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# The Big Creek Research & Extension Team Project – Progress Update: Dr. Andrew Sharpley Presentation to the Arkansas Pollution Control & Ecology Commission

## Arkansas Environmental, Energy, and Water Law Blog

07/01/2016

Dr. Andrew N. Sharpley undertook a presentation at the June 24<sup>th</sup> Arkansas Pollution Control & Ecology Commission (“APCE”) meeting titled *The Big Creek Research & Extension Team Project: Progress Update (“Presentation”)*.

Dr. Sharpley is on the staff of the University of Arkansas Division of Agriculture – Research and Extension.

Dr. Sharpley’s presentation provided both background and an update on a project undertaken to monitor the fate and transport of nutrients/bacteria from land-applied slurry at an Arkansas agricultural operation.

The project began when a farm owner from Newton County, Arkansas contacted the extension office for assistance in 2013. Governor Beebe asked that the extension office provide assistance in terms of monitoring. Efforts were therefore undertaken to assess the impact of farm operations on the water quality of springs, streams and groundwater. The project is also being undertaken to monitor long-term accumulation of nutrients in permitted fields.

Dr. Sharpley identified the members of the project’s scientific team and their areas of responsibility, which include himself (Soil and water quality, watershed management) and:

- Brian Breaker (Hydrology data collection & analysis)
- Kris Brye (Soil physics, pedology, sustainability, nutrient leaching)
- Mike Daniels (Extension water quality & nutrient management specialist)
- Ed Gbur (Statistical applications to agriculture, expt. design)
- Brian Haggard (Ecological engineering, water quality monitoring)
- Phil Hays (Karst hydrology and groundwater quality)
- Tim Kresse (Ground and stream water quality)
- Mary Savin (Structure & function of microbial communities)
- Thad Scott (Water quality, stream ecology and response)
- Karl VanDevender (Extension engineer, manure management & planning)
- Adam Willis (County extension agent – Agriculture)
- Jun Zhu (Manure treatment technologies, agriculture sustainability)

Dr. Sharpley updated the Commission in regards to:

- Where and what are measured
- Holding pond assessment
- Trends

Nutrients, sediment and coliform are stated to be measured. The measurements include:

- Storms and weekly base flow in Big Creek, Ephemeral Creek, Left Fork, & spring
- House well and holding pond trenches
- Field runoff on two application fields and one control
- Grid-soil sampling in three fields

Results to date were discussed, such as:

- Assessment of holding pond integrity
- Soil profile survey
- Trench flow chemistry
- House well chemistry
- Ephemeral Creek chemistry
- Well-drilling logs

Results of dissolved “P and Nitrate-N” in certain locations were addressed. Further, the use of electrical resistivity imaging (a geophysical technique) to image surface features was addressed. One result discussed was water content’s effect on resistivity of Kibushi and Bentonite clay.

Points of interest noted in the presentation also included:

- No scientific evidence that the ponds are leaking manure
- Project increasing level of monitoring
- Installed protective shelters on trenches, flow measuring equipment, and auto-samplers for water quality
- If drilling is conducted
- Must be done and sealed by expert driller
- Drill in agreed position to ground-truth the signal
- After agreeing to the measurements needed

The current status of the project was described as:

- Direct measurements do not indicate pond leakage
- No consistent trends to date
- Project will continue to provide transparent, unbiased, sound science for landowners and State to make decisions
- Quarterly reports provided to Arkansas Department of Environmental Quality and Governor
- System variability creates uncertainty
- To address variability, monitoring of over at least five years is required

A web address for the project is <http://www.Bigcreekresearch.org/>

[A copy of the slides of the presentation can be downloaded here.](#)