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RE: Proposed 2018 Impaired Waterbodies List

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303d Waterbody Comments

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Buffalo River Watershed Alliance Comments on Draft 2018 Impaired Waterbodies List

These comments are submitted by the Buffalo River Watershed Alliance in response to the Draft 2018 Impaired Waterbodies List. In particular, they address the proposal for placing two segments of Big Creek, one for pathogens (AR_11010003_022) and one for dissolved oxygen (AR_11010003_020), and two segments of Buffalo River (AR_11010005_011, AR_11010005_010) for pathogens in Category 4b, meaning “*Water quality standards are not attained for one or more designated uses but the development of a TMDL is not required because: 4b. Other management alternatives are expected to result in the attainment of the water quality standard*”

While we commend ADEQ for using sound science to determine that Big Creek and adjacent segments of the Buffalo National River are threatened, we believe that placing these troubled waters into Category 4b falls short of the mark and is a flawed decision. Category 5 is the only appropriate choice and is necessary to adequately identify and correct the existing sources of impairment through the development of TMDLs in addition to other, more immediate, corrective actions. Big Creek and our State’s most iconic river, the Buffalo, deserve no less.

Regarding Category 4b, the Executive Summary of the 2018 Draft states (emphasis added):

“Category 4b recognizes other, comparable management solutions are expected to result in the attainment of the water-quality standard. Such an approach exists in this watershed where the Beautiful Buffalo River Action Committee (BBRAC) has been established for the purpose of addressing potential water-quality concerns throughout the Buffalo River Watershed and to protect the vitality of the Buffalo National River as a national, state, and local landmark. Governor Asa Hutchinson directed five agencies to develop an Arkansas-led approach to identify and address potential issues of common concern in the watershed. A key priority of BBRAC was to initiate the development of a Buffalo River Watershed Management Plan. The nine-element watershed management plan was developed for the Buffalo River Watershed, and the final plan was submitted and accepted by EPA in June 2018. Watershed management plans are recognized by EPA as comparable, state-led management approaches expected to result in the attainment of water-quality standards. “

The supporting document, “Category 4b Determinations” goes on to say (emphasis added):

“40 CFR 130.7 (b)(1) provides that segments are not required to be listed on the 303(d) list if “other pollution control requirements (e.g. best management practices) required by local, State, or Federal authority” are stringent enough to implement applicable water quality standards within a

reasonable period of time. The Illinois River, Buffalo River, and Beaver Lake watersheds have alternative management plans in place; therefore several AUs were placed in Category 4b.

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*Arkansas is placing two segments of Big Creek, one for pathogens (AR_11010003_022) and one for dissolved oxygen (AR_11010003_020), and two segments of Buffalo River (AR_11010005_011, AR_11010005_010) for pathogens in Category 4b. In August 2016, Arkansas Governor Asa Hutchinson formed the Beautiful Buffalo River Action Committee (BBRAC) to establish an Arkansas-led approach to identify and address potential issues of concern in the Buffalo River watershed. BBRAC comprises the Arkansas Department of Environmental Quality, Arkansas Natural Resource Commission, Arkansas Game and Fish Commission, Arkansas Geographic Information Systems, Arkansas Department of Health, and Arkansas Department of Parks and Tourism. **One of the most significant charges for BBRAC to date was to develop a nonregulatory, watershed management plan for the watershed.** On January 15, 2018, Arkansas Natural Resource Commission finalized the Buffalo River Watershed Management Plan, and it was accepted by EPA June 2018. **The Buffalo River WMP outlines voluntary measures to reduce nonpoint source runoff as well as makes recommendations for water quality monitoring and studies within the watershed.** ADEQ believes stakeholders and BBRAC partners are necessary for successful strategy and milestone development. ADEQ and BBRAC are committed to revising the strategy as necessary to achieve ultimate attainment of water-quality standards in the Buffalo River.”*

Both of these documents point specifically to the Buffalo River Watershed Management Plan (BRWMP) as the “alternative plan in place” to justify inclusion of the impaired segments in Category 4b rather than Category 5. Again, this decision is flawed for the following reasons:

The BRWMA is completely voluntary and precludes consideration of point-sources and permitted facilities. C&H is a point-source, permitted facility and thus is expressly excluded from coverage of the BRWMA. As Governor Hutchinson stated when announcing BBRAC, and as has been made abundantly clear at subsequent BBRAC meetings as well as the BRWMP meetings, all actions undertaken by the BBRAC and BRWMP are completely voluntary and non-regulatory. In addition, there is no mechanism provided in the BRWMA for oversight of the management plan, nor any funding to do so even if a mechanism were present.

As noted above, 40 CFR 130.7 (b)(1) provides that segments are not required to be listed on the 303(d) list if “*other pollution control requirements required by local, State, or Federal authority*” are stringent enough to implement applicable water quality standards within a reasonable period of time. The BRWMP is not “required” by any local, State or Federal authority within the meaning of that regulation, nor are the provisions of the management plan stringent enough to implement the water quality standards within a reasonable period of time. Without more proactive, stringent and enforceable measures being taken, the water quality of Big Creek and the Buffalo River will continue to deteriorate, making remedial action more difficult and prolonged.

The BRWMP, as with all WMPs, relies heavily on Best Management Practices (BMPs) to achieve goals. Reliance on BMPs alone to address these impairments of Big Creek and the Buffalo National River is not only insufficient, it is a recipe for disaster.

Dr. Andrew Sharpley, an acknowledged expert in the fate and transport of phosphorus, has written extensively about the problems of “Legacy Phosphorus”, the phenomenon whereby excess phosphorus is stored in the soil profile and is released to waterbodies, including groundwater, slowly

over long periods of time. Further, as related to implementation of WMPs in Arkansas, BMPs have historically been ineffective in achieving goals of remediation, particularly in the short term. In his report, “*Phosphorus Legacy: Overcoming the Effects of Past Management Practices to Mitigate Future Water Quality Impairment*”

<https://bigcreekresearch.org/docs/Legacy%20P%20across%20the%20watershed%20continuum.pdf>

Dr Sharpley states (emphasis added),

*“Best management practices, which promote the retention of eroded soil, sediment, water, and nutrients within the landscape (such as buffer zones and wetlands) have been successful in storing P and thus smoothing out peaks in P delivery to downstream receiving waters (Reddy et al., 1999; Uusi-Kamppa et al., 2000). These BMPs protect downstream aquatic environments from high P loads and concentrations; without them, the impacts of agricultural P losses on downstream water quality would have been more acute. **By concentrating P storage at specific locations in the landscape, however, these practices can create longer term and continuing sources of legacy P to receiving waters. ...Best management practices can become inadvertent causes of legacy P transfers within watersheds...Because of the lag time between BMP implementation and water quality improvements, remedial strategies should consider the time necessary for re-equilibration of watersheds and water bodies, where nutrient sinks may become sources of P with only slight changes in watershed management and hydrologic response.**”*

In another report, “*Water Quality Remediation Faces Unprecedented Challenges from “Legacy Phosphorus”*” <https://bigcreekresearch.org/docs/Legacy%20P%20viewpoint.pdf> Dr Sharpley writes,

*“Agricultural conservation and nutrient management programs have been very successful at reducing P losses in runoff at the edge-of-field, but there has often been disappointingly little improvement in downstream water quality and ecology.¹ Growing evidence indicates that a major reason for this is the chronic release of P from “legacy P” stores, which have accumulated in watersheds and water bodies...As a result, we face unprecedented challenges in meeting water quality targets, given that P legacies from past land management may continue to impair future water quality, over time scales of decades, and perhaps longer ...To mitigate the water-quality impacts of agricultural intensification, conservation and nutrient management programs have addressed P sources (e.g., rate, method and timing of applied P) and transport controls (e.g., conservation tillage, contour ploughing and riparian buffers [ie: BMPs]). Transport controls have enhanced P storage, protecting downstream aquatic environments from the acute effects of high P loads, **but have also accelerated storage of legacy P within the landscape. Perversely, transport controls, by building up legacy P, may now be counteracting water quality improvements from source controls. ...The water quality impacts of nutrient management and conservation programs, which inadvertently promoted the build-up of legacy P, have emerged too late to be resolved quickly.**”*

Considering this and other peer reviewed research, BMPs alone are inadequate to address the impairment problems of Big Creek and the Buffalo, and more immediate, enforceable actions are called for. These added remedies are provided under Category 5 status.

ADEQ has stated at public meetings that Category 4b status allows for more prompt responses to impairment than does Category 5 because of Category 5’s requirement for developing TMDLs. We acknowledge that TMDL development can be a lengthy process and that more immediate action is required to address impairments of Big Creek and the Buffalo River. We do not support TMDL development as the sole solution to impairment. However, Category 5 requires the state to, “*develop a TMDL or other corrective action(s) for the listed parameter(s).*” Category 5 status does not require sole reliance on TMDLs and in fact allows for “other corrective actions” which should include more immediate actions than TMDLs alone. Category 5 status does not negate, dismiss or prevent implementing the BRWMP or other corrective actions and it would certainly be appropriate to implement the BRWMP as well as other more immediate steps *in addition* to the TMDL actions and enforcements required by EPA under Category 5. The current threats to the Buffalo National River justify an “all hands on deck” approach to address these impairments as quickly as possible. Category 5 provides the greatest latitude to take prompt, enforceable actions.

Please see the attached map graphic titled “2018 Impaired 303d Sections” which combines the map of the impaired segments of the Buffalo and Big Creek with results from the peer-reviewed study, “Using 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. Dr. Van Brahana, et al.”

<http://buffaloriverwatershedalliance.wildapricot.org/resources/Documents/Brahana%20Utilizing%20Flourescent%20Dyes.pdf>. As can be clearly seen, the impaired segments correlate closely with the dye trace study conducted by Dr Van Brahana. Dye injected at Mt Judea, in close vicinity of the C&H spreading fields, makes its way into the Buffalo, not just at the mouth of Big Creek, but a considerable distance both upstream and downstream as well. Dye emerges at multiple locations along Big Creek as well as in other streams which feed the Buffalo. This clearly shows the possibility that a single waste source of a large size in a karst location, such as C&H Hog Farms, could very well impair waters throughout the impacted area.

Dr. Andrew Sharpley, head of the Big Creek Research and Extension Team (BCRET) which is monitoring C&H Hog Farms has stated that he considers Dr. Brahana an expert to whom he would defer in dye tracing and whose studies provide an indication of groundwater flow from the area of the hog farm. [Sharpley Deposition, May 25, 2018, pg. 87, attached] He has stated that he would collaborate with Dr. Brahana to use his findings in the BCRET program, relieving BCRET of the need to duplicate dye traces themselves. [Sharpley Deposition, pg 84-85, attached]

These opinions from acknowledged experts suggest, and any logical person can see, that if C&H is not the sole source of impairment of Big Creek and the Buffalo, it is certainly a likely and significant source which must be investigated and addressed if impairments are to be corrected.

However, any investigation and corrective action related to C&H is not possible under Category 4b, relying on the BRWMP, because:

- 1) The BRWMP cannot address point-source contamination. “The goal of the priority watershed program is to reduce nonpoint source pollutants” C&H is currently operating under an NPDES CAFO permit. CAFOs are point sources, as defined by the CWA [Section 502(14)].
- 2) The BRWMP cannot address regulated facilities. C&H is currently operating under an expired NPDES permit, the expiration of which was stayed by the Arkansas Pollution Control and Ecology Commission on January 17, 2018 (Minute Order No. 18-01)
- 3) The BRWMP is voluntary and non-regulatory and any best management practices which might be implemented are not “required by local, state, or Federal authority” and do not comply with 40 CFR 130.7 (b)(1).
- 4) The BRWMP has no investigative or enforcement authority and is not stringent enough to comply with 40 CFR 130.7 (b)(1).
- 5) The BRWMP prioritizes six specific tributaries, which do not include Big Creek or the impaired segments of the Buffalo. In spite of repeated requests by our organization and other stakeholders to include Big Creek because we knew the current data was forthcoming, it was denied priority status due to “insufficient data”.

2)6) The BRWMP “*provides a framework for landowners, communities, and organizations to voluntarily undertake water quality projects in the watershed and improve their ability to solicit and secure funding and assistance for these projects from various government and private sources.*” [Buffalo River Watershed-Based Management Plan, May 22, 2018, pg ii] In other words, reliance on the BRWMP absolves ADEQ or the state from any responsibilities for implementing corrective actions or exercising enforcement authority. It is solely dependent on voluntary actions by the private sector and, again, does not comply with 40 CFR 130.7 (b)(1).

We now have:

- the only officially impaired waters within the entire Buffalo River watershed,
- waters which correlate closely with dye trace results which numerous experts agree are an indication of groundwater flow,
- and the injection point of those dye studies is in the immediate vicinity of the single largest source of nutrients and pathogens in the watershed,

yet we are supposed to look the other way and ignore the C&H Hog Farm and instead rely on voluntary, non-regulatory, non-enforceable “Best Management Practices” implemented anywhere else except at C&H to correct the problem? Something is wrong with this picture.

Placing these impaired segments in Category 4b is a calculated move to not only avoid EPA scrutiny which would come with Category 5 status, but worse, it absolves ADEQ of responsibility for directly addressing a known threat to our state’s most treasured stream, relying instead on private citizens and non-profit organizations to shoulder the burden while placing C&H off limits. This is unacceptable.

Placing the impaired segments of the Buffalo National River and Big Creek in Category 4b, while relying on the BRWMP as an “alternative plan in place”, does not meet the requirements of Section 305(b) or Section 303(d) of the Federal Clean Water Act, particularly when considering the Extraordinary Resource Waters being impacted. These segments must be placed in Category 5, which will require development of TMDLs as well as other more immediate, stringent and enforceable corrective actions.

We also incorporate by reference the following 2016 comments from National Park Service and Arkansas Game and Fish Commission, which are pertinent today:

From Chuck Bitting's NPS comments on the 2016 303d list:

<https://www.adeq.state.ar.us/water/planning/integrated/303d/pdfs/2016/comments/2016-public-hearing-comments-concerning-arkansas-draft-2016-303.pdf>

Big Creek at Carver should be added for low dissolved oxygen values. Dissolved oxygen is necessary for all aquatic life. The creek has a large diurnal fluctuation of dissolved oxygen during the critical period which puts the stream in an impaired condition through much of the summer. The dissolved oxygen data is based on USGS gaging station just above the Buffalo River. It also collects a suite of parameters on a continuous basis, in addition to dissolved oxygen. Adequate levels of dissolved oxygen are very important for aquatic life. The Buffalo River is home to native mussels and numerous game fish, including the smallmouth bass. As a Blue Ribbon Smallmouth bass stream, dissolved oxygen levels in the Buffalo River need to be protected to maintain the fishery. A reduction in dissolved oxygen would likely result in fewer

fish and mussels, lower angling **success**, and reduced revenues for businesses which rely upon the Buffalo River for all or parts of their profits.

Arkansas Game and Fish Commission, Chris Racey, Chief – Fisheries Division, comment:
<https://www.adeg.state.ar.us/water/planning/integrated/303d/pdfs/2016/comments/agfc-justin-stroman.pdf>

AGFC Biologists are also concerned with the Dissolved Oxygen levels of Big Creek, a Buffalo River tributary in Newton County near Gene Rush Wildlife Management Area. Summer algal blooms, likely caused by excess nutrient levels, appear to be impairing this creek. Smallmouth bass require 6.0 mg/L DO for optimal growth, and this water quality standard is not being met for several months of the year, per the USGS gage station at Big Creek. We concur with the recommendations of the National Parks Service that Big Creek should be considered for the list of 303(d) streams.

Now that ADEQ acknowledges that Big Creek is a significant threat to the Buffalo because of nutrients and pathogens please take the proper next step and move them to Category 5 so that the impairment is corrected before the problem gets worse.

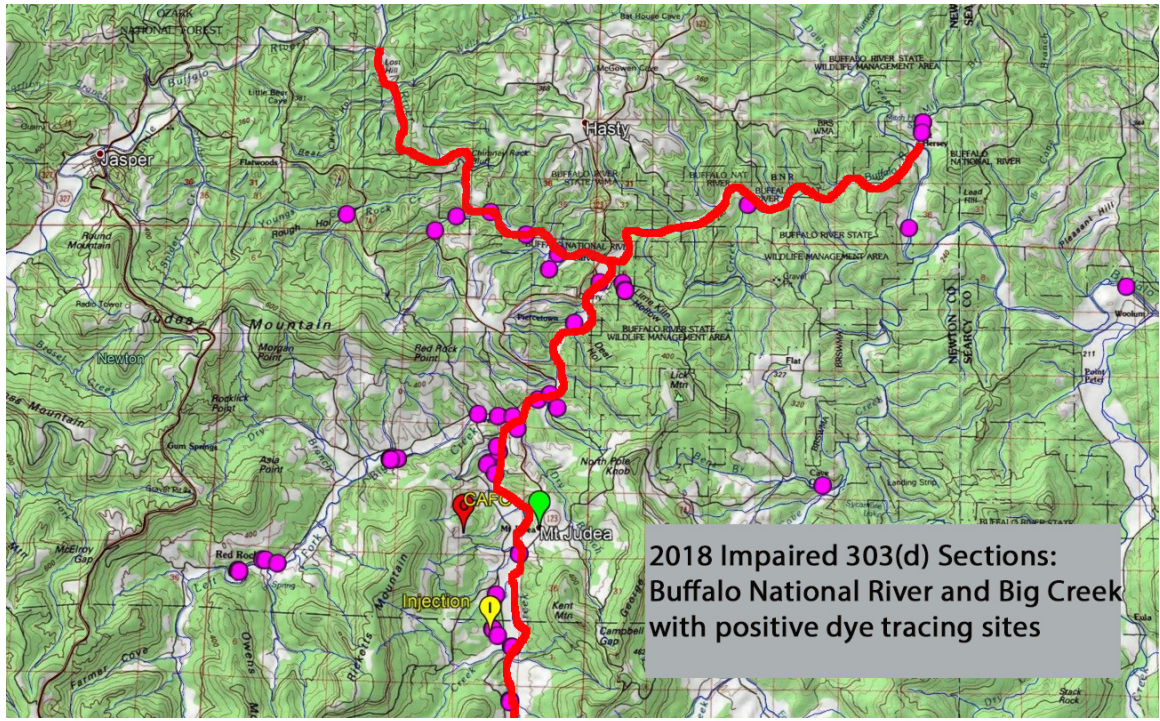
Thank you for the opportunity to submit these comments.

Gordon Watkins, President

Buffalo River Watershed Alliance

Attached below:

- Dye trace/Impairment map
- Sharpley deposition, cover page and pages,84,85,87



Transcript of the Testimony of

Andrew Sharpley

Date: May 25, 2018

Case: IN THE MATTER OF C & H HOG FARMS

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1 A. I have not.

2 Q. But you've worked with Dr. Brahana to do that, right?
3 Or was that not part of the Savoy?

4 A. That was done prior to my collaboration with
5 Dr. Brahana, but I think he did it a couple years before I
6 arrived.

7 Q. I've got you. Okay.

8 BCRET makes several references to conducting dye
9 traces. It's mentioned at Page 10 of the first report. And
10 again in the second quarter of 2014, there's a statement
11 that BCRET contracted with USGS to conduct tracer -- dye
12 tracer studies in the Big Creek watershed.

13 And I've got that, if you want to look at it. If you
14 don't recall it, it's right here. The last point.

15 A. Yes.

16 Q. Agree? Did I get it correct?

17 A. You've got it correct.

18 Q. Okay. Was that ever done?

19 A. No.

20 Q. Why not?

21 A. We -- I'd have to go back and look at what the contract
22 consists of. But we felt as a group that others were doing
23 that, and it was a better use of our resources that we were
24 getting from the State to let the experts do that.

25 Q. And who was that?

1 A. Dr. Brahana, Van Brahana.

2 Q. All right. And so --

3 A. And we would use or we would -- we'd collaborate or we
4 had interacted with him to use his findings to our program.

5 Q. All right. How have you used his findings?

6 A. Well, we haven't used them per se, but we were made
7 aware of -- of his results, and so we felt it was not
8 necessary for us to duplicate something.

9 Q. And, tell me, tell us what your understanding of his
10 results would be?

11 A. Understanding is that there are some complex flows
12 within that watershed; that nutrients can flow quite rapidly
13 from one point to another. Basically what we already
14 would -- would -- as a lawyer would say looking at the
15 watershed, so it's telling us what we probably already knew.

16 Q. And when you look at a watershed and you've got three
17 tributaries with the name "dry" in them within a short
18 distance, it gives you a pretty good idea; doesn't it?

19 A. It -- it does. They are not permanently flowing.

20 Q. Yeah, okay.

21 Most likely karst?

22 A. Yes.

23 Q. The geologic map tells you that.

24 A. Yes.

25 Q. And we know how complex karst networks, how water flows

1 Q. You can answer.

2 A. I think that the study that -- the one that I'm
3 familiar with was adjacent to one of our fields; so, yes, it
4 was in the same topographic position. So I think his
5 results, if again you -- you agree with the methods that
6 were used, would reflect the fields that we're on.

7 Q. Do you not agree with the methods that were used? Or
8 do you know?

9 A. My opinion on those methods would be that if one's
10 looking at the potential for a liquid applied on the surface
11 that that dye would need to be applied on the surface that
12 that manure would, and it would need to be applied in that
13 amount that that manure was applied. So if one put it
14 elsewhere, one might get different results.

15 Q. Might or might not?

16 A. That's my -- that's my soil scientist opinion of a
17 geohydrologist. So that's opinion.

18 Q. Well, as between your expertise and Dr. Van Brahana's
19 expertise, who would you defer to on dye tracing?

20 A. I would defer to his on dye tracing.

21 But, again, that is dye trace -- that is movement from
22 the way that dye was placed, not if that manure was on the
23 surface. And that's what we're talking about, the potential
24 problems on this farm.

25 Q. Well, let me -- let me just -- here's where you're

