Fall into friendraising, rain gardens, water quality and drinking water research treatment costs, and more inside this edition of the Beaver Lake Watershed eNews!

October 2015

You are invited to our Friendraiser 2015!

Save the Date for our
Friendraiser 2015
An evening of dinner, music, and a silent auction

Friday, November 6th
6:30 p.m. to 9:30 p.m.
Magnolia Gardens
501 North Main Street, Springdale Arkansas

RSVP required to 479.750.8007 or info@beaverwatershedalliance.org

Enjoy an evening of celebration for voluntary watershed protection in the Beaver Lake Watershed! Bluegrass, born from the White River, will fill the air and Beaver Lake will be served on the rocks. Meanwhile friends and supporters of water quality improvement efforts in the Beaver Lake Watershed celebrate another year of progress. RSVP requested.

About BWA

The Beaver Watershed Alliance was formed in 2011 to establish programming to maintain high quality drinking water in Beaver Lake and improve water quality in the Beaver Lake Watershed. The Alliance represents a diverse stakeholder group from conservation, education, water utilities, technical and science, agriculture, recreation, business, and local government groups working together for the goal of clean water.
Dr. Julian Fairey is an Associate Professor in the Department of Civil Engineering at the University of Arkansas. Fairey received funding for his research titled “Preparing Drinking Water Utilities on Beaver Lake Reservoir to Meet Disinfection Byproduct Regulations: The Impact of Continued Nutrient Enrichments” from the Arkansas Water Resources Center through the US Geological Survey 104B program.

**The Problem:** When nutrients enter a lake or reservoir, like Beaver Lake, algae grows, and the more nutrients the more algal growth that happens. This can be a problem for drinking water treatment plants because organic matter like algae reacts with disinfectants, such as chlorine or even chlorine dioxide, during the water treatment process and can form various chemical compounds, generically referred to as disinfection byproducts.

**So What?:** Some groups of disinfection byproducts are regulated in drinking waters because of their widespread occurrence and concerns with public health issues, such as bladder cancer. Increased inputs of nutrients to Beaver Lake, the drinking water source for over 400,000 people in Northwest Arkansas, may increase the potential to form disinfection byproducts during treatment.

**The Research Question:** Fairey and his team wanted to know, how do nutrient enrichment and increased algal growth affect disinfection byproduct formation during the drinking water treatment process?

**The Methods:** Fairey’s team collected water from the intake of the Beaver Water District drinking water treatment plant in Northwest Arkansas. Nutrients were added to make algae grow to different levels in the intake.
Lunch ‘n Learn - American Legion, Huntsville

Check out our online calendar for more detailed information on upcoming events!

Please share this newsletter with your friends and neighbors so that they can have the opportunity to become active members in the Beaver Watershed community.

The waters were then treated with chlorine dioxide and aluminum sulfate to simulate how the water is treated at Beaver Water District. Next, Fairey’s team chlorinated the raw and treated waters and measured disinfection byproduct formation, with a focus on trichloromethane – one regulated compound.

**The Findings:** Results showed algal growth increased with increasing phosphorus added, suggesting that algal growth in Beaver Lake was limited by how much phosphorus was in the water. However, algae were most abundant with high amounts of nitrogen and phosphorus added together. As expected, the water with the most algae produced the highest amount of trichloromethane when treated with chlorine dioxide. However, the most important finding was more algae in the water meant that it was harder to remove disinfection byproduct precursors. This means that drinking water reservoirs with increased algal growth from nutrient enrichment will be more expensive to treat.

**The Benefits:** Fairey’s research provides information to drinking water treatment plants about how source water quality can influence the production of disinfection byproducts. Furthermore, this information can be used to help guide nutrient management strategies in the effort to protect source waters and public health.

Dr. Fairey published his research in the journal Environmental Science: Processes and Impacts.

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**Beaver Lake Watershed Rain Garden Project installs 14 Rain Gardens in the Beaver Lake Watershed!**
The Beaver Lake Watershed Rain Garden Project led to the installation of 14 rain gardens in the Beaver Lake Watershed, thanks to the work of landowners, volunteers, and support from Beaver Water District! This project offered mini-grant funds to landowners and landmanagers for rain garden installations on residential, commercial, and public properties throughout the Beaver Lake Watershed.

A rain garden is a landscaped area designed to capture and hold excess rain water runoff from impervious areas for a short period, allowing it to soak into the soil. Rain gardens help to slow the flow of water discharged from impervious surfaces during and after precipitation events, reducing water pollution and flooding, and allowing groundwater recharge. Other benefits include aesthetics and wildlife habitat creation within a rain garden.
Six of these gardens were installed on residential properties, and the other eight were installed on commercial properties and public spaces to demonstrate to the public at large about how rain gardens capture runoff from impervious areas to help slow water down, allow it to infiltrate into the soil, and filter it before it flows on to Beaver Lake. You can see these gardens for yourself at the following locations: St. Paul Town Hall, Elkins Senior Activity Center, Madison County Water Facilities Board, Huntsville High School, Watson Primary School, Mitchusson Park, and Hickory Creek Park.

Rain gardens are a practical low impact development tool that landowners can utilize to improve drainage, reduce flooding, and reduce erosion - all while benefiting local water quality! If you are experiencing any of these issues, would like to prevent them, or just want to do something positive for the environment and wildlife habitat, you might consider installing a rain garden on your own property. For more information on rain garden functions and values, design considerations, how to build one, and native plants that thrive in rain gardens, check out the "Rain Gardens and Stormwater" Fact Sheet from the U of A Cooperative Extension and Beaver Water District's Rain Garden Project page.
future of Beaver Lake and its watershed"

For the full article on this year’s Beaver Lake Watershed Symposium in the Madison County Record, click here.

Madison County 4-H Shooting Stars receive Watershed Guardian Award for War Eagle Creek Watershed

BWA Program Coordinator, Bryant Baker, presented the Watershed Guardian Award to members of the 4-H Shooting Stars at this year’s Beaver Lake Watershed Symposium.

This year’s War Eagle Creek Watershed Guardian Award was given to the Madison County 4-H Shooting Stars at last month’s Beaver Lake Watershed Symposium in Huntsville. The 4-H Shooting Stars have gone above and beyond to practice stewardship through volunteering on projects in the War Eagle Creek Watershed. The group helped the Beaver Watershed Alliance plant trees along a stream in Withrow Springs State Park in the spring. They also helped install the rain garden at Mitchusson Park, which they adopted as well. They pledged to maintain the rain garden by pulling weeds, adding new mulch, and watering during dry periods. Additionally, the group has helped maintain the other rain gardens around Huntsville throughout the summer. Rain or shine, this group has worked hard and had exceptional attitudes while doing it! We have had a great time working with them this year. It’s really great to see young people so dedicated to being watershed stewards, which is why they have been awarded the War Eagle Creek Watershed Guardian Award for 2015.
September Stewardship Moments

BWA partnered with the Watershed Conservation Resource Center for a volunteer effort to remove invasive plant species along a tributary to Cato Springs Branch at the base of Kessler Mountain in Fayetteville. 27 volunteers came out to remove Bush Honeysuckle, Privet, and Perilla Mint along this stream, which is the site of a future stream restoration! Thanks to these hard-working volunteers, and to the City of Fayetteville and Beaver Water District for their support for this project, also funded in part by the Arkansas Natural Resources Commission and EPA.
Above: Volunteers came out to plant a newly installed rain garden at Hickory Creek Park, a public use area managed by the US Army Corps of Engineers. This rain garden captures runoff from the West Shelter.

Below: Volunteers helped plant a new rain garden at the Madison County Water Facilities Board in Huntsville. These gardens, and many more, were installed through the Beaver Lake Watershed Rain Garden Project with support from Beaver Water District.