphorus retention and remobilization along hydrological pathways in karst terrain. *Environ. Sci. Technol.* Dx.doi.org/10.1021/es405585b.

Watershed may not indicate that a problem does not exist; however, it might be a sign that the soil and karst environments have not been saturated to allow excess nutrients (mainly nitrogen and phosphorus) to begin leeching to surface water. If this is allowed to occur, given the above-mentioned articles, recovery may take decades, or worse, create an irreversible altered state⁷. Waiting for data to show degradation of the environment to begin remediation does not fit with the purpose of the Clean Water Act or the Antidegradation Policy in Regulation 2.

Buffalo National River provides habitat for the Threatened Rabbitsfoot mussel (*Quadrula cylindrica cylindrica*) and the Snuffbox mussel (*Epioblasma triquetra*). The Buffalo River from the mouth of Cove Creek near Erbie to the U.S. Route 65 crossing at Grinder's Ferry is Critical Habitat for the Rabbitsfoot mussel⁸. Nutrient loading of streams is one of the primary threats facing the Rabbitsfoot mussel⁹. Nutrient loading is exacerbated by the addition of Zinc (Zn) and Copper (Cu) in swine rations to increase growth rates. The application of effluent enriched in these plant micro-nutrients can cause accumulation in sandy soils¹⁰. Up to 95% of the Cu ingested by swine is passed through and excreted, with much of it being in a readily soluble form¹¹. Juvenile freshwater mussels are particularly sensitive to Cu enrichment of water¹².

Buffalo National River is home to four species of bat listed as Threatened or Endangered. The Gray bat (*Myotis grisescens*) was first listed in 1976. The Gray bat utilizes subterranean habitats year around for roosting, hibernation, and rearing of young. Gray bat caves occur from one end of the Buffalo River to the other, approximately every 15 to 20 miles. They also occur on tributaries to the river. The Gray bat specializes in capturing emergent aquatic insects from streams and large ponds and lakes. The Buffalo River is an undammed 152-mile resource for this species, with an excellent substrate for its favored prey species. Contamination of roost caves with waste from CAFOs or land application permits has the potential to have impacts upon these confined spaces. Contamination of the Buffalo River has the potential to have greater impacts upon this species' survival. *Ephemeroptera*, *Plecoptera*, and *Tricoptera* are very important to the diet of Gray bats¹³. Pollutants can reduce species richness of taxa from these three groups, potentially resulting in adverse impacts to the Gray bat. This is an impact that is additional to the impacts from climate change and White Nose Syndrome (WNS). BNR is close to the southern edge of the range for the Gray bat, changing climate is likely to push this range northerly where

⁷ Carpenter SR, D Ludwig, and WA Brock. 1999. Management of eutrophication for lakes subject to potentially irreversible change. *Ecol. Appl.* 9:751-771.

⁸ Federal Register, Vol. 80 No. 83, 30 April 2015.

⁹ Butler, R.S. 2015. Status assessment report for the Rabbitsfoot, *Quadrula cylindrica cylindrica*, a freshwater mussel occurring in the Mississippi River and Great Lakes Basin. Research April 2215. DOI: 10.13140/RG.2.1.3065.4883. 208 pp.

¹⁰ Novak J, AA Szogi, and DW Watts. Copper and zinc accumulation in sandy soils and constructed wetlands receiving pig manure effluent applications in Trace elements in animal production systems. pp. 45-54.

¹¹ Schwartz MS, KR Echols, MJ Wolcott, and KJ Nelson. 2004. Environmental contaminants associated with a swine concentrated animal feeding operation and implications for McMurtrey National Wildlife Refuge. United States Fish and Wildlife Service. 98 pp.

¹² Wang N, CG Ingersoll, EI Greer, DK Hardesty, CD Ivey, JL Kunz, WG Brumbaugh, FJ Dwyer, AD Roberts, T Augspurger, CM Kane, RJ Neves, and MC Barnhart. 2007. Contaminant sensitivity of freshwater mussels: Chronic toxicity of copper and ammonia to juvenile freshwater mussels (*Unionidae*). *Environmental Toxicology and Chemistry*, V26, N10, pp. 2048-2056.

¹³ Brack Jr. V and RK LaVal. 2006. Diet of the gray Myotis (*Myotis grisescens*): Variability and consistency, opportunism, and selectivity. *Journal of Mammalogy*, V87, N1, pp. 7-18

it may be difficult for the species as a whole to find adequate numbers and distribution of suitable roost sites. WNS is a disease that effects cave dwelling bats. At the current time, it does not seem to be adversely impacting the Gray bat in Arkansas, but reductions in diet variety and abundance may change the current equation.

Thank you again for this opportunity to comment and show our support of the proposed amendments to Rules 5 and 6 and the Governor's direction to place a permanent moratorium on medium and large Concentrated Animal Feeding Operations and Land Application Sites within the Buffalo River Watershed. We believe by working together, we can continue to take the necessary steps to ensure the river is preserved for the enjoyment of present and future generations.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mark A. Foust', with a long horizontal flourish extending to the right.

Mark A. Foust
Superintendent