



DIVISION OF AGRICULTURE
RESEARCH & EXTENSION

University of Arkansas System

Implementing Watershed Management Plans through *Extension Education*

Katie Teague

County Extension Agent – Agriculture/Water Quality

Management Plan Emphases

Awareness/Education Need	Beaver Lake Watershed	Illinois River Watershed
Watersheds & Local Water Resources	✓	✓
NPS Sources & Pathways	✓	✓
Urban Runoff Management	✓	✓
Nutrient Management	✓	✓
Riparian Preservation & Establishment	✓	✓
Construction Sediment/Erosion Control	✓	✓
Unpaved Road Maintenance	✓	✓

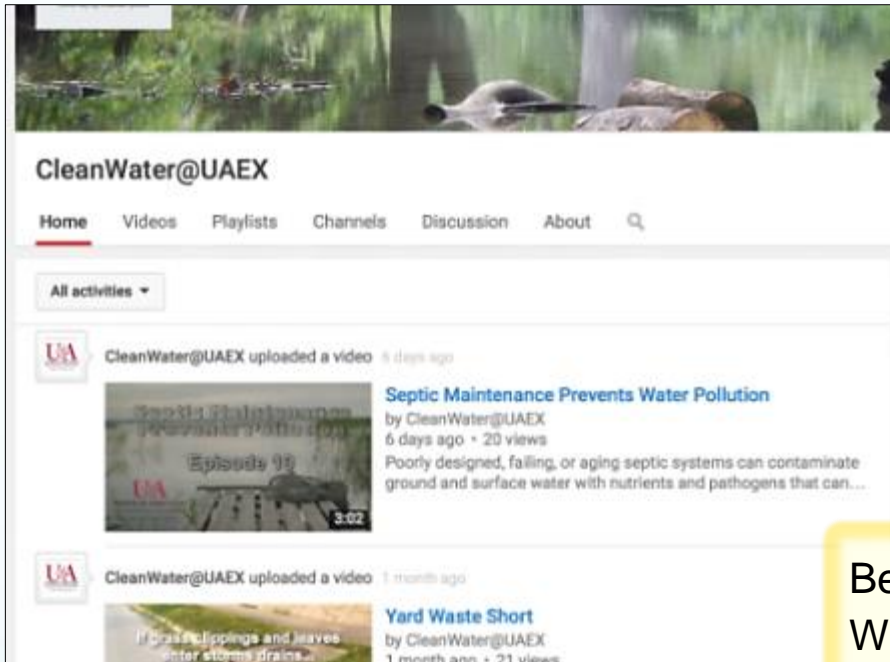
Watersheds, Local Water Resources



Extension's
Water
Connections

August 21, 2015 - *Interview with Tim Nyander and Billy Ammons about Lake Sequoyah serves and the sustainable dredging project to remove sediment bound with phosphorus.*

NPS Sources & Pathways



- Best Management Practices
- Watershed Stakeholders/Partnerships
- HHW & Homemade Cleaners
- Pet Waste Management
- Lawn Watering
- Riparian Buffers, Functions, Values
- Prevent Litter to Protect Water Quality
- Solid Waste Management
- Fats, Oils & Grease Management
- Auto Maintenance

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“Greening Your Life” Online Course



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Cooperative Extension Service

You are logged in as Kate Teague - Student (Return to my homepage)

Home | My courses | Yard & Garden | GYL

Navigation

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- My home
- Site pages
- My profile
- Current course
 - GYL
 - Participants
 - General
- My courses

Settings

- Course administration
 - Grades
- Switch role to...
 - Return to my normal role
- My profile settings

Upcoming events

There are no upcoming events.

Go to calendar...
New event...

Welcome to Greening Your Life

A Course Every Arkansan Should Take

The Greening Your Life on-line, educational course will guide you through a series of short educational units that are designed to help you make informed choices about household and gardening activities that can have an impact on our environment and our drinking water quality among other things.

*This online education course was developed with funding from a Clean Water Act section 319 (b) grant from the EPA funded through the Arkansas Natural Resources Commission.

Course Learning Objectives:

- Participants will gain a knowledge of watershed dynamics in Arkansas.
- Participants will be able to identify home and garden activities that can contribute to local water quality pollution.
- Participants will be able to implement home and garden best management practices (BMPs) to implement their impact on water quality.


Certificate Requirements:

- Complete pre-test
- Complete all module lessons
- Complete modules 1-6 quizzes with 70% accuracy
- Complete modules 7 & 8 quizzes with 80% accuracy
- Complete post-test with 65% accuracy

Getting Started

- Welcome Letter from Instructors
- Test your knowledge before entering the course with the short quiz

Water is important to everyone. On average, Arkansans use 157 gallons of water a day.



Point Source vs. Nonpoint Source Pollution

Oil and grease from leaking vehicles on a parking lot

Point Source Pollution

Nonpoint Source Pollution

SUBMIT



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Home | GYL | Watersheds and Water Pollution (15 Minutes)

Table of contents


- What is a watershed?
- Think about a bathtub...
- A typical watershed
- Watershed Model
- Water Pollution
- Point Source Pollution**
- Nonpoint Source Pollution
- Land-use decisions and actions affect water quality

Point Source Pollution

Where water is affected by point source pollution, the source of the pollution is easily identifiable. It is single source. Common examples include industrial discharges, wastewater treatment plants and...

Watch the video on Point Source Pollution by clicking on the arrow below. When it is over, click on the four videos that come up at the end of this video.

Watershed Model point source pollution



Click here for alternative but for the Watershed Model Point Source Pollution video

After what I've learned here, it is easy to see how one could over-fertilize. I will definitely soil test in the future and apply what I have learned here!”

“I will build and install rain barrels, pay closer attention to correct chemical applications.”

“I have four dogs so the pooper scooper session was very eye opening.”



Archer Learning Center and Springdale Senior Center finished painting a collaborative project with @teamspringdale at park and meadow by the park. Stop by to see the amazing work of these eclectic group of artists! @springdaleschools #drainstocreek #upstreamart #cleanwaterwa



Urban Runoff Management



LID workshops: Landscaping and Engineering for Stormwater Management

- Soil characteristics
- Bioswales and bioretention
- Rainwater harvesting
- Permeable pavement
- Porous pavers
- Incorporating native plants

5 Workshops
239 Participants



Home Runoff Management



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Agriculture and Natural Resources

RA08002

Rain Gardens and Stormwater

Katie Seager
County Extension Agent,
Agriculture/Water Quality

Mike Daniels
Professor, Water Quality
and Habitat Management

John Pennington
County Extension Agent,
Agriculture/Water Quality

Mark Brown
County Extension Agent,
Water Conservation

What is stormwater?

When precipitation falls to the ground at some angle, it either infiltrates into the soil or runs across the land or an impervious surface as stormwater runoff. A runoff is a runoff or stream, eventually flowing to a local storage area such as a pond, a lake or a reservoir. In some cases, stormwater is stored temporarily in small depressions, which infiltrate or evaporate.

Stormwater runoff is a natural process, but it can be greatly altered by development, which creates large areas of impervious surfaces such as parking lots, roads, buildings, roofs, sidewalks and driveways. Impervious surfaces prevent infiltration and create greater volumes and flow velocities of stormwater runoff for a given area. This, in turn, increases the potential for stormwater to runoff and transport pollutants such as sediment, nutrients, bacteria and pesticides toward, or closer to, streams and ultimately to lakes and oceans. It also creates greater potential for flooding in urban areas where small natural drainage areas can no longer accommodate stormwater. Runoff to the natural runoff volume and flow velocity.

To protect our waterways from polluted stormwater, the United States Environmental Protection Agency now has laws in place that require certain municipalities to manage and control stormwater runoff through measures such as the reduction of impervious, nonporous materials, open space preservation and best development practices. Stormwater and property managers can also manage stormwater in a manner that is not only sustainable, pleasing to the eye and beneficial to the environment through the use of rain gardens.

What is a rain garden?

An rain garden captures runoff from impervious surfaces and directs it to infiltrate into the ground. A rain garden is a landscaped depression that collects runoff from impervious areas such as roofs, driveways or parking lots and directs it to infiltrate into the ground. Rain gardens are usually smaller-scale landscaping features that fit perfectly around houses and lawns. The garden's flat bottom and porous soil help distribute rain water evenly across the plot's area, allowing the water to slowly soak into the ground within 48 hours after the rain stops. Appropriately designed rain gardens will not increase overall precipitation since precipitation runoff completion time (traveling cycle) is the length of time.

While they are beautiful, low-maintenance additions to your yard, rain gardens also provide important environmental benefits. Landscaped with native plants, rain gardens provide habitat that attracts land wildlife, including butterflies and birds. By catching and allowing rainwater to slowly percolate into the soil, rain gardens enhance groundwater recharge and decrease stormwater

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Our Campus

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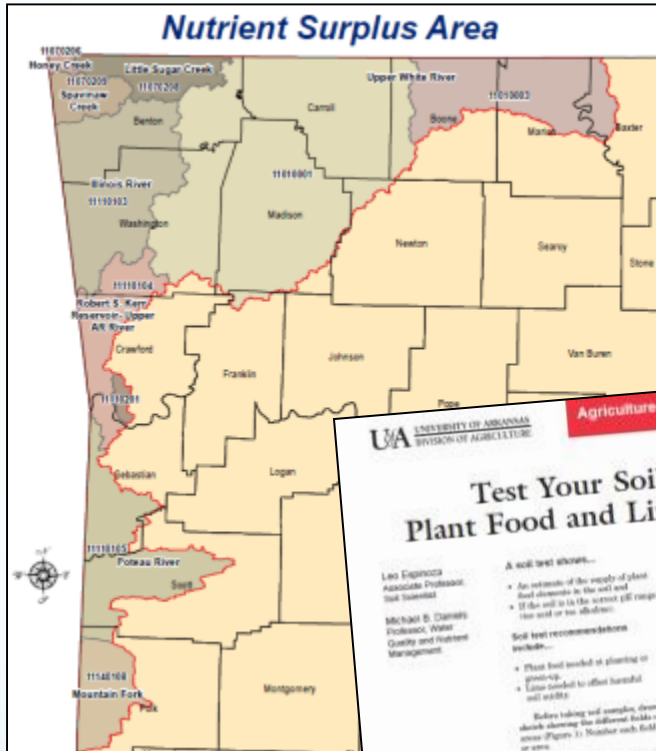
US Army Corps of Engineers
Little Rock District



Beaver Lake
LakeSmart
An environmental self-assessment guide for lakeshore property owners

U of A Arkansas Department of Agriculture
US Army Corps of Engineers
ABLE
Beaver Water District

Nutrient Management



Test Your Soil for Plant Food and Lime Needs

Leo Engstrom, Associate Professor, Soil Scientist
 Michael B. Daniels, Professor, Water Quality and Watershed Management

A soil test shows...

- An estimate of the supply of plant food elements in the soil and
- If the soil is in the correct pH range for soil or tree absorption.

Soil test recommendations include...

- Plant food needed at planting or growth-up
- Lime needed to adjust harmful soil acidity

Before taking soil samples, clean a shovel along the different fields or areas (Figure 1). Number each field or area.

Take soil with a soil probe or shovel from at least 12 samples in each area to obtain a composite (Figure 2). A sipping sampling method is preferred (Figure 3). Fertilizer and lime recommendations are no better than the sample takes.

Sample areas around electric equipment are especially important. If you have a large lawn or garden, sample areas separately that have been treated and different types such field or management soil separately. Use the following procedure:

- Clearly mark each field or section. Mark the area before soil is added (Figure 2).

Visit our web site at <http://www.uaex.edu>

Division of Agriculture, United States Department of Agriculture, and United States Extension Cooperative

Registration Deadline: February 13th, 2015

Only \$20

NWA Landscape Maintenance Workshop

February 19th, 2015 8:30am — 4:15pm
 Rogers, AR

This workshop will recertify Licensed Operators for 3 years and fulfill 6 hours of continued education for Agents in the Commercial Pest Control Section of the Arkansas State Plant Board who hold an ornamental category.

- ✓ Tips for Better Weed, Insect & Disease ID
- ✓ Pesticide Safety
- ✓ Green Options: Responding to Client Questions
- ✓ Tree Injections
- ✓ Pesticide Modes of Action
- ✓ Pesticide Laws and Regulations
- ✓ Neonicotinoids
- ✓ Yard and Grounds Debris Management

Call 479-444-1755 for more information



Yard waste can lead to water pollution

Compost: Break down yard waste in your landscape or garden.

Greenery: Use yard waste for mulch or grass clippings for lawn care.

Reduce pollution with the correct tools, areas and techniques.

Properly dispose your yard waste.

For more information on proper disposal, visit our website at www.uaex.edu

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Preserve & Establish Riparian Buffers



Types Of Riparian Buffers
Stream-side Vegetation That Captures Runoff, Nutrient, and Sediment Pollution

Width
25 to 300 feet

Grass & Shrubs

- Stabilize streambank
- Slow & capture runoff
- Filter pollutants
- Provide food

Trees

- Reduce streambank erosion
- Regulate stream temperature
- Provide habitat

Value

- Protect water resources
- Wildlife corridors
- Visually appealing

Quick Facts

- HS** Grass or Vegetative
- HS** Urban
- HS** Wildlife
- HS** Zoned
- HS** Naturalized

Riparian Buffers: Functions and Values. University of Arkansas System of Agriculture Cooperative Extension. ©2015. <http://www.uaex.edu/publications/PDF/H-502.pdf>

NWA Day of Service Round 4
September 27th 10:30 - 7:30 P
Water + Tools provided

Please come help us remove invasive species around Lake Fayetteville. We will meet at the end of Strawberry Drive by the blue golf cart cover.

cleanwatermwa FOLLOW

11 likes 5d

cleanwatermwa Come help a great group of organizations remove some invasive species at Lake Fayetteville and protect clean water

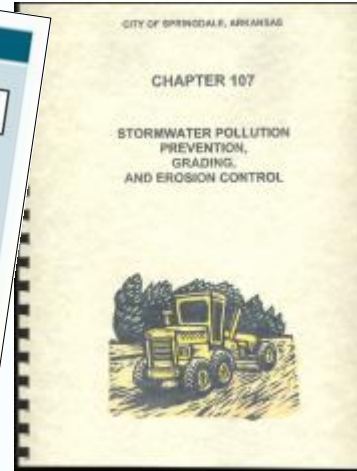
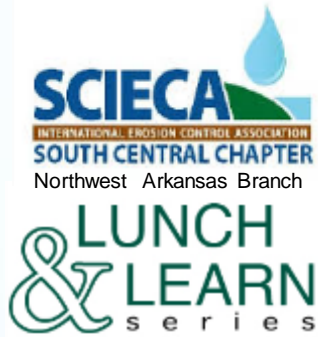
poedirty I'll be there! Thanks for sharing @cleanwatermwa

poedirty @USGBC @usgbc_ar

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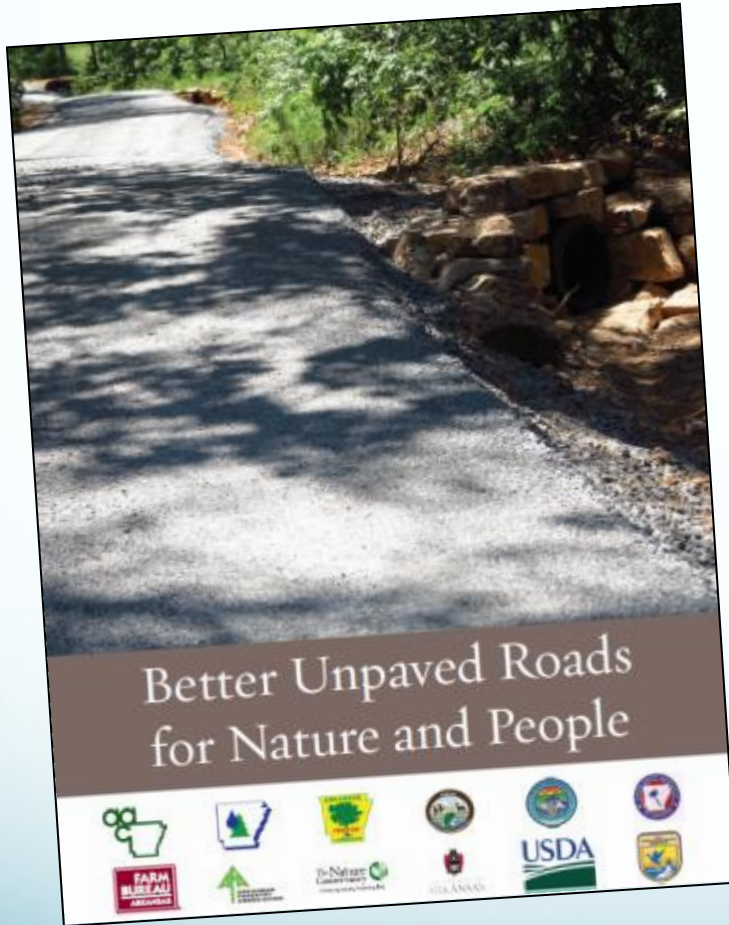
Construction Sediment & Erosion Control



Unpaved Road Maintenance



The Nature Conservancy
FOUNDED 1951. PEKIN, ILL.



Challenges / Lessons Learned

- 💧 **Documenting voluntary BMP implementation without being intrusive**

Greening Your Life course, site visits, engagement events

- 💧 **Linking behavior changes to water quality improvements**

Time lag, links to efforts

- 💧 **Balanced messages**

Promoting successes
Emphasizing issues/needs

- 💧 **Resources**

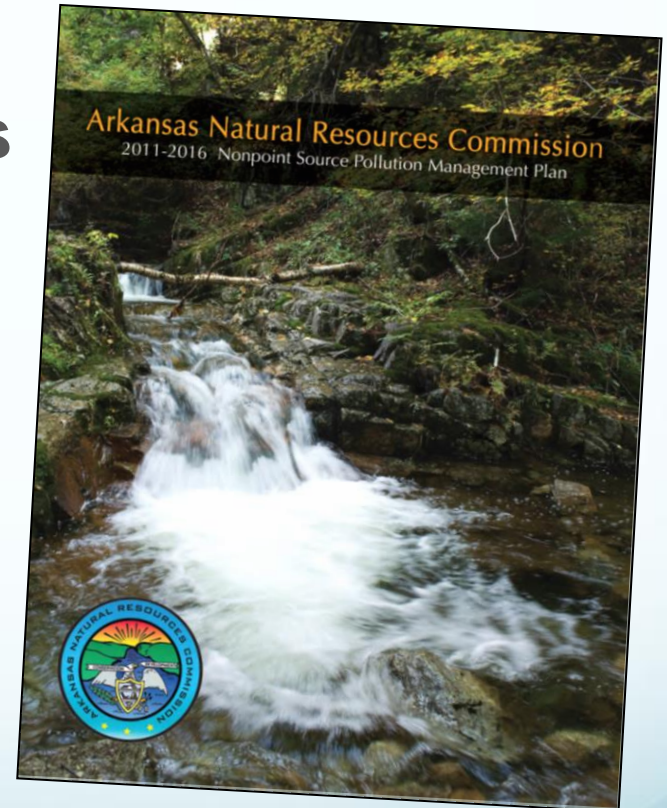


- 💧 **Elected Official Support**
City Councils, Quorum Courts,
Planning Commissions

- 💧 **Enforcement of existing codes and regulations**

What it Takes...

- ✓ Partnerships and collaborations
- ✓ Relationships with organizations (vs. individuals)
- ✓ Local input and engagement
- ✓ Feedback and accountability
- ✓ Adaptive management
- ✓ Full-time dedication ...w/pay?



Questions?

