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In Reference to ADEQ's Draft Decision to Approve C&H Hog Farm Application Permit 5264-W; AFIN 51-00164,

We, citizens, have submitted many expert reports and comments since ADEQ permitted this point source large confined swine feeding operation in the Buffalo River Watershed with no public notice, without informing the National Park Service, Arkansas Game & Fish or the National Forest Service of the General Permit of 2012, without stream data TMDL's or even mention of Big Creek or the Buffalo National River and without utilizing the permit designed for these type of operations, such as the NPDES Individual CAFO Permit.

There is nothing like hogs stinking up the scenic beauty of the sensitive area of the Buffalo River or Big Creek Valley, where Sam's Throne, a popular natural climbing area is located, resort cabins, a community store, restaurant, a school, churches, rural homesteaders and one of Arkansas' curviest roads (a favorite to motorcycle riders). Nor is there anything that quiet describes the community's lack of confidence at speaking out due to intimidation and close relations.

There is nothing like flies covering the eves of houses and puking in the mornings as you try to tend to your chores. How about the asthma illness' and the kids who have to go outside on the playground while hog waste is being spread around their school? Have you heard one classmate to another say, "hogs are stinking up the air?" What about a comment made by a teacher to her students when they remarked the hogs stink and they can't stand to play outside, "that's the smell of money"? Whose going to tell those children that C&H and ADEQ have now permitted fields in all directions of the school, not just south and west? Whose going to tell those children the headaches, runny noses, asthma and illness' they experience are creating immune issues that will slowly break down their health?

Whose going to tell the children the Buffalo River is no longer a place to swim or fish and that recreation is limited to staying out of the water and throwing back your catch? This year I was on a canoe trip, two days into the trip my husband and I both became extremely ill. In our 25 years together we have never been so ill nor have we ever had the same issue at the same time. We both believe we contracted something from a swim at a favorite spring below Big Creek, possibly we licked the water from our lips and exposed our systems to "rage". I also received a phone call from a high school friend telling me of 2 of their youth whom on a June, 7 day Buffalo River canoe trip became so ill they still don't know if both will survive. How many others are out there we don't know of? No agency wants to tell the public the Buffalo River is a hazard and that 6500 hogs (equivalent to a 15,000 town of people) waste is being applied to thin soils with rapid transport to the streams, creeks, wells and aquifer of this state. No one wants to take responsibility, do you?

The April 4, 2001 report by Dr. William Weida, Department of Economics, the Colorado College, Colorado Springs, CO Nutrient Management Problems defines many of the issues with stream and groundwater near cafo's.

"The pathogens present in hog manure are not found in inorganic chemicals. These pathogens could be transported to ground water supplies through improperly sealed wells or other naturally occurring pathways. Studies released since 1999 have found that:

- (a) *Swine herds are a potential animal reservoir for Swine Hepatitis E Virus and this virus is present in fields to which manure has been applied and in water waste from these fields. Swine Hepatitis E Virus may persist in the environment for at least 2 weeks and possibly longer.15*
- (b) *(b) A broad profile of chemical and microbial constituents are present in both ground and surface water proximal to large-scale swine operations--chemical (pesticides, antibiotics, heavy metals, minerals, and nutrients) and microbial (Escherichia coli, Salmonella sp., Enterococcus sp., Yersinia sp., Campylobacter sp., Cryptosporidium parvum) contaminants were present.*
- (c) *Antibiotics are present in waste generated at confined animal feeding operations and may be available for transport into surface and ground water.17*

These data directly contradict the contention the risk of groundwater contamination from hog manure is no different than that from inorganic fertilizer. In fact, the use of animal manure for fertilizer carries with it not only all the contamination issues associated with inorganic fertilizers but also a large number of additional pollution and health concerns.

Hog waste from a large confined feeding operation is a waste application permit. Hog and humans can transfer bacteria and pathogens back and forth. Applying more than the agronomic amounts results in scours in calves and even death of the animals, kidney and liver failures, weedy fields, excessive nutrient runoff (Reg 5.303), and algae growth in streams, loss of aquatic life such as the small mouth bass, muscels, and insects that bats and fish feed upon.

Here (Photo on right) below Gilbert the waters are choked with algae on the impaired stretch of the Buffalo River. The algae was reported for over 30 miles of river. I witnessed at 11.



ADEQ did you take the endangered species into account? After all the lagoons are still permitted to leak and there is a Gray Bat maternity cave near the mouth of Big Creek on the Buffalo River. There are Indiana Bats on Left Fork Big

Creek and scattered throughout the area. The cave above is a Gray Bat maternity colony site and a positive dye trace to the spreading fields of C&H Hog Farm. (Brahana Dye Study 2014).

Regulation 2.201 states: Existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. I have seen no data verifying this is being maintained on the contrary the opposite appears true. Can you please verify this regulation is upheld.

Note the Regulation 5 permit plan and review dated September 1, 2015, by engineers. In a karst environment many things can happen. Did you check the pits below the pigs for leakage? Is there any way to determine if the concrete lined pits are leaking? Can you please list all other ADEQ employees and their qualifications whom reviewed this permit? It appears very minimal for Regulation 5 in karst geology.

There is no plan for spills yet the terrains are steep, roads are windy and narrow crossing many tributaries, sink holes with heavy laden fast moving trucks in a hurry to get the next load of waste dumped. Very important is the financial ability of C&H to support a disaster in the event of "at fault accidents".

There is no consideration for the tourist whom are seen wandering the National Forest sightseeing or hiking. Nor economic considerations for the many whom make a living from rental property.

The proper procedures for a Regulation 5 permit are stated on the ADEQ website https://www.adeq.state.ar.us/water/permits/pdfs/reg_5_permit_procedures.pdf

Page 6 of the Statement of Basis; ADEQ left out the following sources for proper permitting procedures. Why weren't the following used for this permit in a most sensitive karst environment and the First National River, an Outstanding Resource Water with the highest protection, when they are included in proper permitting procedures? <https://www.adeq.state.ar.us/water/permits/nodischarge/individual.aspx>

Here are 4 of the sources that are omitted from proper permitting procedures;

- APC&EC Regulation 2,
- The USDA Natural Resources Conservation Service Technical Publications
- (a) Field Office Technical Guide and
- (b) Agricultural Waste Management Field Handbook

Omitted under part 3 Technical Requirements

- 3.a,
- * each field should have distance to stream and highways, each stream should be named and marked for easy reference to the waterways
 - * A permit with this liability should have a topo map that is readable

Page 5, Operation and Maintenance, Land Management, Spreader Calibration , Soil & Swine Fertilizer Sampling the word fertilizer has been substituted for manure or waste application. This is a waste application permit, not a fertilizer permit. Hog manure from a concentrated animal operation is waste management.

Regulation 5.201 defines the “Waste Management Plan means a plan prepared by the United States Department of Agriculture Natural Resource Conservation Service (NRCS), an Arkansas Natural Resources Commission water quality technician, the University of Arkansas Cooperative Extension Service, or a professional engineer registered in the state of Arkansas detailing the management and disposal of liquid wastes generated in a confined animal operation.”

Why have you changed the wording to fertilizer? it is liquid animal waste, so operation and maintenance section is unacceptable and the permit should be denied. The operator cannot manage proper calculations of waste when the Nutrient Management Plan has been altered beyond acceptable definition. There are up to 6500 hogs living within the confines of 2 buildings. This is waste management. Reg. 5.301 states, No confined animal operation using a **liquid animal waste disposal system** shall be constructed or operated unless the owner has first obtained a permit from the Department. Please explain to the operator the difference in fertilizer and waste management and the health conditions related to waste verses fertilizer. This facility and spreading fields are rock throwing distance to a community and school.

NMP Section 1, page 5; Soil & Swine Fertilizer Sampling Soil samples are to be taken once every five years or **when the nutrient management plan is revised**. Dated 3/2/2016 by Monica Hancock and signed by engineers Pat Bass and Dennis Carmen.

Soil samples once every 5 years for a permit in the watershed of an ORW? C&H ARG590001 is required to sample yearly, these samples are not available and many of the fields are dated 2014. These are outdated for an NPDES permit and a large CAFO in the Buffalo River watershed and outdated for a Nutrient Management Plan dated 2016. Will you continue to permit a large cafo that is already out of NMP compliance with their permit? Again this appears C&H has been allowed a modification not a new permit and the oversight of the industrial hog factory is to lax.

In an inspection by Jason Bolenbaugh dated 1/23/2014, owner, Jason Henson is reminded **soil samples for Nitrate-N and Phosphorus shall be taken no less than annually**. <https://www.adeg.state.ar.us/downloads/WebDatabases/InspectionsOnline/075752-insp.pdf>

Per Section B.3.c.4 of your NMP, soil samples for Nitrate-N and Phosphorus shall be taken no less than annually. This differs from Part 4.2.1.3 of your permit. Please ensure you continue to abide by the requirement of your NMP.

D Section 651.0201(d) of the AWMFH states:

“If wastes are applied to agricultural fields, the application must be planned so that the available nutrients do not exceed the plant’s need or contain other constituents in amounts that would be toxic to plant growth.”

It is apparent there is a problem when you look at the 2016 Annual Report and you see that 15 of the 17 C&H soil samples are above optimum and the waste is still being spread on them. This is a violation of the Regulation 6 NPDES permit.

https://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001_2016%20Annual%20Report_20170126.pdf

Below are excerpts from the NMP prepared by Monica Hancock for the Regulation 5 permit.

NMP dated 3/2/2016 by Monica Hancock Section 1;

Soil and Swine Fertilizer Sampling states, "Soils samples are to be taken once every 5 years or *"when the nutrient management plan is revised."*

Looking through the soil samples I see outdated soil samples such as

Field JH 1, JH 4 JH 2, FD11, CC 13, CC13A, CC13B, C1C15B, BH16,

is dated 12/04/2015 and *above optimum for P & K*

Field CC 3, EGC7, CH35, CC8, CC8A, CC9, CC9A, FD10, BC10A, RF 12, CC 14, C1C15, JC 17, GN23, HC32, HC33, RC34 is dated 12/04/2015 and *above optimum for P*

Field GR 5, RC20, EGC7A is dated *04/01/2014* and above optimum for P (*definitely outdated*)

Field SR 6, GR 6A is dated *04/01/2014* and above optimum for P & K (*definitely outdated*)

Field CH36, dated 12/04/2015; above optimum for K

Field C1C15A, MB1B, MB19, RC21, RC21A, RC21B, KC22, DH24, is dated *04/01/2014* (*outdated*)

According to C&H NMP dated 5/24/2012 B. Nutrient Utilization Plan Page 3 (3) a. Composite base-line soil test will be taken at least annually. See page 43-83 of 5264-W permit for outdated soil test.

Section 2 ; Application for Regulation 5 Permit Engineering Plans and Review Sept 1., 2015;

I could understand an engineer would be needed to go over the building plans, but when it comes to application fields I would think ADEQ would request a geologist and with the sensitive nature of this CAFO in the Buffalo River Watershed I would expect a hydrogeologist, the best in the state. I would also expect that Regulation 2, and Regulation 22 would be taken into account due to the karst terrain and high probability of fast transport of pollutants to the Buffalo River. There is no mention of the karst terrain presented in the ERI by BCRET that identify field 5 and 12 karst. I did not find any reference to the leakage allowed by the lagoons and due to the low permeability of the lining feel this should have been explored more thoroughly. BCRET and ADEQ have had time to install and require monitoring of the daily levels of the lagoons, yet when requested, this information is unavailable. One bore hole, again, is below standard.

At the time of the inspection you could not verify the exact number of swine on site that were above 55 lbs. and below 55 lbs. On January 27, 2014 you confirmed there were 2,499 sows (> 55 lbs.) and 700 nursery pigs (< 55 lbs.) on site. Your NMP states there will be no more than 2,500 swine (> 55 lbs.) and 4,000 swine (< 55 lbs.) on site. Please ensure you are maintaining an actual head count at all times so you do not exceed the given number of swins.

Page 6, 2nd paragraph increases the number of boars and sows and violates Regulation 5.901 (d) A permit renewal, permit modification, or new permit issued pursuant to Reg. 5.901(C) shall not increase the number of swine permitted at a facility.

2012, ARG590001 design calculations section C2 (b) to determine minimum storage requirement it is the sum of the animal waste produced, plus the spillage and wash water, plus the pit recharge produced in 180 days.

These following figures are estimates not exact numbers, but if these were accurate you would see this permit increases the sows, boars, pigs and the number of pounds of hogs raised at C&H over the year increasing waste production.

ARG 590001 NMP Section C2: Design Calculations Waste Production A. (3) 3 boars @ 450 lbs, 2,100 Gestating sows @ 375; 400 lactating sows @ 425 lbs, 4,000 pig @ 10 lbs

ARG 5900001 weekly average of hog weight by annual report 2012-2016 = total hog # ÷ 4 years = average # × pounds = total hog weight

boars 3 @ 450 = 1,350.00 pounds of hog weight
 Gestating Sows 2011.75 @ 375 = 754,406.24 pounds of hog weight
 Lactating Sows. 400 @ 425 = 170,000.00 pounds of hog weight
 pigs 856 @ 10 = 8,560.00 pounds of hog weight
 total 934,316.25 total hog pounds a week

5264-W (Regulation 5 revised, modified numbers)

boars 6 @ 450 = 2,700
 Gestating Sows 2252 @ 425 = 957,100
 Lactating Sows 420 @ 400 = 168,000 weight has decreased by 25 lbs per hog in 2016 NMP
 pigs 750 @ 14 = 10,500 pounds (permit states average 1,500 shipped weekly) this figure was Section 2 P. 6.
 total 1,138,300 weekly hog pounds for 5264-W

This is a difference of 203,983.75 pounds of hog weight per week increase. With lagoon and nutrient management plans relying on hog weight for calculations this will increase the waste output and the storage limits and increase the need for more application fields. This will also increase the impact to the water quality by increasing the output on the already phosphorus saturated fields.

I also would suggest refiguring the pig output. If 2,412 sows produce an average of 856 pigs weekly over 4 years then 2672 sows (an increase of 260 sows a year at the facility) will increase pigs, not reduce them as written in this permit. Will you please explain how you came about reduced figures by increasing sows and boars?

ARG 590001 Section C2; Design calculations "Liquid manure storage is measured by unit waste production (UWP) in cubic feet per day per 1,000 pounds of animal"

Do you see anything in my calculations or reasoning that appears wrong or that there will be less waste due to increase in sow numbers? When sows and boars are increased pigs are increased. The average number of pigs in the last 4 annual reports average 856 yet 5264-W states only 750. Can you clarify this for me?

I could find no water quality TMDL's for Big Creek or water quality data referenced for permitting of large cafo in already impaired stream (Big Creek) as per documents from list in the public comments for the 303 (d) listing. These agencies including NPS, USGS, and BCRET data show Big Creek to be impaired. Regulation 2.201 states Existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained. Regulation 2.30 states....any stream with watersheds of greater than 10 mile square are designated full body contact. Reg 2.301 states....**the criteria to protect the most sensitive use shall be maintained.** Reg 2.304the department may require an evaluation of all practicable alternatives to the project including; an environmental assessment of the impacts of each alternative, an engineering and economic analysis and a socio-economic evaluation of the project in the local area. Dr. Sharpely's study may not be completed until 2019 but that doesn't have anything to do with Regulations and the permitting of C & H Hog Farms. Dr Sharpely's BCRET study has already shown increased e coli and nitrates since the permitting of C&H. The trends have already been done by ADEQ.

Condition #27 page 4 of part 2, states minor modification with Reg 5.306 can incorporate all fields that are permitted to receive waste from the permittee. Does this mean that the *EC Farm fields that are in appeal are allowed to be a minor modification? Does it mean the missing field numbers are permitted and going to be allowed as minor modification? What exactly does this mean? We saw that EC Farms added 600 plus acres stating they were being pro active with the environment and sidestepping all the requirements of a new permit and now we see the language built into C&H's permit. This doesn't take into account the publics point of view and shows ADEQ to be capricious and arbitrary presuming the outcome of the appeal or another plan unbeknownst to the public.*

Condition #28; "alterations to the design, plans or specifications may be approved as a minor modification in accordance with Reg 5.306". Here it appears ADEQ has other plans to make modifications to this permit prior to its approval and are predetermining the need to modify C&H Hog Farms again. This information has not been released for public review and to preset conditions not allowing for public participation is capricious and arbitrary.

A Regulation 5 permit is a non point source permit. EPA definition, "**Non point source pollution** generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification. Non point source (NPS) pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and ground waters. How can ADEQ even consider allowing this when downstream impairment exist?

I am not stating I am in agreement with either permit, I am not. This is the wrong place for an industrial operation of hogs and this factory should be denied any permit in the Buffalo River watershed. Unless this is done the continued trespassing on the community and the nation will continue.

According to the EPA under definition of non point source it says, States report that **nonpoint source pollution** is the leading remaining cause of water quality problems. The effects of non point source pollutants on specific waters vary and may not always be fully assessed. **However, we know that these pollutants have harmful effects on drinking water supplies, recreation, fisheries and wildlife."**

The term "non point source" is defined to mean any source of water pollution that does not meet the legal definition of "point source" in section 502(14) of the Clean Water Act. That definition states:

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

40 CFR 122.23 Discharge of a pollutant means: a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source,"....

C&H discharges waste to a pipe, where the flow creates a surface water of over 1 acre called lagoons or ponds, these lagoons collect rainwater as well as piped hog waste from the barns, they then use a pipe to remove this waste to a tank truck where it is then spread via pipes over sink holes and thin sandy gravelly soils, with discrete fissures to waters of the state. There is no natural animal to ground transport of the waste, all the waste is manipulated from the time it leaves the animal body. See Waste Management Plan requirements <https://www.adeq.state.ar.us/water/permits/nodischarge/individual.aspx>

The terms of point source includes every means that C&H uses to get the waste out of its lagoons and transferred to fields and by discrete fissures to the waters of the state. In a karst environment unless you do a full ERI study of all application fields and rule out the presence of discrete fissures you must presume they are there.

In this email below the AHD and ADEQ know...."the system flushes well after a rainfall". Is this the reason for throwing out the storm flow data?

From: Terry Paul [mailto:Terry.Paul@arkansas.gov]
Sent: Friday, November 06, 2015 2:39 PM
To: Carpenter, Ellen
Cc: Bailey, John; Clem, Sarah
Subject: RE: Big Creek at confluence of Buffalo River

Mrs. Ellen,

It is pretty basic at this point but I am attempting to get ADH data assembled. The only thing really evident at this point is the system flushes well after a rainfall event. I will get that information over to Sarah in the next week, or as soon as I can.

Thanks Again,

Terry Paul

In May of 2012 C&H applied for a General Permit, this general permit did not include public notification requirements that the Regulation 5 individual permit did at that time. May 10, 2012 Mr. Jason Sutherland of Forman, Ar #3604-WG-AG-2 was told ADEQ would no longer reissue the General Permit and he was required to get an individual permit. This information is on the ADEQ website. On the ADEQ site the specific instructions still do not require state general permits to undergo the same notifications as a Regulation 5 permit. Public notification and interagency communications would have saved the C & H Hog Farm owners, the state and all stakeholders many millions of dollars. This permit should be denied as the public was unable to participate in the permit at that time and it appears to be treated as a modification not a new permit at this time.

In accordance with APC&EC Regulation 8.204 (B) all applicants for the issuance (new, Modification, and renewal or transfer of any permit under the environmental law of Arkansas shall submit a "Disclosure Statement" to the Department. This one is blank and due to a new permit and the risk involved why isn't this section completed? There were millions of dollars borrowed against the facility in 2012 see Farm Service Agency and Small Business Association documents. There may be other debts accumulated over the last few years. One stipulation is the full name and business address of any legal entity in which the applicant holds a **debt** or equity interest of at least 5% or that is a parent company or subsidiary of the applicant and a description of the ongoing organizational relationships as they may impact operations within the state; https://www.adeg.state.ar.us/ADEQ_Disclosure_Statement.pdf

Reg. 5.102 's purpose is to establish the minimum qualifications, standards and procedures for issuance of permits for **confined animal operations** using liquid animal waste management systems within the state and for the issuance of permits for land application sites within the state. By definition from Reg 5 C&H Hog Farm is a CAFO. A CAFO requires an NPDES permit because it is a point source pollution.

40 CFR 122.23

(a) Concentrated animal feeding operations (CAFOs), as defined in paragraph (b) of this section or designated in accordance with paragraph (c) of this section, are point sources, subject to NPDES permitting requirements as provided in this section. Once an animal feeding operation is defined as a CAFO for at least one type of animal, the NPDES requirements for CAFOs apply with respect to all animals in confinement at the operation and all manure, litter, and process wastewater generated by those animals or the production of those animals, regardless of the type of animal.

Could you please tell me where fields 25 thru 31 are? and or explain the skip in numbering?

Page 3 of Part II; Condition #22, whose going to ship waste and are there specific requirements for shipping waste? Is C&H qualified to ship waste? Would specific skills be needed for shipping waste? Can this waste be shipped out of the County? State? Country? What type container should hog waste be shipped in? Is there a specific placard for the shipping container? Would you please expand an explanation of what this means. Regulation 22 might need to apply here.



Condition # 26. It doesn't appear that the past has made facilities more responsible with time. In fact facilities such as these become outdated quickly. To allow less observation and frequency of monitoring with time seems backwards. Can you explain how with years there will be less likely hood of pollution and levee breaching? See the ADEQ study done in the 1990's that explains the problems with older facilities and lagoons that were full of solids that no longer held the liquid waste but it flowed over the levees into the streams.

Condition # 27. Could you elaborate? How can ADEQ submit a minor modification proposing to add fields to this permit? Wouldn't it be more proactive to do that now? Why would a permit already be requesting modification? Is there a known problem already? Are you considering EC Fields or are they the missing numbers 25-31? This condition should be struck from the permit. Regulation 5.302, Regulation 5.305 and Regulation 5.306 should be cited here not a predetermined minor modification. I object to any approval of unknown modifications.



Condition # 28. If ADEQ is already expecting this permit appealed does it seem that the agency should rethink the permitting of a large swine cafo in the Buffalo River watershed? Is the agency taking the public comments and expert reports and the water quality criteria into consideration? Has the department predetermined it is going to approve this permit regardless of any and all scientific data, public resistance, or recommended council? Please supply answers.

Page 2 Part III, 5. Be sure Oil and Hazardous Substance Liability pertains to this permit. I'm not sure about oil but if you consider hog waste hazardous then we need to include that in the transportation of hazardous substance. If a disclosure statement is included a better determination is whether C&H is financially or mechanically responsible to handle a crisis of a hazardous substance. I think it important to note CDL's, spill training, qualifications, etc. Will you please explain?

#10 (A) Are all these facilities located at these coordinates Latitude 35 55' 30.47"N Longitude 93 4'18.42"W?

#11 This is a no discharge permit....there is no discharge not even a 25 year 24 hour storm event, neither can there be any pollution from application fields. ADEQ considers runoff from application fields as pollution. See full answers under ADEQ's General Permit Fees_Economic_Impact_Environmental_Benefit_Analysis.pdf Below is an excerpt:

4. What risks are addressed by the proposal and to what extent are the risks anticipated to be reduced?

NPDES permitting for CAFOs will require the CAFOs to implement waste management practices that reduce the amount of pollutants that may enter waters of the State from waste storage and land application.

#12 Discarded or land applied? I'm not sure this is what you mean. Could you please define "removed substances" as relating to a waste management plan? This condition starts off with "solids removed" and Regulation 22, page 1-8 under *solid waste* definition includes "agricultural operations". According to definition of Liquid Waste Management System in Regulation 5 chapter 2; Definitions it means a system used for the collection, storage, distribution or disposal of **animal waste in liquid form** generated by a confined animal operation. ARG590001 states Condition 7.6 of the permit does talk about removed substances but I can only assume somewhere there are management practices to follow, here are from

previous ARG590001 permit. *Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of waste waters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering the waters of the State. Written approval for such disposal must be obtained from the ADEQ Director, unless management of the material is contemplated by the Nutrient Management Plan.*

#13. In a karst terrain 24 hours could be too late to capture the pollutant from making it to the streams. Spills, leaks, or any discharge must be handled immediately. See Terry Paul, ADH comment “The only thing really evident at this point is the system flushes well after a rainfall event.” See Arkansas State Geology road guide for description of the area of Big Creek and surrounding spreading fields. <http://www.geology.ar.gov/pdf/Roadside%20Geology%20Series%2001.pdf> The Confederate Fault may help understand why the section of the Buffalo River is impaired at Tyler Bend. See <http://buffaloriveralliance.org/resources/Pictures/scanned%20reprints%20GWSW%20Big%20Creek%20karst.pdf> also; <http://buffaloriveralliance.org/resources/Pictures/Brahana%20JAAS%20Article.pdf> See Regulation 5.402, Chapter 7, Part 651-Geologic and Groundwater Considerations

Did you know in 2008 there were two Segments of the Buffalo River impaired for water quality? ADEQ is using the 2008 data and these segments are downstream of C&H 21 miles by river and 18 miles by air. This segment is shown here in these 2016 photos as impaired.

In the inpress, 2017 USGS Scientific Investigation report “Utilizing Fluorescent Dyes to Identify Meaningful Water-Quality Sampling Locations and Enhance Understanding of Groundwater Flow Near a Hog CAFO on Mantled Karst—Buffalo National River, Southern Ozarks Dr. Brahana states, “One positive trace to Mitch Hill Spring on the opposite side of the Buffalo River from injection reflected how complex the karst flow system is and how far flow from the study area could be measured. “

Here a map showing injection at BS36 and dots at positive dye receptors within the Buffalo National River. The spreading fields surrounding this injection are the most heavily spread. The red line indicates 11.4 approximate miles to Woolum from injection. I have only noted 4 receptors and of these, 3 are springs.

From Woolum (green dot at end of red line) to Tyler Bend Campground is less than 9 miles. It would be easy to visualize the fast transport of swine waste downstream and through underground conduits, settling in the deeper pools downstream as the finer particles are absorbed by the rocks and soils creating breeding grounds for pathogens, over loading of nutrients and algae blooms such as last summer.



303(d) water body – Under section 303(d) of the 1972 Clean Water Act, states, territories, and authorized tribes are required to develop lists of impaired waters. These impaired waters do not meet water quality standards that states, territories, and authorized tribes have set for them. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop TMDLs for these waters.

Specifically stated in Regulation 2.203; Outstanding Resource Waters, Where high quality waters constitute an outstanding state or national resources, such as those waters designated as extraordinary resource waters, ecologically sensitive or natural and scenic waterways, those uses and water quality for which the outstanding waterbody was designated shall be protected by (1) water quality controls (2) maintenance of natural flow regime, (3) protection of in stream habitat, and (4) encouragement of land management practices protective of the watershed.

The stream to the right is below C&H Hog Farm. It is below a plugged well that at one time was Mt. Judea's water supply until it was contaminated after dead hogs were thrown into a sink hole upstream. (prior dating to C&H) Big Creek goes dry and resurges just upstream of this photo. Above this area the closest spreading field is 6270 feet by Big Creek stream.



In 2014 Dr. Van Brahana put dye into a well (map below). The well is approximately 1,600' from C&H Hog Barns and approximately 1,600' from the spring it emerged in 31 hours later in Big Creek. The emergence of the dye was visually apparent under the ledge in the stream (see photo). 1,200' downstream of the spring is a deep pool and 1,200' further is another on Big Creek and both used for swimming.



BigCreek is considered a primary contact stream and flows into the campground at Carver on the Buffalo River. E coli monitoring results show Big Creek as impaired...

see C & H All data in the 2016 303 (d) impaired waters comments on the ADEQ website. See 2013 Arkansas



Department of Health concern for ...pathogens such as e coli and cryptosporidium from the proposed land application sites..... https://www.adeg.state.ar.us/downloads/webdatabases/permitsonline/npdes/permitinformation/arg590001_adh%20comment%20letter_20130321.pdf

If C&H is given a Regulation 5 permit, a non point source permit, then according to the definition of non point source and the pollution increased risk of non point source and a karst topographical setting, along an Outstanding Resource Waterway and the first National River the potential for poor water quality will continue escalating.

In a recent interview of Dr. Andrew Sharpely, University of Arkansas states, **“you cannot expect cheap food and clean water at the same time”** <https://youtu.be/0lvkRwXpZYY>

The Buffalo National River is downstream of Dr. Sharpely's, University of Arkansas, Division of Agriculture's study of C&H Hog Farm in Big Creek.

To my knowledge the owners were not aware of the fragile ecosystem in which they have been raised and lived. They understand the beauty, the hunting, the easy availability to all the scenic sports they enjoy and wanted to work in their community, but they may not have had an idea of the impact they created or will continue creating without Dr Sharpely, ADEQ, Pork Producers & Farm Bureau showing them the facts. They have put their trust in these agencies and these agencies are at fault for allowing the continued degradation of the waters and the community by continuing to support the wrongful permitting of this cafo and not informing the owners and the community of the science that supports these statements of degradation.

One person in tourism told me if we don't talk about it people won't know. Does this mean if we ignore it, it will go away? I doubt it and I found the comment an insult to those whom I know that work so hard to keep this part of Arkansas for the enjoyment of all. I want people to come back or share a wonderful view of our beloved state and its people. We are the host to an industry that we the people of these counties along the Buffalo River have developed. We are responsible for the needs of the million plus visitors and the sensitive Buffalo River. It is our responsibility as residents to protect her having survived and built our own successful business' with her influence. This market is open to everyone with initiative in the 5 counties that line her borders and we are the largest stakeholders. C & H and all stakeholders have shown that an industry such as the hog CAFO industry isn't sustainable in this area. It is time to make decisions based on all facts.

The federal and state agencies have increased the wages of hundreds of county residents over the years and contributed to many added incomes and retirements. Those who live here sacrifice to live here. We treasure our solitude, the scenic beauty and we at times enjoy the simplest lives because we can. We are blessed and at this time we are battling our state and industry for what we know is the livelihood of millions of people and the future of a river. I can't even imagine how many jobs or recreational values will be lost when the Buffalo River is no longer a river that is treasured for what Congress designated. I can't imagine that the algae experienced last summer will choke the life out of all her miles. But I know that if the cafo's of this state continue to haul their waste to the poor, rocky, hillsides and continue to force chicken and hog waste down her throat, she will suffocate and all the while ADEQ refuses to admit wrong doing ignoring the very value they represent as taken from their website **“The Arkansas Department of Environmental Quality (ADEQ) is the state's main environmental protection agency, charged with protecting, enhancing, and restoring the environment for Arkansans.”**

Sincerely,

Carol Bitting
HC 73 Box 182 A
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The Difference Between Animal Manure and Inorganic Fertilizer

Statements that manure application by subsoil injection at agronomic rates has a risk of groundwater contamination that is no different than inorganic fertilizer ignore the non-nutrient content of animal manure. A large number of diseases are present in animal manure. These diseases are not present in inorganic fertilizers. Table 2 shows that the potential presence of 25 different diseases in animal manure make this form of fertilizer very different from the inorganic chemicals that are used as crop fertilizer.

Table 2, Diseases and organisms spread by animal manure

Disease	Responsible organism	Disease	Responsible organism
Bacterial			
Salmonella	Salmonella sp	Viral	
Leptospirosis	Leptospiral pomona	New Castle	Virus
Anthrax	Bacillus anthracis	Hog Cholera	Virus
Tuberculosis	Mycobacterium tuberculosis	Foot and Mouth	Virus
	Mycobacterium avium	Pituitary	Virus
Johnes disease	Mycobacterium paratuberculosis	Fungal	
Brucellosis	Brucella abortus	Coccidioidomycosis	Coccidioides immitis
	Brucella melitensis	Histoplasmosis	Histoplasma capsulatum
	Brucella suis	Ringworm	Various microsporium and trichophyton
Listeriosis	Listeria monocytogenes	Protozoal	
Tetanus	Clostridium tetani	Coccidiosis	Eimeria sp.
Tularemia	Pasturella tularensis	Balantidiasis	Balantidium coli.
Erysipelas	Erysipelothrix rhusiopathiae	Toxoplasmosis	Toxoplasma sp.
Colibacillosis	E.coli (some serotypes)	Parasitic	
Coliform mastitis	E.coli (some serotypes)	Ascariasis	Ascaris lumbricoides
Metritis		Sarcocystiasis	Sarcocystis sp.
Rickettsial			
Q fever	Coxiella burnetii		

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Nutrient Management Issues

Source: Agricultural Waste Management Field Handbook, United States Department of Agriculture Soil Conservation Service, April, 1992, p. 3-13, 3-14.

The pathogens present in hog manure are not found in inorganic chemicals. These pathogens could be transported to ground water supplies through improperly sealed wells or other naturally occurring pathways. Studies released since 1999 have found that:

(a) Swine herds are a potential animal reservoir for Swine Hepatitis E Virus and this virus is present in fields to which manure has been applied and in water waste from these fields. Swine Hepatitis E Virus may persist in the environment for at least 2 weeks and possibly longer.¹³

(b) A broad profile of chemical and microbial constituents are present in both ground and surface water proximal to large-scale swine operations—chemical (pesticides, antibiotics, heavy metals, minerals, and nutrients) and microbial (Escherichia coli, Salmonella sp., Enterococcus sp., Yersinia sp., Campylobacter sp., Cryptosporidium parvum) contaminants were present.¹⁶

(c) Antibiotics are present in waste generated at confined animal feeding operations and may be available for transport into surface and ground water.¹⁷

These data directly contradict the contention the risk of groundwater contamination from hog manure is no different than that from inorganic fertilizer. In fact, the use of animal manure for fertilizer carries with it not only all the contamination issues associated with inorganic fertilizers but also a large number of additional pollution and health concerns.

As the populations increase so does man's demand on the resources. We can practice sustainability, but Dr. Sharpely does not have a sustainable plan for C & H Hog Farm or the owners. We do not need to feed the world, that is not our responsibility. One only has to consider what happens when there is no electricity, no water in the well, no antibiotics etc to know this is not sustainable.

Save the river...for the future of all generations.



