

# OKLAHOMA'S NONPOINT SOURCE MANAGEMENT PROGRAM

## 2022 ANNUAL REPORT



The USEPA provided partial funding for activities discussed in this report through §319(h) FY 2023, C9-996100-23, Project 2, Output 2.4.1a

For more information on activities discussed in this report, visit our website:  
<https://conservation.ok.gov>

**Oklahoma Conservation Commission  
Water Quality Division  
2800 N. Lincoln Blvd. Suite 200  
Oklahoma City, OK 73105**



This document was prepared as a requirement for the Clean Water Act Section §319 Program. This document is issued by the Oklahoma Conservation Commission (OCC) as authorized by Trey Lam, Executive Director. Copies have not been printed but are available through the agency website. Two printout copies have been deposited with the Publications Clearinghouse of the Oklahoma Department of Libraries. All programs and services of the OCC and the Oklahoma Conservation Districts are offered on a nondiscriminatory basis without regard to race, color, national origin, gender, religion, marital status, or disability.

**Cover photo: Salt Fork of the Arkansas River, Alfalfa County, Oklahoma  
Back photo: Eagle Chief Creek, Major County, Oklahoma**

# Oklahoma's Nonpoint Source Management Program

## Overview:

Oklahoma's Nonpoint Source (NPS) Pollution Management Program is a combination of federal, state, and local agency programs. The NPS Program is supported federally by Section 319(h) of the Clean Water Act (CWA), which requires states to 1) assess and report on NPS issues in OK waters and 2) develop a Management Program that creates and implements objectives for addressing the problems. These core program elements are described in the Oklahoma NPS Management Plan.



By state statute, the Oklahoma Conservation Commission (OCC) serves as the technical lead agency of Oklahoma's NPS Program. This responsibility means monitoring and assessing waterbodies for NPS impacts and implementing programs to reduce these NPS issues, with the ultimate goal of restoring full support of the designated beneficial uses of all waterbodies. With input from the NPS Working Group, comprised of more than 30 agencies, tribes, organizations, and universities, the state follows an organized process to identify NPS threats and impairments to water resources, determine causes, extent, and sources of the problems, and prioritize the watersheds needing improvement. Solutions to the NPS problems are then planned and addressed, primarily through projects in priority watersheds to provide implementation and education.

Oklahoma's NPS Management Program is *non-regulatory*. On-the-ground conservation is the primary focus, and less than 10% of OCC funds support administrative duties. **Planning** and **educating** to address NPS problems are the backbone of OCC's program and are critical to its success. Long-term water quality **monitoring** and **assessment** are essential to help prioritize areas to target through the program and evaluate its effectiveness. **Implementation** of Conservation Practices (CPs) through cooperative, targeted, voluntary efforts allows improvement and protection of water quality and other resources while maintaining agricultural production goals.

Oklahoma's NPS program is largely funded through the Environmental Protection Agency (EPA) Clean Water Act Section 319(h) NPS Management Program. The Oklahoma Secretary of Energy and Environment (OSEE) is the state administrative lead and recipient of CWA program funds, disbursing Section 319 dollars to OCC and partners, ensuring that all NPS activities meet appropriate state and federal guidance and priorities. Federal funds are matched by monies from the State's Conservation Infrastructure Revolving Fund, state and local partners, and most importantly, local landowners who voluntarily participate in cost-share programs to install conservation practices which facilitate agricultural production goals while protecting soil and water resources. In recent years, Oklahoma has formed strong partnerships, networking with multiple agencies to secure matching funds to increase the total amount of funding available to address NPS issues.

## In 2022:

The OCC implemented its 2022 NPS Management Program efforts with \$2.8 million in U.S. Environmental Protection Agency (USEPA) Clean Water Act Section 319(h) funding and \$1.8 million in state funds. The monitoring program is allotted 28% of the budget, the Blue Thumb education program receives 18%, and the remainder is used for technical support and implementation. Major accomplishments for the NPS Management Program in 2022 include 1) progress in partnerships and projects in watersheds including Little Beaver Creek, Illinois River, Grand Lake, Crow Creek, Lake Thunderbird, and Wister Lake, 2) developing NPS Success Stories in six new waterbody segments, 3) continued expansion of the soil health education program focusing on the nexus between healthy soils and water quality protection, 4) expansion of education programs in support of partners including the Grand River Dam Authority, Oklahoma tribes, USDA NRCS, General Mills, and others, and 5) continued water quality monitoring of streams across the state continuing the fifth cycle of the Rotating Basin Monitoring Program. Highlights of Oklahoma's progress in implementing the NPS Management Program during FY2022 are included in the following pages. While efforts funded through Section 319 are emphasized, projects conducted by NPS Program partners are also included. Readers are encouraged to access more details on project and program efforts via web links where provided.

# Oklahoma's NPS Management Program

## Planning:

The long- and short-term goals of Oklahoma's NPS Management Program Plan set the course for addressing NPS pollution throughout the state and comprise the vehicle to its mission, "To conserve and improve water resources through assessment, planning, education, and implementation."

**OK's NPS Program areas: Planning, Implementation, Education, and Assessment.**

Long-Term Goals	Progress Toward Attaining
<p>By 2030...establish a Watershed Based Plan (WBP), Total Maximum Daily Load (TMDL), implementation plan, or achieve full or partial delisting based on water quality success to restore or maintain beneficial uses in all watersheds identified as impacted by NPS pollution on the 2002 303(d) list, unless the original basis for listing is no longer valid.</p>	<p>Oklahoma currently has:</p> <ul style="list-style-type: none"> <li>• 637 TMDLs for 359 waterbodies impaired by bacteria, turbidity, low dissolved oxygen, and nutrients. Work to address additional impairments is ongoing.</li> <li>• Fifteen WBPs, and implementation of CPs to improve water quality is ongoing in five of these watersheds.</li> <li>• 101 published success stories on the EPA's §319 website, indicating delisting of 146 pollutants from 101 impaired waterbodies due to CP implementation and education</li> </ul>
<p>By 2050...attain and maintain beneficial uses in waterbodies listed on the 2002 303(d) list as threatened or impaired solely by NPS pollution.</p>	<p>Oklahoma has delisted more NPS impaired streams than any other state with a total of 100. Strong partnerships with other agencies, particularly the NRCS, are resulting in additional funding for implementation of practices focused on water quality improvement.</p>
Short-Term Goals	Progress Toward Attaining
<p>Monitor at least 250 streams, rivers, and other waterbodies every five years to determine causes and sources of NPS impairments.</p>	<p>The water quality of more than 15,467 stream miles has been assessed and presented in the State's biennial Integrated Report. Summary reports are written for each basin at the end of each two-year monitoring cycle.</p>
<p>Prioritize watersheds using the process described in the NPS Management Plan, then draft and update WBPs or similar planning documents for top priority watersheds.</p>	<p>Fifteen WBPs are currently approved. All watersheds in the state were assessed with the new prioritization scheme, and the OCC is working with partners to develop at least three additional plans.</p>
<p>Provide educational information through the statewide Blue Thumb Program. Blue Thumb staff will work with Conservation Districts as requested to develop and maintain education programs.</p>	<p>Oklahoma's Blue Thumb Education Program currently has active volunteers in 29 of the 77 counties of the State, with 79 active monitoring sites. Approximately 50 Conservation Districts have joined the nonprofit Oklahoma Blue Thumb Association.</p>
<p>Reduce NPS loading in priority watersheds with accepted WBPs through implementation of conservation practices. Implement water quality restoration and protection efforts in additional priority watersheds annually, as identified by the Unified Watershed Assessment (UWA) in the updated NPS Management Plan.</p>	<p>Oklahoma's NPS program has been successful at partnering with various agencies to secure funding and match federal funds to increase the total amount of funding available to address NPS issues, including EPA's Clean Water State Revolving Fund (CW-SRF), NRCS, public companies, and private landowners. Work continues that will advance NPS related programs in watersheds prioritized in the Unified Watershed Assessment. This includes support for education and training, water quality monitoring, and partnering with USDA to focus conservation dollars in high priority UWA watersheds.</p>

# Oklahoma's NPS Management Program

## Implementation:

Current OCC priority watershed implementation projects are located in two general parts of the state: the east and the west-central. The predominant agricultural practices vary between these two general areas, so the implementation focus is slightly different in each area. In the east, extensive poultry production and related land application of waste as fertilizer has contributed to the build-up of high levels of nutrients, particularly phosphorus, in the soils. Consequently, CPs focus on riparian buffers and animal waste management. In the west-central part of the state, wheat and cattle production dominate agricultural activity, often contributing to water- and wind-driven soil erosion in conventional tillage operations in the sandy soils. No-till and field conversion CPs are the focus of implementation efforts in this area. Establishing riparian buffers is an important component of all projects, as these vegetated regions act as filters to take up nutrients, and roots help stabilize streambanks to reduce erosion. Fencing livestock out of riparian areas also reduces the amount of fecal bacteria in the stream.

Despite some differences in CP focus, all OCC priority watershed implementation projects share a common design which has resulted in success both in number of participants who are implementing CPs in each area and in actual, measurable water quality improvement:

- **Planning:** have data/information that indicates NPS problems that can be addressed with a project
- **Local leadership and buy-in:** get support of local Conservation District and hire local coordinator; establish a Watershed Advisory Group (WAG) that includes all interests to drive implementation planning
- **Targeting:** use an effective model (e.g., SWAT) to locate pollution hotspots to target for implementation
- **Effective monitoring:** use a proven study design (e.g., EPA's Paired Watershed Method) and sampling method (e.g., continuous, flow-weighted sampling) to obtain sufficient data to evaluate impacts on water quality
- **Demonstration/Education:** establish a demo farm where landowners can see a suite of CPs in action
- **Partnerships:** look for creative ways to engage other agencies, leveraging hard dollars and matching funds
- **Long-term commitment:** commit to have multiple phases in the project (i.e., be in watershed for more than 5 years) to allow project concepts to take hold and prove their way from producer to producer

## Implementation Projects:

During FY2022, approximately \$638,041 dollars in federal \$319 funds, Oklahoma state funds, and private landowner funds were expended for implementation of CPs in six priority watersheds (see map). The majority of these funds focused on riparian area protection.

An additional \$5,196,766 in state and matching fund implementation dollars were invested statewide in NPS projects through the Locally-led Cost-Share Program, partnerships with General Mills, and Oklahoma Association of Conservation District CARES Project to support historically underserved or socially disadvantaged producers to protect soil and water quality.

A brief update of implementation in each of the OCC priority watershed projects is given in the following pages. Details of each project, including reports and Watershed Based Plans, can be accessed via the OCC Water Quality Division website under Priority Watershed Projects.



# Water Quality Monitoring

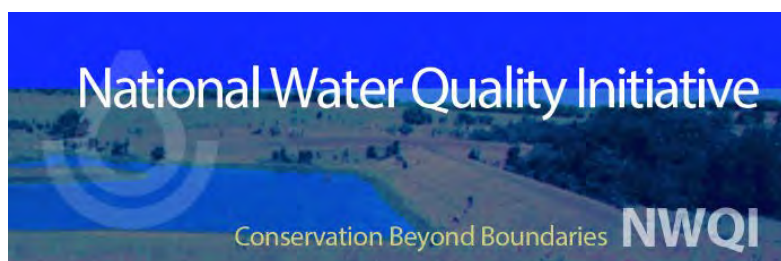


The Oklahoma Conservation Commission (OCC) has an extensive and unique monitoring program assessing essential components of water quality, biology, and habitat in streams across the state. Effective monitoring and assessment are essential to determine the extent, nature, and probable sources of NPS pollution and show improvement due to conservation programs across the state.

## Implementation Monitoring Program:

Implementation monitoring is performed to determine the effects of conservation practices (CPs) on water quality in high priority watersheds. Implementation monitoring usually involves sampling streams during defined periods before and after CPs are installed in a watershed.

Due to budget cuts, OCC and its partners are turning to collaborative projects such as the Regional Conservation Partnership Program (RCP) and the National Water Quality Initiative Program (NWQI) to fund implementation in priority watersheds. With these, OCC continues assistance in the technical delivery and the critical monitoring efforts needed to determine changes brought about by the prescription of CPs. OCC will remain flexible in the monitoring approach so that appropriate monitoring can determine changes in water quality in these watersheds with available funding and time constraints.



NRCS provides technical and financial assistance to landowners to plan and apply land treatment and structural practices on a voluntary basis to improve water quality while maintaining the essential production of food and fiber in Oklahoma's agricultural areas. NRCS has been engaged with landowners and partners on two ongoing water quality projects targeting assistance. The National Water Quality Initiative (NWQI) completed its third year of implementation in 5 watersheds located in eastern and SW Oklahoma. NWQI utilizes Farm Bill funding through the Environmental Quality Incentives Program (EQIP).

### FY 2022:

Ongoing projects include: Little Beaver Creek NWQI Project and the New Spiro Lake/Holi-Tuska Creek NWQI Project, Riparian Protection in the Grand Lake and Illinois River Watersheds, Septic Tank Replacement in Grand Lake and Hudson Lake Watersheds, Regional Conservation Partnership Neighbors Helping Neighbors Project in eastern Oklahoma, and the development of the Oklahoma HAWQS water quality model.

The Rotating Basin Monitoring Program has been expanded in most of these watersheds to help measure potential impacts from conservation practice installation and education programs associated with these projects and to support watershed plan implementation. In addition, water quality monitoring completed by partners such as the Grand River Dam Authority, City of Spiro, and others helps supplement these efforts.



## Rotating Basin Monitoring Program:

The Rotating Basin (RB) Monitoring Program has allowed for the identification of impaired streams to target for implementation projects, the determination of high quality streams used as reference sites to gauge the health of other streams, the detection of changes in NPS pollutants following implementation of CPs by project partners, and the use of data by Oklahoma Department of Environmental Quality (ODEQ) to create total maximum daily loads for impaired streams.

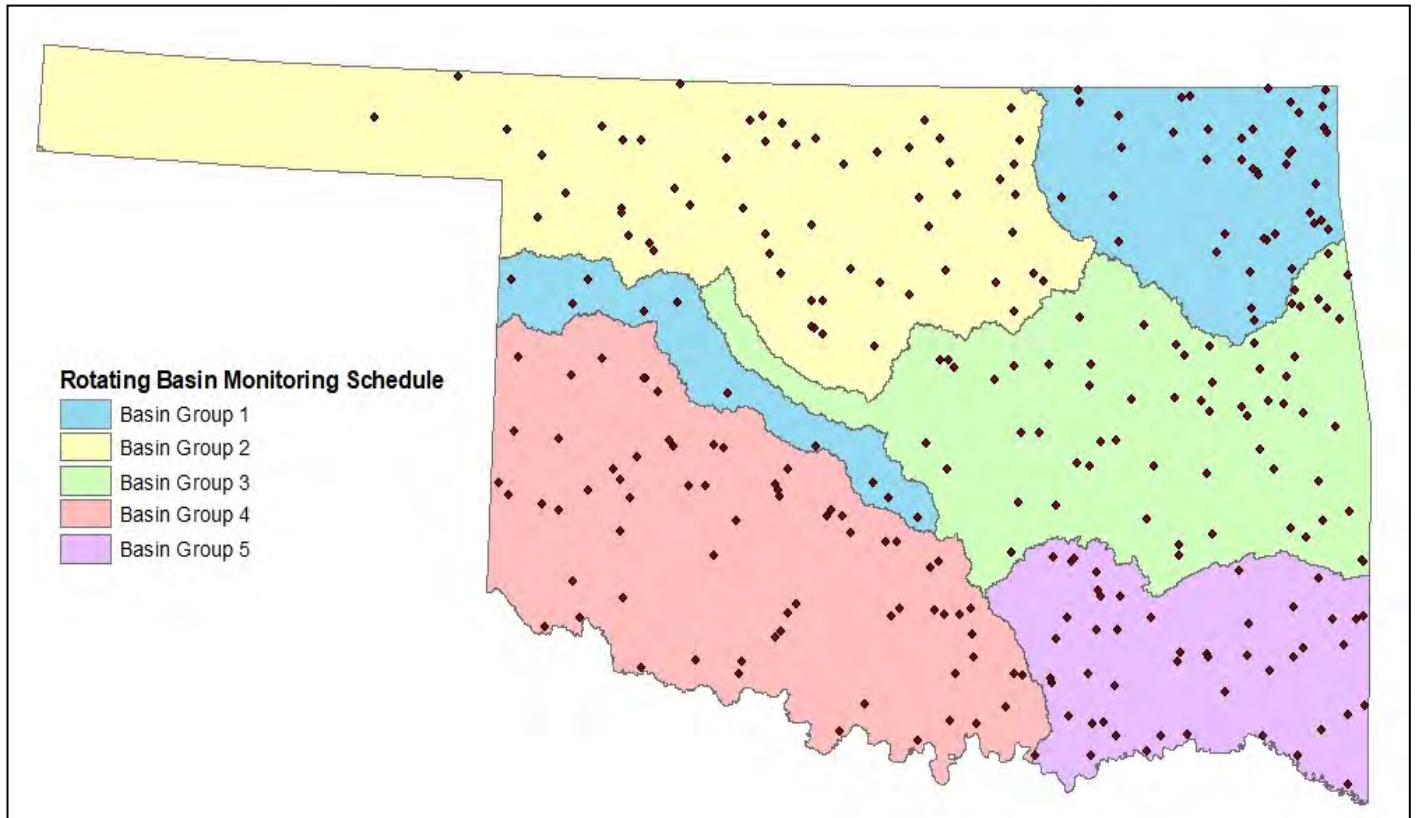
For the RB program, a total of at least 250 fixed sites are monitored on a rotational schedule by basin (see map). Sites within a basin are sampled every five weeks for two consecutive years to gather water quality data. In addition, a fish collection and habitat assessment is performed. Benthic macroinvertebrates are collected twice a year. Each year a new basin is sampled, meaning all sites are sampled within a 5 year period. This frequency of sampling allows for both broad coverage of streams across Oklahoma and the assessment of streams for attainment of beneficial uses. Approximately 100 sites are assessed each year.

In 2022, OCC finished the fourth cycle of monitoring in Basin Group 5, continued the second year of the fifth cycle of Basin Group 1 and began the fifth cycle of Basin Group 2.

Oklahoma continues to experience climatic variations which present a challenge to ambient monitoring of small and medium sized streams. OCC has revisited planning efforts and made some revisions to the RB Program site list. OCC has dropped some sites which have stopped flowing or dried during previous monitoring cycles and added some sites deemed significant and important to the determination of the effects of NPS pollution.

### Water quality parameters assessed:

<u>In field:</u>	<u>Lab:</u>
dissolved oxygen	ammonia
water temperature	nitrite
pH	nitrate
turbidity	total Kjeldahl nitrogen
conductivity	ortho-phosphate
alkalinity	total phosphorus
hardness	chloride
instantaneous discharge	sulfate
	total dissolved solids
	total suspended solids



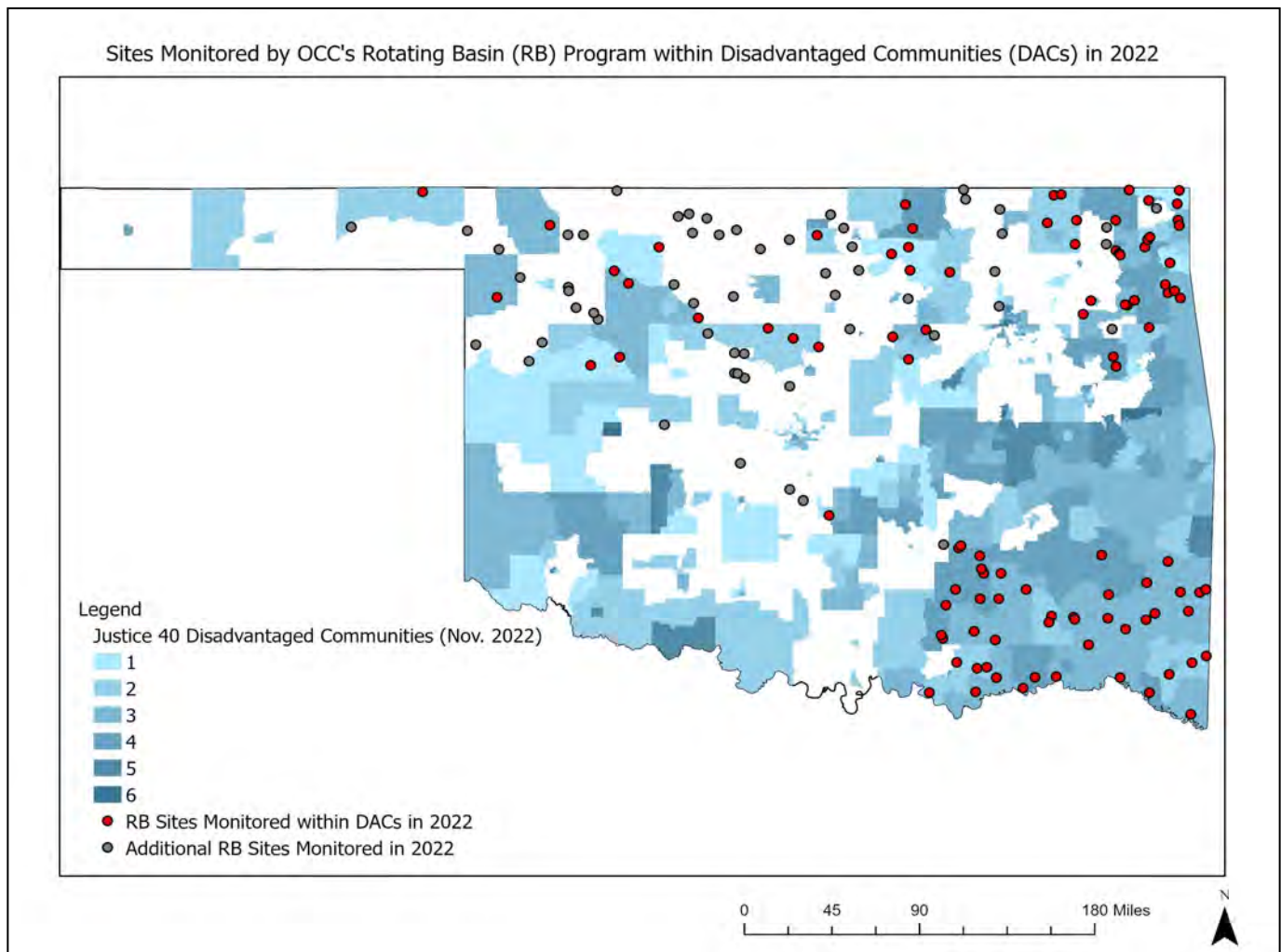
## Rotating Basin Monitoring Program:

The Climate and Economic Justice Screening Tool (CEJST) was developed to identify disadvantaged communities (DACs) across the U.S. to support the Justice40 Initiative. The goal of this initiative is to deliver 40 percent of the overall benefits of federal programs to communities that are marginalized, underserved, and overburdened by pollution. DACs are defined by census tracts that have one to eight categories of burden, including economic, health, environmental, and social impacts. For a complete list of the methods used to define DACs, visit: <https://screeningtool.geoplatform.gov/en/methodology>.

OCC's statewide RB program helps to deliver important water quality benefits to DACs through routine water quality monitoring and outreach through local conservation districts. In 2022, the RB program monitored 158 sites across the state, with 101 sites occurring in DACs, as defined by CEJST.

Table 1: Number of RB sites monitored in 2022 within DACs and the number of burden categories present.

RB Sites Monitored	RB Sites in DACs	Sites w/ 1 Category of Burden	Sites w/ 2 Categories of Burden	Sites w/ 3 Categories of Burden	Sites w/ 4 Categories of Burden
158	101	10	26	46	19





## Estimating Load Reductions

In addition to tracking change in actual stream water quality results through its extensive monitoring and assessment program, the OCC determines conservative estimates of CP impacts on reducing priority NPS pollutant loads delivered to streams. Load reductions for nitrogen, phosphorus, and sediment are determined using the EPA’s Spreadsheet Tool for Estimating Pollutant Loads (STEPL) and submitted through EPA’s Grants Reporting and Tracking System (GRTS) for CPs implemented during the program year. Load reductions are estimated for projects implementing CPs directly funded or supported by OCC’s NPS Management Program. Project efforts include but aren’t limited to the OCC’s statewide Locally-Led Cost-Share Program, ongoing riparian easement efforts in the Illinois River and Eucha-Spavinaw watersheds, OCC’s Soil Health program, and poultry litter transfer efforts.



Watershed / Program	2022 Load Reduction Estimates*		
	Nitrogen	Phosphorus	Sediment
Riparian easement (Illinois River and Eucha/Spavinaw watersheds) and RCPP Projects	413,793 lbs/yr	37,002 lbs/yr	4,792 tons/yr
Statewide Locally-Led Cost-Share, Soil Health Program, and Poultry litter transfer	427,012 lbs/yr	329,776 lbs/yr	2,010 tons/yr

\*Estimates rendered using EPA’s Spreadsheet Tool for Estimating Pollutant Loads (STEPL) Model. Totals recorded in GRTS may include additional data not available during preparation of this report.





## NONPOINT SOURCE SUCCESS STORY

# Oklahoma

## Documenting Success

EPA approved 6 new Oklahoma NPS Success Stories in 2022. These stories detail the results of cooperative efforts among the NRCS, OCC, conservation districts, and landowners to implement voluntary, cost-shared conservation practices (CPs) to improve water quality and result in delisting of at least one parameter from the 303(d) impaired waters list. These practices reduced the runoff of soils, waste products, and associated nutrients and bacteria and resulted in improved turbidity



**2022 Oklahoma Nonpoint Source Success Stories  
6 New Streams**

### Legend

- |                                   |                                       |                                    |                              |                                 |                                  |                                 |
|-----------------------------------|---------------------------------------|------------------------------------|------------------------------|---------------------------------|----------------------------------|---------------------------------|
| <b>County Boundaries</b>          | Buffalo (Harper Co.) (79)             | Crooked Creek (Beaver Co.) (62)    | Glover River (65)            | Main Creek (46)                 | Roaring Creek (91)               | Turkey Creek (Jackson Co.) (92) |
| <b>Success Story Watersheds</b>   | Bull Creek (8)                        | Crooked Creek (Grant Co.) (41)     | Goose Creek (37)             | Medicine Lodge River (29)       | Rock Creek (72)                  | Turkey Creek (Woods Co.) (23)   |
| <b>Success_St</b>                 | Caddo Creek (96)- NEW!                | Curl Creek (57)                    | Gray Horse Creek (36)        | Mill Creek (42)                 | Salt Creek (20)                  | Walnut Creek (44)               |
| Alabama Creek (81)                | California Creek (4)                  | Deer Creek (39)                    | Hogshooter (66)              | Mineral Bayou (87)              | Salt Creek (Osage Co.) (73)      | Wewoka Creek (82)               |
| Bad Creek (80)                    | Camp Creek (15)                       | Deer Creek (Custer Co.) (98)- NEW! | Honey Creek (52)             | Mission Creek (13)              | Salt Creek (Osage Co.) (73) (85) | Whitegrass Creek (40)           |
| Beaty Creek (1)                   | Canadian Sandy Creek (53)             | Delaware Creek (51)                | Illinois River (74-78)       | North Canadian River (69)       | Salt Creek (Pott. Co.) (90)      | Wildhorse Creek (34)            |
| Beaver Creek (Jefferson Co.) (24) | Caney Boggy Creek (55)                | Dirty Creek (11)                   | Indian Creek (27)            | Otter Creek (Garfield Co.) (38) | Sandstone Creek (30)             | Willow Creek (93)               |
| Beaver Creek (Osage Co.) (14)     | Clear Creek (Beaver Co.) (16)         | Doga Creek (49)                    | Ionine Creek (28)            | Otter Creek (Tillman Co.) (54)  | Sandy Creek (3)                  | Winter Camp Creek (61)          |
| Big Creek (32)                    | Clear Creek (Harper Co.) (26)         | Duckpond Creek (17)                | Lagoon Creek (18)            | Peaceable Creek (83)            | Stillwater Creek (50)            | Wolf Creek (7)                  |
| Big Eagle Creek (99)- NEW!        | Cloud Creek (9)                       | Dugout Creek (12)                  | Lake Creek (2)               | Peacheater Creek (56)           | Stinking Creek (Caddo Co.) (21)  | Yellowstone Creek (47)          |
| Bird Creek (35)                   | Commission Creek (43)                 | Elk Creek (48)                     | Lake Creek (Greer Co.) (101) | Pannington Creek (19)           | Stinking Creek (Kiowa Co.) (31)  |                                 |
| Bird Creek (Hughes Co.) (88)      | Coon Creek (94)                       | Euchee Creek (84)                  | Little Cabin Creek (68)      | Pond Creek (45)                 | Sulphur Creek (60)               |                                 |
| Bitter Creek (33)                 | Cooper Creek (10)                     | Finn Creek (89)                    | Little Elk Creek (5)         | Pryor Creek (70)                | Tepee Creek (22)                 |                                 |
| Bois d'Arc (25)                   | Cottonwood Creek (59)                 | Fish (63)                          | Little Wewoka Creek (6)      | Rainy Mountain Creek (86)       | Timber Creek (100)- NEW!         |                                 |
| Brazil Creek (97)- NEW!           | Cottonwood Creek (59) Deer Creek (95) | Fourteenmile Creek (64)            |                              | Ranger Creek (71)               | Turkey Creek (58)                |                                 |

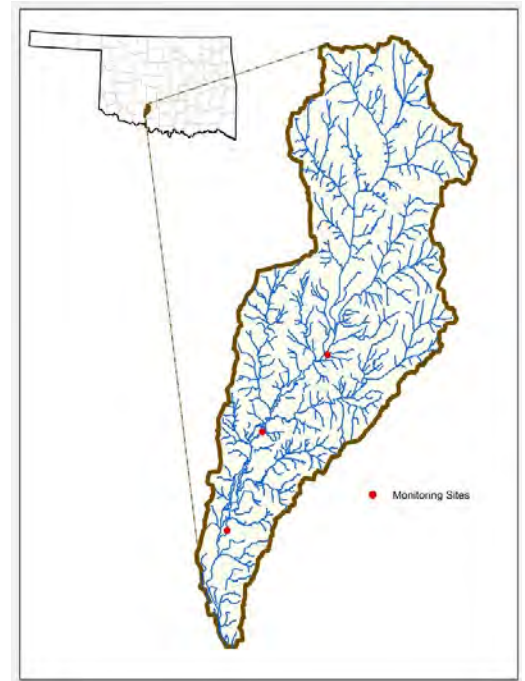
### Oklahoma's 2022 Success Stories:

*With the submission of the 2022 stories, Oklahoma has 101 streams that are recognized as EPA NPS Success Stories, detailing removal of 146 pollutants. Oklahoma remains first in the nation for documenting NPS pollution reduction through NPS Success Stories.*



## Little Beaver Creek

- In 2015, four sub-watersheds of the Little Beaver Watershed were chosen as NRCS National Water Quality Initiative (NWQI) watersheds. Through NWQI, NRCS provides technical and financial assistance to help farmers and ranchers install conservation practices that will improve downstream water quality.
- Little Beaver Creek was listed as impaired on Oklahoma's 2012 Integrated Report for high levels of *E. coli* bacteria. Waurika Lake is listed as impaired for chlorophyll-*a* and turbidity.
- The Little Beaver NWQI project builds on a 2011 local emphasis area (LEA) project in Cotton, Stephens and Jefferson counties that includes the lower half of the Little Beaver Creek watershed. This program provided extra funding to install practices which protect water quality and quantity. Emphasis was given to adoption of renewable energy resources, exclusion of livestock from streams, and cedar removal.
- The OCC began collecting water quality data on Little Beaver Creek in 2015, sampling at three locations (as shown on map) approximately once per month.
- The project received additional funding in 2016 through the NWQI Pilot Program to develop a watershed plan that would eventually allow implementation to spread into the two remaining HUCs in the Little Beaver watershed.
- In 2019, modeling, riparian assessments and critical area rankings were completed for all six HUC 12's in the Little Beaver Creek watershed. The NRCS/NWQI report was accepted and a little over a million dollars per year was granted to spend on targeted conservation practices that are designed to have a positive effect on water quality in the watershed. In addition to NWQI, the 319 Watershed-Based Plan was submitted and accepted by EPA in May.



### In FY 2022:

- Water Quality monitoring continued on Little Beaver Creek.
- Conservation Practice implementation continued where USDA COVID office constraints allowed.

# Blue Thumb Education Program



The Blue Thumb Program provides education and outreach on behalf of the Oklahoma Conservation Commission's Water Quality Division. Blue Thumb is a statewide citizen science effort focused on training volunteers to collect water quality data and share their knowledge with others. The Blue Thumb Program strives to achieve stream protection through education. Blue Thumb aims to inspire and empower people across the state to use education and monitoring to protect water in their region from nonpoint source pollution.

In 2022, the Blue Thumb program achieved the following:

- ◆ Supported approximately 134 certified volunteers who monitor
- ◆ Supported an additional 241 students who monitor with their teacher or professor
- ◆ Logged 5,118 volunteer hours (monitoring and education volunteers)
- ◆ Collected water quality data at 79 stream sites across Oklahoma
- ◆ Collected 132 macroinvertebrate samples and completed 11 fish collections in coordination with volunteers



**Highlights from 2022 include:**

- ◆ Continued to publish a monthly e-newsletter for volunteers
- ◆ Partnered with Pioneer Library System to offer water education at eight libraries and creek cleanup events at three parks in their service area
- ◆ Partnered with GRDA to offer two camps for children and workshop for teachers
- ◆ Offered three educational experiences for Girl Scouts at Camp Tallchief
- ◆ Expanded the Yard by Yard Program to 10 new conservation districts
- ◆ Partnered with the City of Norman to install educational signage at three parks in the Brookhaven Creek Watershed
- ◆ Began working with a stakeholder group to develop a watershed based plan for Bishop Creek in Norman
- ◆ Served on the Volunteer Monitoring Workgroup of the National Water Quality Monitoring Council; chaired the Webinars subcommittee
- ◆ Served on the National Project WET Council
- ◆ Published the 2023 Blue Thumb Calendar



The Soil Health program is one of the educational arms of the Water Quality Division housed in the Oklahoma Conservation Commission. The Commission collaborates with other state, federal, tribal, and private partners to provide education assistance to the 84 conservation districts, and to tribal groups and city organizations across Oklahoma to further soil health and pollinator habitat education. The Soil Health team uses educational tools like the rainfall simulator (both table top and trailer version), plant ID workshops, backyard pollinator plot conversion classes, and cover crop and grazing land field days to provide hands on experiences to communities to expand knowledge about land and water quality. Soil Health team members provide one-on-one consulting services and soil testing to Oklahoma farmers, ranchers, and urban citizens.

## Highlights from 2022:

- The Soil Health program has continued a partnership with American Farmland Trust to complete studies showing the economic benefits of soil health practices. Two case studies were published, featuring farmers Scotty Herriman from Nowata and Mark Nault from Okeene. Soil Health Program Coordinator Meg Greski joined the American Farmland Trust team to present the case study results at the Soil & Water Conservation Society International Annual Conference in August held in Denver, CO.
- The Soil Health team and four of our conservation districts are working with General Mills to expand soil health practices in north central Oklahoma. Producers, under guidance of GM Project Mentor Jimmy Emmons, have implemented several soil health/regenerative agriculture practices within the project area. We have submitted a proposal to General Mills to establish no-till/cover crop test plots. In 2023, we plan to add four additional county conservation districts to the project.
- The Soil Health team has continued to work towards engaging and educating citizens through traditional and nontraditional means. This has included private consulting, in-person field days/workshops, school programs and farm shows, which reached over 11,000 people, and have impacted over 24,000 acres. In addition, Facebook posts continue to reach hundreds. Over 10,000 people have subscribed to receive the monthly Soil Health email newsletter. OCC continues to sponsor and support the educational efforts of the Oklahoma Grazing Land Coalition, OSU Extension, NRCS and other organizations with similar goals.
- The Yard by Yard program, designed to reach urban citizens, was developed by the Oklahoma County Conservation District Urban Soil Health Specialist. This program provides a unique approach to educate urban citizens about their lawn and small parcel management. Oklahoma CCD/OCC Soil Health Team specialist Josh Kouri has taken on leadership of this program. It has grown from 11 participating districts in its first year, to over 20 in 2022.
- Research and data collection have expanded across Oklahoma with the assistance of trained partners. Soil Health Team members assisted with the Conservation and Agriculture Reach Everyone (CARE) Project, specifically with soil data collection and soil sampling using the WORMS (Working on Regenerative Management Systems) App, training partners to utilize the app and with soil data collection. Soil Health team members presented at 19 CARE field days in 2022.
- The Soil Health team has an advisory role in multiple regenerative agriculture research initiatives. We are currently working with the University of Oklahoma, Oklahoma State University, Texas A&M University AgriLife Extension, and others to create a robust body of peer-reviewed literature on soil health agriculture.



# Other OCC Programs



Oklahoma's NPS Management Program is a cooperative effort, blending partners from multiple state and federal programs to accomplish water quality protection and improvements. Each of the programs described here is coordinated by the OCC and works to complement NPS efforts of the agency. With support from EPA §319 funds, OCC staff have been able to engage relevant partners, generate interest, and obtain grants to leverage additional match for non-EPA grants.

## *Wetlands Program*

Wetland activities initiated by the OCC provide demonstration, restoration, and protection of wetland resources. Every wetland project the OCC pursues has the potential to improve water quality, particularly with regard to NPS pollution. The program is primarily funded through EPA §104(b)(3) Wetlands Program Development Grants (WPDG) with matching funds from state and local sources.

In 2022 approximately \$163,369 in 104(b)(3) federal funds and \$53,232 in 106 federal funds were used to accomplish the activities below:

- Participated in an intensification of the 2021 National Wetland Condition Assessment (NWCA), which involved sampling an additional 15 wetlands in the summer of 2022. At each site vegetation, water, and soil data were collected to assess wetland condition.
- Continued work on our project titled "Improving Wetland Maps for Floodplains of the Canadian and Arkansas Rivers and Associated Tributaries" in collaboration with Oklahoma State University. This project focuses on utilizing satellite imagery specifically timed to coincide with flood events to better understand the spatial extent of floodplain wetlands. National Wetland Inventory maps will be updated through the improved mapping of floodplain wetlands.
- In partnership with Oklahoma State University, we continued working on our collaborative project titled "Development of a Guidebook and Conducting Training for the Oklahoma Rapid Assessment Method (OKRAM)". We have developed a draft of the guidebook and will be planning OKRAM trainings in the future.
- Continued efforts on our Restorable Wetland Identification Protocol (RWIP) project, including attributing potentially restorable wetlands with hydromodifications, such as extent of ditching and upstream ponds.
- Began work towards our newly funded RWIP project in which the updated protocol will be applied to additional HUC-8 watersheds, as well as the development of techniques to identify stream restoration potential.
- Continued to manage the Oklahoma Wetland Website, which hosts information on wetland activities and programs from government agencies (all levels), academia, tribes, and non-governmental organizations.
- Participated on the US Army Corps of Engineers Interagency Review Team to approve activities of an in-lieu fee mitigation program and consider a proposed mitigation bank.
- Completed desktop wetland determinations on projects that utilize state and/or federal monies.
- Met with numerous potential future partners in efforts to build collaborations to serve the needs of Oklahoma in the conservation of wetland and stream resources.



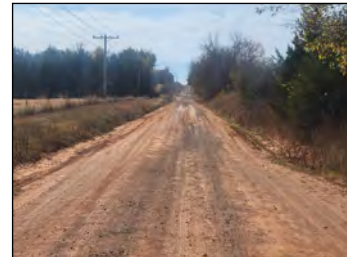
# Other OCC Programs

## Unpaved Roads Program

The Unpaved Roads Program hosted the first Environmentally Sensitive Maintenance (ESM) training on September 7, 2022 in Chandler, Oklahoma. This training is a requirement for decision makers from each county who are interested in applying for future grants.

Lincoln County was selected as our pilot project county, with each district receiving \$50,000.00 to implement BMP's to reduce erosion and maintenance, as well as improve safety and water quality of adjacent streams/water bodies along unpaved roads.

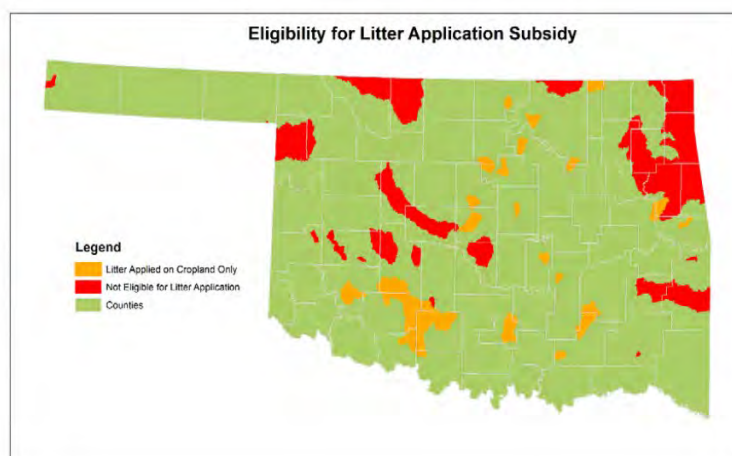
Two districts proposed to enhance an estimated 1,000 LF of roadway by increasing the road elevation, crowning the road to promote water removal, gravel placement with proper thickness and packing to ensure minimal erosion of road top, and drainage enhancement along the roads. The other district will be utilizing funds to protect a 350 ft stretch of roadway alongside Wildhorse Creek, south of Cushing, by installing 18" – 24" riprap along the roadside and the eroded road base constructed with ESM principles.



## Poultry Litter Transport Program

Since January 1, 2022, the OCC has provided support for the transfer of poultry litter out of nutrient-impaired watersheds to areas where land application of the derived nutrients poses a lower risk to downstream water resources. This program provides incentive to poultry growers (\$2/ton of litter sold) to sell litter to qualified buyers outside of the impaired watersheds and to the buyers (\$0.08/mi for transfer within 100 miles; \$0.05/mi for transfer outside 100 miles) to help offset the cost of litter transport for application to farmland in Oklahoma.

Nutrient-impacted watersheds, as depicted in the map below, include both watersheds where litter application is not eligible for the program (red) and watersheds in which litter is only eligible on cropland (orange). Litter application is eligible for some portion of the funding in all green shaded areas, as well as the orange shaded areas on cropland only.



# Other OCC Programs

## Oklahoma Locally-Led Cost-Share Program

OCC's Locally-Led Cost-Share Program (LLCP) is a state-funded program providing technical and financial assistance to landowners and producers to install conservation practices to protect soil and water resources and reduce NPS pollution. The program is administered by OCC personnel and is implemented locally through the conservation districts who interact directly with landowners, NRCS, and other entities to draft the necessary conservation plans.

Landowners and producers participate voluntarily and contribute a minimum of 40% match based on pre-established cost-share rates by practice. OCC's LLCP is a critical mechanism to promote voluntary implementation of NPS controls statewide and serves as primary match for federal §319 funds.

Contracts for FY2022 totaled \$5.1 million and were completed in conservation districts statewide. Conservation practices installed are shown in the table on the right.

Ponds (number of ponds)	159
Cover crop planting (ac)	3,664
Fencing (ft)	172,857
Grade stabilization structures (cy)	5,061
Grassed waterways (ac)	42.96
Heavy Use Area Protection (yd <sup>3</sup> )	60,245
Pasture/hayland planting (ac)	2,280
Pasture Taps (Rural Water Connections)	40
Pipeline (ft)	100,596
Prescribed grazing (ac)	128
Pumping Plants (number)	157
Range seeding (ac)	288.28
Terraces (ft)	1,450
Watering Facility (number of tanks)	87
Wells (number drilled)	191

## Crow Creek Watershed Community

Crow Creek is a small urban stream running through one of the older parts of Tulsa. Residential properties, schools and parks border the stream. The stream is enjoyed by many for its aesthetic value. Although the portion of the stream monitored by the Blue Thumb Program has excellent habitat, the macroinvertebrate and fish communities are impaired. The stream is on the 303(d) list for E. coli and has been for many years. Data suggest that domestic pets are the primary source of bacteria.

In 2015 the Crow Creek Community was organized by Blue Thumb volunteers who had monitored in the watershed for 20 years. The Crow Creek Community continues to be actively involved in education and outreach in the community. The group includes representatives of the City of Tulsa, the Metropolitan Environmental Trust, the Tulsa County Conservation District, the Tulsa Zoo, Blue Thumb and local residents. The group maintains Crow Creek Meadow, a water quality demonstration site located at 1025 East 33rd Place.

Crow Creek Community, in cooperation with OCC, accomplished the following tasks in 2022:

- Held seven planning meetings
- Hosted a “Do You Know Crow?” event at the Philbrook Museum
- Held an education event at Florence Park
- Participated in two maintenance days at the Crow Creek Meadow
- Held a cleanup event at Zink Park
- Held “Trash or Treat” at Zink Park
- Continued to support the “Yard by Yard” Community Resiliency Project in coordination with partners from OCC Soil Health, Friends of Blue Thumb, Tulsa and Oklahoma County Conservation Districts and the Oklahoma Association of Conservation Districts





# NPS Program Partner Activities

Oklahoma's NPS Management Program is a collaborative effort of federal, state, and local agencies, as well as nonprofits and citizen groups. Here are just a few examples of partner agencies which usually do not receive federal §319 funds yet have programs that mitigate NPS pollution and improve and protect water quality in the state.

## *Oklahoma Natural Resources Conservation Service*

The Oklahoma NRCS natural resources conservation programs help people reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters. NRCS addresses NPS concerns through various efforts.

One example is the Agricultural Conservation Easement Program (ACEP) – Wetlands Reserve Easements. Through this the NRCS prioritizes applications that protect, restore and enhance habitat for wildlife on their lands and reduce damage from flooding and recharge groundwater. “USDA is committed to restoring and protecting vital sensitive wetlands that provide important wildlife habitat and improve water quality,” Oklahoma State Conservationist Gary O’Neill said.

Land eligible for easements includes cropland, rangeland, grassland and pastureland, land owned by private individuals or Native American Tribes. Wetlands Reserve Easements provide habitat for fish and wildlife, including endangered species, improve water quality by filtering sediments and chemicals, reduce flooding, recharge groundwater, protect biological diversity and provide opportunities for educational, scientific and limited recreational activities.

The Agricultural Conservation Easement Program (ACEP) has two components, one for Agricultural Land Easements (ALE), and Wetland Reserve Easements (WRE). Applications for both ALE and WRE are accepted on a continuous basis.

- Under the ALE component, funds are provided to eligible entities that use ACEP funding to purchase permanent agricultural land easements that not only protect the future of the nation's food supply, they also support environmental quality, wildlife habitat, and historic preservation and protection of open spaces.
- Under the WRE component, funding is provided directly to landowners for the purchase of an easement and for restoration. Wetland reserve easements allow landowners to successfully restore, enhance, and protect habitat for wildlife on their lands. Eligible landowners may choose to enroll in a permanent or 30-year easement. Eligible lands include farmed or converted wetlands that can be successfully and cost-effectively restored.

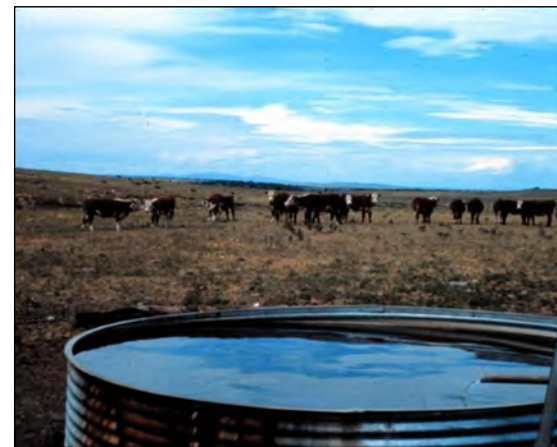


# NPS Program Partner Activities

## Oklahoma Natural Resources Conservation Service cont.

There are many NRCS efforts connected with Nonpoint Source Management, but here is one additional example.

The Watering Facility (Conservation Practice Standard (CPS) 614) is the most visible part of a Livestock Water System. The system could also include a Livestock Pipeline (CPS 516) that connects the water source which could be a Water Well (CPS 642) or a Pond (CPS 378) requiring a Pumping Plant (CPS 533). Protection of the soil around the watering facility with some form of Heavy Use Area Protection (CPS 561) is also critical. Each component is dependent on the other and must be designed and sized accordingly.



Various types and sizes of Watering Facilities may be used to meet the needs of an individual livestock producer. The CPS 614 even provides criteria for ramps into existing ponds. Some research has indicated that fresh clean water from a watering facility may be sufficient to draw animals away from streams and ponds to improve water quality. However, another method of improving water quality is to fence off the stream or pond and provide alternative water. A Watering Ramp into an existing pond that is fenced can provide such access.

## Oklahoma Water Resource Board (OWRB)



The Oklahoma Water Resources Board offers a funding opportunity through the Clean Water State Revolving Fund's (CWSRF) Sponsorship Program to address a water quality issue or initiative approved under the state's Nonpoint Source Management Program (NPSMP).

The CWSRF provides below-market interest rate loans for the planning, design, and construction of projects that prevent or address nonpoint source (NPS) water pollution and the Clean Water Act. This program incentivizes NPS projects through reducing interest cost when paired or 'sponsored' with a traditional treatment works project funded through CWSRF.



In 2021, the OWRB approved funding for the first CWSRF Sponsorship Program project to construct approximately 12.4 acres of wetland, as well as a sedimentation fore basin, designed to reduce sedimentation into the Wes Watkins Reservoir. A review of the watershed and land-use nearby revealed that "erosion and sediment delivered from past, present, and future sources entered the (Wes Watkins) lake through Deer Creek and that land owned by the Pottawatomie County Development Authority (PCDA) between the reservoir headwaters and I-40 could help to reduce sedimentation to the watershed." This project and the maintenance of the sedimentation basin by PCDA, Natural Resources Conservation Service (NRCS), and City of Shawnee is estimated to prevent 26.55-acre feet of sediment loading to Wes Watkins Reservoir over a 20-year period.

Water Quality Division Director of the Oklahoma Conservation Commission, Shanon Phillips, stated, "While several communities have considered the use of a wetland to protect drinking water supply reservoirs, most have not been able to develop a partnership to protect the long-term use of such a structure. This project could serve as an example for other communities."

# NPS Program Partner Activities

## Oklahoma Water Resources Center (OWRC)

### Master Irrigators Program



The goal of the program is to facilitate improved water use efficiency and farm income via increased farmer adoption of advanced water management strategies and technologies.

With support from the OCC, OWRB, and the OWRC, the Master Irrigator Program from OSU Extension provides advanced training on irrigation water management, irrigation system and equipment maintenance, energy conservation, water conservation and quality, and economics of irrigated agriculture. The program includes classroom training, peer-to-peer exchange of information between producers, field demonstrations, and free-of-charge services such as energy audits through mobile irrigation laboratories.

In 2022, 19 producers from Beckham, Hardeman, Harmon, Jackson, and Tillman Counties participated in the Master Irrigator training program held in Altus, Oklahoma. Sixteen producers graduated from the program representing over 35,000 acres, of which more than 13,000 acres were irrigated.

In the Fall of 2022, planning and preparations were made for the third edition of the program, scheduled for January 17, 24, 31 and February 7, 2023 at the Oklahoma Panhandle Research and Extension Center in Goodwell, Oklahoma. Advisory meetings were held to develop program curriculum, which involved local producers, OSU research and Extension faculty, local county educators, and NRCS personnel.



### Virtual Fencing Project

This EPA funded project demonstrates the utility of new virtual fencing (VF) technology to improve water quality and ecosystem services of grazing lands by controlling the distribution of cattle on a landscape using GPS-enable collars on individual cattle without the disadvantages of traditional physical fences.

The OWRC, in cooperation with OCC, accomplished the following tasks in 2022:

- Water quality monitoring of surface runoff using automated samplers began in March 2022.
- Four 4.5 foot H-flumes and automated ISCO's were installed at OSU's Bluestem Research Range and Lake Carl Blackwell during the summer of 2022.
- Stream assessments were conducted quarterly throughout the year at all 4 OSU Range sites, as well as a cooperator ranch where VF is being evaluated.



In year 1, all four watersheds were continuously grazed and monitored. In year 2, VF will be used to implement riparian buffers and rotational grazing in 2 watersheds and 2 watersheds will continue to be continuously grazed.

Extensive outreach occurred throughout 2022:

- Two advertisements ran in "The Oklahoman" and the "Tulsa World" news outlets reaching an estimated 226,179 through readership and 110,602 through digital ad impressions.
- Drs. Reuter and Wagner provided "The Tuesday Pasture Talk," to the Arkansas USDA-NRCS
- Drought Resilience Meeting – Enid, OK



# NPS Program Partner Activities

## Oklahoma Water Resources Center (OWRC)

### OSU and Texas A&M collaboration

The Southern Great Plains RegenAg project is a USDA NIFA AFRI funded \$10 million 5-year grant. This multi-disciplinary research project explores and investigates regenerative agricultural practices to increase the agricultural sustainability of the Southern Great Plains in cotton production systems. Together, our team of 29 researchers across 8 institutions and 2 states aims to increase agricultural intensification in tandem with sustainability and conservation.



In 2022, the OWRC:

- Established twelve small (0.5 acre) watersheds to evaluate the benefits of cover crops on irrigated and dryland no-till cotton and installed automated ISCO samplers to measure and collect runoff
- Monitored runoff quantity and nutrient concentrations in runoff starting in April 2022
- Led the modeling team working to evaluate the broader watershed and regional scale effects of regenerative ag practices in the Southern Great Plains.

Our team of modelers from OSU and Texas A&M will use models to predict:

- crop growth, soil C dynamics, N leaching, and emissions of N<sub>2</sub>O, NO, dinitrogen, NH<sub>3</sub>, CH<sub>4</sub>, and CO<sub>2</sub> at field and watershed scales
- effects of management decisions on soil loss, water quality, and crop yields at the field scale
- effects of regenerative practices and climate change on hydrology and soil and water quality at basin scale.

## Oklahoma Department of Agriculture, Food, and Forestry (ODAFF)



In December 2012, the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) received authorization from the U.S. Environmental Protection Agency to administer agriculture-related Clean Water Act discharge permits. This is a permitting program and under certain conditions, it authorizes discharges to Waters of the U.S. from three agriculture related programs. Upon authorization, ODAFF referred to this program as the Agriculture Pollutant Discharge Elimination System (AgPDES) program. One of those programs is the AgPDES Construction General Permit (CGP). The CGP addresses storm water discharges associated with construction activities on some agriculture construction activities. One of the requirements is for construction operators or owners to develop a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP includes a description of the Best Management Practices (BMPs) that will be used to reduce pollutants in storm water discharges. The CGP also requires operators to conduct regular site inspections to ensure BMPs are performing as designed and to monitor and maintain BMPs throughout the project. Since authorization of the program through October 2022, the AEMS Division has issued 255 CGP authorizations associated with Ag related construction sites.



The AEMS Division has an educational brochure to help educate the public on who may need coverage under the AgPDES CGP program. For additional information on the program, and a full glimpse at the brochure please see <https://ag.ok.gov/wp-content/uploads/2021/10/Construction-Storm-Water-Brochure-2021.pdf>

# NPS Program Partner Activities

## *Yard by Yard Community Resiliency Project*

The Oklahoma Conservation Commission became one of several partners to support the “Yard by Yard” Community Resiliency Project in 2020. Josh Kouri, an urban soil health specialist with the Oklahoma County Conservation District, is in the leadership role for the project, gaining recognition from all involved conservation districts, as well as support from Jack Titchener, urban soil health specialist in Tulsa County, and Cheryl Cheadle with the Blue Thumb water quality education program. Conservation Districts (CD) involved to date include: Bryan County CD, Cherokee County CD, Cleveland County CD, Cotton County CD, Deer Creek CD, Delaware County CD, Grady County CD, Johnston County CD, Konawa CD, LeFlore County CD, Marshall County CD, Mayes County CD, Murray County CD, Muskogee County CD, Okfuskee County CD, Oklahoma County CD, Ottawa County CD, Payne County CD, Pontotoc County CD, Rogers County CD, Shawnee CD, Tulsa County CD, and Woods County CD. This project is supported by Friends of the Blue Thumb, The Oklahoma Association of Conservation Districts, and the Oklahoma Conservation Commission.

Yard by Yard is a multi-faceted approach to changing our world for the better. Conservation districts have long been known as the “go to” to assist farmers and ranchers and districts are comfortable in this role. Yard by Yard brings recognition to urban and suburban citizens who manage their lawns with conservation in mind.

Some favorite conservation actions are:

- Planting native plants – native plants feed pollinators, increase infiltration, add habitat, and offer beauty.
- Growing of vegetables – locally produced fruits and vegetables add nutritious options to the table, and often grow the community as neighbors share their harvest.
- Mowing a little taller – grasses that are cut no lower than three inches increase the infiltration of rain and reduce the frequency of firing up the lawn mower, thus reducing air pollution.

The “Yard by Yard” Community Resiliency Project is designed to do good. Greater beauty in yards, less chemicals, increased infiltration (so reduced flooding), greater tolerance to drought, more nutritious local food, feeding opportunities for birds, bees, and butterflies, and an opportunity for residents to bring nature right to their homes.

In addition to the conservation districts pushing the idea of the Yard by Yard Community Resiliency Project, each new participant is awarded a handsome sign designed to pique the interest of passers-by. Yard by Yard participants are also given two packets of wildflower seed, one for their own yard, and one to provide to a friend or neighbor so that Yard by Yard can be locally grown!

A special effort for Yard by Yard is being made in Delaware and Ottawa Counties. The Grand River Dam Authority (GRDA) provided a donation through Friends of the Blue Thumb that allowed promotional t-shirts to be printed and distributed to those participating in the project. Blue Thumb and GRDA are working together to promote urban conservation practices in conjunction with the two conservation districts.

Success has been witnessed the most within three of Oklahoma’s most urban counties, Oklahoma, Tulsa, and Cleveland. With dedicated leadership from Josh Kouri, it is expected that Yard by Yard certifications will pick up in smaller rural counties in 2023. Currently 112 yards across the state are certified — a great success for a new project born during a pandemic.



# NPS Program Partner Activities

## Long-term Riparian Conservation Protection Programs



The Grand River Dam Authority (GRDA) and OCC have a long-term partnership to protect water quality in northeastern Oklahoma through riparian area conservation. These efforts include a variety of easement and contract terms and formats, ranging from 10 year agreements up to perpetual easements.

These contracts have focused on protection of the Illinois River Watershed but this year expanded to the Grand Lake Watershed. GRDA maintains a program of 30 – year or longer easements. At the same time, the OCC, Adair, Cherokee, and Delaware county conservation districts maintain annually-renewed 10 to 15 year riparian protection contracts.

GRDA has 1480.44 acres (ac.) in the Illinois River Watershed and 236.86 ac. in the Grand Lake Watershed of 30 year or perpetual easements at a total cost of \$2,889,295.45. Approximately 200 additional ac. of easements are currently pending.

The OCC and conservation districts currently have multi-year riparian agreements with 24 landowners in the Illinois River Watershed. These total 1,195.9 ac. in Adair (850 ac.), Cherokee (289.8 ac.), and Delaware (56.1 ac.) counties at a cost of \$72,959.40 per year.



## Guard the Grand

The Guard the Grand program is a watershed education program designed to involve the public in improving water quality throughout the Grand Lake watershed. Currently, the program is funded through an Environmental Protection Agency Environmental Education Grant. The grant targets three audiences; residents/lake users, educators and businesses. Each audience receives information specific to them and ways they can easily implement some best practices.

Residents/Lake Users: We held six in person and one virtual workshop for residents and lake users on two topics, Landscaping for Water Quality and Boat Maintenance to Protect Water Quality. We were able give away rain barrels again this year along with a certificate for soil tests through Oklahoma State University Extension Services. We also gave out several pet waste stations to several area marinas, RV parks and the town of Disney. We have registered 16 businesses as Guardians of the Grand and have added several residents to the list as well. We are beginning to see more involvement throughout the watershed and residents and businesses share when they do something to help Guard the Grand.



Educators: We were excited to award three grants in 2020 to area nonprofits that are working to educate students and tribal members on soil health, water quality issues and nonpoint source pollution. We held our Riverology 101 educators workshop this summer and had 14 teachers join us to learn about watersheds, water conservation and what resources other state agencies have for them. Teachers left with our 4th grade curriculum specific to the Grand Lake watershed and became Project WET certified teachers. The Oklahoma Conservation Commission's Blue Thumb program, Ag in the Classroom and OSU Extension partnered with us to offer the workshop.

Other Accomplishments: GRDA staff have released a Guard the Grand app. The app provides watershed information, lake information and how bugs and fish are used to help determine water quality. All workshop videos and pamphlets are available for download on the app and interested users can join the email list. GRDA and the Guard the Grand Program were recognized in Nov. of 2020 as the Best of the Environmental Best at the Keep Oklahoma Beautiful Environmental Excellence Awards banquet.



# NPS Program Partner Activities

## Fresh Rx - Human Health and Soil Health



Fresh Rx Oklahoma is a program that focuses on using exclusively locally sourced fruits and vegetables as prescription medicine for Type 2 diabetes. The program is directed by Erin Martin, President of the Tulsa Urban Ag Coalition, who is a passionate Gerontologist who spreads the gospel of food as medicine for longevity and health.

The goals and objectives of the program are to improve health metrics, increase consumption of fresh fruits and vegetables, improve participants knowledge of nutrition, and improve patient's ability to self-manage chronic conditions and help reduce patients A1C levels through communication with patients, local produce sourcing and distribution, cooking and nutrition classes, and tracking health outcomes.

In the first year of the program (2021), FreshRx saved the state of Oklahoma \$750,000 in health care costs, and nearly 75% of the 52 participants had some type of reduction in their A1C level.

Funders and stakeholders have committed to serve 100 patients and partner with 6 clinics in the programs second year. FreshRx was awarded the first USDA GusNIP Produce Prescription grant ever received in the state of Oklahoma and is funded through 2025.



## Conservation and Agriculture Reach Everyone (Care) Project

The Conservation and Agriculture Reach Everyone (CARE) project is a collaboration between the Oklahoma Association of Conservation Districts, the Oklahoma Black Historical Research Project, the Texas Agriforestry Small Farmers and Ranchers, and individual conservation districts to increase the number of minority and veteran farmers that are accessing conservation technical and financial assistance. The project is focused on identifying and empowering minority and veteran farmers and ranchers that are willing to be CARE Champions and provide information on conservation back to their communities.

Each CARE champion works with a certified conservation planner to complete a demonstration project in either soil health or invasive species removal. Through collaboration with the Oklahoma Conservation Commission, each champion receives \$70/acre for up to 40 acres for their project. After completion of the project, CARE Champions host a field day to show their communities the practice that they have completed. Champions also participate in educational and networking opportunities.

The CARE program has reached 4,000 minority producers and 400 veteran producers in the last two years alone. The project is five years old and to date there have been over 45 CARE champions in Oklahoma and Texas.

Outreach involved 7,032 producers including 3,354 socially disadvantaged farmers/ranchers and 453 veterans in 2022.

Twenty-six demonstration projects on soil health and/or invasive species removal were completed. This included 880 acres and 2 projects on urban/specialty production operations. The practices that were completed include fencing off of riparian areas, grass plantings, prescribed grazing, eastern red cedar removal using both livestock (goats) and mechanical removal, blackberry removal, over crop plantings, and field border plantings for pollinators.



# NPS Program Partner Activities

## Oklahoma Department of Transportation (ODOT)



The Oklahoma Department of Transportation (ODOT) storm water program is continuing to develop and has had exciting additions this year. The agency piloted an Environmental Field Liaison position in District 4 and has seen great success utilizing this role. The agency has continued to collaborate with the Oklahoma Association of General Contractors as well as the

Oklahoma Department of Environmental Quality for storm water compliance. This year these agencies came together to put on the first Annual Contractor Construction Compliance Conference (C4). This conference touched on new regulatory updates, innovations in the field, and open discussions about compliance during construction. The 2019 Sediment and Erosion Control standards were finalized and are being utilized in plan sets as well as during construction. The Storm Water Action Team (SWAT) has initiated a review process for BMPs in order to add sediment and erosion control products to the agency's Approved Product List (APL). A Construction Control Directive and a corresponding plan note have been created to aid in this process which will go through various divisions within the agency.



## City of Oklahoma City



The purpose of the Oklahoma City Storm Water Quality Division (SWQ) is to provide inspections, water quality assessments and technical services, public outreach, household hazardous waste services, and emergency response to residents, businesses, and government agencies so they can comply with the Clean Water Act and enjoy a safe and clean environment.

Storm Water Quality outreach programs recorded an estimated 9.58 million advertising impressions through media releases, news coverage, radio and printed advertisements. An additional 36,537 personal contacts were made through email correspondence, newsletters, workshops, booths/displays, webinars and presentations. Oklahoma City's floatable debris management programs cover a range of City maintenance activities and volunteer initiatives. City maintenance activities such as the Oklahoma River Management program, street sweeping contracts and the storm water netting programs accounted a total of 6,930,898 pounds of debris removed from the urban areas and waterways. The Adopt-a-City Street and the Waterway Clean Sweep volunteer programs included 1,087 volunteers that provided efforts to remove over 16,387 pounds of debris. The Household Hazardous Waste Collection Center served 9,492 facility participants that delivered 657,586 pounds of household hazardous waste such as paint, used oil, and pesticides. 163,303 pounds of that waste stream was separated and either recycled or released for public reuse. Storm Water Quality Management staff completed 13,098 construction site and industrial facility inspections. Staff managed 136 pollution incident reports ensuring proper cleanup of spills and illicit discharges.





# NPS Program Partner Activities

## City of Norman



City of Norman

The City of Norman's Environmental Services Division oversees several environmental programs including the Industrial Pretreatment Program; Fats, Oils and Grease (FOG) Program; the new permanent Household Hazardous Waste Facility; the staff liaison for the Environmental Control Advisory Board and Earth Day. In addition, the Environmental Services Manager position was reclassified as the Environmental and Sustainability Manager for Fiscal Year 2022. In Calendar Year 2022, approximately 44,206 pounds of electronics were collected at two, one-day events (April 30, 2022, in partnership with Cleveland County, and September 17, 2022), 52 tons of residential household hazardous waste was accepted at the new permanent facility, and 352,104 gallons of grease were kept out of the sanitary collection system through the FOG Program, helping to prevent sanitary sewer overflows. In addition, year-round collection for oil, antifreeze, oil filters, kitchen grease and tires were provided at no charge to citizens at the City of Norman's transfer station. The Sanitation Division provides curbside recycling and yard waste collection that help keep our streams and creeks clean, as well. In 2022, over 6300 tons of recyclables and 13 thousand tons of yard waste were collected. Additionally, 37 thousand tons of vegetative waste was diverted from landfills by commercial entities through our compost facility.

The City of Norman Stormwater Division also planned and implemented some wonderful activities, both for educational purposes and public participation purposes, including distributing almost 200 rain barrels and composters in April as part of their participation in the Central Oklahoma Stormwater Alliance (COSWA) annual rain barrel promotion. In fact, in 2022, the City implemented several clean-up events, hosted workshops for targeted and general audience members, and facilitated the installation of the Fourth Annual Artful Inlets pieces.

### Workshops and Activities for the Construction Industry Stakeholders

The Stormwater Division works closely with building and development stakeholders throughout the year. On May 25, 2022, the Spring Builders Workshop was presented at The Well. This event was in partnership with the Oklahoma Department of Environmental Quality. Participants learned about Norman's stormwater program, common issues on construction sites, and what to expect from the reauthorized OKR10 permit.

### General Clean-up Events

Clean-up Events were scheduled in March, April, May, June, October, November, and December of 2022. In March, April, and May, a suite of cleanup events was held in conjunction with the Great American Clean-up. Ten (10) clean-up events were held in both major watersheds (Canadian River, Lake Thunderbird). During these events, almost 150 participants removed almost 1200 pounds of trash and other deleterious material from the watersheds that could have otherwise made its way to our waterways. Other clean-up events resulted in the removal of over 2500 pounds from both watersheds.



# NPS Program Partner Activities

## City of Norman cont.



City of Norman

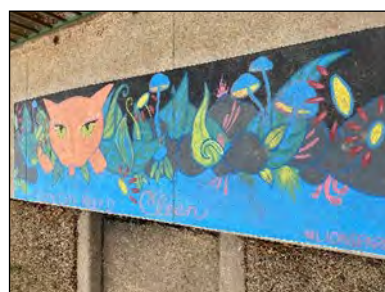
### 7<sup>th</sup> Annual Lake Thunderbird Workshop and Clean-up Event

On October 30, 2022, the Stormwater and Environmental Services Divisions hosted the 7th Annual Lake Thunderbird Workshop and Clean-up Event at Lake Thunderbird State Park. With a beautiful setting and wonderful weather, fifty-one (51) volunteers discussed the lake and ways to help its water quality, enjoyed talks by Courtney Dekalb-Myers, Interim County Extension Director, Cleveland County OSU Extension Services, and Sierra Harwood, Recreation Coordinator, Lake Thunderbird State Park, and then helped remove over 1250 pounds of material from the Lake Thunderbird State Park. Prizes were awarded for several categories including most trash collected. Mother Nature made a special appearance.



### 4<sup>th</sup> Annual Artful Inlets Installation

The Artful Inlets program was developed and implemented as a way to combine education and art in a wonderful way to help people realize how they impact their environment in general, and stormwater quality in particular, every day. On April 22 and 23, 2022, six artists installed their pieces around stormwater infrastructure located in and around Lions Park during the 4th Annual Artful Inlets installation with the theme, “Cool Cats Keep It Clean”. Additionally, ECAB members hosted educational activity booths during the installation to educate and entertain onlookers. Eventually, the City hopes to bring Artful Inlets works to areas throughout the City of Norman, highlighting the importance of protecting stormwater quality. The selected pieces for 2022 were “Purrmaid” by Ken and Sarah Hall, “Clean Cat” by Sam Douglas, “Jazz Cat and Friends Keep It Clean” by Ginna Dowling, “All the Cats” by Michael Wilson, and “Catalyst” by Roxxann Murphy. Their designs are shown below, respectively:



# NPS Program Partner Activities

## City of Tulsa



The City of Tulsa's Stormwater Quality Program includes monitoring, enforcement, education, and inspection programs, all aimed at keeping Tulsa's waterways pollutant free. Tulsa has specifically enhanced its monitoring program, aimed at identifying and eliminating all illicit discharges, but more recently focusing special attention on discharges that are contributing bacteria to rivers and streams.

Tulsa's Household Pollutant Collection Facility, opened in 2016, has proven very successful each successive year with record customer participation and disposal weight, keeping our streams and lakes cleaner and healthier. In this past year, over 4,000 customers from greater Tulsa metro area properly disposed of 406,509 lbs. of pollutants.

Tulsa's Education and Outreach Program has begun getting back into the swing of public events since the pandemic, completing over 200 education outreach activities this past year, including the State Fair, radio ads, billboards, cable and streaming tv commercials, and much more. Tulsa is still awaiting finalization of its Low Impact Development Manual as a way to slow and sink stormwater runoff into the ground as opposed to running off properties carrying pollutants and eroding stream banks. Information on Tulsa's Stormwater Quality Program from the past fiscal year can be found at [www.cityoftulsa.org/sos](http://www.cityoftulsa.org/sos)



## Save the Illinois River (STIR)

Save the Illinois River, Inc., STIR, is a private, not-for-profit organization chartered exclusively for the preservation of the Illinois River (Upper and Lower), Flint Creek, Barren Fork Creek, Tenkiller Lake, and their tributaries.

STIR continues advertising messages to help manage nonpoint pollution in the Illinois River watershed and the watersheds of other Oklahoma Scenic Rivers. STIR donates pet waste disposal stations to cities and government agencies within the Illinois River watershed in both Arkansas and Oklahoma. These stations dispense biodegradable plastic bags for the disposal of pet waste.

Some of the entities using STIR pet waste disposal stations in Oklahoma include Tahlequah Parks Department, Grand River Dam Authority, Lake Tenkiller State Park, and Greenleaf State Park. In Arkansas entities include Siloam Springs, and several other cities in Arkansas. STIR has designed ads that have recently appeared in the Tahlequah Daily Press and in the Adventure Guide for Lake Tenkiller, which have been viewed by thousands of visitors to Oklahoma and to newcomers to Tahlequah. Below is a copy of one of the ads which explain the problem of stormwater runoff.

**Save The Illinois River**

(918) 284-9440      www.illinoisriver.org      info@illinoisriver.org

**From Your Backyard To Lake Tenkiller**  
**Illinois River and Lake Tenkiller Protection Starts With You**

- Test soil for the amount of phosphorus lawns and gardens really need.
- Maintain your home's septic system.
- Properly dispose of pet waste, unused medications and household chemicals.
- Control runoff to ditches and streams.

**Watershed Quiz**

1. What is a watershed?  
2. In what watershed is Tenkiller Lake?  
3. What nutrient is the major pollutant for the Illinois River watershed?

1. A watershed is the area that drains to a common waterway such as a stream or lake.  
2. Tenkiller Lake is in the Illinois River watershed of one million acres in Arkansas and Oklahoma.  
3. Phosphorus is the nutrient in the Illinois River watershed that promotes growth of potentially toxic algae.

Watershed Quiz Answers

**STIR is watching the water for you**

# Responsible Care for Oklahoma's Natural Resources



Through extensive partnerships, education programs, and effective monitoring, assessment, and implementation, Oklahoma's NPS Management Program continues to demonstrate its success in improving water quality. Oklahoma has ranked in the top five states for documented NPS success stories and reported priority nutrient load reductions over the last several years.

The achievements of Oklahoma's NPS Management Program would not be possible without the funding and support of the USEPA, local conservation districts, USDA-NRCS, Oklahoma Legislature, and hundreds of private landowners whose voluntary participation is paramount to the conservation, restoration, and management of Oklahoma's natural resources. The OCC will continue to strive for fishable, swimmable waters statewide with the vision that one day all Oklahoma waterbodies will fully meet their designated uses.