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## Oklahoma Conservation Commission

### Development of Illinois River Watershed Management Plans Second Stakeholder Meeting – May 18, 2023 Summary of Meeting

The Oklahoma Conservation Commission (OCC) and the Arkansas Department of Agriculture Natural Resources Division (NRD) jointly held a stakeholder meeting as part of the development of watershed management plans for the Illinois River watershed. The meeting was held in the afternoon in West Siloam Springs, OK (Cherokee Hotel and Casino). A total of 91 individuals attended the meeting, 81 in person and 10 online. Attendees included farmers, landowners, and business owners, as well as individuals from interest groups, and employees from state and federal agencies. A list of specific organizations represented at the meetings is included as Attachment 1.

The meeting was facilitated by Tate Wentz, NRD, Water Quality Section Manager. The agenda for the meeting is shown on page 1 of Attachment 2. The meeting was also presented and recorded using Zoom. The recording of the meeting can be viewed on the OCC YouTube site: [https://youtu.be/5Cba4WZ2L\\_8](https://youtu.be/5Cba4WZ2L_8)

Tate Wentz opened the meeting stating that OCC and NRD are preparing separate updated plans for the Illinois River watershed using a joint, collaborative approach. Team members present from NRD, their contractor FTN Associates, OCC, and Illinois River Watershed Partnership were identified. Then Mr. Wentz presented basic information on watershed management plans and the process for updating the plans for the Illinois River watershed. This was a review of information provided at the first public meeting in October 2022. Mr. Wentz's statement that the watershed management plans are non-regulatory sparked a discussion of the recent ruling against Arkansas poultry companies in the Oklahoma lawsuit. In this discussion Mr. Wentz and Greg Kloxin of OCC both stressed that the watershed management plans have no "regulatory teeth" and the two states are committed to a collaborative interstate approach to nonpoint source pollution management in the Illinois River watershed. They also stated that the watershed management plans address a wide variety of nonpoint sources of pollution, not just poultry litter application. At the end of Mr. Wentz's presentation, Mr. Kloxin commented that this update of the Arkansas and Oklahoma watershed management plans for the Illinois River is a continuation of the work both states have been doing for many years, and before the lawsuit. The update of the watershed management plans incorporates new data, new programs, and new partnerships that have become available since 2015.

Following Mr. Wentz, Philip Massirer of FTN Associates, Ltd. (FTN) gave a brief recap of water quality information presented at the first public meeting in October 2022. FTN is an environmental consulting firm headquartered in Arkansas that is under contract to NRD to assist with development of the watershed management plan for the Arkansas portion of the Illinois River watershed. Mr. Massirer presented maps of impaired waters in Arkansas and Oklahoma, with lists of nonpoint sources of the pollutants impairing water quality that have been identified.



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After Mr. Massirer's presentation, Mr. Wentz explained that the purpose of this meeting was to collect input from the stakeholders present about practices that can reduce nonpoint source pollution in the Illinois River watershed. Stakeholders were invited to participate in one of two break-out groups: one focused on practices for rural areas, and the other focused on practices for developed areas (i.e., urban areas). In these groups, input from stakeholders was guided by three questions. The rural break-out group was facilitated by Mr. Massirer. The urban break-out group was facilitated by Lief Kindberg of the Illinois River Watershed Partnership. Summaries of the break-out group discussions are provided as Attachment 3. After about an hour, everyone met together to hear short summaries of the results of the break-out group discussions.

Following this, Mr. Wentz discussed the next steps in the process. First, a summary of this meeting will be prepared and distributed to all attendees who signed in and provided contact information. Another public meeting is scheduled for August 2023. At this meeting, information about the Illinois River water quality models being prepared for NRD and OCC will be presented. Mr. Wentz provided a brief introduction to the Arkansas model, being developed by FTN. Brad Rogers of OCC presented a brief introduction to the Oklahoma model, being developed by Texas A&M. Mr. Wentz then told the group that a fourth meeting will likely be scheduled in October to present findings from data analysis and water quality modeling. He stated that there is the possibility of additional meetings, into 2024, if NRD and OCC decide together that additional meetings are needed.

Attendees were encouraged to contact NRD or OCC at any time with questions or comments about the watershed management plan or suggestions of others who would be interested in the plan and/or the meetings. Contact information for NRD and OCC project personnel was provided and is shown below. A copy of the slides presented during this meeting is provided with this summary (Attachment 2).

For additional information, contact:

- Tate Wentz, Arkansas Department of Agriculture Natural Resources Division, [Tate.Wentz@agriculture.arkansas.gov](mailto:Tate.Wentz@agriculture.arkansas.gov), (501) 682-3914
- Shanon Phillips, Oklahoma Conservation Commission, [Shanon.Phillips@conservation.ok.gov](mailto:Shanon.Phillips@conservation.ok.gov), (405) 522-4728
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## ATTACHMENT 1

### Illinois River Watershed Management Plans Second Stakeholder Meeting –May 18, 2023 In-Person Meeting Attendance Summary

Organization / Category	Number of attendees
Arkansas Game and Fish Commission	1
Arkansas Dept. of Agriculture Natural Resources Division	2
Interested citizens	12
FTN Associates	4
Oklahoma Conservation Commission	3
Save the Illinois River (STIR)	5
Cherokee County	1
Journalists	4
BioX Design	1
Grand River Dam Authority	1
Oklahoma Rural Water Association	1
Citizens Advocating a Safe Environment (CASE)	1
Jacobs/City of Fayetteville	1
OK Foods	1
Illinois River Watershed Partnership	4
Oklahoma Energy & Environment	1
Oklahoma Department of Agriculture, Food, and Forestry (ODAFF)	1
Tahlequah Public Works	1
Carbon Chicken Project	1
Ozark Society	1
Emerald Solutions	1
SHV Tahlequah	1
USDA Natural Resources Conservation Service	5
Oklahoma Department of Wildlife Conservation (ODWC)	1
Oklahoma Onsite Wastewater Association (OOWA)	1
City of Siloam Springs	1
Northwest Arkansas Land Trust	2
US Army Corps of Engineers	2
City of Bentonville	2
University of Arkansas Cooperative Extension Service	1
Benton County Quorum Court	1
H2Ozarks	1
Watershed Conservation Resource Center	1
NWAR PC	1
Crafton Tull	1
AEMS (OK)	1
Oklahoma Farm Bureau	1

<b>Organization / Category</b>	<b>Number of attendees</b>
WCCD	1
City of Tontitown	1
Cherokee Nation	1
Food Recycling Solutions	1
Tulsa Metro Utility Authority	1
Fidlers Bend?	1
Southwestern Power Company (SWEPCO)	1
Attorneys	3

**Attachment 2 Meeting Presentations**

# Voluntary, Non-Regulatory Watershed Management Plan for the Illinois River Watershed

2<sup>nd</sup> Stakeholder Meeting  
West Siloam Springs, OK  
May 18, 2023



## Today's Agenda

- ▶ Introduction to the Watershed Management Planning (WMP) process
- ▶ Review October 2022 first stakeholder meeting
- ▶ Stakeholder engagement on conservation practices and water quality issues in the watershed
- ▶ Review Illinois River WMP meeting schedule and next steps

## Watershed Management Plan

### ► Three Key Features:

1. **Water quality emphasis**
2. **Nonpoint sources - non-regulatory**
3. **Voluntary participation**

## Watershed Planning Process

### ► Six Steps

1. **Building partnerships**
2. **Characterizing the watershed**
3. **Management goals, practices, measures, actions**
4. **Design implementation program**
5. **Implement the Watershed Management Plan**
6. **Measure progress - adaptive management**

## Benefits of a Watershed Management Plan

- ▶ Holistic WS assessment identifying areas with greatest ROI
- ▶ Document/demonstrate conservation doesn't cost; it pays
  - ▶ Increased landowner profitability
  - ▶ Improved soil health
- ▶ Restore/sustain fishable, swimmable, drinkable water uses
  - ▶ Increased recreational opportunities
  - ▶ Increased tourism
  - ▶ Improved aesthetics/enjoyment
- ▶ Cumulative/Synergistic Benefits

## Points of Contact



**Tate Wentz, NRD**

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**Philip Massirer, FTN**

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**Shanon Philips, OCC**

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**Greg Kloxin, OC**

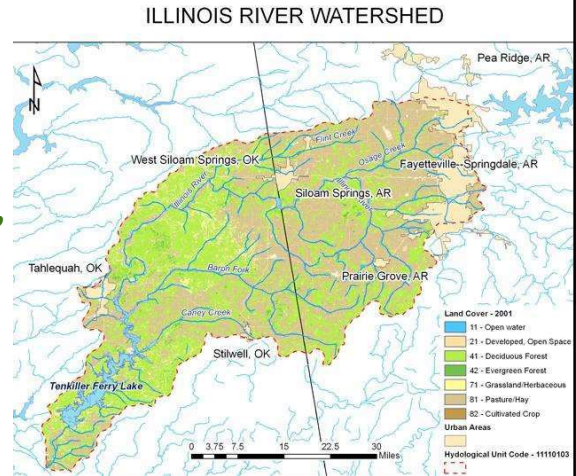
**Greg.Kloxin@conservation.ok.gov**

**(405) 522-4737**



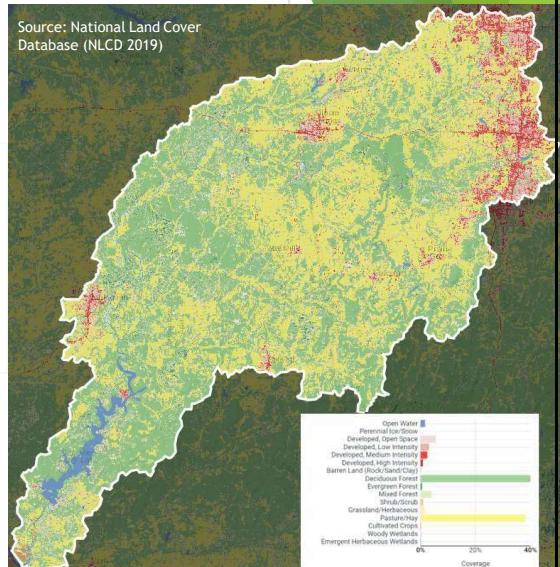
# Water Quality Issues

- ▶ **AR Impairments & Sources**
  - ▶ Chlorides, Sulfates, Pathogens
  - ▶ Unknown, Industrial, Municipal, Surface Erosion, Agriculture
- ▶ **OK Impairments & Sources**
  - ▶ Total Phosphorus, Pathogens,
  - ▶ Sediment, Dissolved Oxygen
  - ▶ Multiple non-point sources



# Managing Different Watershed Uses

	2001		2019		Change	
NLCD Type	Code	Area (km <sup>2</sup> )	Coverage (%)	Area (km <sup>2</sup> )	Coverage (%)	(%)
Less Than 20% Impervious	21	224.4	5.25	236.5	5.53	5%
20%-49% Impervious	22	109.8	2.57	134.9	3.16	23%
50%-79% Impervious	23	54.13	1.27	104.6	2.45	93%
80%-100% Impervious	24	21.25	0.5	38.05	0.89	78%



## Today's Engagement Opportunity

- ▶ **Conservation Practices in the Watershed**
  - ▶ Emphasis on water quality, but all input welcome
  - ▶ What's working, what's not and why
  
- ▶ **Breakout Session**
  - ▶ Facilitated discussion

## Today's Engagement Opportunity

- ▶ **Breakout Session**
  - ▶ **Two Breakout Groups**
    - ▶ Rural
    - ▶ Urban
  - ▶ Facilitated discussion for 1 hour
  - ▶ Recap information for both groups

## Today's Engagement Opportunity

### ▶ Breakout Session Ground Rules

- ▶ One speaker at a time
- ▶ Request acknowledgment
- ▶ Listen first to understand, then to be understood
- ▶ Please do not interrupt others
- ▶ Respect others ideas/thoughts
- ▶ It's okay to disagree, but be respectful
- ▶ Please no sidebar conversations

## Today's Engagement Opportunity

### Report Out

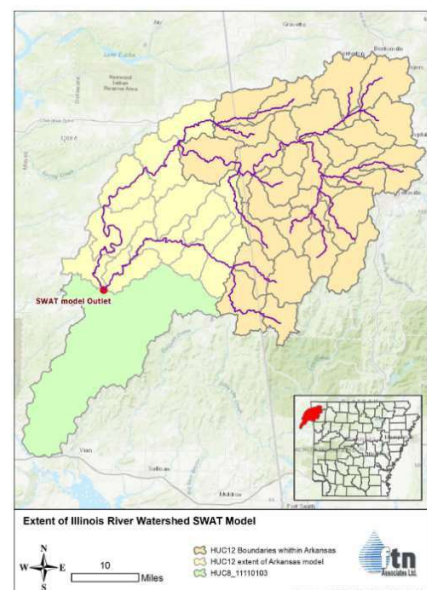
## Illinois River WMP Meeting Schedule

- ▶ October 2022 - 1<sup>st</sup> Introductory Meeting
- ▶ January 2023 - 2<sup>nd</sup> Stakeholder Engagement & Conservation Practices
- ▶ March 2023 - 3<sup>rd</sup> SWAT Model Report
- ▶ May 2023 - 4<sup>th</sup> Information Summary
- ▶ TBD (if needed) 2023

## Arkansas SWAT Updates

### Model Inputs

- 28 HUC12s partially or fully within AR
- Calibration period: 1/2/1996-12/31/2020
- Six year warm period
- June 2021 USGS DEM
- NLCD land use 2001-2019



# Arkansas SWAT Updates

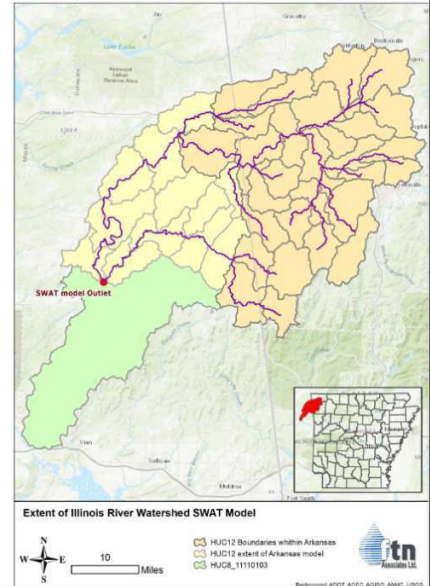


## Model Inputs

- Point Source

NPDES permit number	Facility name or description	Average flow (MGD) <sup>1</sup>	Discharges during simulation period	
			Begin date	End date
AR0020184	City of Gentry WWTP <sup>2</sup>	0.58	Jan. 1990	Dec. 2020
AR0020273	City of Siloam Springs WWTP	3.20	Jan. 1990	Dec. 2020
AR0022063	City of Springdale WWTP	14.56	Jan. 1990	Dec. 2020
AR0022098	City of Prairie Grove WWTP	0.64	Jan. 1990	Dec. 2020
AR0033910	USDA Forest Service – Lake Wedington Recreation Area	0.03	Jan. 1990	Dec. 2020
AR0035246	City of Lincoln WWTP	0.62	Jan. 1990	Dec. 2020
AR0043397	City of Rogers WWTP	8.24	Jan. 1990	Dec. 2020
AR0050024	NW Arkansas Conservation Authority Regional WWTP	3.07	Dec. 2010	Dec. 2020
AR0050288	City of Fayetteville West Side WWTP	8.87	Jun. 2008	Dec. 2020
ARG250008	Zero Mountain, Inc. (cooling tower blowdown)	0.002	Aug. 2009	Jan. 2019
ARG640066	City of Prairie Grove Water Treatment Plant (filter backwash)	0.04	Jan. 1990	Dec. 2020

Notes: 1. Average flows are for January 2018 – December 2020 to reflect current magnitude of discharges.  
 MGD = million gallons per day.  
 2. WWTP = wastewater treatment plant



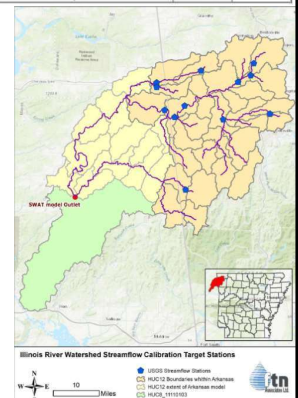
# Arkansas SWAT Updates



## Model Inputs

- Parameter-elevation Relationships on Independent Slopes Model (PRISM) daily data
  - Precip, max/min/mean temp, dew point
- Daily stream flow data
- Water quality data
  - ADEQ, USFS, AWRC
  - Model calibrated to 16 locations

Gage number	Gage name	Available data within calibration period	
		Begin date	End date
07194800	Illinois River at Savoy, AR	9/30/2001	12/31/2020
071948095	Mud Creek near Johnson, AR	9/30/2015	12/31/2020
07194880	Osage Creek near Cave Springs, AR	4/07/2000	12/31/2020
07194933	Spring Creek at Hwy 112 near Springdale, AR	10/17/2011	12/31/2020
07195000	Osage Creek near Elm Springs, AR	1/01/1996	12/31/2020
07195400	Illinois River at Hwy 16 near Siloam Springs, AR	10/01/2002	12/31/2020
07195430	Illinois River South of Siloam Springs, AR	1/01/1996	12/31/2020
07195500	Illinois River near Watts, OK	1/01/1996	12/31/2020
07195800	Flint Creek at Springtown, AR	1/01/1996	12/31/2020
07195855	Flint Creek near West Siloam Springs, OK	1/01/1996	12/31/2020
07195965	Sager Creek near West Siloam Springs, OK	9/12/1996	12/31/2020
07196900	Baron Fork at Dutch Mills, AR	1/01/1996	12/31/2020







# Oklahoma SWAT Updates

## Model developed/hosted on the OK-HAWQS platform

- Developed with and hosted by Texas A&M
- Cloud based model using SWAT 2012 as the hydrologic model
- Base version of the model is flow calibrated
- Working on WQ calibration
- Ability to share, duplicate, run scenarios and modify models hosted on the site
- Ability to download models, edit, modify, run scenarios and upload back to the website

**OK-HAWQS** is a web-based interactive water quantity and quality modeling system that employs as its core modeling engine the Soil and Water Assessment Tool (SWAT) an internationally recognized public domain model. OK-HAWQS provides users with streamlined web interfaces and pre-built input data, outputs that include tables, charts, and raw output data, a user guide, and online development, execution, and storage of a user's modeling projects.

OK-HAWQS automatically enhances the quality of SWAT to simulate the effects of management practices based on an array of climate, soil, nutrient, sediment types, and uses, and other scenarios for hydrology and the following water quality parameters:

- Sediment
- Phosphate
- Nitrate
- Biological oxygen demand
- Dissolved oxygen
- Pesticides
- Water temperature

HAWQS users can select from several models around the globe to run simulations, and upload their own SWAT models for public use. OK-HAWQS tracks the future aggregation and availability of daily monthly and annual water quality data across large geographic regions.

The Texas A&M University Spatial Sciences Laboratory subject matter experts provide ongoing technical support including system design, modeling, and software development. The United States Department of Agriculture (USDA) and Texas A&M University jointly developed OK-HAWQS and have actively supported the model for more than 15 years.

For HAWQS area usage and paper citation, please reference the following:  
 HAWQS 2022. HAWQS System and Database model the level of operational U.S. Using the SWAT Model. doi:10.10188/761047023. Texas Data Repository Database 17.

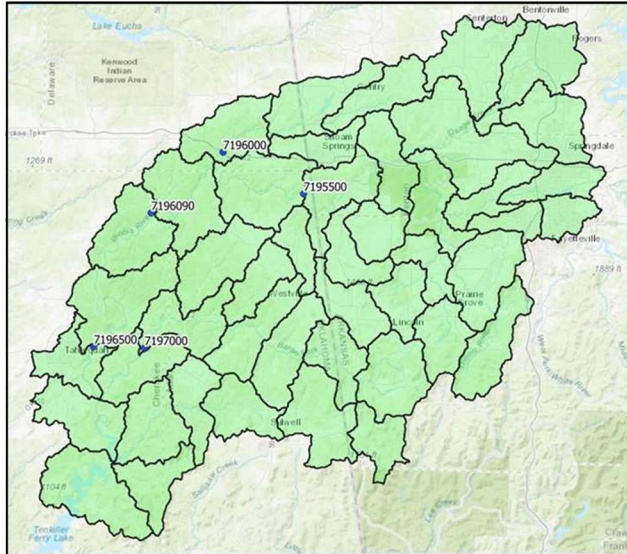
**How does OK-HAWQS work?**

- 1. Create a new project**  
 Choose a dataset  
 Select your ending subbasin from a map  
 Set HUCs to eliminate minor land uses, soils and states
- 2. Create scenarios and customizations**  
 Edit general basin, fertilizer, and urban inputs and databases  
 Edit Agriculture management (APMs) conservation practices  
 Edit run numbers profiles, sediment routing climate change, benefits, and point source
- 3. Run the model**  
 Write SWAT input files based on your customizations  
 Run one of the available versions of SWAT  
 Process output files generated by the model
- 4. Analyze output**  
 View charts and maps of output and compare between scenarios  
 Run SWAT Checks to identify potential model problems  
 Download your project files, including input files, for offline use

# Oklahoma SWAT Updates



Input Dataset	Source	Specifications
Climate	Parameter-elevation Regressions on Independent Slopes Model (PRISM)	1981 – 2018 (gridded)
Atmosphere Deposition	National Atmospheric Deposition Program (NADP)	(1980 – 2010) monthly
Watershed Boundaries	National Hydrography Dataset Plus 2.0 (NHDPlus)	HUC 12
Land Use (non-agricultural)	National Land Cover Database (NLCD)	2016
Land Use (agricultural)	United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) Cropland Data Layer (CDL)	2016 – 2018
Soil	USDA Natural Resources Conservation Service (NRCS) Soil Survey Geographic Data (SSURGO)	County level 2019
Elevation	USGS National Elevation Dataset (NED) and Digital Elevation Model (DEM)	10 meter 2019
Stream Network	National Hydrography Dataset Plus 2.0 (NHDPlus)	2019
Dams, Ponds, and Reservoirs	National Inventory of Dams (NID) and NHDPlus 2.0	2018; 2019
Point Sources	Water Quality eXchange (WQX) and National Pollutant Discharge Elimination System (NPDES)	2020
Management Data	USDA-NRCS crop management zone data	2010



# Oklahoma SWAT Updates



- Flow calibration is complete for **5 USGS gage locations** in the Illinois River Basin
- Water Quality Data is available for **9 locations**
- There are an additional **5 locations** that could be used if we have WQ data available
- Other Data to compile before WQ calibration
  - Point Source Data
    - From both Arkansas and Oklahoma
  - Land Management Data
    - e.g., manure spread across the landscape, quantity/timing

USGS Site #	Name	Parameter	Calibration years	NS	PBIAS	KGE
07196000	Flint Creek near Kansas, OK	All	1983-2018	0.81	-7.6	0.8
07195500	Illinois River near Watts, OK	All	1983-2018	0.9	-3.6	0.87
07197000	Baron Fork at Eldon, OK	All	1983-2018	0.88	-17.1	0.82
07196090	Caney Creek near Barber, OK	All	2010-2018	0.91	-6.5	0.84
07196500	Illinois River near Tahlequah, OK	All	1983-2018	0.91	0.1	0.92

## Points of Contact



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## ATTACHMENT 3

### Illinois River Watershed Management Plans Second Stakeholder Meeting –May 18, 2023 Break-out Group Discussion Summaries

## Rural Discussion Group

The goal of the discussion group was to get input from stakeholders regarding conservation practices that should be recommended in the watershed management plan to address rural nonpoint sources of sediment, nitrogen, and phosphorus in the Illinois River watershed. The following questions were posed to the group to guide the discussion.

1. Which conservation practices have been utilized in your area? Have they been successful?
2. Which conservation practices have been underutilized and why? What are the barriers/challenges that need to be addressed?
3. Which conservation practices haven't worked? Why were they unsuccessful?

The discussion from participants is summarized below. The summary is organized by conservation practice because many of the comments addressed more than one of the questions listed above.

### **Streambank restoration**

Streambank restoration was acknowledged to be needed in many places.

One of the primary barriers to implementing streambank restoration is cost. Several people have been looking at ways to reduce costs for streambank restoration.

Obtaining Section 404 permits from the Corps of Engineers can be expensive.

Streambank protection measures can get washed out by floods if they are not installed with heavy materials and extensive protection/anchoring. Streambank restoration projects (including vegetative plantings) are expensive to re-do if they get washed out. Peak stream flows that can cause damage are exacerbated by urban sprawl and development, which creates more impervious areas that lead to increased storm runoff.

Streambank erosion can be exacerbated by farming the land right up to the edges of the streambanks.

### **Riparian restoration**

An idea for restoring riparian areas is to create wetlands in the riparian areas so that the cost of the work can be at least partly offset by using the created wetlands as mitigation credits for other wetlands that are lost due to construction projects.

Implementation of riparian buffers needs to be promoted and encouraged more.



## **Conservation easements**

Conservation easements are not well understood by many people. Some people are hesitant to set up easements because they don't want to restrict what their heirs can do with the land and/or they don't want to limit the sale price if they decide to sell the land later (especially with current trends in land prices).

One idea is to help pay for conservation easements (and other conservation practices) from source water protection funds.

## **Fencing to exclude cattle from streams**

Fencing to exclude cattle from streams has been used in the watershed, but there are several barriers to further implementation of this practice.

One barrier to implementation is that the fence will be damaged by debris during floods if it is placed close to the stream. If the fence is placed far enough away from the stream to avoid flood damage, a large strip of fertile land between the fence and the stream is essentially taken out of production.

Another barrier to implementation of this practice is the need to provide alternate water sources.

## **Management of poultry litter application**

One of the ways that poultry litter is managed is using stacking sheds to protect the litter from being exposed to rainfall prior to being applied on land.

Application of poultry litter in the Illinois River watershed has been reduced by exporting litter out of the watershed. A large percentage of the litter that is generated in the watershed is currently being exported out of the watershed. A question was asked during the discussion about how much litter is being generated in the Arkansas portion of the watershed; this information can be obtained on a spatially aggregated basis (to protect privacy of individual producers) from NRD.

Poultry litter is valuable as fertilizer in other watersheds without extensive poultry production, especially watersheds with large areas of cropland. However, the primary barrier to exporting poultry litter to other watersheds has been the cost of transporting the litter.

One person mentioned a company that has set up a system to economically export litter. This company is currently exporting litter to Missouri. One of the keys to this company's operation is to move the litter one time from where it is generated to where it will be applied on land – in other words, don't move the litter multiple times to get it from the original location to its final destination. This requires identifying a specific buyer for the litter and making sure that the buyer can receive the litter when it is shipped.

Another idea that was presented is to use poultry litter to create biochar. Because the organic matter in biochar decays much more slowly than that of poultry litter, biochar allows for carbon sequestration. In large quantities, carbon sequestration can be marketed as carbon credits for businesses that want to offset their carbon footprint. Also, nutrients are released more slowly from biochar than from poultry litter.

## Urban Discussion Group

The goal of the discussion group was to get input from stakeholders regarding conservation practices that should be recommended in the watershed management plan to address urban nonpoint sources of sediment, nitrogen, and phosphorus in the Illinois River watershed. The following questions were posed to the group to guide the discussion. The notes taken from the discussion group are presented below.

1. Which conservation practices have been utilized in your area? Have they been successful?
2. Which conservation practices have been underutilized and why? What are the barriers/challenges that need to be addressed?
3. Which conservation practices haven't worked? Why were they unsuccessful?

### **Which conservation practices have been utilized in your area? Have they been successful?**

Workshops about rain gardens

Green streets, bioswales, permeable pavements, green roofs all have been used in NWA (e.g., Ramble, Fayetteville Public Library, Crystal Bridges, etc.)

Permanent voluntary conservation easements

Riparian buffers

*[Note: These practices have all experienced failures in the watershed, usually due to poor installation and/or lack of proper maintenance.]\**

### **Which conservation practices have been underutilized and why?**

Floodplain management: development is occurring in floodplains that is changing hydrology, destabilizing streambanks, acting as a source of pollutants (e.g., parking lots, fertilized landscaping). Also, the land trust system that protects riparian areas needs to be better maintained/supported.

Buffer/riparian zones: The recent USACE study of the Illinois River watershed concluded that buffer zones are needed to protect water quality and need to be prioritized.

NWA Land Trust (permanent conservation easements) was mentioned by more than one participant as being underutilized. *[Note: Buy-protect-sell models where a voluntary conservation easement is placed on the property at the time of resell has been used by Central Arkansas Water and in other watersheds.]\**

Partnerships: A successful partnership between the Northwest Arkansas Land Trust and Arkansas Natural Heritage Commission was given as an example of what is needed. This partnership expanded access to funding opportunities to address funding barriers that NGOs and non-profits experience when applying for grants.

Green streets: The comment was made that green streets could be incorporated in more downtowns and could/should be marketed to historic communities/neighborhoods. Downtown Rogers was cited as a good

example of the use of green infrastructure elements like pervious pavers in a way that preserves the historic aesthetic.

Phytoremediation: Fayetteville has some phytoremediation areas (i.e., Beaver Water District, Gulley Park). However, some areas have not been implemented well and lack sufficient quantity of native plants and sustainable maintenance plans.

Advanced treatment septic systems: Given the marginal appropriateness of the soils and geology for much of this area for conventional septic systems, advanced treatment septic systems would be a good choice for new developments outside of sewer utility service areas. These systems can serve individual residences or entire subdivisions.

Infill development is needed: City planning needs to reduce urban sprawl and cities need better/more education/promotion of why increased density isn't "bad" for a community. [*Note: see Fayetteville "City Plan 2040", <https://www.fayetteville-ar.gov/1216/City-Plan-2040>*]\*

Urban farms/urban forest systems.

Water-based recreation stewardship and related practices that improve/protect recreation areas, including streambanks, natural vegetation, and gravel bars, and better manage trash.

### **What are the barriers/challenges that need to be addressed?**

Cities require paved areas as part of developments and don't incentivize pervious pavement and other alternatives. [*Note: Fayetteville and Rogers are both encouraging use of alternative paving systems and Lowell and other municipalities are looking at it.*]\*

Riparian area protection through conservation easements is expensive and the burden of providing funding for management/maintenance and costs associated with donation of the easement often falls on the landowner. We need to work with the legislature to obtain money to offset costs to landowners and secure other sources of financing. Organization funding resources for conservation easements are limited e.g., Norwest Arkansas Land Trust, Ozark Regional Land Trust, Grand River Dam Authority, Farm Services Agency.

Maintain stream form/function: Commenter gave an example near their residence of a new development channeling runoff and increasing flow and water depth on surrounding areas. Commenter wants to see protection of all riparian/buffer zones inside municipalities and within the counties (referenced USACE study) incorporated in development codes.

Need building codes within municipalities and counties that better protect flood zones and riparian areas. Developers are doing things "by the book" (i.e., following existing codes), so the current development and building codes need to be changed so that they reflect current understanding of what is needed to protect Illinois River and other surface waters.

MS4 (Municipal Separate Storm Sewer System) regulations are not sufficiently adequate to address the challenges of expanding development and its impact on the watershed. Developers are not using green

infrastructure or low impact development in most developments and have few incentives to do so. MS4 does not provide a strong enough incentive to change the way developers are working.

Decision makers (e.g., city councils, county judges, justices of the peace, etc.) need more/better information about SmartGrowth, Green Infrastructure, and other practices/BMPs that reduce nutrients and other pollutants in stormwater. For example, detention pond retrofits can provide significant benefits, but decision makers have a hard time seeing the expense as justified.

Address policy and code development by providing technical assistance, cost/benefit information.

Detention Pond Retrofit and phytoremediation: education should center around benefits, not appearance. Challenges for retrofits include cost (expensive) and the public perception that retrofitted (“naturalized”) ponds are “unattractive.”

Applicators and landowners lack of education surrounding fertilizer and pesticide applications/lawn care education (example of applying right before rain); encourage commercial entities to maintain best practices in lawn care. [Note: *The Illinois River watershed in Arkansas is designated a nutrient surplus area. Within Arkansas nutrient surplus areas, fertilizer applicators who fertilize an area of 2.5 acres or more are required to be trained and certified in practices to reduce nutrients in runoff. See <https://www.agriculture.arkansas.gov/natural-resources/divisions/conservation/nutrient-management-program/>. It is not clear how many applicators are trained within the watershed. The Northwest Arkansas Stormwater Education Program includes guidance on lawn maintenance practices that reduce stormwater pollution. See <https://www.uaex.uada.edu/environment-nature/water/stormwater/nwastormwater/>. Oklahoma has the Yard-by-yard program. See <https://www.okconservation.org/yardbyyard>. Information is available but doesn't seem to be reaching people.*]\*

HOA/POA regulations around lawn care are limited and do not normally consider water quality but rather focus on appearance. How do we support people who want to implement other options besides close-cut Bermuda lawns (e.g., rain gardens, alternative grass mixtures)?

Educate individual homeowners: How do we reach homeowners/neighborhoods directly? There are social media tools already being used for messaging (e.g., NextDoor). Is there something we can use to encourage change and provide information?

Pretreatment of stormwater using green infrastructure BMPS is too expensive. Green infrastructure is also not aesthetically pleasing to some/many; some people don't like messy or wild looking areas when they are used to concrete or green cut Bermuda. More/better data management and success stories are needed for use in improving public perception.

Pet waste management and education is needed to help people understand the role pet waste has in bacterial impairments. There is currently not much credible information on this in our watershed.

Unpaved roads: There is a lack of education at the municipal level on erosion control and [Note: *The Arkansas Unpaved Roads Program provides training in environmentally sensitive maintenance for unpaved roads to county road crews (both Benton and Washington Counties are active in this program).*]

*Materials may be useful for municipal folks also. Oklahoma is looking at implementing an unpaved roads program in the watershed.]\**

Better information is needed about projecting future scenarios for rainfall total accumulation and intensity so that infrastructure is better designed to handle it.

### **Which conservation practices have NOT worked and why?**

No responses to this question were provided during the discussion.

### **Additional/Other Comments:**

USACE study of flooding says to preserve and restore riparian areas.

One person suggests more pervious surfaces should be integrated into planning.

Education and research are needed around master planning, including looking at larger impacts of planning and design rather than just building “by the book”. See comments above in Barriers/Challenges.

Education about green infrastructure, low impact development, and other BMPs that protect stream water quality is needed for city councils and planning engineers, as well as county judges and justices of the peace.

Groundwater: There are unintended consequences of mismanagement of surface water that harm GW. Suggested creating BMPs for joint groundwater and surface water protection, or building on existing Karst BMPs used in Lowell, Cave Springs, Rogers, and Springdale.

Designers and engineers need better education about stormwater BMPs and how to include them in their projects, e.g., the importance of knowing depth to groundwater and/or whether there is karst in the underlying geology when using stormwater infiltration BMPs.

Why can't we get new technology and policy adopted here?

Regional approach (planning and design standards) rather than city to city would be beneficial.

Native plant and tree giveaways have been popular.

Partnerships, bringing multiple players together, has been beneficial to make larger impacts.

\* Information listed under “Note:” was not provided during the discussion session. It is provided here to enhance or address comments made during the discussion.