Arkansas Natural Resources Commission

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Arkansas Natural Resources Commission's Development of the Middle White River Watershed Management Plan

Third Stakeholder Meeting

November 28, 2018 Batesville, AR

Meeting Summary

The Arkansas Natural Resources Commission (ANRC) recently sponsored a stakeholder meeting as part of the development of the watershed management plan for the Middle White River watershed. The meeting was held in Batesville on November 28, 2018. The meeting agenda is included as Attachment 1. Approximately 30 individuals attended the meeting, including farmers, landowners, and utility representatives, as well as individuals from agricultural, conservation, recreational, and other interest groups, and employees from state and federal agencies.

The meeting was facilitated by FTN Associates, Ltd. (FTN), an engineering and environmental consulting firm headquartered in Little Rock. The ANRC contracted FTN to assist the agency with the development of the Middle White River Watershed Management Plan. The process will be completed by September 2019.

The meeting was opened by Terry Horton of FTN, with a summary of the previous public meeting in Calico Rock (September 2018). A list of management practices for nonpoint source pollution recommended by the stakeholders at the Calico Rock meeting was included as part of this presentation. A copy of the presentation can be found in Attachment 2 below.

Following the introductory presentation, two landowners and a conservation district agent from Fulton County told the group about their experiences implementing stream exclusion and pasture management practices that reduce nonpoint source pollution through the 319 program in the Strawberry River.

Carroll Prewett runs a cow/calf operation in the Strawberry River watershed in Fulton County. NRCS practices that he has implemented on his pastures through the 319 program include cross fencing, water supplies, and establishment of warm and cool season grass pasture. He also fenced his cattle out of the woods, ponds, and wet weather areas on his land. Keeping his cattle out of ponds and wet areas improves their health, and managing grazing improves the quality of his forage. His experience with the 319 program and people in his county office has been positive. Mr. Prewett said he appreciated that he could go to the county office and get help right away when he has a project he wants to do on his property. Mr. Prewett has also implemented a number of beneficial practices on his own. For example, he purchased a bale un-roller. Unrolling the bales he feeds his cattle both spreads the hay nutrients over the pasture and reduces hay waste.

Logan Stone is considered a new/beginning farmer, though he has raised cattle with his father most of his life. He runs a cow/calf operation with goats in the Strawberry River watershed in Fulton County. NRCS practices he has implemented on his land through the 319 program include cross fencing, water supply, strip grazing, and rotational grazing. He also fenced his cattle out of the ponds, and, in some of his pasture, out of streams. Mr. Stone found that, with rotational grazing, he is able to feed his cattle on pasture longer, and purchase less hay. The quality of the pasture forage is also better. His cattle seem to prefer the cleaner water in the tanks to drinking out of streams and ponds – they will walk across a stream to get to a water tank to drink. Keeping the cows out of streams visually appears to keep the streams clearer. Mr. Stone sells his cattle as grass-fed beef, and has recently started using goats on his pastures to clear brush the cows don't eat. With this practice, he hopes to reduce the exposure of the cattle to pesticides, which is what buyers of "grass-fed" beef desire. This practice is reducing his input costs, increasing the profitability of his beef operation.

Kenny Crawford is a Fulton County Conservation District technician who has worked with Mr. Prewett and Mr. Stone in the 319 Program. Mr. Crawford noted that in addition to funding, technical assistance is an important part of what the county offices provide. An added benefit of his position is that he learns from the producers with whom he works. Fulton County has had a number of projects implementing management practices. While the NRCS and 319 focus is protecting and improving water quality, his experience is that there are numerous benefits for the producer. In Fulton County, they don't have to go out and try to convince producers to enroll in programs and implement practices; producers come to the county office wanting to do the projects, because they have heard about the benefits of the practices and the program from their neighbors.

During the presentations by the Fulton County representatives, an Independence County agent asked if they are using cover crops as an erosion control practice. The Fulton County representatives stated that they have been planting grass in eroded areas of their pastures.

Following the presentations by Mr. Prewett, Mr. Stone, and Mr. Crawford, Dr. Kent Thornton of FTN did a presentation that included identifying the subwatersheds that are being recommended for initial implementation of practices to reduce nonpoint sources of pollution, the pollutants that are being targeted for control in those subwatersheds, reduction targets for the target pollutants, practices that could be used to reduce the target pollutants, and estimates of the cost to implement those practices. A copy of this presentation is included in Attachment 2.

The people at this meeting were very engaged, and there were a number of questions and discussions throughout the presentations. A summary of questions and the resulting answers and discussions is included in Attachment 3.

The next watershed meeting is tentatively planned to be held in March in Calico Rock, AR. At that meeting the draft plan and recommendations will be presented.

For additional information or to provide additional questions, contact:

- ANRC, Allen Brown (allen.brown@arkansas.gov) or (501) 682-1611
- FTN Associates, Terry Horton (twh@ftn-assoc.com) or (501) 225-7779

ATTACHMENT 1
Middle White River Watershed Management Plan:
A Voluntary, Non-Regulatory Project

November 28, 2018
University of Arkansas Community College at Batesville,
Independence Hall Banquet Room,
Agenda

Time	Topic	Individual
9:30 pm	Welcome, Meeting Purposes: • Summarize the Calico Rock Meeting and suggested management practices • Provide stakeholder perspective on pasture management practices • Describe the process for estimating water quality improvements, and associated costs, of implementing management practices • Discuss next steps	T. Horton, FTN
9:35	Summarize the Calico Rock Meeting • Watershed Management Plan and planning process • Management practices proposed by stakeholders • Screening process and recommended subwatersheds • Questions	T. Horton
9:50	Stakeholder Experiences with Management Practices • Carroll Prewett – Cow/Calf • Logan Stone – Cow/Calf & Goats • Questions	
10:30	Management Practices and Subwatersheds • Hicks Creek • Greenbrier and Lower Salado Creeks • Miller and Spring Creeks • Funding resources • Questions	K. Thornton, FTN
11:45	Next Steps	T. Horton
12:00	**Adjourn**	

ATTACHMENT 2

MIDDLE WHITE RIVER

WATERSHED MANAGEMENT PLAN:

A VOLUNTARY, NON-REGULATORY PROJECT

3RD STAKEHOLDER MEETING

November 28, 2018 Batesville, AR

POWER POINT PRESENTATION

Middle White River Watershed Management Plan: A Voluntary, Non-Regulatory Project

3rd Stakeholder Meeting
Batesville, AR
28 November 2018

Meeting Purposes

- Summarize Sept. Calico Rock meeting
- Discuss target loads and management practices
- Receive your feedback
- Discuss next steps

11 Sept. Calico Rock Meeting

- Watershed Management Plan
  - Water Quality Emphasis
  - Nonpoint Sources – non-regulatory
  - Voluntary participation

Calico Rock Meeting

- Elicited management practices for issues identified in May Batesville meeting
  - Two Groups:
    - Commerce/Agriculture/Local Communities
    - Tourism/Recreation/Environment
- Discussed criteria used to screen and recommend a subset for continued management

Management Practices Suggested

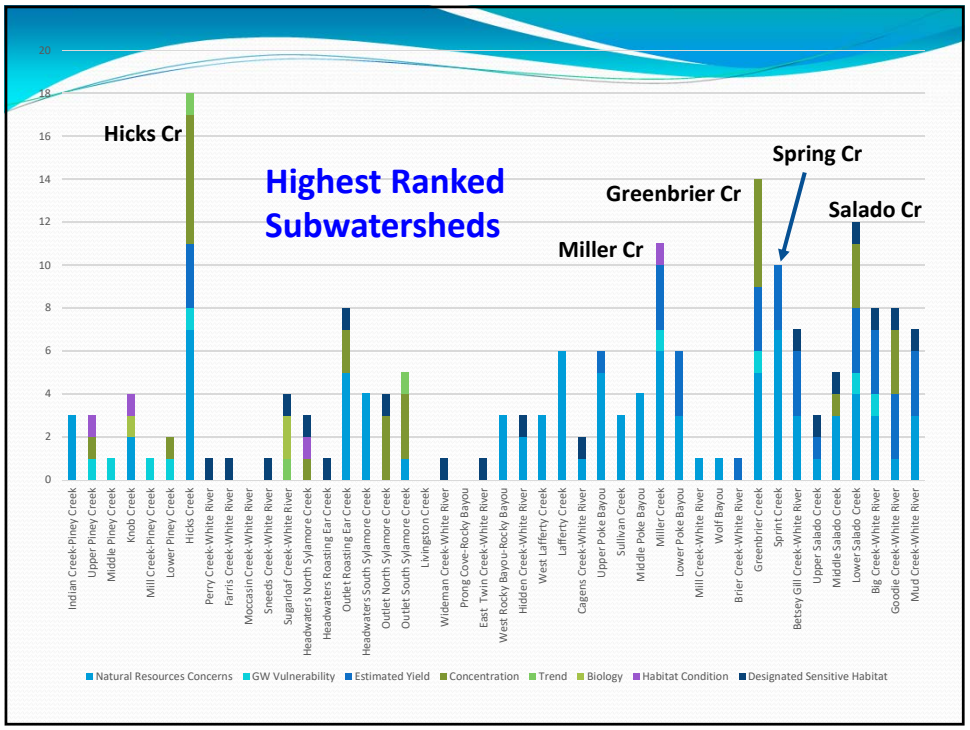
- Nutrient mgt. plans
- Unpaved road BMPs/training
- Greenbelt buffers – pasture/stream
- Septic system education/ repair/replace/inspection
- Forest mgt. practices – AFC, USFWS Guidelines
- Rotational grazing/pasture management
- Integrated pest mgt. plans
- Streambank restoration
- Erosion control BMPs
- New rancher/farmer BMP educational programs
- Str. bank assess. for erosion
- NPS public education
  - Developing areas
  - Outreach & science
- Sediment budgets to target streams
- AP&T programs – forest health, green space

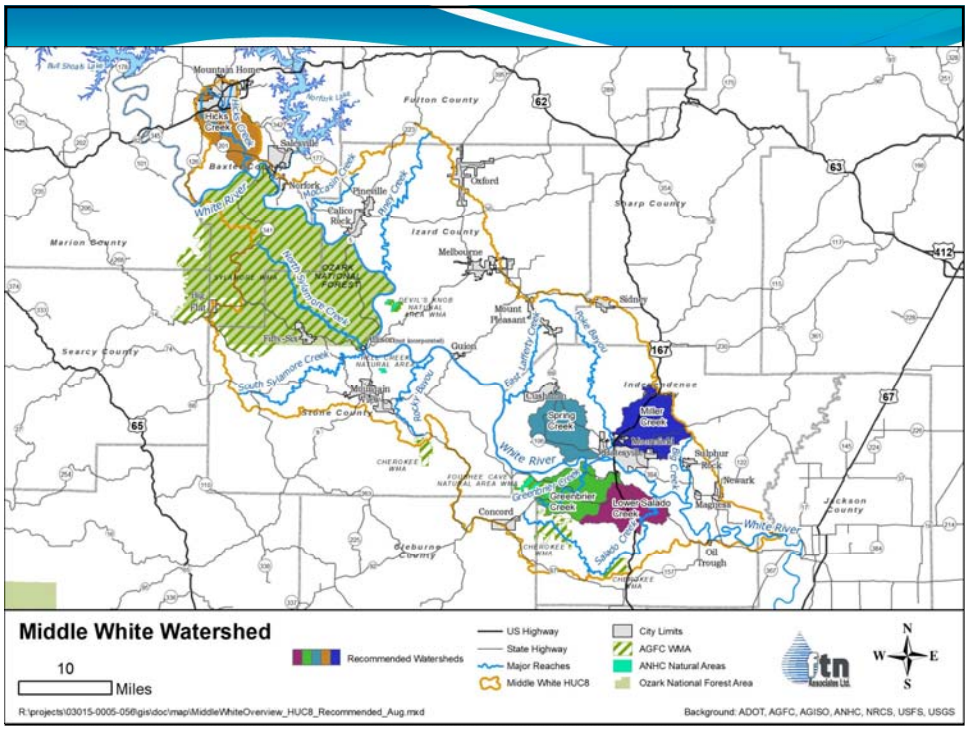
Mgt Practices Suggested (Con't)

- Livestock exclusion with flood mitigation for fences
- Outreach workshops on BMPs in selected water-sheds (field days)
- Low-water slab/culvert & channel training structures
- Pasture mgt. educ.
- Other Recommendations
- Drought/flood preparation assistance
- Restrict development along White (zoning)
- Mitigation bank/credits for development & DOT projects
- T&E species & fish mgt.

Where To Start?

- **24 Ranking Criteria**
  1. **Impaired – Highest priority**
  2. **Stream biology – Integrators**
  3. **Water quality – Affects biology**
  4. **Habitat Suitability – Affects biology**
  5. **Land use – Affects water quality**
  6. **Karst geology – Affects water quality**
- **Intersection of multiple criteria – Both/And**





Screening Process Caveats

- **Not Exclusionary**
  - **Place to start ONLY**
  - **Additional management practices positive, and encouraged, in any subwatershed**

Questions on the Calico Rock Meeting?

Stakeholder Experiences

- Carroll Prewett – Cow/Calf
- Logan Stone – Cow/Calf & Goats

Targets and Practices

Desired Outcome:

Sustain, improve water quality

- **Four Goals:**
  1. **Restore stream uses currently not being attained,**
  2. **Sustain those uses that are being attained,**
  3. **Keep pollutants out of both the surface and groundwater, and**
  4. **Minimize activities that disturb the stream bed and its banks.**

Target Load Process

- Two Criteria Being Exceeded – Primary Focus
  - Pathogens (Indicator bacteria)
    - Attain primary contact criteria (410 cfu/100mL)
  - Dissolved oxygen
    - Attain critical season DO criteria (6 mg/L)
    - Regress organic N with DO (6 mg/L)

Emphasis

- Vegetative enhancement
- Soil health
- Streambank stabilization
- Filter media/buffer areas
- Runoff passive treatment

Suggested Practices

- In addition to Calico Rock suggested practices,
  - Detention/retention basins
  - Constructed wetlands
  - Bioretention/rain gardens
  - Filter media

Management Practice Efficiency

- Estimated Practice Efficiency
  - Arkansas BMP Tool II
  - NRCS Conservation Practice Standards
  - National Pollutant Removal Performance Database
  - International Stormwater BMP Database
  - Chesapeake Bay Program BMPs

Practices – Expected Reductions

Practice	Nitrogen Reduction	Coliform Reduction	Sediment Reduction	Phosphorus Reduction
Stream Exclusion/ Controlled Access	18-60%	30% - 95%	18%-83%	18-76%
Off-stream Water Source	13% - 77%	51 - 94%	30% - 96%	30% - 97%
Forested stream buffer	37% - 89%	30%	45% - 95%	30% - 80%
Non-forest stream buffer	31% - 76%	21% - 100%	23% - 84%	50% - 89%

Practices – Expected Reductions

Practice	Nitrogen Reduction	Coliform Reduction	Sediment Reduction	Phosphorus Reduction
Prescribed Grazing	20%	60% - 72%	20% - 60%	20%
Filter Strips	1% - 93%	30% - 100%	18% - 99%	18% - 100%
Pasture Planting/Mgt	66%	X	59%	67%
Nutrient Management Plan	0 – 84%	X	72% - 92%	8% - 91%

Practices – Expected Reductions

Practice	Nitrogen Reduction	Coliform Reduction	Sediment Reduction	Phosphorus Reduction
Detention Basin	8% - 86%	0% - 100%	0% - 100%	0% - 92%
Stormwater Filters	0% - 94%	0% - 100%	8% - 100%	0% - 99%
Stormwater Bioretention/ Rain Garden	0% - 92%	0% - 100%	0% - 100%	0% - 99%

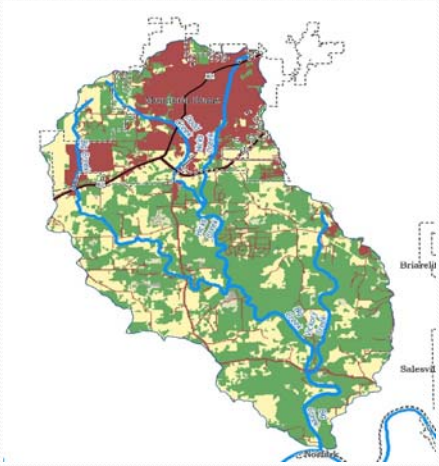
Pollutant Reduction Targets

HUC12	Pollutant	Reduction Needed	Possible Sources to Manage
Hicks Creek	Bacteria (E. coli)	69%	Onsite wastewater treatment systems, leaking sewer lines, illicit discharges, pets and wildlife
Greenbrier Creek	Nitrogen	46%	Pasture, forest, septic system, livestock, wildlife
Lower Salado Creek	Nitrogen	49%	Pasture, forest, septic system, livestock, wildlife

Hicks Creek

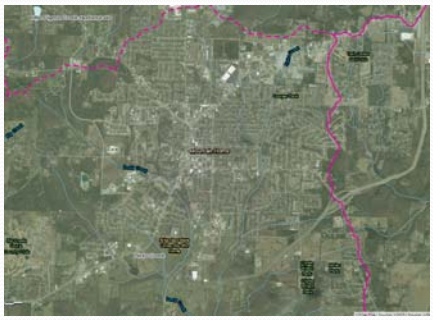
26,175 acres

- 49% Forested
- 23% Developed
- 28% Pasture



Hicks Creek Urban/Suburban

- **Pathogens**
  - E. coli emphasis
- **ADEQ Monitoring**
  - Upstream of WWTP
  - Urban runoff
- **Municipal Separate Storm Sewer System (MS4)**
  - Regulatory Program
  - Runoff to impaired streams falls under MS4 jurisdiction



Hicks Creek

- **Additional monitoring**
  - Big Creek area and downstream of Hicks Creek
  - Land use criteria ranks subwatershed high
  - Determine if WQ issues exist and develop target load reductions, or
  - Identify management practices that are preventing WQ issues from developing
- **Stable isotope studies**
  - Partition human, animal, inorganic fertilizer N sources

Greenbrier Creek

21,650 acres

54% Forest
7 % Developed
35% Pasture
3 % Cropland

Estimated Reduction & Cost*

Greenbrier Cr Watershed = 222 ac impervious (1,600,000 cu ft runoff from 2 inch rainfall)

Practice	Cost/cu ft storage**	Cost ($ 1,000)	Developed N Reduction (46%)
Bioretention/Rain garden	$15.46	$24,736	14%
Detention ponds	$6.88	$11,008	10%
Stormwater filters	$17.94	$28,704	40%
Porous pavement	$5.32	$8,512	40%

* Independent BMP Implementation **2016 dollars

Estimated Reduction & Cost*

Greenbrier Cr Watershed = 7,577 ac pasture

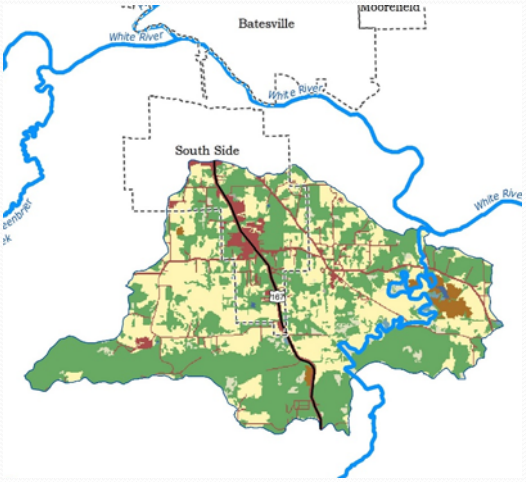
Practice	Unit Cost	Amount	Cost ($ 1,000)	Pasture N Reduction (46%)
Restrict stream access	$1.75/ft fence	95,938 ft	$310	46%
Alternate water	$1,500/unit	96 units	$140	40%
Prescribed grazing	$68/ac	7,577 ac**	$520	20%
Forest buffer	$2,000/ac	82,232 ft	$190	46%
Nutrient mgt plan	$80/plan	10	$0.8	Up to 40%

* Independent BMP Implementation **100% of source

Lower Salado Creek

18,446 acres

- 51% Forested
- 8 % Developed
- 38% Pasture
- 2 % Cropland



Estimated Reduction & Cost*

Lower Salado Cr Watershed = 242 ac impervious (1,800,000 cu ft runoff from 2 inch rainfall)

Practice	Cost/cu ft storage**	Cost ($ 1,000)	Developed N Reduction (46%)
Bioretention/Rain garden	$15.46	$27,828	14%
Detention ponds	$6.88	$12,384	10%
Stormwater filters	$17.94	$32,292	40%
Porous pavement	$5.32	$9,576	40%

* Independent BMP Implementation **2016 dollars

Estimated Reduction & Cost*

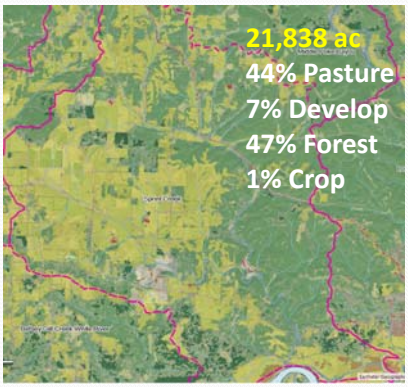
Lower Salado Cr Watershed = 18,446 ac (7,009 ac pasture)

Practice	Amount	Cost ($ 1,000)	Pasture N Reduction (49%)
Restrict stream access	231,554 ft	$750	49%
Alternate water	232 units	$140	40%
Prescribed grazing	7,009 ac**	$480	20%
Forest buffer	99,238 ft	$230	49%
Nutrient mgt plan	10	$0.8	Up to 40%

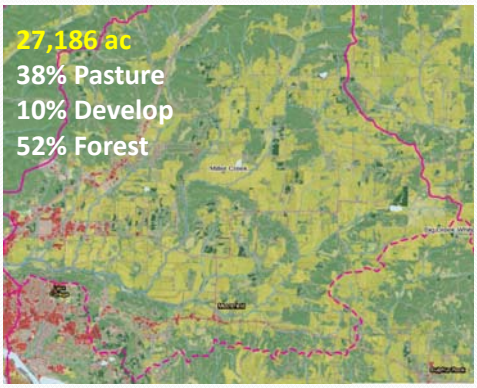
* Independent BMP Implementation **100% of source

Spring and Miller Creek

Spring Creek Subwatershed



Miller Creek Subwatershed



Miller & Spring Creeks

- Land Use Criteria Indicate WQ Issues
- NO Water Quality Data
- Therefore, Collect WQ Data to:
  - Determine if WQ issues exist and develop target load reductions, or
  - Identify management practices that are preventing WQ issues from developing

Potential Funding Sources

- ANRC 319 Program – e.g., Conservation Districts
- NRCS EQIP – Individual Landowner
- FSA CRP – Individual Landowner
- NRCS MRBI – Individual Landowner
- NRCS RCPP – e.g., Conservation Districts
- USFWS Controlled Access Livestock Fencing (CALF) Program – Individual Landowner
- TNC – Individual Landowner
- AP&T – Small municipalities
- AFC – Urban forests

Not Starting From Scratch

- County Conservation Districts & NRCS
  - Izard County
    - Nutrient management plans
    - Pasture/hay planting
    - Prescribed grazing
  - Stone Country
    - Pasture/hay planting
    - Stream access with alternate water
    - Pasture aerator
  - Baxter County
    - Stream access with alternate water
    - Nutrient management plan
  - Marion County
    - No-till drill

Questions on Load Reductions and Management Practices?

Next Steps

- Meeting Summary – distributed to everyone attending and on email list (or address)
- Continue to elicit your input
- Refine management practice analyses; add outreach and education
- Schedule next meeting; likely in March
- Next meetings topic
  - Draft Plan

Points of Contact

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(501) 225-7779

Thank You
Happy Holidays

ATTACHMENT 3

Stakeholder Discussion, Questions, and Responses

Batesville, AR November 26, 2018

Comment: Regarding the recommendation of restoring and protecting streambanks to improve water quality, the White River streambanks are under US Army Corps of Engineers (USACE) control and streamside landowners are not allowed to do anything to the banks. The land owner stated that the USACE has installed some erosion control rip-rap in the past, but they are no longer maintaining their erosion control works. As a result, landowners along the White River are losing land to erosion that they can do nothing about. Others present thought that the landowners along the White River can do streambank erosion control.

Response: If the USACE regulates streambank protection and restoration along the White River, then, because it is a regulatory, and not voluntary, program, this issue will not be addressed in the management plan. However, as with other watershed management plans, riverside landowners concerns about White River streambank erosion will be submitted to the USACE.

Question: Could the low dissolved oxygen conditions in Greenbrier Creek (which have resulted in the stream being on the state impaired waters list) be a natural condition, not related to nutrient inputs, and is there historical data for comparison?

Response: Available data from 2000 – 2015 was analyzed which showed low dissolved oxygen. In addition, dissolved oxygen saturation was computed to determine if the low dissolved oxygen levels were the result of high water temperatures. Dissolved oxygen saturation levels were between 40% and 60% during the warm season when dissolved oxygen concentrations below the water quality standard occurred. If the low dissolved oxygen concentrations were the result of just high water temperatures, the dissolved oxygen saturation should be close to 100%. It, therefore, appears that the low dissolved oxygen concentrations could be the result of the influence of nutrient inputs from the watershed.

Question: Greenbrier Creek runs through both mountains and lowlands, is monitoring data from Greenbrier Creek in both the mountains and the lowlands?

Response: There is only one location on Greenbrier Creek where water quality is monitored, at the Highway 14/25 bridge, which is in the lower portion of the subwatershed.

Comment: The dissolved oxygen criterion being used by ADEQ may not be appropriate for the segment of the creek that is monitored.

Response: Arkansas water quality criteria are established based on ecoregions, and Greenbrier Creek is classified by ADEQ as being in the Boston Mountains ecoregion. It is possible that the natural water quality of Greenbrier Creek is more similar to streams in the Delta than Boston Mountain streams and the Boston Mountain dissolved oxygen criterion may not be appropriate for the monitored segment of Greenbrier Creek.

Question: FTN is recommending that practices to reduce nitrogen loads be implemented to improve dissolved oxygen levels in Greenbrier Creek (and Lower Salado Creek); where is the nitrogen causing the low dissolved oxygen coming from?

Response: The sources are unknown. Because the relationship is between low dissolved oxygen and organic nitrogen, the nitrogen is most likely of animal origin. There has recently been a study that used nitrogen isotope analysis to identify the sources of nitrogen in water, e.g., whether it was from fertilizer, manure, or human waste. It may be possible to do a nitrogen isotope study for Greenbrier Creek and/or Lower Salado Creek.

Comment: It shouldn't be too hard to collect some more data in the Greenbrier Creek subwatershed.

Response: ADEQ does some water quality monitoring through roving water quality stations, which may be a possibility. Tony Ramick, ANRC, explained that it can be very expensive to collect and analyze water quality samples, and both state and federal agencies that do water quality sampling are experiencing budget cuts. It is not necessarily easy to collect more data to answer the questions, but this is one of the recommendations. Local Stream Teams also may be an option.

Comment: The Independence County Conservation District representative commented that $1.75/ft was used to estimate fencing costs, while the District uses $1.40. He asked if NRCS is increasing the allowance.

Response: We have no information that NRCS is changing the EQIP allowance for fence, though the values used by NRCS do tend to change from year to year. The Fulton County Conservation District representative (Mr. Crawford) commented that in Fulton County they have used values around $1.75/ft for fencing.

Question: Will a watershed recommended in the plan for management have more funding available for practices?

Response: Mr. Ramick responded that there are no guarantees. Having a watershed management plan for the Middle White River watershed that has been accepted by EPA means that ANRC can allocate 319 funds (which come from EPA) to projects in the Middle White River watershed. ANRC and NRCS often work together to leverage their funds. 319 funds may not be available for watersheds that do not have a management plan.

Question: Who decides where the money goes?

Response: Mr. Ramick responded that it depends on the source of the funds. For EQIP, each county has a local resource team that decides on priorities for the county. Representatives from each county then present their priorities to a state panel, who decides what gets funded.

Question: Would it not be more useful to develop plans for HUC12 subwatersheds rather than the larger HUC8 watersheds?

Response: There are 58 HUC8 watersheds in Arkansas and ANRC currently has watershed management plan prepared for 11 of them. In addition, there are hundreds of HUC12 subwatersheds in the state, which would be cost-prohibitive. However, within each of the HUC8 watershed management plans, selected HUC12 subwatersheds are identified as appropriate places to emphasize additional watershed management practices. In essence, the plans do focus on the HUC12 subwatersheds. Mr. Ramick also stated that although ANRC is developing the watershed management plans, the intention is for stakeholders to take over the plan after it is done.

Question: How often can the plan be revisited?

Response: Mr. Ramick responded that ANRC suggests every 5 years stakeholders look at what has been done and what is still needed, including data and monitoring.

Question: Is monitoring one of the 9 elements required by EPA to be in the watershed management plan?

Response: Mr. Ramick had explained previously that EPA requires that watershed management plans for the 319 Program include 9 specific elements. He responded that yes, monitoring is one of the elements required.

Comment: It appears that more water quality monitoring data will be needed before practices suggested can be really be implemented.

Response: Mr. Ramick stated that if stakeholders decide more data is needed, water quality monitoring can be done through the nonpoint source program. He explained that usually County Conservation Districts act as sponsors for the nonpoint source program projects. Money does not go directly from ANRC to individuals.

Question: What happens if implementing the watershed management plan does make the water quality good enough to meet water quality standards, or reduce the nitrogen concentrations by the target amount? Will there be regulations on nonpoint sources then?

Response: While only a few of the watershed management plans prepared by ANRC have been implemented by stakeholders, no regulations have been enacted in any of the watersheds as a result of the watershed plan. This is, and has been, a voluntary program and no regulations are anticipated.

Comment: We (stakeholders) are at this meeting because we are interested in taking care of our land and the environment. It is so complicated to put projects together and get them on the ground. The Departee Creek project has been in the works for years and has finally, this year, started. There isn't enough money to fix all the problems. It is overwhelming.

Response: It can take a long time to initiate and implement projects. Having an accepted watershed management plan can help expedite the process, not just for projects with 319 funds, but also through other agencies as well. This is one of the benefits of having a watershed management plan.

Comment: Government funding depends on emphasizing sustainability – you will have to show that the plan is sustainable. There will be market value in using the word sustainable. Nobody wants to keep throwing money at a problem. The term sustainable must be in the plan.

Response: We agree. Sustaining water quality is one of the desired outcomes of the watershed management plan and emphasized throughout the plan.

Comment: Very often, if producers use government money to try a practice and they find it works well for them, they are then willing to pay themselves to continue the practice. Thus, it is sustainable.

Response: Agreed. This was also emphasized by Messers Prewett, Stone, and Crawford.