BUFFALO RIVER WATERSHED ALLIANCE
ARKANSAS CANOE CLUB
NATIONAL PARKS CONSERVATION ASSOCIATION
OZARK SOCIETY

September 4, 2015

Via Email and Certified Mail
C&H Hog Farms EA
c/o Cardno, Inc.
501 Butler Farm Rd., Suite H
Hampton, VA 23666
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Re: Comments on FSA and SBA Draft Environmental Assessment, C&H Hog Farms

Dear Director Ponish,

We appreciate the opportunity to comment on the Draft Environmental Assessment ("EA") for C&H Hog Farms ("C&H") prepared by the Farm Service Agency ("FSA") and Small Business Administration ("SBA"). These comments are submitted by the Buffalo River Watershed Alliance, Arkansas Canoe Club, National Parks Conservation Association, and Ozark Society (collectively, "the Coalition"), the plaintiffs in the legal action that is the basis for the environmental review now being undertaken by the agencies. *See Buffalo River Watershed Alliance v. Department of Agriculture*, No. 4:13-cv-450-DPM, 2014 WL 6837005 (E.D. Ark. Dec. 2, 2014).

As detailed below, the draft EA is substantially flawed. It fails to engage in the alternatives analysis required under the National Environmental Policy Act, 42 U.S.C. §§ 4321-4375 ("NEPA"), ignores key facts and science, and only cursorily reviews the information it does gather in assessing the impacts of an unprecedented 6,500 swine concentrated animal feeding operation ("CAFO") operating on karst terrain in the watershed of the iconic Buffalo National River. In these comments, the Coalition identifies the inaccuracies and flaws in the draft EA to aid in the agencies' compliance with NEPA.

These comments also attach statements from the following experts:

- Dr. John Van Brahana, Ph.D., Professor Emeritus, Geosciences, University of Arkansas (statement attached as **Exhibit 1**)
- Dr. JoAnn Burkholder, Ph.D., William Neal Reynolds Distinguished Professor and Director of Center for Applied Aquatic Ecology, North Carolina State University (statement attached as **Exhibit 2**)
- James Gore, M.S. Candidate, Arkansas State University (report attached as **Exhibit 3**)

- Dr. Michael Smolen, Ph.D., retired Professor, Biosystems and Agricultural Engineering, Oklahoma State University (statement attached as **Exhibit 4**)
- Dr. Steve Wing, Ph.D., Associate Professor, Epidemiology, University of North Carolina Gillings School of Global Public Health (declaration attached as **Exhibit 5**)

The Coalition urges FSA and SBA (jointly, "the agencies") to address the shortcomings of the EA that are identified below and to consider carefully the data and information proffered by these experts—all of which point inexorably to a finding that the C&H facility will have significant impacts on the quality of the human environment.

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BACKGROUND

In 2013, the Coalition challenged the agencies' loan guarantees to C&H—for 90 percent of a $1.3 million loan in the case of the FSA, and for 75 percent of a $2.3 million loan in the case of the SBA—for violating NEPA and the Endangered Species Act, among other laws. In *Buffalo River Watershed Alliance*, the District Court for the Eastern District of Arkansas agreed with the Coalition.

In the Court's words, the EA supporting FSA's Finding of No Significant Impact was "cursory and flawed." *Buffalo River Watershed Alliance*, 2014 WL 6837005, at *4. The Court found that FSA had "failed to give reasons for th[e] generalized conclusion" that any environmental effect would be mitigated by C&H's compliance with its Nutrient Management Plan. *Id.* The Court concluded that the C&H facility was unprecedented and that the agencies had provided inadequate public notice of the financial assistance they provided. *Id*. Finding that the agencies had violated NEPA and the Endangered Species Act, the Court remanded the matter to the agencies to comply with these laws within a year.

The draft EA critiqued in these comments is the product of the agencies' efforts on remand. The agencies acknowledge that "[t]his EA is being prepared in response to the court's order to take a 'hard look' at the environmental impacts of the C&H Hog Farms to aid the SBA and the FSA's decision making related to their loan guarantees." EA at 1-4. Yet, as detailed below, the EA offers only a cursory and misinformed assessment riddled with errors and unsupported assumptions.

DISCUSSION

I. THE ANALYSIS OF ALTERNATIVES IS INADEQUATE

The EA effectively fails to analyze *any* alternatives other than the proposed action, defying NEPA's mandate to "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14.(a) To comply with NEPA, the agencies must assess a No Action Alternative in which C&H is no longer in operation as well as action alternatives apart from the Proposed Action. *Id.* § 1502.14(d).

The inadequacy of the alternatives analysis arises from two distinct deficiencies. First, the EA's characterization of the No Action Alternative is based on the ungrounded assumption that "the farm will likely continue to operate" even if the agencies void their loan guarantees. EA at 2-1. The EA consequently assumes that the No Action Alternative is exactly the same as the Proposed Action of continuing the federal loan guarantees, resulting in no comparative analysis whatsoever between the No Action Alternative and action alternatives.[1] But NEPA requires the EA to consider the impacts of a No Action Alternative in which revocation of the

[1] The EA notes that "the No Action Alternative and the Proposed Action are, in fact, very similar." EA 1-5. This is an understatement. As erroneously framed by the agencies, the No Action Alternative and the Proposed Action are exactly the same.

loan guarantees does *not* lead to business as usual for C&H—that is, a No Action Alternative in which the C&H facility no longer operates.

While it may be true that C&H and Farm Credit Services of Western Arkansas "are *free* to continue their financial relationship without Federal guarantees," the Coalition is aware of no support or evidence—and the agencies offer none—for the assumption that C&H "will *likely* continue" wholly unaffected by revocation of the loan guarantees. EA at 2-1 (emphasis added). In fact, the record strongly suggests otherwise. The Court recognized that "C&H wouldn't have gotten financing on do-able terms absent the federal guaranties" and that these guarantees "were essential for C&H's financing." *Buffalo River Watershed Alliance*, 2014 WL 6837005 at *3. Indeed, even after Farm Credit Services "has disbursed the loan proceeds, C&H must pay the lender back" and the federal guarantees "assure that it, or the United States will do so." *Id.* at *3. Thus, in the Court's words, "[t]he two federal Agencies, C&H, and Farm Credit *are bound together for the loans' duration*." *Id.* at *4 (emphasis added).

On this record, it is unreasonable for the agencies to assume that C&H would likely continue unaffected if the loan guarantees are withdrawn. A rational approach to the No Action Alternative would instead suppose that revocation of the guarantees could lead to a potential shutdown of C&H and analyze the impacts of a scenario in which C&H ceases operation and the impacts of 6,500 pigs are no longer felt in the Buffalo River watershed. Such an approach would have the benefit of serving the intended purpose of a No Action Alternative, namely to provide a baseline against which action alternatives are assessed. *See N.C. Wildlife Fed'n v. N.C. Dep't of Transp.*, 677 F.3d 596, 603 (4th Cir. 2012) ("Without accurate baseline data, an agency cannot carefully consider information about significant environment[al] impacts . . . resulting in an arbitrary and capricious decision.") (internal alterations and citation omitted).

The second key deficiency in the EA's analysis of alternatives is its failure to consider any action alternative other than the Proposed Action. NEPA requires the consideration of a "[n]o action alternative," "[o]ther reasonable courses of actions," and "reasonable alternatives not within the jurisdiction of the agency." 40 C.F.R. §§ 1502.14(c), 1508.25(b)(2). FSA regulations further specify that Class II EAs, like the one here, are to "[d]iscuss the feasibility of alternatives to the project and their environmental impacts," including "(a) alternative locations, (b) alternative designs, [and] (c) alternative projects having similar benefits . . . ." 7 C.F.R. Pt. 1940, Subpt. G, Ex. H, XVIII. The draft EA does not identify, much less discuss, other action alternatives.

There likely are feasible alternative locations for a 6,500 swine CAFO other than on karst terrain and along the banks of a major tributary of the Buffalo River.[2] The record before the agencies shows that Cargill, C&H's contractor, sought to contract with farms anywhere within 100 miles of its feed mill in London, Arkansas. A simple mapping exercise shows that most or

[2] There likely are alternative designs as well, such as the addition of odor and emission control equipment and installation of a waste treatment plant to the CAFO to treat the more than 2.6 million gallons of waste produced by the swine each year. The Coalition maintains, though, that any CAFO operating in the Buffalo River watershed would have the potential for significant impacts.

all of more than 20 counties are within a 100 mile radius of London and *not* within the Buffalo River watershed and not on the karst landscape of the Boone Formation. Assessing the impacts of a swine CAFO on other feasible locations would provide a basis for comparing the impacts of the Proposed Action, thus, as required by NEPA, "sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. § 1502.14. Doing so would also give meaning to the agencies' claim that,

> [b]ased on the information in this EA, the SBA and the FSA will decide whether:
> - To void the loan guarantees
> - To continue to back the loan guarantees on the existing terms
> - To back the loan guarantees with additional conditions
> - To undertake an EIS [(Environmental Impact Statement)] to further analyze the effects of the loan guarantees

EA at 1-6; *see also id.* at 1-4 (acknowledging that the EA is intended "to aid [their] decision making related to their loan guarantees"—"[s]pecifically, the SBA and the FSA have to determine whether to void their existing loan guarantees, to continue to back their guarantees, or to add additional conditions to the guarantees"). As currently written, the draft EA provides no information on whether to back the loan guarantees with additional conditions, because no such additional conditions are considered in the analysis of alternatives.

II. THE DRAFT EA FAILS TO TAKE A HARD LOOK AT DIRECT AND INDIRECT IMPACTS

A. The Assessment of Soils and Geology Ignores Critical Facts and Science

A glaring error that pervades the draft EA is its unfounded conclusion that "there are no karst features within the C&H Hog Farms parcel." EA at 3-25. As explained in the comments submitted by hydrogeologist Thomas Aley, President of the Ozark Underground Laboratory, and the attached statement of Emeritus Professor of Geosciences at the University of Arkansas Dr. John Van Brahana, C&H is undoubtedly located in a karst system. Brahana at 2-4; Aley at 3-4. This fact is of central importance to an accurate assessment of C&H's impacts because karst is characterized by rapid underground drainage and groundwater flow to surface waters. The EA's willful blindness to the geologic context of the C&H facility and the significance of this context for impacts on water resources is the antithesis of the hard look required under NEPA.

The EA recognizes that C&H sits atop the Boone Formation. EA at 3-23. The Boone Formation is a karstic, cherty limestone formation that underlies a majority of the Buffalo River watershed, including many tributaries and a substantial portion of the Buffalo River itself. Brahana at 2; *see also* EA at 3-10 ("There is a hydraulic connection of surface water and groundwater that typifies the Boone Formation."). Areas of karst are characterized by rapid groundwater flows through underground conduits and seamless interaction between surface and groundwater, as well as springs (*i.e.*, release of groundwater at the surface of the land), sinkholes, sinking streams, and caves. *See* EA at 3-10; *see also* Aley at 4-7; Brahana at 2-3.

The National Park Service ("NPS"), a sister federal agency, recognizes that C&H is situated atop a karst system.[3] Dr. Andrew Sharpley, head of the Big Creek Research and Extension Team ("BCRET"), whose study the EA cites frequently, has implicitly acknowledged that C&H is located on karst.[4] The external peer review panel for the BCRET study similarly noted the karst features in the watershed and "recognized the need for the addition of a karst hydrogeologist to the [BCRET] Team."[5]

Yet, the EA turns a blind eye to the facts, claiming instead that there is no karst directly under the C&H "facilities,"[6] and denying any knowledge of whether karst underlies C&H's spreading fields. *See* EA at 3-11, 3-33. Both Mr. Aley and Dr. Brahana debunk the first proposition. The agencies claim that a "geologic investigation" conducted as part of C&H's permit application "indicate there are no karst features within the C&H Hog Farms parcel." *Id.* at 3-23, 3-25. The soil sampling that was conducted could not have adequately tested for karst because karst is characterized in the bedrock underlying soil. *See* Aley at 12; Brahana at 3. The agencies also cannot evade a conclusion that karst underlies the C&H fields by pointing, as they do, to two pending studies with unavailable data: a dye tracing study of Big Creek conducted by Dr. Van Brahana[7] and an electrical resistivity imaging study conducted by Oklahoma State

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[3] A National Park Service newsletter for the Cave and Karst Program operated out of the Geologic Resources Division of the Natural Resource Science and Stewardship Program noted, in reference to C&H, that "a large hog farm Concentrated Animal Feeding Operation (CAFO) has been placed on top of karst within the Buffalo River watershed . . . ." Nat'l Park Serv., Cave and Karst Programs, *Park Updates: Buffalo National River*, 17 Inside Earth 3 (2014), http://www.nature.nps.gov/geology/caves/newsletters/Inside%20Earth%20Winter%202014.pdf.

[4] In describing his team's study of Big Creek and the impacts of C&H, Dr. Sharpley stated that "obviously in karst, we can't capture every bit of water movement, but we feel pretty confident that if there's an impact on Big Creek that we will see it . . . ." Video at 1:35, Ken Moore, Ark. Farm Bureau Public Relations, Big Creek Water Quality Research (Oct. 20, 2014), http://www.arfb.com/media-communications/press-releases/2014/video_big_creek_water_quality_reseach.

[5] Memorandum from Carl Bolster, U.S. Dep't of Agric. et al., to Mark J. Cochran, Vice President for Agric., Univ. of Ark. 2 (May 19, 2014), *available at* http://www.bigcreekresearch.org/docs/Review%20Panel%20Report%20May%2019%202014.pdf) ("BCRET Peer Review Panel Report").

[6] The EA appears to equate "facilities with the C&H "parcel," as it claims elsewhere that "there are no karst features within the C&H Hog Farms parcel." EA at 3-25. Map 2 and page 1-1 of the EA show this "parcel" to include 23.43 acres including the confinement houses and waste storage ponds.

[7] The EA claims that "no data or results are available" from a "groundwater characterization, karst inventory, and a fluorescent dye tracing study . . . being conducted on Big Creek." EA at 3-11 (citing Soto 2014). Soto 2014, a National Park Service Report dated October 7, 2014, in turn specifically identifies the groundwater characterization, karst inventory, and fluorescent dye tracing *being conducted by Dr. Brahana* and finds that "[n]o reports associated with the current dye tracing results were obtained during the compilation of this summary." Nat'l Park Serv., Summary of Previous Dye Tracing Reports in the Area of the Buffalo National River, Arkansas 15 (Draft, Oct. 2014), *available at* http://buffaloriveralliance.org/Resources/Documents/Dye%20Tracing%20Summary_Buffalo%20National%20River%2011.17.2014_LSOTO%20(1).pdf.

University. *See* EA at 3-24. In fact, data from both studies *are* available—showing that a karst system underlies C&H—and must be considered by the agencies.

The preliminary results of Oklahoma State University's electrical resistivity surveys are attached to these comments. *See* Oklahoma State University, *Preliminary Electrical Resistivity Surveys of Mount Judea Alluvial Sites* (2015) (attached as **Exhibit 6**) ("ERI study"). The study characterizes the epikarst underlying two C&H waste application fields, Fields 5a and 12, and observed "[t]he potential for rapid transport pathways in the underlying bedrock." *See id.* at 2. Epikarst is "a weathered zone of enhanced porosity on or near the surface or at the soil/bedrock contact of many karst areas." Brahana at 3; *see also* Smolen at 4 (noting that the "[e]pikarst with coarse chert, and gravel lenses" observed in the ERI study "indicate that short-circuit pathways from the disposal fields to Big Creek and the Buffalo River are likely"). The electrical resistivity imaging also revealed a doline feature, "a closed topographic depression caused by dissolution or collapse of underlying rock or soil, within the weathered bedrock" underlying Field 12. ERI Study at 3, 22 (defining "doline feature" as "synonymous with sinkhole").

A hard look would have revealed to the agencies that data and results from Dr. Brahana's studies of Big Creek also were available.[8] Those results are detailed in Dr. Brahana's attached statement, which describes his team's dye trace studies and groundwater characterization in the Mount Judea area. Sampling in the Big Creek basin has allowed his team, Karst Hydrogeology of the Buffalo National River ("KHBNR"), to identify a karst inventory in that area with numerous caves, springs, sinkholes, sinking streams, dry stream reaches, and very fast groundwater velocities. *See generally* Brahana.

In particular, dye injected into a dug well 40 feet east of the C&H property and beneath its Field 5 was traced to a subsurface spring in Big Creek, reflecting groundwater flow of 2200 feet in 30.5 hours. *Id.* at 3-4. Another dye injected into a dug well surrounded by three C&H spreading fields moved to wells and springs in contiguous surface-water drainage basins a distance of 3.5 miles in 7 days (about 2500 feet per day) at high flow, and ultimately to the Buffalo National River. *Id*. at 4. The KHBNR study also assessed the lag time between precipitation and water level rises in wells and increases in stream flow. *See id.* at 6. Dr. Brahana and his team determined that the temporal variation between water levels in wells and stream levels is within hours of one another—"another indicator that the karst is well developed, that groundwater and surface water are intimately interactive, and that fast-flow dominates in this groundwater system." *Id.*

In short, the EA's assessment of soils and geology is spectacularly lacking. The EA's misinformed insistence that soil sampling evidences the absence of karst and its failure to obtain accessible information and data demonstrating the existence of a well-developed karst system

[8] As early as April 2014, a member of Dr. Brahana's Karst Hydrogeology of the Buffalo National River team presented preliminary results of its dye tracing studies in Big Creek at a public meeting of the Arkansas Pollution Control and Ecology Commission. *See* Carol Biting, Dye Trace Preliminary Report (Apr. 25, 2014), *available at* http://www.buffaloriveralliance.org/page-1558368 (scroll down to "Dye Trace Preliminary Report").

under C&H all reflect, at best, an apathetic failure to grasp relevant scientific facts and, at worst, an intentional desire to ignore reality. Either way, any environmental assessment of C&H that fails to take into account the karst underlying C&H and its spreading fields does not suffice to meet NEPA's hard look standard.

B. The Assessment of Impacts on Water Resource Is Fundamentally Flawed

The EA's assessment of water resources fails to make a "convincing case," as required by NEPA, that C&H's impacts are insignificant. *See Audubon Soc'y of Cent. Ark. v. Dailey*, 977 F.2d 428, 434 (8th Cir. 1992). Indeed, an expert in water pollution assessment and water quality monitoring with extensive experience in research on nutrient pollution, including the impacts of CAFOs on aquatic ecosystems, concluded that "*there is substantial evidence/data indicating that the operation of the C&H CAFO is adversely affecting surface water quality.*" Burkholder at 17 (emphasis in original). As detailed below, the EA's thoughtless reliance on C&H's permit and myopic focus only on certain limited data in the BCRET study is insufficient to support its conclusion that C&H will have no significant impacts on water resources.

1. The EA Wrongly Assumes that C&H's NPDES Permit Will Obviate Impacts to Water Resources

The EA erroneously relies on C&H's permit, including its nutrient management plan ("NMP"), to reach the conclusion that there will be no significant impacts to surface waters and no impacts *at all* to groundwater. *See, e.g.*, EA at 3-20 ("No direct or indirect impacts to groundwater quality are expected since it is protected by rigid adherence to the farm's NPDES General Permit requirements and BMPs."). As the following discussion shows, C&H's operation under a permit and NMP in no way prevents impacts to water resources from the spreading of swine waste on fields and from leaking waste storage ponds. The EA's ungrounded assumption that C&H's NMP will prevent such impacts defies the Court's admonition that while the EA could rely on the NMP, "at a minimum [the agency] ha[s] to make the case for doing so in its Environmental Assessment." *Buffalo River Watershed Alliance*, 2014 WL 6837005, at *4.

a. C&H's Permit Does Not Prevent the Runoff of Contaminants From Land Application

In assessing the impacts of C&H on surface waters, the EA extensively describes C&H's "comprehensive NMP" and refers to "[a] field-specific assessment . . . conducted to designate the form, source, amount, timing, and method of application of manure on each field in order to minimize the potential for any discharge to surface waters." EA at 3-13. The EA assumes, without basis, that "[a]ll land application areas receive application at rates *consistent with*

infiltration capabilities of the native soil such that there is *no runoff to surrounding areas*." EA at 3-19 (emphasis added).[9]

In fact, an examination of C&H's NMP actually reveals that most of the fields designated for C&H waste spreading have medium to very high soil phosphorus ("P") levels. Smolen at 3. Dr. Smolen, former Coordinator of Water Quality programs for the Division of Agricultural Sciences and Natural Resources at Oklahoma State University, with a particular expertise in agricultural nutrient management, notes that C&H's NMP "indicates that virtually all of [C&H's] designated fields are intended to receive waste application *greater than the crop requirements*, and some will exceed both the Nitrogen and Phosphorus requirement of the crop." *Id.* The highlighted yellow fields in the table below from Dr. Smolen's statement, which is based on self-reported information in C&H's 2014 Annual Report, shows that in 2014, C&H applied P in excess of crop needs in Fields 3, 4, 10, 13, 14, and 15, and applied Nitrogen ("N") in excess of crop needs in Fields 3, 13, and 15.

Comparison of waste applied by field in 2014 with that approved in C&H permit (source C&H Annual Report 1-27-2015)

Field	Waste galx1000		N lb Total		P2O5 Total lbs	
	approved	actual	approved	applied	approved	applied
1	69.6	46	2,927	773	2,265	833
2	34.0	22.6	1,266	380	973	409
3	120.2	118.1	1,023	1,984	786	2,138
4	43.7	28.8	655	484	503	521
5	0.0		11,621			
6	0.0		16,895			-
7	464.9	396.2	36,346	6,656	27,921	7,171
8	146.5	25	7,583	420	5,826	453
9	312.0	103.8	20,178	1,744	15,501	1,879
10	527.4	249.2	4,487	4,187	3,449	4,511
11	140.6	51	1,541	857	1,184	923
12	163.5	48	2,668	806	2,050	869
13	503.9	453.55	4,587	7,620	3,526	8,209
14	72.3	73	1,340	1,226	1,030	1,321
15	318.8	401.4	1,543	6,744	3,492	7,265
16	212.8	56	8,380	941	6,441	1,014
17	574.2	294.75	12,006	4,952	9,228	5,335
Total	3,704.4	2,367.4	135,046	39,772	84,175	42,850

Figure 1. Table from Exhibit 4, based on information in C&H's 2014 Annual Report.

[9] This unfounded assumption contradicts the EA's acknowledgement elsewhere that "[i]t is possible that over time a P[hosphorus] imbalance in one or more of the fields could occur" and that "[i]n this situation, there is the potential that excess P could be mobilized off-site during precipitation events." EA at 3-13. This unexplained self-contradiction in itself is evidence of the agency's cursory review.

Dr. Smolen notes that such "continued over-application of P-rich waste water will result in buildup of soil P and increasing loss of P to nearby streams and rivers." Smolen at 3. Such surface runoff of excess nutrient results not only from C&H's excessive waste application, it is also associated with waste spreading at times when plants absorb very little nutrients. Inspection reports show that C&H applied a total of 327,000 gallons of swine waste on its fields between December 27, 2013, and March 21, 2014[10]—at times when crops were not growing and it was highly unlikely that the nutrients were being absorbed.

These facts fully undermine the EA's sanguine assumption that C&H operates in compliance with its approved permit and that such compliance will prevent any significant impacts. The EA is simply wrong in stating that "[w]aste and nutrient application rates on the fields do not exceed the plant uptake . . . ," and that "[a]ll land application areas receive application at rates consistent with infiltration capabilities of the native soil . . . ." EA at 203-33. As Dr. Smolen points out, C&H's permit allows C&H "to continue to apply waste to soils that already have more P than is required by the growing crop." Smolen at 5. The flexibility of the NMP—a feature the EA itself recognizes, EA at 3-19—"allows the operator to plan extremely high application rates, which if followed, would definitely contaminate the water resource," particularly in light of the karst terrain. Smolen at 5.[11]

It is worth noting, too, that C&H's NMP is directed at addressing "nutrient management," and does not address the host of other contaminants in the more than 2.4 million gallons of swine waste being applied to C&H's fields each year.[12] Swine waste contains pathogens, including more than 100 disease-causing microorganisms, Burkholder at 1, and likely also contains antibiotics and other pharmaceuticals, like growth hormones, all of which have potentially harmful impacts on water resources and human health. Pathogens can cause sickness and death of aquatic life. Contamination by certain feed additives such as heavy metals also can cause harmful effect, such as the interruption of the reproductive cycle of fish and shellfish. All of these compounds persist in the environment. Pathogens have variable stability in soil and aquatic environments but some have half lives of up to a year.[13] To meet the hard look standard, the EA must include an assessment of impacts from these contaminants wholly uncontrolled in C&H's permit, particularly in light of the downstream Buffalo National River and the many people who come in direct contact with the waters in that river. *See* Aley at 14.

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[10] This number is derived from C&H's inspection report dated November 5, 2014. *See* ADEQ, Water Div. Inspection Report, Permit No. ARG59001 at 9-10 (Nov. 5, 2014), *available at* https://www.adeq.state.ar.us/downloads/WebDatabases/InspectionsOnline/081071-insp.pdf ("Nov. 5, 2014 Inspection Report").

[11] Even if waste application rates were not excessively high, Dr. Burkholder concurs that "the fact that this CAFO is located in a known karst area near the land surface makes full consumption of nutrients applied to fields unrealistic." Burkholder at 19.

[12] *See* Nov. 5, 2014 Inspection Report at 9-10 (showing that 2,400,400 gallons of waste were applied between December 27, 2013, and October 30, 2014).

[13] U.S. Envtl. Prot. Agency, EPA 820-R-13-002, Literature Review of Contaminants in Livestock and Poultry Manure and Implications for Water Quality 35 (July 2013).

b. C&H's Permit Allows Extensive Leakage From Waste Storage Ponds and Does Not Assure Against Catastrophic Releases From the Ponds

The EA's reliance on C&H's permit as a basis for its conclusion of no significant impacts is unfounded also because of the permit's treatment of C&H's two waste storage ponds.

C&H's permit allows a leakage rate of up to 5,000 gallons per day per acre of surface area for each pond.[14] C&H's consulting engineering firm measured the permeability of the compacted soil lining for each pond[15] and calculated the initial leakage rate of Pond 1 to be 3,488 gal/acre/day and of Pond 2 to be 4,218 gal/acre/day if the ponds were full. Since the area of Pond 1 is approximately 0.5 acre and the area of Pond 2 is 0.8 acre, the total initial leakage rate would be 5,118 gallons per day if the ponds are full. Even assuming that plugging of the ponds' liners with manure solids slowed the leakage rate from each pond, there would likely still be significant leakage from the ponds on the order of 1,982 gallons per day or 723,430 gallons per year for both ponds.[16]

The EA fails to consider the impacts from such leakage in a karst system. It states instead that "[t]o date there are no data available to determine whether the ponds are leaking at a measurable rate," EA at 3-20, illogically equating an apparent lack of data about leakage to a conclusion that there is no leakage. In so doing, the EA inexplicably dismisses data from the BCRET study showing consistently elevated levels of nitrate, and spikes of high Total Suspended Solids ("TSS"), *E. coli*, and Total coliform in the trench installed by the BCRET team to detect leakage from the ponds. *See* Section II.B.2, infra.

The EA also relies vaguely on "extensive safeguards and BMPs" in C&H's permit to conclude, again without any evidence, that discharges from the ponds from significant rainfall or an accidental spill "would not result in long-term (chronic) or significant impacts to surface water quality." EA at 3-19. A careful assessment of the facts and science shows otherwise.

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[14] After some unspecified period of time the rate of leakage might be reduced by as much as a half order of magnitude due to manure solids plugging the pores of the clay liner. *See* Natural Res. Conservation Serv., U.S. Dep't of Agric., Ch. 10 Agricultural Waste Management System Component Design, *in* Part 651 Agricultural Waste Management Field Handbook (2009), *available at* http://directives.sc.egov.usda.gov/viewerFS.aspx?hid=21430. For a liner with an initial rate of 5,000 gallons per acre per day, the resulting rate would be 1,000 gallons per acre per day (365,000 gallons per acre per year)—a rate still unacceptably high, particularly in karst terrain and in an ecologically sensitive watershed, such as that of the Buffalo River.

[15] These are the soil core samplings that the agencies mistakenly construe as a geological test for karst.

[16] If after a few months, the leakage rate of Pond 1 reduced to 3488/5 or 700 gal/acre/day and that of Pond 2 reduced to 5098/2.5 or 2,040 gal/acre/day, this would result in combined leakage of 1,982 gallons per day or 723,430 gallons per year if the ponds were full. (Calculations of Robert Cross, Professor Emeritus, Ralph E. Martin Department of Chemical Engineering, University of Arkansas, Fayetteville, Arkansas).

Dr. Smolen points out the significant design defects that plague C&H's waste storage pond and were overlooked in C&H's permitting process: both ponds are situated on the side of a steep slope, and the second pond in the two-pond system has no stabilized emergency outlet. As a result, "[i]f the pond were to overtop the embankment due to a very large storm . . . or a prolonged period of wet weather, or a combination of wet weather and extreme storm, there would be a danger of catastrophic failure of the embankment." Smolen at 2. In light of expected climatic instability, the 25-year, 24-hour storm that the ponds are designed to withstand is projected to occur more frequently, about every 4 to 15 years, and a similar increase in frequency is expected for 50- and 100-year storms. Burkholder at 18.

Apart from the possibility of embankment failure or discharge from a major storm event, Mr. Aley also identifies the possibility of a sinkhole collapse involving one or both of the ponds. Based on his long history of hydrogeologic investigation in karst areas, Mr. Aley explains that the development of sinkholes in karst areas related to human activities is hardly rare and is of sufficient import that potential impacts must be considered in any adequate environmental assessment of C&H. *See* Aley at 9-11. Such an assessment is all the more necessary given the inadequacies Mr. Aley points out in the subsurface investigations conducted prior to construction of the C&H ponds, Aley at 8-9, and the presence of an apparent sinkhole in Field 12, *see* ERI Study at 22.

Whatever the cause of a catastrophic failure of the waste storage ponds, there is no science to support the EA's assertion that "[t]hese types of discharges would not result in long-term (chronic) or significant impacts to surface water quality." EA at 3-19. Dr. Burkholder explains in her attached statement that, to the contrary, "*swine waste spills have been shown to cause acute, significant impacts in receiving waters lasting weeks to months*." Burkholder at 19 (emphasis in original). Downstream waters are deprived of dissolved oxygen, the fish community can be destroyed, high suspended solids can bury bottom-dwelling fauna, and fecal bacteria can thrive in high numbers in surficial sediments for months. *Id.* Additionally, research shows that catastrophic discharges resulting from such waste spills can induce persistent, radical changes in the aquatic community, causing irreversible damage to the ecosystem. *Id.* These are all facts and science that the EA never mentions in its glib conclusion that C&H's "extensive safeguards and BMPs" assure that an accidental spill of waste from C&H's ponds would not have significant impacts.

2. The EA Fails to Take a Hard Look at the Science Showing C&H's Impacts to Water Resources

The EA's incorrect conclusion that "[t]here are no data or other evidence to indicate that the operation of C&H Hog Farms is adversely affecting surface water quality," EA at 3-18, is based on a fundamental misunderstanding of the science and cherry-picking of available data. First, the EA relies exclusively on the BCRET study despite serious limitations of that study that call into question its ability to capture the impacts from C&H. Second, even where the BCRET study reveals alarming data suggestive of contamination from C&H, the EA inexplicably fails to mention this data or dismisses it offhandedly. Finally, the EA ignores the results of other data, outside of the BCRET study, that show alarming trends of potential significant impacts from C&H.

a. The EA Fundamentally Misunderstands the Science and Data on C&H's Water Quality Impacts

The EA's exclusive reliance on results from the BCRET study, which it deems "the best available scientific information," signifies in itself the agencies' failure to take a hard look at the science on C&H's impacts.[17] The EA's assessment of surface water impacts focuses almost entirely on the BCRET study's upstream vs. downstream water monitoring. "By monitoring immediately upstream and downstream of the farm and at the fields," the EA claims, "any measurable increase in nutrient or bacteria concentrations discharging from the operations would be recorded and the contributions from other sources would be eliminated or minimized." EA at 3-7. This statement is incorrect and not grounded in the facts or in science, for two reasons. First, this upstream-downstream approach completely fails to consider the significant confounding role played by karst topography. Second, the BCRET study is designed such that the "upstream" values are not reflective of a true "control."

In his comments, Mr. Aley explains why, contrary to the EA's assertions, monitoring immediately upstream and downstream of C&H will *not* capture "any measurable increase in nutrient or bacteria concentrations discharging from the operations," EA at 3-7. *See* Aley at 4-7. This approach "would be relevant only if all the water leaving the land application sites was as surface water runoff," but this is not the case in karst, where water "moves downward through permeable soils and then into limestone units of the Boone Formation." Aley at 4. "Once into the limestone units the water then flows hundreds to tens of thousands of feet to discharge from springs." *Id.* In short, the EA's reliance on BCRET's upstream vs. downstream monitoring is "grossly flawed because it ignores the predominant contribution of [C&H] contaminants to the karst groundwater system and incorrectly presumes that contaminants from [C&H], if they existed, would be present in Big Creek downstream of [C&H]." *Id.* at 6; *see also* Burkholder at 8.

The EA also fails to grasp that the upstream-downstream approach is significantly flawed because the single upstream sampling site in the BCRET study does not serve its intended function as a "control." First, it is worth noting that BCRET's surface water sampling relies only on 6-7 sites spanning a CAFO with more than 600 acres of waste spreading fields sprawling along three river miles on Big Creek. *See* Burkholder at 7-8. The BCRET measures "downstream" of C&H at a single site and "upstream" of C&H at a single site. As shown in

[17] It is the informed, and perhaps unanimous, opinion of experts who have reviewed the BCRET study that this study, as designed and implemented, does not capture the full range of water impacts from C&H. The expert panel that peer-reviewed the BCRET study noted that the study's monitoring activities are "not fully adequate in scope and duration to address the long-term potential for [C&H's] impacts to the quality of surface and groundwater resources." *See* BCRET Expert Peer Review Panel. Dr. Smolen similarly noted that the BCRET's "results do not address the question at hand," namely whether C&H has an impact on water quality in Big Creek or the Buffalo National River. Smolen at 4. Mr. Aley, too, was of the opinion that the BCRET study "is not a gathering and assessment of information useful for determining health and environmental impacts expected to result from [C&H] or for protecting the [Buffalo] River and springs that feed it." Aley at 15.

Figure 1 of Dr. Burkholder's report, the downstream sampling site is somewhat buffered because it is located just downstream of Fields 5 and 6, which do not receive any swine waste.

By contrast, the so-called upstream sampling site is near Fields 15, 16, and 17. Between December 15, 2013, and January 15, 2015, whereas the average C&H field received wasted applications 4.3 times, Fields 15 and 17 each received 13 to 15 applications and also each received more total swine waste than nearly any other field. *Id.* at 7. Meanwhile, Field 16 received the highest average rate of swine waste per acre. *Id.* These three heavily-used fields, located in close proximity to the upstream monitoring site "likely explain the degraded water quality of the so-called 'upstream' station," *id.* at 8, especially given the karst character of the area. This "upstream" monitoring site therefore cannot serve as a true control for the downstream monitoring site. "The combination of a seriously compromised 'upstream control' and a downstream station that is buffered from swine waste pollution skews the findings by artificially 'minimizing' any upstream vs. downstream differences in surface water quality." *Id.* at 4.

Consequently, the numerous upstream vs. downstream graphs excerpted from the BCRET quarterly reports that serve as the centerpiece of the EA's assessment of surface water impacts reflect little more than the EA's fundamental failure to grasp the science and the facts. The EA's claim that "[t]here have been no measurable increases in the concentrations of nutrients or bacteria downstream of the operation," EA at 3-19, must be dismissed as an observation that has no bearing on whether C&H actually has an impact on groundwater and surface water.

b. The EA Inexplicably Ignores or Dismisses BCRET Data Showing Potential Adverse Impacts

Despite its ready embrace of BCRET's upstream-downstream data allegedly showing no observable impacts from C&H, the EA dismisses BCRET data suggestive of contamination. This cherry-picking of data to support a predetermined conclusion is the opposite of the hard look required under NEPA.

First, upstream-downstream data do show starkly higher downstream values for nitrate-N. *See* EA at 3-15 to 3-16. Dr. Sharpley has acknowledged that this difference is statistically significant. Burkholder at 11. Peer-reviewed science has demonstrated that high levels of ammonia in swine waste are oxidized to nitrate, resulting in high levels of nitrate pollution to receiving waters. *Id.* Yet, the EA dismisses the higher downstream nitrate-N levels in a single sentence, concluding vaguely and without any evidence that the higher downstream concentration "is probably reflective of the land use continuum and historic management of the greater catchment area that drains into and is monitored at the downstream site." EA at 3-15. This is self-evidently not a hard look at compelling data of adverse impacts.[18] Moreover, if this

[18] Elsewhere, the EA disregards the very existence of this data, claiming that "[t]here have been no consistent or significant differences in the concentrations of nutrients or bacteria between the upstream and downstream sites. EA at 3-19.

statement were taken at face value, it would call into question *all* of the upstream-downstream data that the EA relies on extensively elsewhere to justify its conclusion that there are no impacts from C&H.

The EA also disregards frequent elevated levels of contaminants in surface waters near C&H. A culvert sampled by BCRET, described as an ephemeral stream, showed consistently elevated nitrate levels, as well as several excessive ammonia-N, total nitrogen, *E. coli*, and total coliform levels. *See* Burkholder at 13-14, Table 4. Another ephemeral stream similarly showed elevated nitrate levels, several excessive *E. coli* measurements, and frequent high levels of total coliform. *See id.* at 13-15, Table 5. Surface runoff measured from Fields 1 and 12 also demonstrated excessive levels of pollutants, including dissolved P, total P, ammonia-N, nitrate, TSS, and dissolved organic carbon. *Id.* at 16-17, Table 6.[19] The EA fails to mention any of this data, much less take a hard look at its implications for water resources.[20]

The EA briefly references, but cursorily dismisses, elevated levels of *E. coli* measured in a trench constructed below the two waste storage ponds to detect any leakage from those ponds. *See* EA at 3-17. The EA notes that "*E. Coli* concentrations were high in the trench flow samples collected on October 13, 2014," but that "[t]hese high levels appeared to be isolated at the time and likely resulted from construction contamination flushing." *Id.* In its haste to disregard this data, the EA does not mention that the nitrate-N levels measured from the trench are consistently very high, that TSS occasionally spikes, and that total coliform levels are frequently extremely high—all indicators of possible leakage from the C&H waste ponds. *See* Burkholder at 20-22, Table 7.

The EA also does not present and discuss relevant data from BCRET sampling of a water well drilled to provide water for the C&H facility.[21] Figures 2 and 3 below show the presence of total coliform and *E. coli* in this well, based on data from the BCRET study. Notably, this well

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[19] Dr. Burkholder notes, and the agencies must take into account that, "the concentrations of a given parameter in receiving surface waters and groundwaters should not be expected to be consistent; that is the nature of CAFO-imparted water pollution." Burkholder at 15. Rather, "[p]arameter levels should, and do, vary depending on the location with respect to swine waste practices at the CAFO, storm/runoff conditions, and soil characteristics . . . ." *Id.*

[20] Even ADEQ has commented to the agencies that "the water quality standard for primary contact of *E. coli* from an individual sample[] is 410 (col/100 mL), and according to the BCRET quarterly report from April 1 to June 30 this was exceeded at the Big Creek downstream site (2), Big Creek upstream site (4), spring site (1), and Ephemeral Stream site (1)." Letter from Ellen Carpenter, Chief, Water Div., ADEQ, to C&H Hog Farms (Aug. 31, 2015), *available at* https://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001_Environmental%20Assessment%20Comments_20150831.pdf.

[21] The EA references the well but clearly makes an error in describing it as 325 feet below ground surface, with a water level of 1,138 feet below ground surface. EA at 3-11. The EA further errs in citing an incorrect source for the well's construction log; the source cited (ANRC 2015c) is for a different well altogether. Such sloppy work reinforces the conclusion that the agencies have not taken the necessary hard look.

is being used to supply drinking water for the C&H facility, but the consistent presence of total coliform and *E. coli* make this water unfit for human consumption.[22]

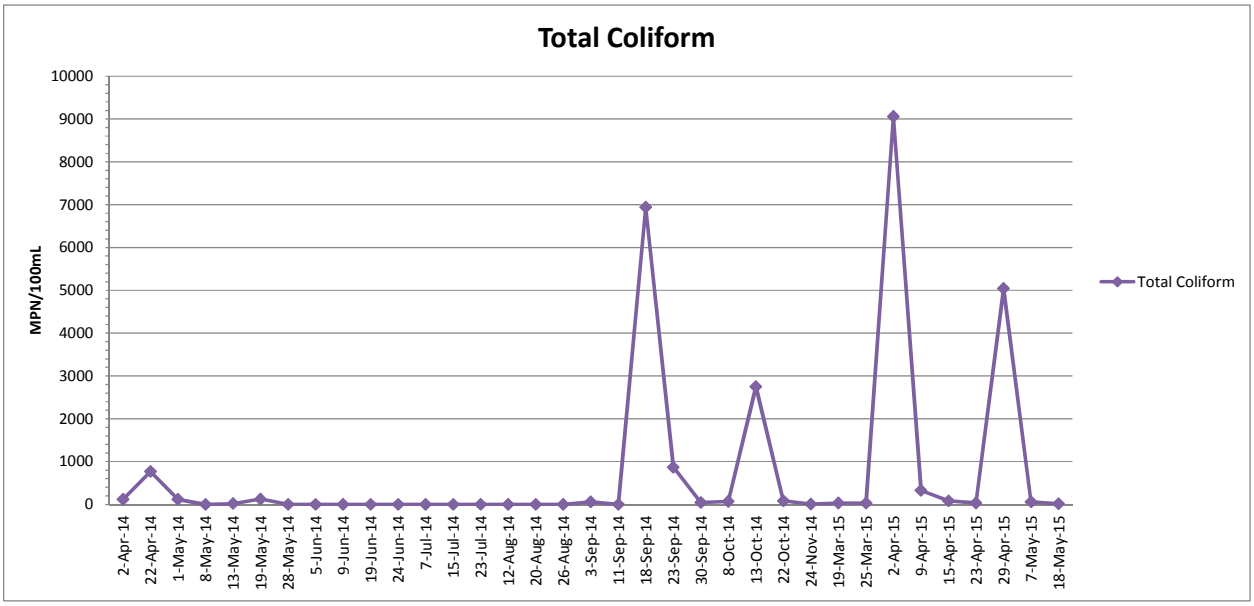

Figure 2. Graph showing total coliform levels from sampling of a water well at C&H (data drawn from BCRET Quarterly Reports).

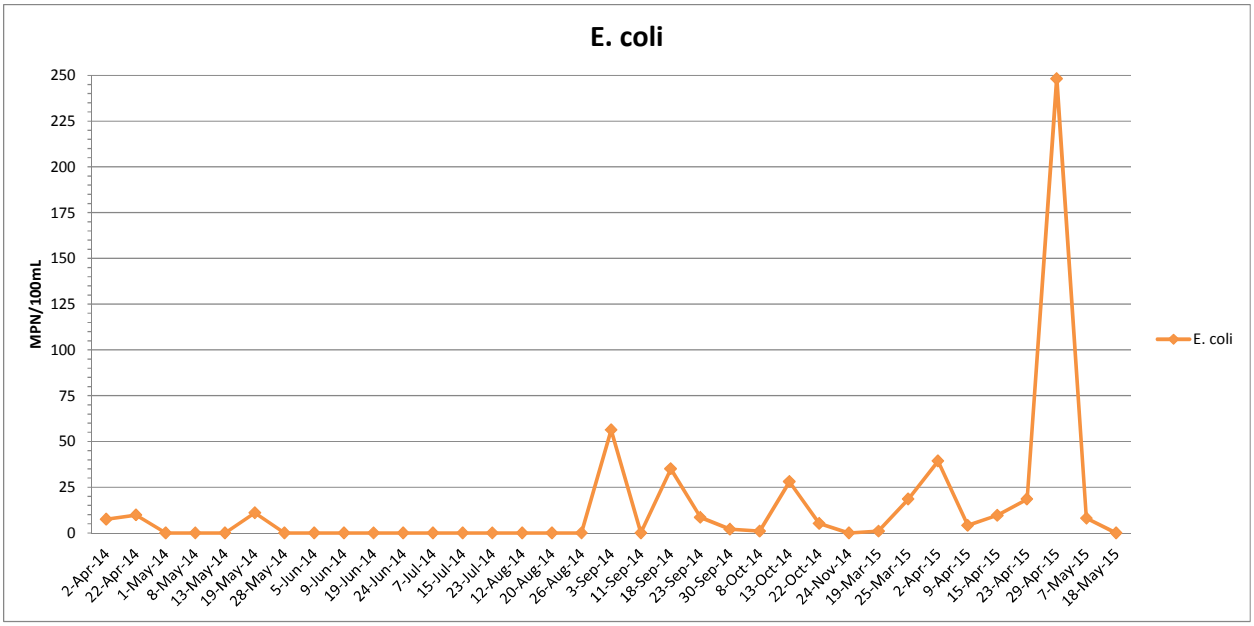

Figure 3. Graph showing *E. coli* levels from sampling of a water well at C&H (data drawn from BCRET Quarterly Reports).

[22] Dr. Brahana reports that users of other private wells near the C&H spreading fields have reported human health problems. Brahana at 9.

All of this data—of elevated downstream nitrate levels, excessive levels of pollutants associated with swine waste measured in surface runoff from fields and in nearby surface water, and the recent, consistent presence of fecal coliform in a groundwater well at the facility—together show that C&H likely already is having significant impacts on the water resources around it. Yet, in violation of NEPA, the EA either ignores this data or dismisses it without any credible, rational explanation.

c. Other Science and Data Strongly Suggest Significant Adverse Impacts to Water Resources and Must Be Considered

The draft EA's cherry-picking of BCRET data extends to its irrationally dismissive approach to water sampling data collected by the National Park Service, which show troubling trends of possible impacts from the C&H facility. The EA also does not, but must, incorporate consideration of water quality sampling results from Dr. Brahana's KHBNR study, which also show alarming trends in the water quality of Big Creek downstream of C&H.

The EA does not provide any actual NPS data for the readers to evaluate and understand, yet it devotes a long paragraph to explaining why "any increase in concentrations . . . of nutrients or bacteria" recorded at the BUFT06 sampling site—the closest NPS sampling site to C&H, located on Big Creek approximately 6 river miles downstream of the facility just before Big Creek's confluence with the Buffalo National River—"cannot be directly attributed to the C&H Hog Farms." EA at 3-7.[23] This cursory dismissal of NPS data foregoes mention of the fact that such increases are not merely hypothetical. Sampling data at BUFT06 actually have shown marked increases in *E. coli* after C&H began spreading waste on its fields.

The graph below is taken from an NPS powerpoint presentation and shows *E. coli* concentrations from grab samples taken from March 2013 through January 2015 at a monitoring site upstream of Big Creek's confluence with the Buffalo National River (denoted by the blue line), at the BUFT06 station on Big Creek (denoted by the red line), and at a monitoring station downstream of the Big Creek confluence with the Buffalo (denoted by the green line). The start of C&H's land application of waste in December 2013 is marked by the black vertical line. The graph shows a clear trend of increasingly frequent and greater *E. coli* concentration spikes after December 2013, including spikes in Big Creek that are not mirrored in the upstream monitoring station.

[23] The EA dismisses the data from BUFT06 in part because "the entire Left Fork Creek sub-watershed . . . empties into Big Creek above the sampling site." EA at 3-7. Yet, the EA elsewhere suggests that the USGS station located in Left Fork as it enters Big Creek can serve as a control for sampling in Big Creek because Left Fork "drains a watershed similar to Big Creek but does not contain a CAFO operation." *Id.* at 3-8. Obviously, to take a rational hard look, the EA cannot have it both ways here.

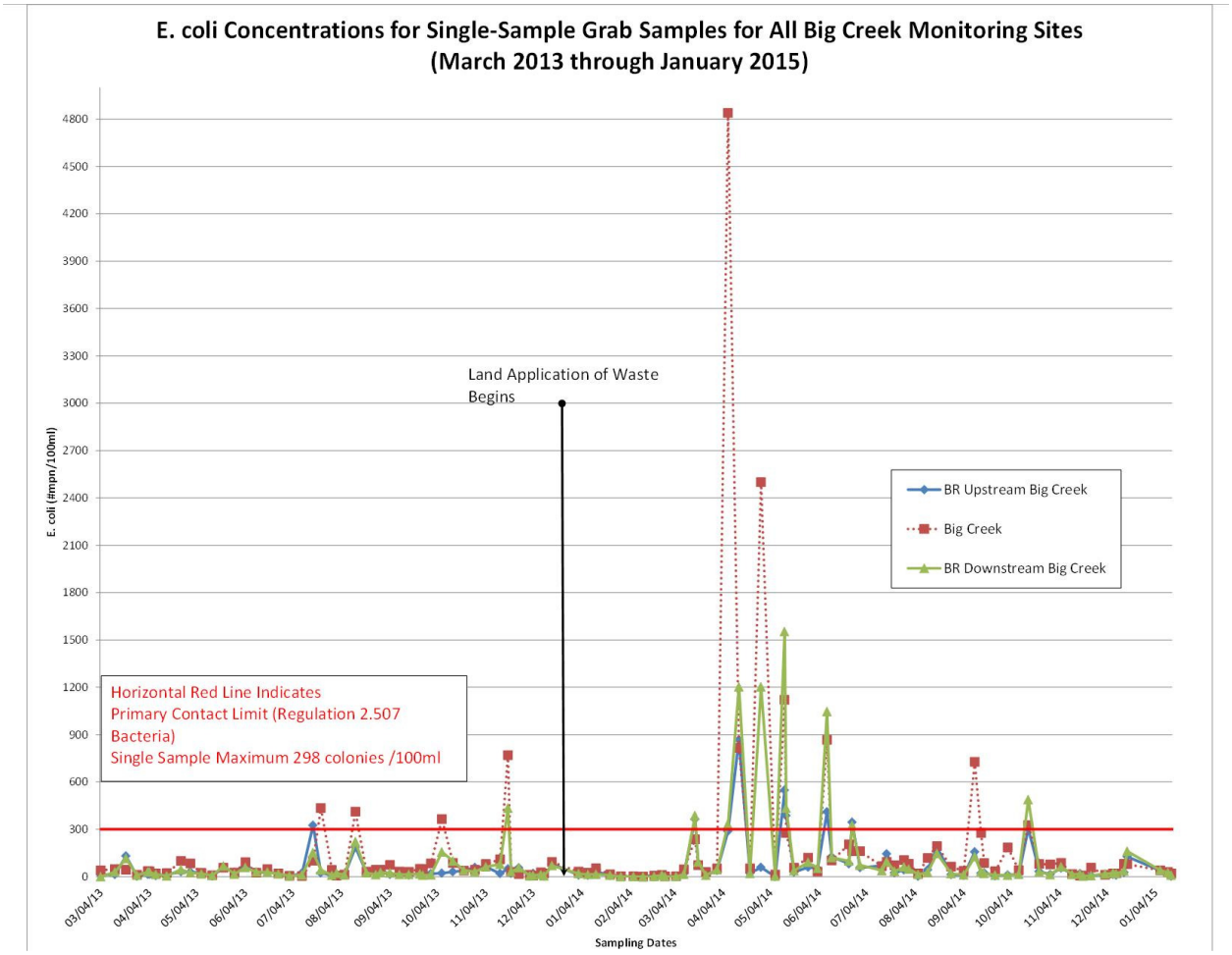

Figure 4. Graph taken from an NPS powerpoint presentation showing data from three sampling sites: on the Buffalo National River upstream of the Big Creek confluence, on Big Creek, and on the Buffalo National River downstream of the Big Creek confluence.

The EA wholly fails to reveal this troubling data to the public and to take a hard look at its implications. In order to satisfy its NEPA obligations, the agencies must consider this data as well as other data obtained by the Park Service.

The EA also does not mention or discuss results from NPS and United States Geological Survey ("USGS") monitoring, for instance, showing low dissolved oxygen ("DO") levels in Big Creek downstream of C&H. As shown in the graph below, in the summer of 2014, about a year and a half after C&H began spreading waste on its fields, a gaging station on Big Creek downstream of C&H, operated by USGS in cooperation with NPS, showed DO levels falling consistently below 6 mg/L (denoted by the yellow line) and even below 5 mg/L (denoted by the red line). Arkansas state regulations establish 6 mg/L as the applicable water quality standard for DO in Big Creek.[24]

[24] *See* Ark. Pollution Control & Ecology Comm'n, Regulation No. 2, A-12 (adopted Feb. 28, 2014), *available at* https://www.adeq.state.ar.us/regs/files/reg02_final_140324.pdf.

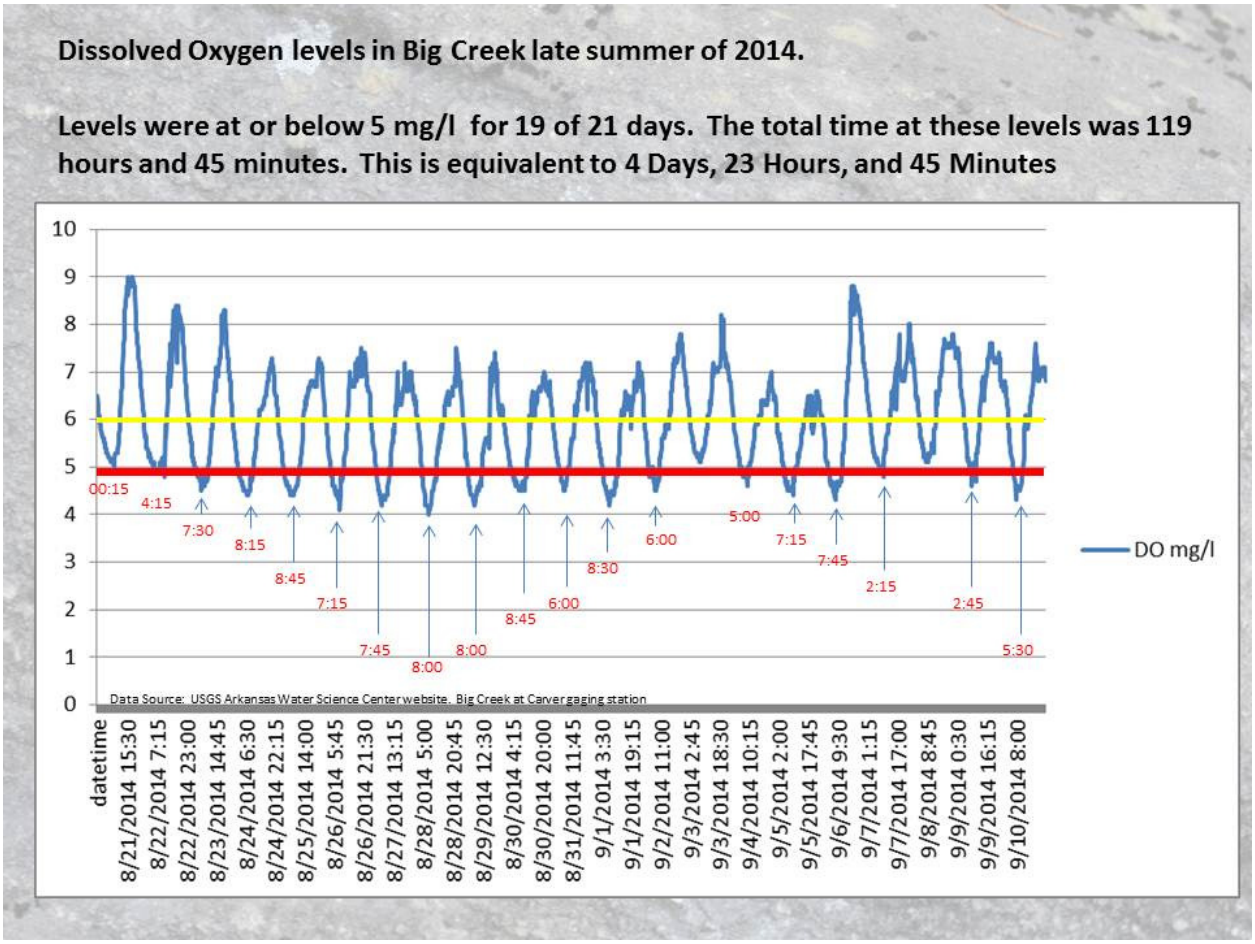

Figure 5. The graph above is taken from an NPS powerpoint presentation. The underlying data are from the USGS station on Big Creek at Carver, Arkansas (USGS 07055814), and are accessible online from the USGS Arkansas Water Science Center at http://waterdata.usgs.gov/ar/nwis/uv/?site_no=07055814&PARAmeter_cd=00010,00300,00095,00400,63680,00631,70301,00090,00940.

The trend of DO impairment in Big Creek has continued this summer. In the month of August 2015, the DO in Big Creek measured at this USGS station dropped below the water quality standard of 6 mg/L on 30 of 31 days.[25] This shows a clear water quality violation and is alarming evidence of possible impacts from C&H. Swine CAFO pollution "is well known to drive the DO in receiving streams down to levels that can stress or kill beneficial aquatic life." Burkholder at 11. Dissolved oxygen is "of fundamental importance to the biota of the Big Creek and Buffalo National River ecosystems." *Id.*

[25]U.S. Geological Survey, National Water Information Service: Web Interface, USGS 07055814 Big Creek at Carver, AR, http://waterdata.usgs.gov/ar/nwis/uv?cb_00300=on&format=html&site_no=07055814&period=&begin_date=2015-08-01&end_date=2015-08-31.

Dr. Brahana's team also has conducted water quality sampling to assess the potential impacts of C&H. His sampling, which began in July 2013, captures baseline conditions to some extent as C&H's waste application did not begin until December of that year. The KHBNR sampling shows that despite an already polluted baseline "reflecting land-use patterns consistent with a karst area that was operating near its limit of accommodating animal wastes," the addition of the pigs at C&H has been associated with "*increases in indicator microbes, nitrates, and selected trace constituents* in wells, springs, and suction lysimeters (soil water samplers) . . . ." Brahana at 9 (emphasis added). The highest values of *E. coli* (20,000 mpn/100 mL) have been obtained from springs with no surface runoff (suggesting heavily contaminated groundwater) and surface channels that lie closest to C&H's spreading fields. *Id.* at 9, 10. Moreover, *E. coli* values taken as random grab samples in Big Creek show a marked increase in 2014, as compared to 2013. *Id.* at 10. As Dr. Brahana points out, his water sampling results together with the extremely low dissolved oxygen levels detected by the National Park Service in Big Creek are "consistent with the fact that Big Creek and its ecosystem are being stressed" and suggest that C&H's 6,500 pigs have added to the total agricultural loading in this valley. Brahana at 10.

d. The Existing Science Shows Significant Impacts that Must Be Considered and Further Assessed in an EIS.

The EA cannot rationally conclude, based on the limited information it considered, that C&H will not have significant impacts to water resources. In fact, it is the opinion of multiple well-respected experts that C&H will indeed have significant impacts on Big Creek and the Buffalo River. Mr. Aley noted that "[t]he EA's conclusion that the tons and tons of hog manure dumped on farm fields will not significantly impact the Buffalo River is utterly ridiculous." Aley at 7. Dr. Smolen noted that the excessive overload of waste on C&H's fields "would definitely contaminate the water resource." Smolen at 5. Dr. Burkholder expressed her opinion that "there is very high potential for major surface water degradation from the C&H CAFO" and that data already "indicat[e] that the C&H CAFO is degrading the quality of surface waters." Burkholder at 9. Dr. Brahana similarly concluded that the data "indicate that contamination from the hog factory and its spreading fields is moving offsite" and "that contamination levels will continue to increase." Brahana at 11.

To comply with NEPA, the agencies must prepare an EIS that takes a hard look at these impacts. The EIS must consider not only the existing data referenced above from NPS, USGS, and Dr. Brahana, it should also engage in further reasonable scientific assessment of C&H's impacts. Mr. Aley identifies, for instance, what a hydrogeologist should search for on and adjacent to C&H's waste spreading fields in order to properly assess the facility's impacts, including "[s]urface evidence of land subsidences or sinkholes," "[i]dentification of gaining or losing stream segments on Big Creek and Dry Creek adjacent to, or within a mile of, application fields." Aley at 13. Dr. Burkholder also identifies actions necessary for a "realistic, science-based environmental assessment of impacts and potential impacts" from C&H, including the use of appropriate techniques, such as molecular techniques or stable isotope techniques, to verify the source and predominance of C&H-related fecal bacteria and nitrate-N pollution. Burkholder at 23. Notably, documents obtained from a public records request show that hydrogeologist Phillip Hays from USGS, another federal agency, has expressed an interest and willingness to

use stable isotopes to examine subsurface nutrient processing in the epikarst zone of Big Creek basin.

C. The Assessment of Impacts on the Buffalo National River Is Inadequate

The Court in *Buffalo River Watershed Alliance* chided the agencies for not even mentioning the Buffalo River in the original EA. 2014 WL 6837005 at *2. This draft EA fails to heed the spirit of the Court's admonition—its "assessment" of impacts to the Buffalo National River is characterized by significant omissions and is no more meaningful than a mention. First, the EA misleadingly characterizes C&H in relation to the Buffalo National River. Second, the EA's failure to consider adequately the geologic context and impacts to water resources, as detailed above, necessarily makes its assessment of impacts on the Buffalo National River deficient. Furthermore, while recognizing that the Buffalo River is designated an "Extraordinary Resource Water," EA at 3-6, the EA fails to take a hard look at the implications of this designation.

The EA's description of the affected environment misleadingly emphasizes that the C&H facility is located "approximately 2,200 feet west of Big Creek, a tributary of the Buffalo River." EA at 3-35. The more germane point, and one that is reflected in the EA's Map 1, is that the fields on which C&H spreads more than 2.4 million gallons of swine waste a year are located immediately adjacent to Big Creek. As Dr. Smolen points out, the fields directly adjacent to Big Creek (Fields 3, 5, 6, 7, 9, 12, and 16) are indicated in soil surveys as "occasionally flooded" and are thus in the floodplain of Big Creek. Smolen at 4. The EA's focus on the location of the C&H facility in relation to the Buffalo National River, as opposed to the distance between C&H's *spreading fields* and the downstream river, is thus misplaced. Moreover, it is worth noting that the boundaries of the national park unit extend beyond the waters of the river. GIS mapping shows that the distance between the most downstream C&H field and the national park unit boundary is closer to three river miles rather than the 6.8-mile distance emphasized in the EA. *See* Figure 6, infra.

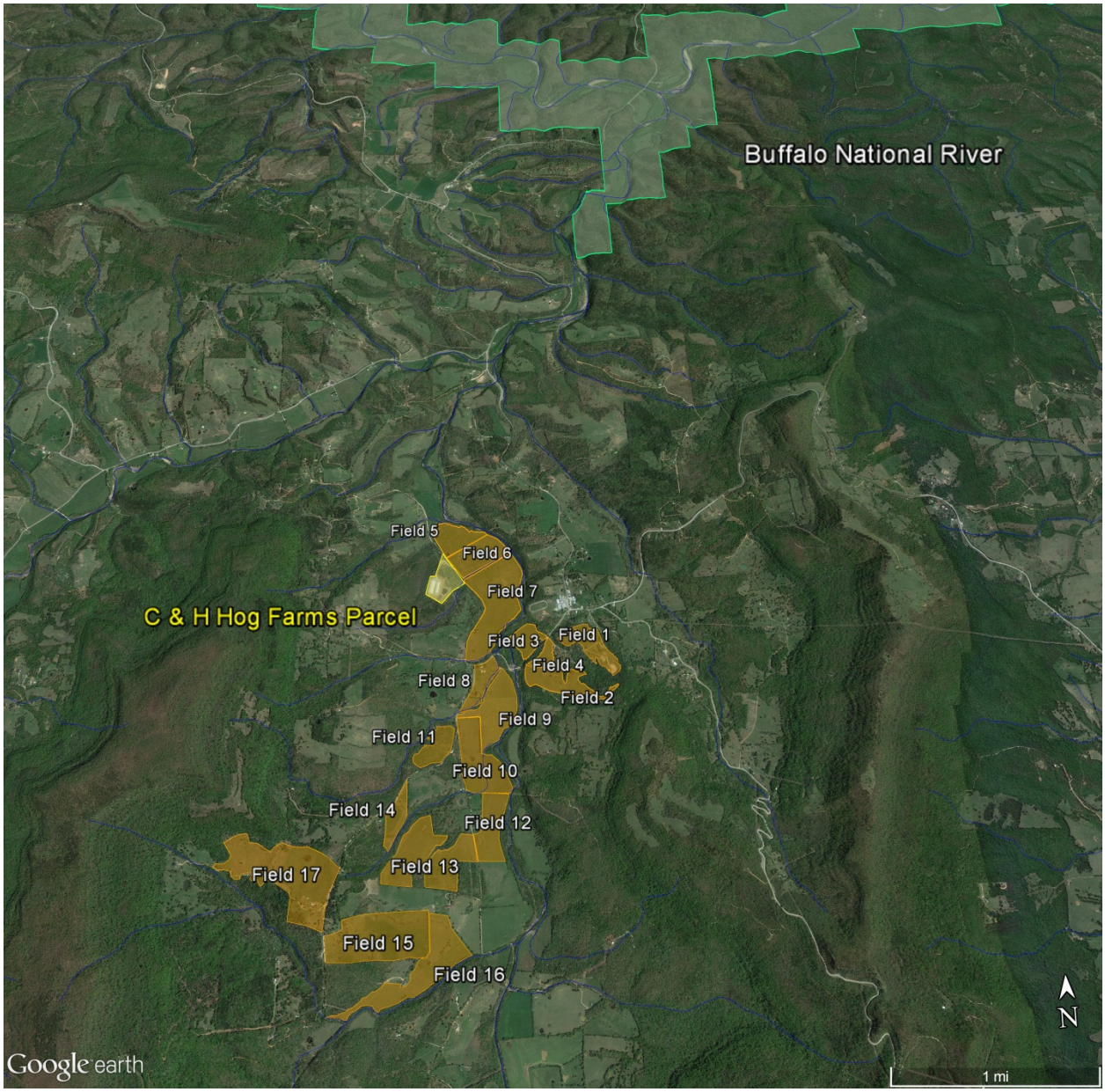

Figure 6. Map of C&H in relation to the boundaries of the Buffalo National River park unit.

The EA's single-paragraph assessment of C&H's impacts on the Buffalo National River incorrectly states that "[t]here are no data to suggest the operation is negatively affecting water quality by increasing the concentrations of nutrients or bacteria in Big Creek." EA at 3-35. As discussed above, the facts prove otherwise. BCRET data show statistically significant higher nitrate-N pollution downstream of C&H than upstream. Dr. Brahana's data, as well as NPS data, show extremely high levels of *E. coli* in Big Creek downstream of C&H. NPS data also show that Big Creek is impaired for dissolved oxygen.

These indicators of adversely affected water quality in Big Creek have significant implications for the Buffalo National River. Nitrate is well known for traveling long distances of up to 200 miles or more—nearly 30 times the distance between C&H and the Buffalo National

River (even using the EA's 6.8-mile figure). *See* Burkholder at 18. NPS studies demonstrate that "Big Creek has a notable loading effect upon Buffalo River" and "can have a strong influence on the recreational water quality safety for visitors within Buffalo River."[26] In April and May of 2014, NPS water sampling revealed that Big Creek was responsible for placing the Buffalo River nearly beyond the water quality standard for *E. coli* in primary contact waters.[27] Due to such potential threats to visitor safety, the National Park Service plans to develop a health advisory system for Big Creek with a focus on recreation advisories and potential closures.[28]

In a karst system, in particular, the excessive application of waste by C&H "is a threat to the Buffalo River." Smolen at 4. Dr. Brahana notes that during high flow in the spring months, when most of the hog waste is being spread on the fields, "groundwater flow tends to be dispersive, and flows rapidly downgradient to the main drain, the Buffalo National River." Brahana at 6. Dr. Brahana's dye tracing shows that groundwater near C&H's most upstream spreading fields travels into Big Creek, contiguous surface-water drainage basins, and to the Buffalo National River itself. *Id.* at 3-4. At high flow, some of the water can travel a distance of 3.5 miles in 7 days, or about 2,500 feet per day. *Id* at 4. Plainly, then, there is a significant potential for adverse impacts to the Buffalo National River from C&H.

These impacts must be considered under the state's antidegradation policy pursuant to the Clean Water Act. *See* Ark. Pollution Control & Ecology Comm'n, Regulation No. 2, at p. 2-1. As an "Extraordinary Resource Water," the Buffalo's uses and water quality are protected under this policy, as are Big Creek's existing use as a primary and secondary contact recreation water. *Id.* § 2.201,p. A-11. United States Department of Agriculture ("USDA") regulations explicitly prohibit FSA from "provid[ing] financial assistance to any activity that would either impair a State water quality standard . . . or that would not meet antidegradation requirements." 7 C.F.R. § 1940.304(h); *see also* FSA Handbook at 4-5 ("FSA will **not** approve actions or activities that could significantly affect surface water quality.").

To implement this requirement, FSA must review "[e]ach application for financial assistance . . . to determine if it would impair a State water quality standard or meet antidegradation requirements." 7 C.F.R. § 1940.305(k). Here, the EA fails to make any mention of antidegradation and does not address available BCRET data showing exceedances of water quality standards for *E. coli* or data from a sister federal agency detecting DO impairment of Big Creek. Such an omission violates not only NEPA but also USDA environmental program regulations.

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[26] Faron D. Usrey, NPS, *Water Quality Characterization of Big Creek* at Slides 19-20, http://buffaloriveralliance.org/Resources/Documents/2014%20AWRC-%20Usrey%20WQ%20Big%20Creek.pdf.

[27] *Id.* at Slide 8.

[28] *Id.* at Slide 20.

D. The Assessment of Impacts to Protected Species Is Insufficient and In Violation of USDA Regulations

The agencies' cursory analysis of C&H's impacts on protected species relies on the same few unsupported and incorrect assertions repeated throughout the EA—that there is no karst under C&H, that C&H's permit protects against impacts, and that no data show water quality impacts from the facility—to conclude wrongly that protected species and critical habitat will not be affected by the proposed action. As explained below, FSA also violated its own regulations by failing to mention and document the Section 7 consultation it is required to undertake under the Endangered Species Act.

USDA regulations require FSA to "implement the consultation procedures required under Section 7 of the Endangered Species Act . . . ." 7 C.F.R. Pt. 1940, Subpt. G., Ex. D, ¶ 1. They specify that "*as part of the assessment process* [for Class II actions], the preparer will initiate the consultation and compliance requirements" for the Endangered Species Act, *id.* § 1940.318(h), and that "[t]he results of this process *shall be documented in the environmental review* being done for the proposed project and, *if this review is an environmental assessment, shall be an important factor in determining the need for an environmental impact statement.*" *Id.* Pt. 1940, Subpt. G, Ex. D, ¶ 6 (emphasis added). Despite the Court's order in *Buffalo River Watershed Alliance* that the agencies engage in consultation with Fish and Wildlife Service ("FWS"), and in contravention of its own regulations, FSA fails to make any reference to Section 7 consultation in the EA.

The agencies' failure to document the Section 7 consultation in the EA, as required by USDA's own regulations implementing NEPA, deprives the public of an opportunity to understand and weigh in on the agencies' consideration of impacts on protected species. This failure has implications not only for the adequacy of the EA's assessment of impacts on protected species, but also for the adequacy of the EA's disclosure and consideration of potential mitigation measures. USDA regulations specify that "[w]henever the results of the consultation process include recommendations by the Area Manager [of] FWS . . . for modifications to the project which would enhance the conservation and protection of a listed species or its critical habitat, the [FSA] State Director shall review these recommendations and require that they be incorporated into the project as either design changes or special conditions to the offer of assistance." 7 C.F.R. § Pt. 1940, Subpt. G, Ex. D. ¶ 8(c).

The EA's "assessment" of impacts to protected species focused only on the endangered Snuffbox mussel, the threatened rabbitsfoot mussel, and the rabbitsfoot's designated critical habitat in the Buffalo River. The EA's perfunctory review of impacts to these species and the critical habitat is substantially flawed for all the same reasons already addressed at length in preceding sections of these comments. The EA re-states wrongly that "[t]here are no data to suggest the operation is negatively affecting water quality," that C&H's NMP ensure "there is no runoff to surrounding areas," that a discharge from the waste storage ponds from an extreme weather event would have only "short-term impacts," and that "[t]here is no evident conduit for groundwater to reach surface water in the area." EA at 3-32 to 33. Each of these assertions is incorrect. Taken together they form the basis for the EA's patently unsupportable conclusion that there will be no impacts to the mussels or to critical habitat.

The EA also inappropriately eliminated three protected bat species from consideration in its assessment: the endangered Gray bat, the endangered Indiana bat, and the threatened Northern Long-eared bat. *See* EA at 3-28. In leaping to its unjustified conclusion not to consider impacts to these species, the EA states that "[i]mpacts to listed species from the C&H Hog Farms operations would be limited to the potential for adverse changes to water quality from increased nutrients" and that because bats are terrestrial species and "there are no caves within the C&H Hog Farms parcel," "there would be no effects" to these protected bat species. EA at 3-26.

This conclusion inexplicably discounts the fact that caves inhabited by theses bat species are located 2.75 and 4 miles from C&H, *see* EA at 3-28, and also fails to incorporate information from FWS identifying other Gray bat, Northern long-eared bat, and Indiana bat hibernacula within 5.3 miles from C&H.[29] It also cannot be squared with the findings of a recent bat netting survey and acoustic monitoring along Big Creek and directly adjacent to C&H's spreading fields. *See* Gore at 3. The survey, conducted by wildlife biologist James Gore, utilized acoustic monitoring devices placed at three locations along the banks of Big Creek—one just immediately downstream of Field 16, a second next to Fields 5 and 6, and a third approximately 0.75 miles downstream of Field 5. The acoustic monitoring detected all three species of protected bats, including several hundred Gray bats, in a two-night span. *See* Gore at 2.

The close proximity of inhabited caves and the presence of all three species on Big Creek, next to C&H's waste spreading fields, must be addressed in a careful assessment of impacts to protected species. As explained in previous sections, the presence of karst in the Big Creek basin and the introduction of massive amounts of swine waste applied in excess of plant uptake rates indicate a likely impact on water resources. Notwithstanding the EA's unscientific disregard of the facts, this will affect even "terrestrial species." The gray bat, for instance, forages primarily over water and is "highly dependent on aquatic insects, especially mayflies, caddisflies, and stoneflies."[30] These three species of aquatic insects happen to be indicator species for aquatic ecosystem health, as they are extremely sensitive to pollution and are "usually only found at high quality, minimally polluted sites."[31]

Sensitive stream biota have been shown to be harmed by low DO caused by swine CAFOs, and also adversely affected by microbes, high nutrient levels, high suspended solids, and other pollutants introduced by CAFOs. Burkholder at 18. Dr. Burkholder reports, for instance, that "[b]eneficial macroinvertebrates have been shown to be adversely affected by nitrate concentrations as low as 0.23 mg nitrate-N/L," and "[e]arly instar caddisfly larvae have sustained adverse effects from chronic toxicity at 1.4 to 2.4 mg nitrate-N/L." *Id.* Adverse impacts to Big Creek, which already appear to be occurring based on water sampling results

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[29] This information was obtained in a Freedom of Information Act request to FWS.

[30] U.S. Fish & Wildlife Serv., *Gray Bat (Myotis grisescens) 5-Year Review: Summary and Evaluation* 7 (2009), http://www.fws.gov/ecos/ajax/docs/five_year_review/doc2625.pdf.

[31] Me. Dep't of Envtl. Protection, *Mayfly Larva (Ephemeroptera)* (2013), http://www.maine.gov/dep/water/monitoring/biomonitoring/sampling/bugs/mayflies.htm.

described above, therefore could spell significant harm for endangered Gray bats who depend on insects that will not survive near impaired waters. The agencies must consider these impacts and document such consideration and consultation with FWS in its environmental review, rather than turn a blind eye to the presence of protected species in the affected area and the strong likelihood that C&H is detrimentally affecting water resources.

E. The Draft EA Fails to Consider Odor and Air Quality Impacts on Public Health and the Local Community

The draft EA's scant discussion of potential air quality and odor impacts from C&H is woefully inadequate. The EA fail to implement FSA guidance that requires feasible mitigation measures to reduce odor impacts. Additionally, the EA's assumption that the operational status quo under C&H's permit is sufficient to protect against air and odor impacts overlooks the numerous odor and air complaints that have already been filed against C&H.

As detailed in the attached Declaration of University of North Carolina Gillings School of Global Public Health Professor Steve Wing, odor and air impacts from CAFOs go hand in hand. Airborne emissions of volatile organic compounds from CAFOs adsorb to fine particles that settle on the mucous membranes of the nose and contribute to the offensive odors typical of these facilities.[32] In addition to volatile organic compounds, CAFOs can emit other air pollutants of concern, such as hydrogen sulfide, ammonia, and toxins less than 10 microns in diameter ("PM_{10}"), including endotoxins, bacteria, yeasts, and molds.[33] Though the housing yard and manure storage pits at CAFOs contribute to odor and air impacts, the vast majority of CAFO air emissions are associated with land application of waste.[34]

The odors and air pollutants emitted by swine CAFOs have deleterious effects on the health and wellbeing of surrounding communities. Professor Wing's research has shown that, compared to people living in communities without industrial livestock facilities, residents living near swine CAFOs report higher frequencies of headaches, runny nose, sore throat, coughing, diarrhea, and burning eyes—symptoms consistent with the well-documented effects of volatile organic compounds, hydrogen sulfide, ammonia, and PM_{10}.[35] Residents near CAFOs also have higher diastolic blood pressure at times when they report stronger hog odors outside their homes than when there was less odor.[36]

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[32] Wing Decl. ¶ 7.

[33] *Id.* ¶ 6.

[34] Owen T. Carton & William L. Magette, Teagasc (Irish Agric. & Food Dev. Auth.), *Land Spreading of Animal Manures, Farm Wastes & Non-Agricultural Organic Wastes, End of Project Report Part 1: Manure (and Other Organic Wastes) Management Guidelines for Intensive Agricultural Enterprises* 38-40 (1999), http://goo.gl/7kJmjE. The draft EA ignores this fact when it assumes that installation of a cover over the waste storage ponds would appreciably reduce odor ignores this fact.

[35] Wing Decl. ¶¶ 10, 18.

[36] *Id.* ¶ 17.

In addition, children who attend schools within three miles of a hog CAFO or schools with reported livestock odors inside the building twice or more per month have a higher prevalence of asthma-related symptoms, more doctor-diagnosed asthma, and more asthma-related medical visits than other children.[37] These findings are critical and must be considered, in the EA, given the close proximity of the Mt. Judea K-12 School to C&H's application fields. Fields 1, 3 and 7 are very near the school property and receive substantial amounts of waste. Field 3 in particular, which is directly adjacent to the school's playground and track, received 5,590 gallons per acre of waste between March and June, 2014 alone, *see* Burkholder at 4, a period when schoolchildren were likely outdoors during recess. The NMP recommends avoiding applications on weekends and holidays, which means that, assuming C&H's compliance, during the school year, waste applications are most likely to occur when school is in session, therefore increasing students' risk of exposure.

The potential impacts to health and wellbeing from air emissions and odors from swine CAFOs are therefore significant. C&H in particular has the potential to create significant incremental increases in odor and air emissions because it is the first, and so far only, animal operation classified as a Large CAFO, *see* 40 C.F.R. § 122.23(b)(4), anywhere in the Buffalo River watershed. The Court in *Buffalo River Watershed Alliance* recognized this fact, finding that "[t]he size of C&H's planned swine operations made it unprecedented." *Id.* at *4. The draft EA's characterization of the affected environment, Newton County, as a place where "agriculture, including CAFOs . . . , is common," is therefore inaccurate and misleading. Though the draft EA claims that "there are four other swine CAFOs . . . in Newton County," EA at 4-3, a review of the permits of these operations shows they are significantly smaller than C&H and may not even be "CAFOs."[38] C&H is permitted to house over five times more swine than the largest of these other facilities and over twice as many swine as all of these other facilities combined.

FSA's handbook on the NEPA process, *FSA Handbook: Environmental Quality Programs 1-EQ (Rev. 2)* ("FSA NEPA Handbook"), recognizes that "agricultural operations that raise animals and grow crops can generate emissions of gases, particulate matter, chemical compounds, and odor" and that "[a]ir pollution threatens the health of human beings."[39]

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[37] *Id.* ¶ 11.

[38] The Arkansas Department of Environmental Quality ("ADEQ") permit database lists four livestock operations in Newtown County, other than C&H, with active water permits. *See* https://www.adeq.state.ar.us/home/pdssql/pds.aspx. These are Campbell Farms, EC Farms, R & D Farms, and Yancy's Farm—all swine facilities. Campbell Farms is permitted to house 400 sows, 15 boars, and 400 nursery pigs. Campbell Farms Permit Statement of Basis at 1, https://goo.gl/JjAk9F. EC Farms (formerly C & C Hog Barn) is permitted to house 312 sows, 4 boars, and 300 weaner pigs. EC Farms Permit Statement of Basis at 2, http://goo.gl/GbwuAp. R & D Farms is permitted to house 425 sows and 770 pigs. R & D Permit Statement of Basis at 1, https://goo.gl/WoCKo4. Yancy's Farm is permitted to house 300 sows and 300 pigs for farrowing. Yancy's Farm Statement of Basis at 1, https://goo.gl/bvxtMH.

[39] Farm Serv. Agency, *Environmental Quality Programs 1-EQ (Rev. 2)* at 4-61 (2009), https://www.fsa.usda.gov/Internet/FSA_File/1-eq_r02_a01.pdf.

Accordingly, the FSA NEPA Handbook requires FSA to implement "feasible mitigation measures to reduce odor concerns" during the NEPA review process whenever a proposed action involves the establishment or changes to an existing CAFO and the issue has not "already been addressed during [the] S[t]ate operating permit process."[40]

Here, contrary to the draft EA's misleading characterization, the state permitting process did not address odor or air-quality concerns. The NPDES General Permit and NMP were issued under the Clean Water Act and their operational requirements were therefore designed to address water pollution from C&H. The NMP's Section L on "Odor Control" cited by the draft EA merely appends as a reference a study that lists general best practices to reduce odors from swine CAFO operations. Because C&H's state permit does not address odor or air-quality concerns, FSA is required—but fails to—implement feasible mitigation measures to address these impacts. Instead, the EA wrongly assumes that C&H's compliance with its NPDES permit and related documents—such as the NMP, Operation and Maintenance Guidelines, and Mortality Management Plan—will prevent significant odor and air-quality impacts from C&H's operations.

This assumption is problematic not only because it violates FSA guidance but also because it overlooks the fact that C&H's current operations already have resulted in air and odor impacts. A public records request to ADEQ revealed numerous citizen complaints about emissions and odors emanating from C&H. These complaints from residents near C&H note that the "stench will knock you down most days,"[41] and that "[t]here is rarely a time that the smell is not noticeable from somewhere in the Mt Judea area."[42] On one day when 24,000 gallons of waste were sprayed onto Fields 15 and 17, one citizen complained of an "extremely strong" odor at the Criner Cemetery near Field 17 and noted that strong winds were causing the waste to drift outside of the specified spray area.[43] Several citizens noted that odors are particularly bad during early-morning inversions, during which the putrid smell is "trapped in the valleys."[44] Valley residents that live as far as eight miles from the facility note that the air near their homes is "permeated with th[e] stench" of C&H whenever the inversion traps air within the valleys.[45] One resident noted that "many of us have closed our windows" in response to the stench and air emissions.[46] In addition to the smells, residents note a "heavy," "thick haze"

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[40] *Id.* at 4-62.

[41] Email from local citizen to ADH Environmental Health (Apr. 2, 2015, 03:19 PM) (The identity of the complainants are withheld and the complaints are not appended here in order to protect the personal information of the complainants. The complaints are on file with the author and are available upon request).

[42] ADEQ, Air Division Online Concern/Complaint Form Submission (Jan. 6, 2014, 11:31 AM).

[43] ADEQ, Water Division Complaint Report 4 (Jan. 16, 2014).

[44] ADEQ, Air Division Online Concern/Complaint Form Submission (Jan. 6, 2014, 11:31 AM); *see also* ADEQ, Water Division Complaint Report 1 (Apr. 17, 2014).

[45] Email from local citizen to ADH Environmental Health (Apr. 2, 2015, 03:19 PM).

[46] ADEQ, Air Division Online Concern/Complaint Form Submission (Jan. 6, 2014, 11:31 AM).

visible in the sky above C&H when the facility sprays its fields.[47] One Op-Ed contributor to the *Lovely County Citizen* noted that her family tradition of going to the Sexton Cemetery to clean and decorate the headstones of deceased loved ones was ruined by the "horrendous and overwhelming stench of hog manure" and the "distinct singed-hair smell" of burning hogs.[48] ADEQ investigators too have encountered malodors from C&H during post-complaint site investigations.[49]

Even beyond degrading the quality of life of its neighbors, C&H's air emissions are already affecting the health and wellbeing of the local community. One citizen reported "extremely sharp headaches" when he is at the Mt. Judea School or the cemetery near C&H,[50] while another citizen with experience working on hog farms and near lagoons nevertheless suffered "the worst headache [he] ever had" when floating down the Big Creek near Mt. Judea School.[51] Many citizens expressed concerns about the impacts of air emissions and odor from C&H on their health and the health of others, especially the children who recreate in the river or attend the Mt. Judea School.[52]

These citizen complaints invalidate the draft EA's assumption that C&H's compliance with its NPDES permit will prevent significant odor and air impacts from this CAFO.[53] Thus, both the FSA NEPA Handbook and the complaints of citizens that suffer the stenches emanating from C&H vitiate the draft EA's assumption that compliance with a Clean Water Act permit is sufficient to protect against air and odor impacts. Rather than ignoring the significant air and odor impacts that are already being felt by the nearby community, the agencies must take a hard look at these impacts in an EIS and require feasible odor and air-emission mitigation measures, consistent with the FSA NEPA Handbook.

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[47] Email from local citizen to Anthony Davis, Manager, Air Quality Planning, ADEQ (Oct. 21, 2014, 7:46 AM).

[48] Pam Fowler, *Guest Commentary: Neighbor laments factory hog farm changes*, Lovely County Citizen (June 4, 2014), http://www.lovelycitizen.com/story/2089232.html.

[49] Letter from Jason R. Bolenbaugh, Inspection Branch Manager, Water Div., ADEQ to Toni Allen, Compliance Assurance & Enforcement Div., U.S. Envtl. Prot. Agency Region 6 (Sept. 10, 2013).

[50] ADEQ, Online Air Pollution Complaint Reporting Form Submission (Mar. 25, 2015 3:44 PM).

[51] Email from local citizen to Melissa McConnell, ADEQ (May 14, 2014 2:42 PM).

[52] ADEQ, Air Division Online Concern/Complaint Form Submission (Jan. 6, 2014, 11:31 AM); ADEQ, Online Air Pollution Complaint Reporting Form Submission (Mar. 25, 2015 3:44 PM).

[53] EA at 3-2, 3-37. These complaints even cast doubt on the underlying premise that C&H is currently complying and will continue to comply with all of the terms of its Permit. As the draft EA itself notes, C&H's NMP requires it to avoid spraying waste within twelve hours of forecasted rain events or during weekends and holidays. EA at 2-5. Yet one citizen observed waste being sprayed near Big Creek when there was a threat of rain, and several citizens commented that C & H was spraying on weekends and holidays. *See* Online Air Pollution Complaint Reporting Form Submission (Mar. 25, 2015 3:44 PM); Email from local citizen to Ryan Benefield, ADEQ (Oct. 27, 2014 12:03 PM); Email from local citizen to Anthony Davis, Manager, Air Quality Planning, ADEQ (Oct. 21, 2014, 7:46 AM); ADEQ, Water Division Complaint Report 4 (Jan. 16, 2014).

F. The Assessment of Socioeconomic Impacts Is One-Sided and Omits Important and Relevant Considerations

We incorporate by reference the comments on the draft EA's analysis of socioeconomics and environmental justice submitted by Professor Lisa Pruitt, Professor of Law at University of California Davis School of Law and a native of Mount Judea. We also highlight here the Draft EA's myopic and biased focus on the limited economic benefits from C&H operations without discussion of the numerous negative socioeconomic effects that C&H will have on the surrounding community and region. With respect to the socioeconomic impacts of the C&H facility, the draft EA notes only that C&H employs nine employees, pays about $7,000 per year in property taxes, and sells fertilizer to nearby producers.[54] At no point does the draft EA discuss the significant negative socioeconomic effects of 6,500 swine producing more than 2.6 million gallons of waste each year next to residences and in the watershed of a national park unit.

The draft EA does not discuss, for instance, impacts on surrounding property values and people's ability to sell their property as a result of C&H's operations. The National Association of Local Boards of Health has found that "[t]he most certain fact regarding CAFOs and property values are that the closer a property is to a CAFO, the more likely it will be that the value of the property will drop."[55] One study found property values decreases that ranged from 6.6% within a three-mile radius of a CAFO to 88% within one tenth of a mile from a CAFO.[56] Decreases in property values can cause property tax rates to drop and place stress on local government budgets.[57]

The facts on the ground show that operations at C&H already have started to depress surrounding property values, with residents noting difficulty in finding buyers for property near C&H that they no longer wish to own or reside in. One resident commented to ADEQ that, after his family decided to move from the area because his asthmatic grandson began to have breathing problems when C&H started spraying manure on the fields, "I put my house for sale and left the area. It's been over a year now, and after lowering the price several times [and] switching realtors, I have not had even one offer. Nobody in their right mind wants to live in that polluted area."[58] Plummeting property values adversely affect not only the homeowners who are trapped with unwanted property, but also the public revenue of Newton County. The draft EA notes that C&H pays about $7,000 in property taxes to Newton County per year—or about 0.2% of the county's estimated 2011 property tax revenue of $3.3 million. But the draft

[54] EA at 3-39 to 3-40.

[55] Carrie Hribar, Nat'l Ass'n of Loc. Boards of Health, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities* 11 (Mark Schultz, ed., 2010), http://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf.

[56] *Id.*

[57] *Id.*

[58] Katherine McWilliams, Ark. Dep't of Envtl. Quality, *Response to Comments: Final Permitting Decision* 12 (May 12, 2015), http://goo.gl/8F6uVe (paraphrasing comment of Robert Cauley).

EA fails to consider the likelihood that overall property tax revenue for the county may decrease as C&H's operation lowers the property values of all nearby parcels.

Moreover, the draft EA fails to consider evidence that an increase in factory farming may actually be detrimental to local economies in the long term. As factory farms increase in number, research shows that rural employment and income decline. A nationwide study found that counties with larger farms had lower levels of economic growth, which suggests that larger farms make smaller contributions to local economies.[59] Moreover, studies show that large-scale farmers are far less likely to buy supplies locally and circulate earnings across the local community than are medium- and small-scale farmers; a University of Minnesota study found livestock operations with less than $400,000 in income made between 60 and 90 percent of their purchases locally, but farms with incomes over $600,000 purchased locally less than 50 percent of the time.[60]

Nor does the draft EA discuss the socioeconomic impacts of many other aspects of C&H's operations. Already, C&H has cost the state of Arkansas $340,510 in Rainy Day funds and an additional $400,000 in appropriations from the Arkansas State Legislature ($100,000 per year from 2015 to 2018) as taxpayers foot the bill for research to determine the extent of C&H's impacts. Additionally, the draft EA fails to account for increases in health care costs of residents who may see their health suffer from pollution and odor from the facility, as well as potential costs of mitigation and clean-up in the event of catastrophic discharges of waste to public waters—as from embankment failures or sinkhole collapses in the two waste storage ponds.

Perhaps most significantly, the draft EA fails to consider any socioeconomic impacts on the Buffalo National River or other areas of major economic activity outside of Newton County. A recent NPS report shows that 1,357,057 people visited the Buffalo National River in 2014 and spent a total of $56.6 million in the gateway communities surrounding the park.[61] Visitor spending supported 890 jobs while adding a cumulative monetary benefit of $65.1 million to the local economy. In 2014, visitation was up 20.6 percent and visitor spending increased 22.6 percent.

The Buffalo National River thus supports almost 100 times more jobs than C&H and provides nearly 10,000 times more monetary benefit to the area's economy than C&H provides in property taxes. But the $65 million of economic benefits brought to the area by the Buffalo National River may be threatened if pollution from C&H renders the river no longer suitable for recreation or attractive to visitors. The draft EA's discussion of socioeconomic impacts therefore cannot ignore the potential negative economic impacts that C&H may have on the Buffalo National River.

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[59] Food & Water Watch, *Factory Farm Nation* 23-25 (2015), http://documents.foodandwaterwatch.org/doc/FactoryFarmNation-web.pdf.

[60] *Id.* at 25.

[61] Catherine Cullinane Thomas et al., Nat'l Park Serv., U.S. Dep't of the Interior, Natural Resource Rep. NPS/NRSS/EQD/NRR – 2015/947, *2014 National Park Visitor Spending Effects* 17 (2015).

G. The Environmental Justice Assessment Falls Short of NEPA's Requirements

The draft EA's terse section on environmental justice neither seriously considers the impacts that C&H may have on surrounding low-income communities nor meets the requirements for NEPA analyses of the Council for Environmental Quality ("CEQ"). The discussion of poverty in Newton County begins and ends with the recognition that Newton County's poverty rate of 23 percent is higher than the poverty rates of either the North Arkansas region (21 percent) or the State as a whole (18 percent). EA at 3-40. As detailed below, this bare statement fails to disclose that Mt. Judea and Newton County show many of the qualities of a community that would be least resistant to the siting of a major undesirable facility: an area comprised of rural communities with small populations and many residents that are low-income, are above middle age, or have education levels of high school or less.[62] Newton County is thus home to exactly the type of environmental justice communities for which the hard look of the NEPA process is most warranted.

As noted in the comments of Professor Pruitt, poverty in Newton County is much more "deep-rooted [and] intergenerational" than is revealed in the EA.[63] The USDA Economic Research Service designates Newton County as one of only 355 "persistent poverty" counties in the nation and one of only 708 "persistent child poverty" counties in the nation.[64] A county is designated as persistently poor or persistently child poor if it has experienced poverty or child poverty rates above 20 percent over the last thirty years.[65] Indeed, Newton County has had high poverty rates since such accounting began in the 1960s.[66] Child poverty is significant in the area—nearly 90 percent of children attending the Mt. Judea K-12 School qualify for free or reduced price lunches.[67]

The Economic Research Service has also classified Newton County as a "low-employment" county and one of only 244 "government-dependent" counties in the nation, given

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[62] Cal. Waste Mgmt. Board, *Political Difficulties Facing Waste-to-Energy Conversion Plant Siting* 50-53 (1984), http://www.ejnet.org/ej/cerrell.pdf.

[63] Lisa R. Pruitt & Lina T. Sobczynski, Comments on Draft Environmental Assessment of C&H Hog Farms 3 (Sept. 4, 2015).

[64] *Geography of Poverty,* Econ. Res. Serv., U.S. Dep't of Agric. (May 18, 2015), http://goo.gl/bcPEVp; *see also Child Poverty,* Econ. Res. Serv., U.S. Dep't of Agric. (July 10, 2015), http://goo.gl/2LWAi7. For comparison, there are approximately 3,144 county and county equivalents in the United States.

[65] *Id.*

[66] *See Population by Poverty Status in 1959:1960, All Counties*, *1960 Census*, U.S Census Bureau, https://www.census.gov/hhes/www/poverty/data/census/1960/ (showing 73 percent poverty rate in Newton County in 1960 Census).

[67] *Certified School Level - Meal Status Counts SY 2014-2015*, Ark. Dep't of Educ., http://www.arkansased.gov/divisions/fiscal-and-administrative-services/e-rate/free-and-reduced-school-lunch-data.

the local labor market's high dependence on government agencies as employers.[68] The percentage of Newton County residents with at least a bachelor's degree (12.7 percent) is less than half of the national percentage (28.8 percent), while the percentage of residents over age 65 (23.1 percent) is one-and-a-half times higher than the national average (14.1 percent).[69] In addition, the 2009-2013 estimated median household income in Newton County of $30,038 is little over half the national value of $53,046.[70]

While the draft EA does recognize that "it is important to consider potential disproportionate impacts to low-income populations" like the population in Newton County, the EA completely discounts the possibility of any disproportionate impacts by merely reiterating that C&H is obligated to comply with the terms of its permit.[71] As explained previously in these comments, the draft EA's assumption that FSA and SBA can ignore the potential for significant environmental impacts merely due to the existence of the permit and related documents is baseless and overlooks both the likelihood that the permit does not adequately protect against all types of impacts and the possibility that C&H may have operated or may operate in the future in violation of the permit.

As CEQ's 1997 guidance on environmental justice under NEPA ("CEQ Guidance") makes clear, the identification of environmental justice communities is not an end to itself. Rather, the identification of such a community spurs the requirement of a more searching NEPA analysis about the action's effects on already overburdened populations. With respect to cumulative impacts, for instance, the CEQ Guidance states,

> Agencies should consider relevant public health data and industry data concerning the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent such information is reasonably available. For example, data may suggest there are disproportionately high and adverse human health or environmental effects on a . . . low-income population . . . from the agency action. Agencies should consider these multiple, or cumulative effects, even if certain effects are not within the control or subject to the discretion of the agency proposing the action.[72]

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[68] *County Typology Codes,* Econ. Res. Serv., U.S. Dep't of Agric. (June 1, 2015), http://www.ers.usda.gov/data-products/county-typology-codes.aspx.

[69] *State & County QuickFacts for Newton County, Arkansas,* U.S. Census Bureau (Aug. 5, 2015), http://quickfacts.census.gov/qfd/states/05/05101.html; *State & County QuickFacts for USA,* U.S. Census Bureau (Aug. 5, 2015), http://quickfacts.census.gov/qfd/states/00000.html.

[70] *Id.*

[71] EA at 3-40 to 3-41.

[72] Council on Envtl. Quality, Exec. Office of the President, *Environmental Justice: Guidance under the National Environmental Policy Act* 9 (1997), http://goo.gl/nYOGZC.

But the draft EA not only fails to discuss cumulative impacts in the context of environmental justice communities, as discussed below, the document fails to discuss cumulative impacts at all and plainly contravenes the directives of the CEQ Guidance.

The CEQ Guidance also clarifies that "the identification of [a disproportionate] effect should heighten agency attention to *alternatives (including alternative sites)*, mitigation strategies, monitoring needs, and preferences expressed by the affected community or population."[73] But the draft EA fails to consider any true alternatives to the proposed action, glosses over all discussion of potential conditions on the loan guarantees such as mitigation or monitoring measures, and neglects to take into account the opinions and preferences of the affected communities.

Finally, the CEQ Guidance states,

> [a]gencies should recognize that the impacts within . . . low-income populations . . . may be different from impacts on the general population due to a community's distinct cultural practices. For example, data on different patterns of living, such as . . . *the use of well water in rural communities* may be relevant to the analysis.[74]

But the environmental justice section of the draft EA fails to discuss impacts that may be unique to local low-income populations, such as the potential for residents to lose the ability to use wells and springs as drinking water sources if they become contaminated from C&H's operations. The environmental justice analysis of the draft EA is thus lacking and does not meet the standards of the CEQ Guidance. A more searching environmental justice analysis is required.

III. THE EA EFFECTIVELY FAILS TO CONSIDER CUMULATIVE IMPACTS

Like the other sections of the draft EA discussed above, the section on cumulative impacts shirks the required hard look under NEPA. This section does not consider the cumulative effects of potential impacts from C&H and other stressors in the area under the assumption that these impacts will be prevented by the mere existence of C&H's NMP. But this assumption is faulty, and the agencies must undertake a true, robust analysis of cumulative impacts in the area to avoid violation of NEPA.

CEQ regulations require NEPA documents to consider cumulative impacts in addition to direct and indirect impacts. 40 C.F.R. § 1508.25(c)(3). The regulations define a "cumulative impact" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." *Id.* § 1508.7. In the case of C&H, then, this requires an analysis of the cumulative impacts to water resources, air, odor, and human health and wellbeing from the totality of stressors in Newton County and the

[73] *Id.* at 10.

[74] *Id.* at 14 (emphasis added).

Buffalo River watershed, including most notably the presence of existing agricultural operations in the area.

The draft EA cites NPS's Buffalo National River Water Resources Management Plan ("NPS Plan") for the notion that conversion of land to pasture, increasing poultry production, and the land application of animal waste are factors that affect the water quality of the Buffalo River watershed. *Id.* Yet, the EA conveniently ignores the NPS Plan's determination that the cumulative effect of all of these impacts must necessarily be analyzed together. As the NPS Plan states,

> The overarching problem with the [issues that affect the Buffalo National River] is that they are viewed and addressed independently of each other. In reality, these issues are all going on simultaneously and they are having a cumulative impact upon the aquatic communities of the river and its tributaries. The magnitude of those cumulative effects is unknown. The question to ask is will solving one or two of these issues stop degradation of water quality or biological communities or will it take a more interdisciplinary approach to prevent long-term damage to the aquatic ecosystem.[75]

The draft EA does little to advance knowledge about the cumulative effects of C&H and other stressors on the Buffalo River watershed. The EA notes that 41 percent of the 114,000 acres of farmland in Newton County is pastureland, with the top livestock being turkey, cattle, and calves, followed by broiler, layer, and rooster operations. EA at 4-3. It also notes that, in addition to these facilities, ADEQ has permitted four other swine CAFOs and one dairy in Newton County, and that these farms are permitted to land apply waste. *Id.*

But the agencies make no attempt to analyze the cumulative impacts of these various agricultural operations on the environment of Newton County and the Buffalo River watershed. Indeed, the cumulative impacts of all the waste and excess nutrients and contaminants generated by livestock operations likely are significant. The 2012 USDA Census of Agriculture lists the farms of Newton County as housing a total of nearly 18,000 cattle and calves and nearly 320,000 turkeys.[76] While the number of layers and broilers in 2012 was withheld to avoid disclosing data on individual farms, 2007 data shows nearly 43,000 layers in Newton County.[77] The draft EA makes no attempt to analyze what percentage of these livestock facilities are operating within the Buffalo River watershed or which facilities might be impacting the same sub-watersheds as C&H. If, as the draft EA suggests, ADEQ issues water permits to swine and dairy facilities only, then the impacts from poultry and cattle facilities may remain relatively unchecked, further

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[75] David N. Mott & Jessica Laurans, Nat'l Park Serv., U.S. Dep't of the Interior, *Water Resources Management Plan: Buffalo National River, Arkansas* 116 (2004), http://www.nature.nps.gov/water/planning/management_plans/buff_final_screen.pdf ("NPS Plan").

[76] Nat'l Agric. Stat. Serv., U.S. Dep't of Agric., *2012 Census of Agriculture – County Data* 350 (2014), http://goo.gl/lbWyYU; Nat'l Agric. Stat. Serv., U.S. Dep't of Agric., *2012 Census of Agriculture – County Data* 395 (2014), http://goo.gl/vT1UYo.

[77] *Id.* at 395.

warranting a robust review of the cumulative impacts from these facilities in the EA. As stated in the expert report of Dr. Brahana, the karst geology that underlies Newton County is already "operating near its limit of accommodating animal wastes," and the significant and unprecedented increase in animal waste from C&H exacerbates this problem.[78]

CEQ regulations require a hard look at the "the incremental impact of the action when added to other . . . reasonably foreseeable future actions." 40 C.F.R. § 1508.7. One such reasonably foreseeable future action that the draft EA ignores is the likelihood that C&H's waste will be transported and applied to fields other than C&H's own. Indeed, a currently depopulated livestock facility, EC Farms, has already applied to ADEQ to modify its permit to allow the facility to accept and apply C&H's waste to nearly 600 acres of fields in the Left Fork of the Big Creek.[79] The application of waste on EC Farms land is directly related to C&H's operations and must be analyzed in the EA.

Nor does the draft EA make any attempt to characterize the cumulative effects that various livestock operations might have on the surrounding communities and, particularly, low-income communities—a cumulative-impact analysis that, as noted above, is demanded by CEQ's environmental justice guidance. This is significant because the air, water, and odor impacts of poultry or cattle operations are often similar to those of swine facilities. For example, at the national level, dairy, beef, and poultry facilities are estimated to emit roughly equivalent amounts of airborne ammonia emissions as swine facilities.[80]

The draft EA thus fails to adequately consider and analyze the cumulative environmental impacts of the agencies' loan guarantees when added to other past, present, and reasonably foreseeable actions in Newton County and the Buffalo River watershed—impacts that NPS has already recognized as having a "cumulative impact upon the aquatic communities of the [Buffalo National R]iver and its tributaries."[81] The Final EA must engage in a robust analysis of cumulative impacts in the area, particularly the cumulative impacts from increasing agricultural activities and the land application of animal waste.

IV. THE EA DOES NOT CONSIDER ANY MITIGATION

A proper environmental review would identify and consider mitigation measures to minimize the adverse impacts of the proposed action. *See* 40 C.F.R. § 1502.16(h). Instead, the draft EA identifies no measures in the "Mitigations" section for each resource assessed. For each resource examined, the EA simply claims there are no significant impacts anticipated and hence no mitigation measures required. *See, e.g.*, EA at 3-21 ("No significant impacts to water resources are anticipated and no mitigation measures are required.").

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[78] Brahana at 9.

[79] *See* Ellis Campbell, *Arkansas Department of Environmental Quality No-Discharge Section Permit Application* 25, 28 (July 27, 2015), https://goo.gl/dnkIz4.

[80] Viney P. Aneja et al., *Ammonia Assessment from Agriculture: U.S. Status and Needs*, 37J. Envtl. Quality 515, 516 (2007).

[81] NPS Plan, *supra* note 75, at 116.

To be clear, NEPA requires consideration of "[m]eans to mitigate adverse environmental impacts," not just *significant* adverse impacts. 40 C.F.R. § 1502.16(h); *see also id.* § 1502.14(f). Similarly, FSA regulations mandate that "throughout the assessment process, consideration will be given to incorporating mechanisms into the proposed action for reducing, mitigating, or avoiding adverse impacts," not only significant adverse impacts. 7 C.F.R. § 1940.318(g); *see also id.* § 1940.303(d).

Setting that aside, it is noteworthy that in spite of the lack of specified mitigation in the draft EA, the EA actually relies on C&H's permit, including its NMP, to mitigate any potential impacts. *See, e.g.*, EA at 3-20 ("No direct or indirect impacts to groundwater quality are expected *since it is protected by rigid adherence to the farm's NPDES General Permit requirements and BMPs*.") (emphasis added). This conclusory determination that C&H's compliance with its state permit will result in no impacts runs afoul of the Court's ruling in *Buffalo River Watershed Alliance.* There, the Court found inconsistent with NEPA FSA's "generalized conclusion" that "any environmental effect C&H might have would be mitigated by following the Arkansas Department for Environmental Quality's waste-disposal plan [, *i.e.*, the nutrient management plan]." *Id.* at *4. The Court noted that the agency had "to make the case" for relying on the provisions of the state permit to reach a Finding of No Significant Impact. *Id.* The agencies fail to make that case yet again.

As noted in these Comments and in Dr. Smolen's statement, C&H's permit allows excessive application of nutrients to soils, and in any event, evidence suggests that C&H is not rigidly adhering to the provisions of its permit—by, for instance, over-applying waste beyond the amounts approved in its NMP, and spreading waste during the winter months. Moreover, as explained above, data and facts on the ground show that C&H is having a detrimental effect on water resources, air quality, and the quality of life of nearby residents. To pass muster under NEPA, the final environmental review must address these facts in the record and consider appropriate mitigation as conditions to the federal financial assistance.

V. THE PROPOSED ACTION'S POTENTIAL FOR SIGNIFICANT IMPACTS DEMANDS AN ENVIRONMENTAL IMPACT STATEMENT

The agencies have failed to "supply a convincing statement of reasons"—and cannot, based on all the facts before them—why C&H's potential effects are insignificant. *Choate v. U.S. Army Corps of Eng'rs*, No. 4:07-CV-01170-WRW, 2008 WL 4833113 at *6 (E.D. Ark. Nov. 5, 2008). Experts from hydrogeologists to aquatic ecosystem specialists, whose statements are attached or referenced, agree that C&H poses very high potential for significant water degradation. Moreover, the context and intensity of this unprecedented 6,500 CAFO in the Buffalo River watershed demand a conclusion of significant impacts and the preparation of an EIS. *See* 40 C.F.R. § 1508.27 (identifying the factors to be considered in ascertaining significance).

As an Extraordinary Resource water and national park unit situated on karst, the downstream Buffalo National River, including its watershed, is "ecologically critical" and has "[u]nique characteristics." *Id.* § 1508.27(b)(3). The public outcry over the unprecedented siting of a Large CAFO in this watershed and the substantial dispute over the nature and impact of such

an industrial operation upstream of a treasured national resource have demonstrated the extent to which C&H's effects are "highly controversial." *Id.* § 1508.27(b)(4). Moreover, as discussed above, the operation of a 6,500 swine CAFO, with its odors and emissions of volatile organic compounds, hydrogen sulfide, ammonia, and toxins unquestionably "affects public health." 40 C.F.R. § 1508.27(b)(2). The CAFO's release of fecal coliform to groundwater and surface waters in a karst system likewise has the potential to affect the health of those who come in contact with the contaminated water, whether by drinking groundwater from private wells nearby or recreating in Big Creek and the Buffalo National River.

The location of C&H on karst terrain, with its waste storage ponds and excessive application of swine waste, poses significant risk of major adverse water impacts, which in turn has the potential to adversely affect a number of protected species known to occur in the area, including three bat species, as well as the critical habitat of a mussel species. It is also "reasonable to anticipate a cumulatively significant impact on the environment," given that C&H is operating in an ecosystem already taxed with existing agricultural operations and excess nutrients. *Id.* § 1508.27(b)(7). Finally, as the Court in *Buffalo River Watershed Alliance* recognized, C&H is unprecedented in the context of the Buffalo River watershed. The agencies' proposed action—providing federal financial assistance to make possible the presence of this operation--therefore "establish[es] a precedent for future actions." *Id.* § 1508.27(b)(6). In light of these considerations that overwhelmingly weigh in favor of a finding of significant impacts, a refusal to prepare an EIS would not be legally supportable.[82]

CONCLUSION

For all the reasons stated above, the Coalition respectfully requests that the agencies undertake the review required by NEPA, by appropriately considering all of the impacts of its proposed action and feasible alternatives in an EIS. The impacts of this swine CAFO—on water resources and air quality, for instance—are ones that are being and will continue to be felt by neighboring residents, the local community, and the more than 1.3 million people who visit the Buffalo National River each year. All indicators are that these impacts will be significant. The Coalition therefore urges the agencies to undertake the environmental review process on remand carefully and to prepare an EIS, as required by law.

[82] In addition to the problems described above, the EA's "Consultation, Coordination, Preparers" section is problematic. CEQ regulations require NEPA documents to include a "List of Preparers" that "list[s] the names . . . of the persons who were *primarily responsible* for preparing the [NEPA document]." 40 C.F.R. § 1502.17 (emphasis added). The draft EA's list fails to distinguish between those who are "primarily responsible for preparing" the draft EA and those who were merely consulted. The draft EA's identification of preparers, consultants, and coordinators in a single list thus gives the false impression that everyone on the list, from academics to National Park Service staff, agree with all of the conclusions made in the draft EA. The Coalition is aware that this is not the case.

Sincerely,

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National Parks Conservation Association
Ozark Society