

STORMWATER MANAGEMENT IN AN OKLAHOMA SCENIC RIVERS WATERSHED: THE GOOD, THE BAD, AND THE UGLY

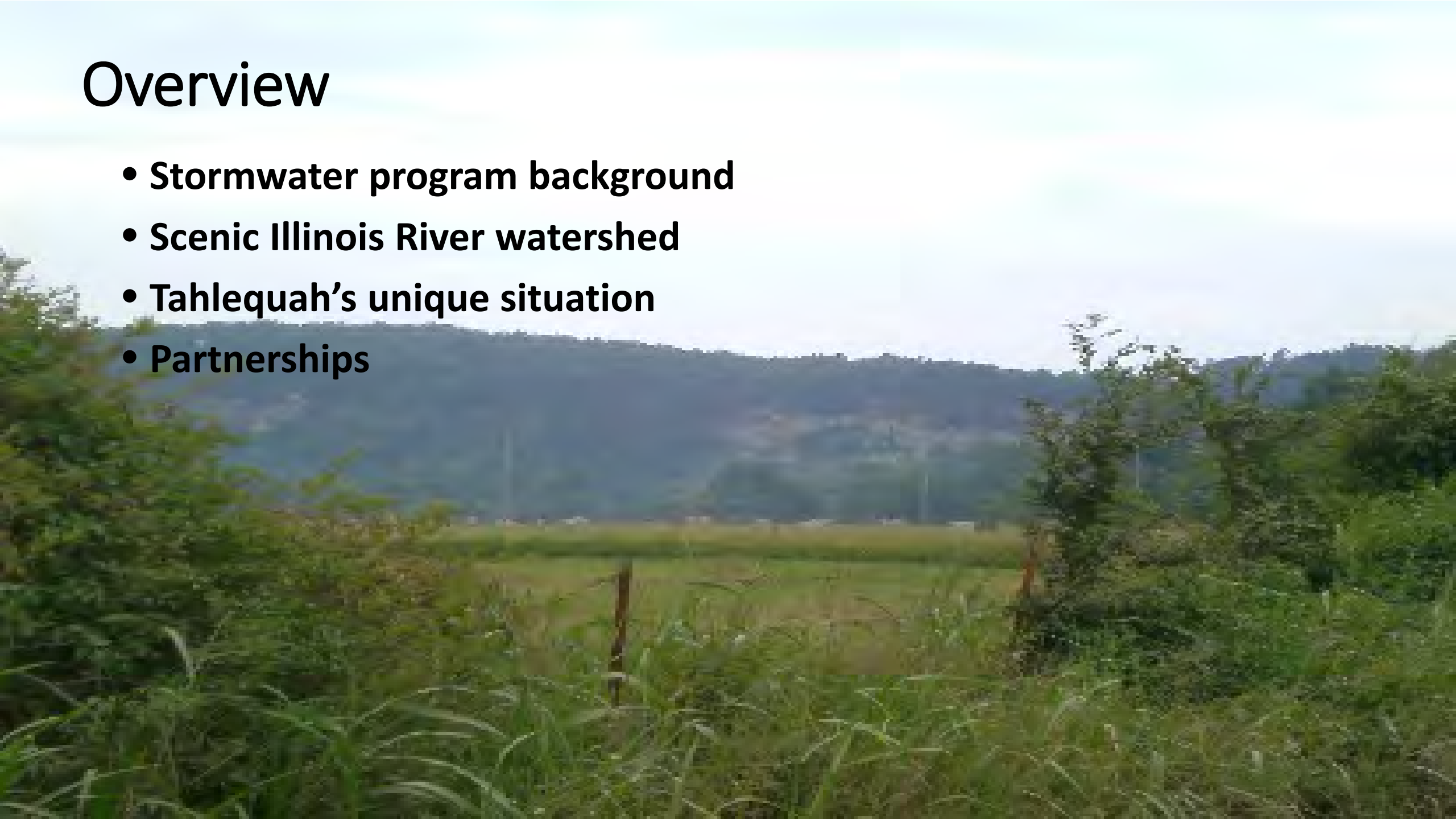
Jahna Hill, M.S.

Stormwater Manager



Overview

- **Stormwater program background**
- **Scenic Illinois River watershed**
- **Tahlequah's unique situation**
- **Partnerships**

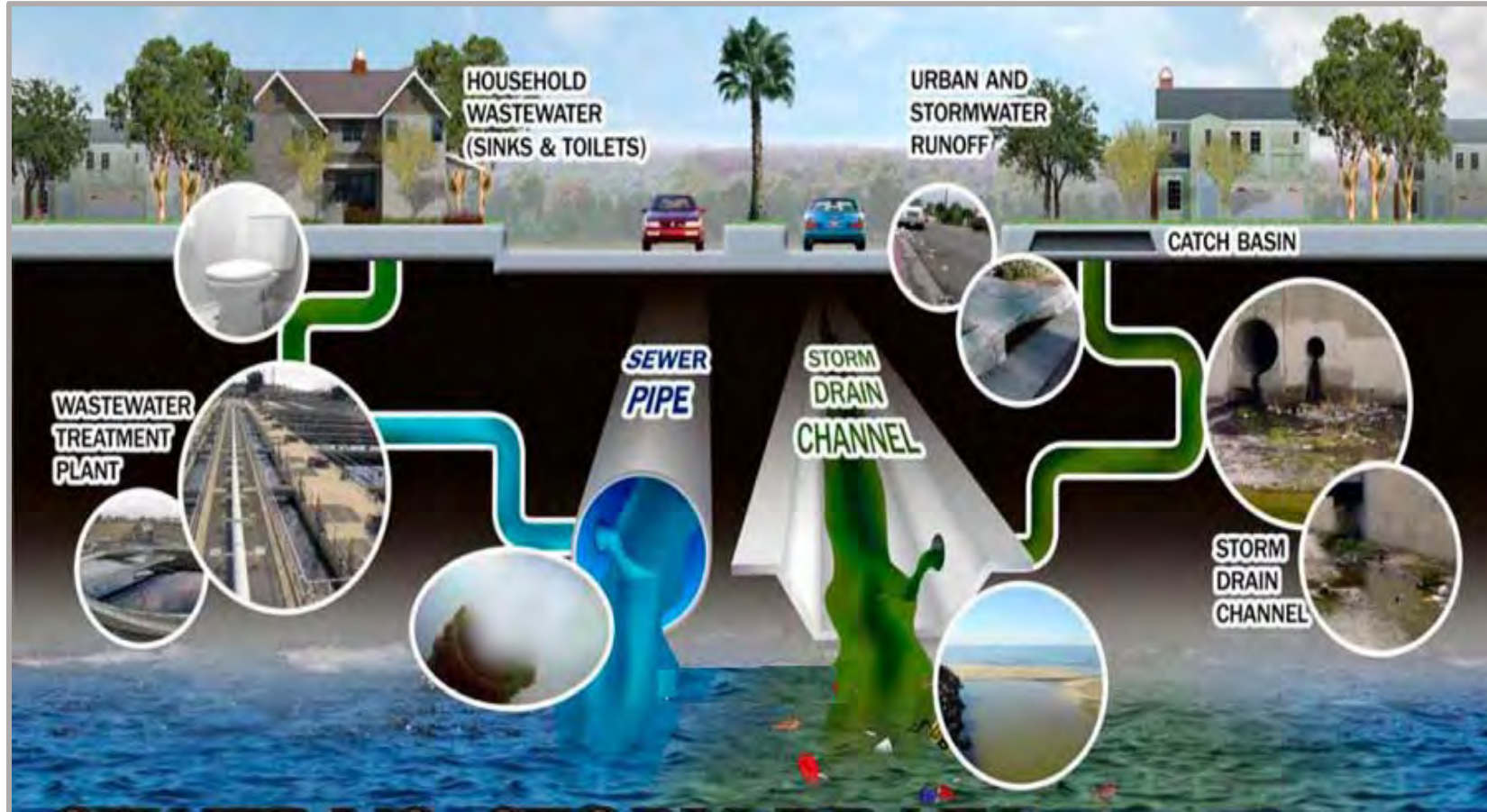


Stormwater Program – Background

- Clean Water Act of 1987
 - Stormwater runoff is the #1 contributor of polluted waterways



Municipal Separate Storm Sewer System (MS4)





Oklahoma Pollution Discharge and Elimination System (OPDES)

- **Authorizes allowable stormwater discharge**
 - **OKR10 – Industrial**
 - **OKR05 – Construction**
 - **OKR04 – Municipal**
 - **Phase I**
 - **Population over 100,000**
 - **Phase II**
 - **Population over 10,000; less than 100,000**



Town Branch Creek
Tahlequah, OK

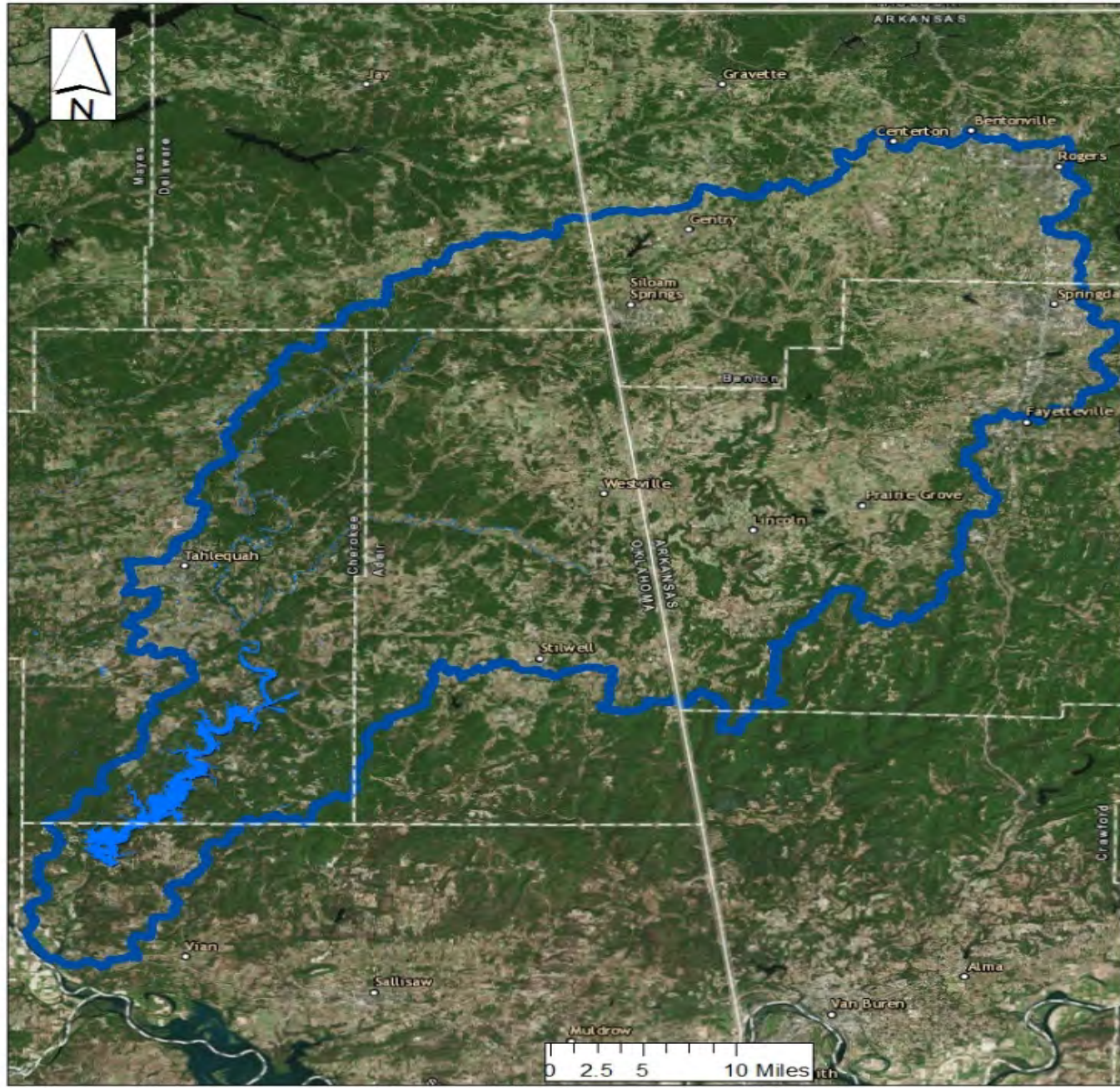
Minimum Control Measures to Minimize Pollution

- **Municipal Stormwater Management Plan**
 - Public education and outreach
 - Public participation and involvement
 - Illicit discharge detection and elimination
 - Construction site stormwater runoff control
 - Post-construction management
 - Pollution prevention / good housekeeping from city operations

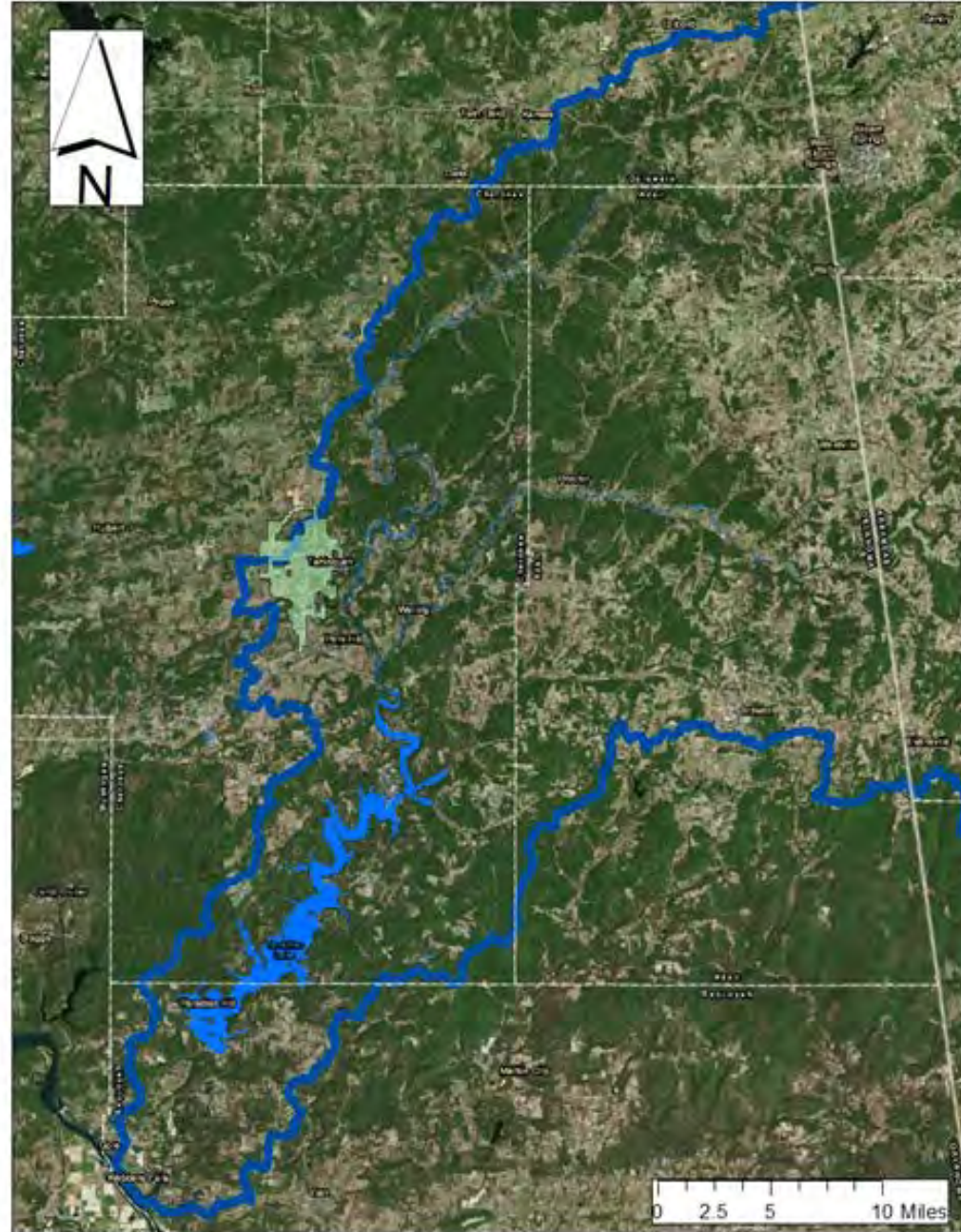


Town Branch Creek
Tahlequah, OK

Scenic Illinois River Watershed



Scenic Illinois River Watershed







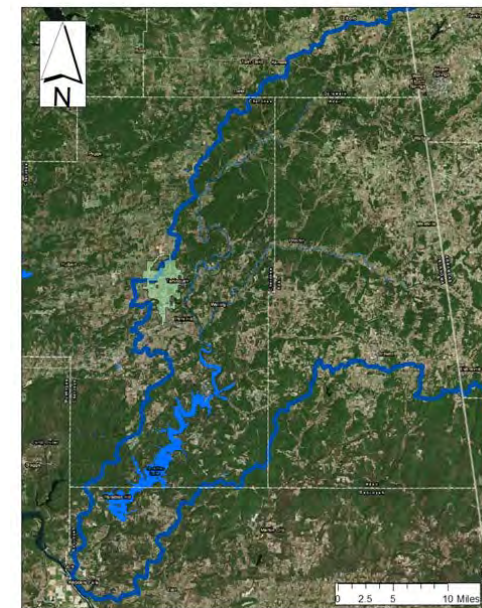
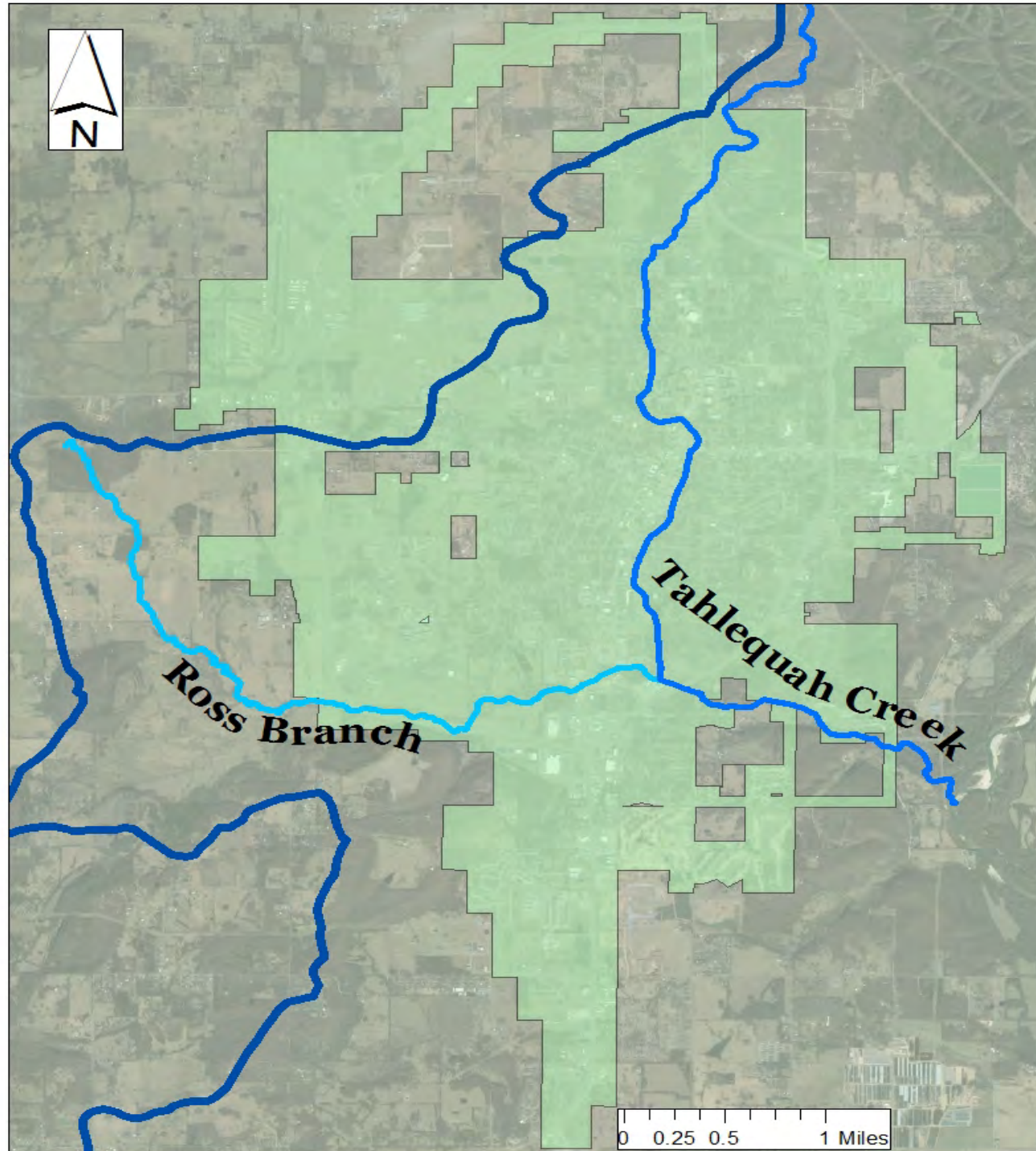


Original Combs Bridge

Tahlequah Creek Watershed

9,457 acres

~15 square
miles

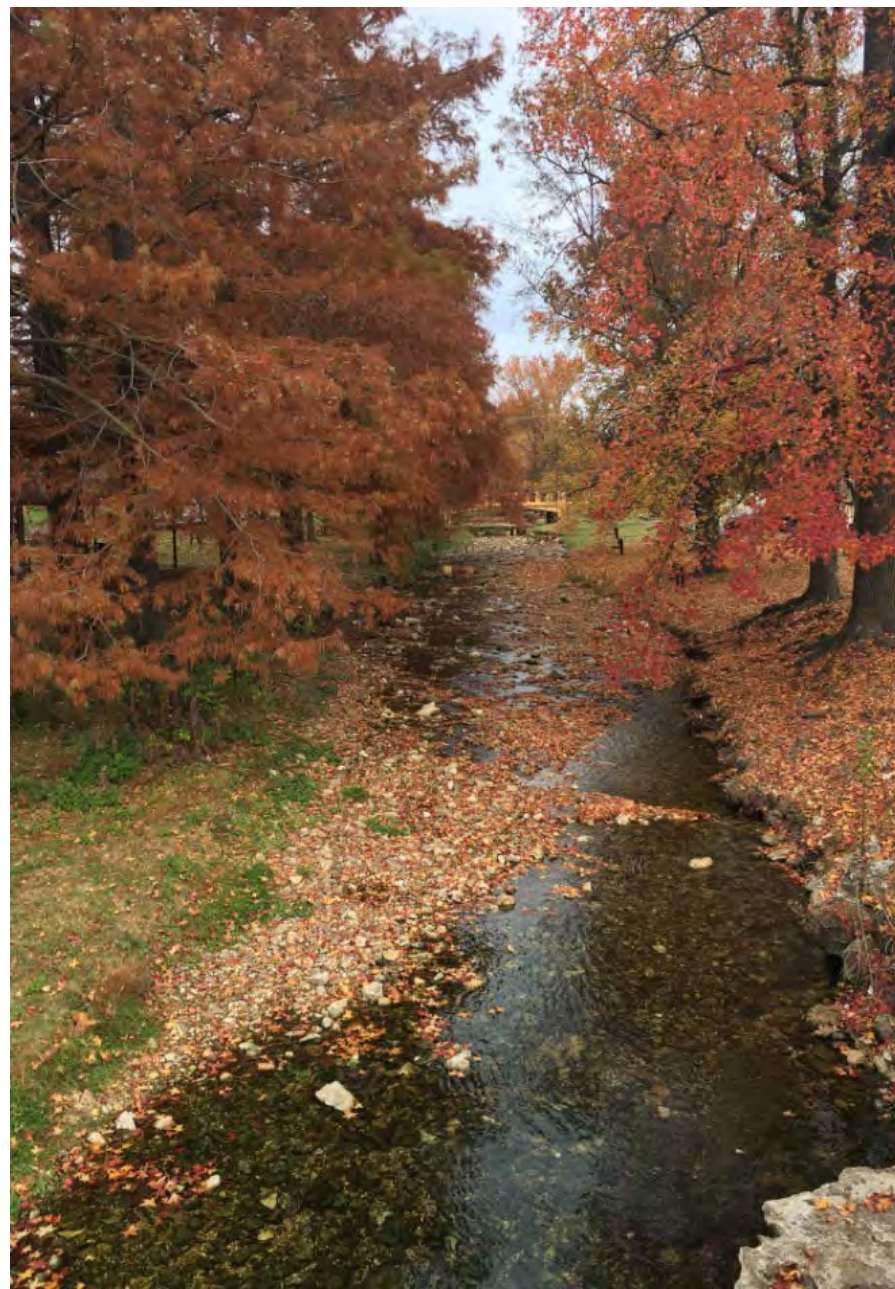




Felt's Park



Town Branch Creek



Sequoyah Park



River Park



**Aquatic
Resource of
Concern**

**Ft. Gibson Lake
Watershed**



**Outstanding
Resource
Water**

**Scenic Illinois
River
Watershed**

Water Quality Standards

- Tahlequah's permit requires additional monitoring
 - Stormwater runoff sample events
 - Baseflow sampling during 4 seasons
 - Reference creek not available:
 - Baseline pollutant loading of historical data is not available



Tahlequah's Phase II Permit – Water Quality

- **ODEQ 303(d) List of Impaired Water Bodies**
 - *Escherichia coli (E. coli)*
 - *Monthly testing*
 - *Sewer line inspection reports*
 - *Public outreach*
 - *Signage*



Town Branch Creek at Felt's Park

Tahlequah's Phase II Permit – Water Quality

- **Additional monitoring**
 - Chemical parameters
 - In-stream flow measurements
- **Biological indices**
 - Fish collections
 - Aquatic macroinvertebrate collections



Illicit discharge detection and elimination

- Inspections during various weather conditions
- Dry weather field screening
 - Indicator of illegal discharge
 - Episodic



Floatables (trash)

- Creek clean-up and free dump day (twice/year)



- Street sweeper removal
 - 55 tons of household trash, brush, and street sweepings removed in 2017

Riparian Protection



**Town Branch Creek at
Head of History Trail**

Pollution prevention / good housekeeping from city operations

- Annual stormwater pollution prevention training
- Facility inspections



Pre- and post- construction inspections

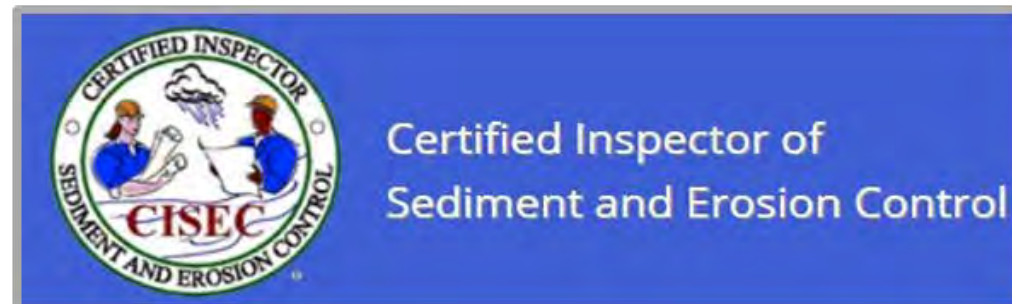
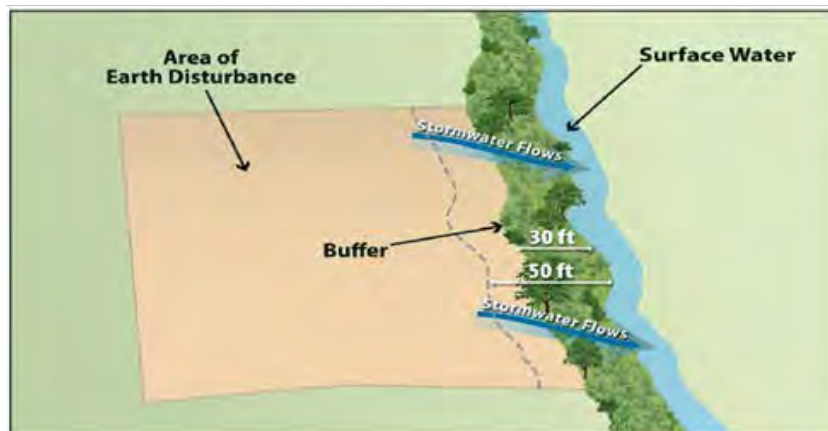


Before land disturbance



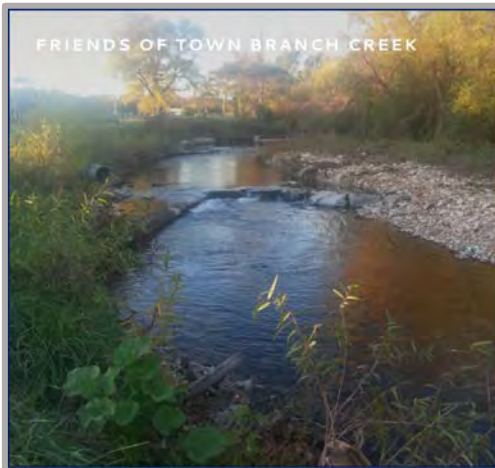
During construction – lack of erosion control

Stormwater Pollution Prevention Plan (SWP3)




Public outreach and involvement

- **Friends of Town Branch Creek**
 - **Mission Statement:**
 - **Preserve the unique biology and aesthetic value of Tahlequah's Town Branch Creek watershed through public education and involvement.**



E. coli collection and bacteria colonies

Friends of Town Branch Creek




Jarvis Hill
City of Tahlequah
Stormwater Manager

Our mission is to educate citizens about water quality issues, preserve the biological integrity of the natural resource, and promote the aesthetic value of the creek. Our group is part of the City of Tahlequah's Stormwater Program.

It is important to recognize that rain water drains to Town Branch Creek, as well as Ross Creek and Pecan Creek. Stormwater is not treated before it enters these waterbodies; it is important to keep stormwater free of trash, debris, and pollution.

Town Branch Creek is impaired by *Escherichia coli* (*E. coli*), which may pose health risks to people fishing and swimming in the stream. The current status of *E. coli* is currently being researched by Friends of Town Branch Creek and the Stormwater Program.

Inhabitants of Town Branch Creek



Orange-throated Darter
(*Etheostoma spectabile*)


Jon West
Oklahoma Department of Wildlife Fisheries
Biologist

This rainbow-hued darter can be found throughout Town Branch Creek, if you know how and where to look. The males (pictured above) can be uncommonly striking during their breeding season which ranges from February to May. Orange-throats prefer clear, gravel-bottomed streams so they can hide under rocks in riffles and feed on insect larvae and fish eggs. To catch a glimpse of one you would have to use a kick seine in a riffle or, as an alternative, by donning your mask and snorkel and submerging into their world. With a maximum length of 2.5 inches they aren't winning any trophies for size, but what they lack in size, they make up for in beauty.

NEXT MEETING

Tuesday, Nov. 7th, 2017
5:30 PM

Brookside House
124 N. Brookside Ave.
Tahlequah, OK



CONTACT US

Facebook
Friends of Town Branch Creek

Email
TownBranchCreek@gmail.com

Instagram
TownBranchCreek

Website
friendsoftownbranchcreek.weebly.com





April 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	May 1	May 2	May 3	May 4	May 5

Volunteer Jahna Hill at Town Branch Creek.

Before, it was just a great creek that ran through town. I would bring my kids to the park, let them play in it, and for school, it was a great resource to have right outside the college doors. But since I've started monitoring it, I'm in it once a month, come rain, snow, or heat. I am very protective of it now.

In my stormwater position (in Tahlequah) I started collecting E. coli samples with the intent of getting it off the 10,000 list. It seems to be in good shape; the monthly results are pretty constant, with all the results generally the same every month.

I found my niche when I found Blue Thumb. I found a group of people who were as super nerdy as I am and who are as excited about fish and bugs and water quality as I am.

-Jahna Hill
Blue Thumb Volunteer

Critter of the Month



Lepomis megalotis

Longear Sunfish, known as perch, are in the bass family. They have a black flap covering the gills. Males develop beautiful spawning colors of turquoise, neon-orange, and orange-red (pictured). With a maximum length of 5 inches, these aggressive fish are both predators and prey. They feed on aquatic bugs, crayfish, small fish, and fish eggs. Males protect the nests located in the gravel creek-bed. DNA sampling in the OK Ozark ecoregion determined we have a unique species of Longear when compared to AR or MO Ozark creeks.



Stormwater Splash

Stormwater runoff carries trash, debris, chemicals, and nutrients from yards/streets. The Environmental Protection Agency (EPA) determined in the 1980's that stormwater runoff is the #1 source of polluted waterways in the U.S. EPA's Clean Water Act requires each state, as well as cities with a population greater than 10,000 residents to obtain a permit to discharge stormwater into a local waterbody. The Okla. Dept. of Environmental Quality is tasked with enforcement of the OKR04 Municipal Stormwater Permit. Tahlequah's permit requires a water quality monitoring plan because stormwater discharges into the Scenic Illinois River. This article will run every 3rd Sunday with new information each month prepared by Stormwater Manager, Jahna Hill. Please visit www.cityoftahlequah.com, Stormwater Dept., or call 918-456-0651, ext. 2270.

Green Team

A FREE trash dump-day and community clean-up will be held on Sat., April 14, 2018 from 10am-2pm. The dump is available to Tahlequah residents and a current TPWA utility bill is required. Bring your used motor oil, cardboard, paper, number 1 and 2 plastics, aluminum, metal cans, electronics, and unwanted items to the Solid Waste Dept. located at 1851 N. Douglas Blvd. Please call 918-456-8332 for more information. The Chamber of Commerce and Tahlequah Young Professionals and Entrepreneurs (TYPE) will host the community clean-up of our streets, parks, and creeks. Cleaning supplies and drinks/snacks are provided. Please register at www.mytahlequah.com. This event is funded by the Solid Waste Dept. and Stormwater Program.

Construction Corner



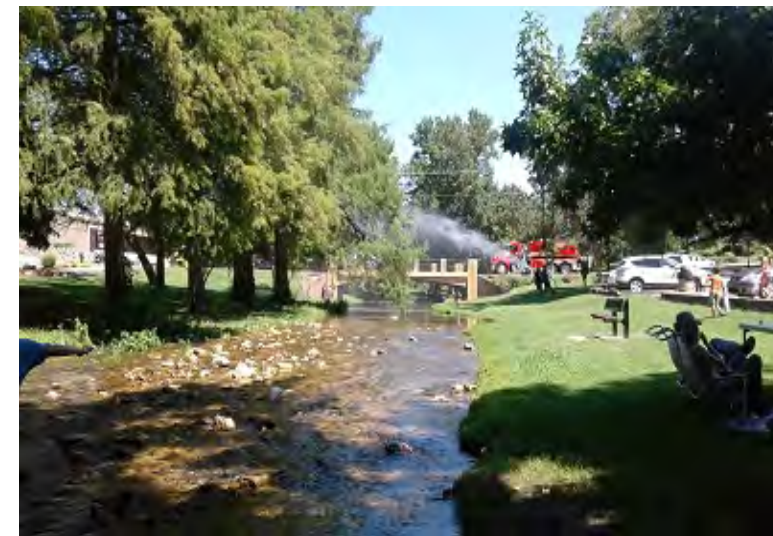
The Cherokee Nation Pavilion is located near Town Branch Creek at Sequoyah City Park. During construction, erosion control devices may prevent sediment (pollution) from exiting the site and protect water quality. The site perimeter is protected by silt fence and hay bales that filter sediment from stormwater runoff. The near-by storm drain is protected from sediment with coconut matting anchored to the grate, orange waddle (mulch within a mesh sock), and sand bags. The pavilion is a replica of an 1843 structure that housed the largest intertribal peace gathering of that era. The space will host events, music, markets, and cultural classes.



TahlequaH₂O

A vibrant, folk-art style illustration of a black bear and a brown rabbit standing on a grassy bank next to a flowing river. The bear is holding a branch with green leaves and a nut. The rabbit is also holding a similar branch. The background features a dense forest of green trees, a bright yellow sun with rays, and several blue birds flying in the sky. Small fish are visible in the river. The signature "JACOB" is in the bottom right corner of the illustration.

Saturday August 19 2017
Sequoyah City Park in Tahlequah
Water Quality Ecology & Biology



Mark Your Calendar for Saturday, September 15, 2018



Contact Information

- Email: stormwater@cityoftahlequah.com
 - 918-456-0651 ext. 2270
- City of Tahlequah – Stormwater Dept.
 - www.cityoftahlequah.com
- Friends of Town Branch Creek
 - www.friendsoftownbranchcreek.weebly.com

