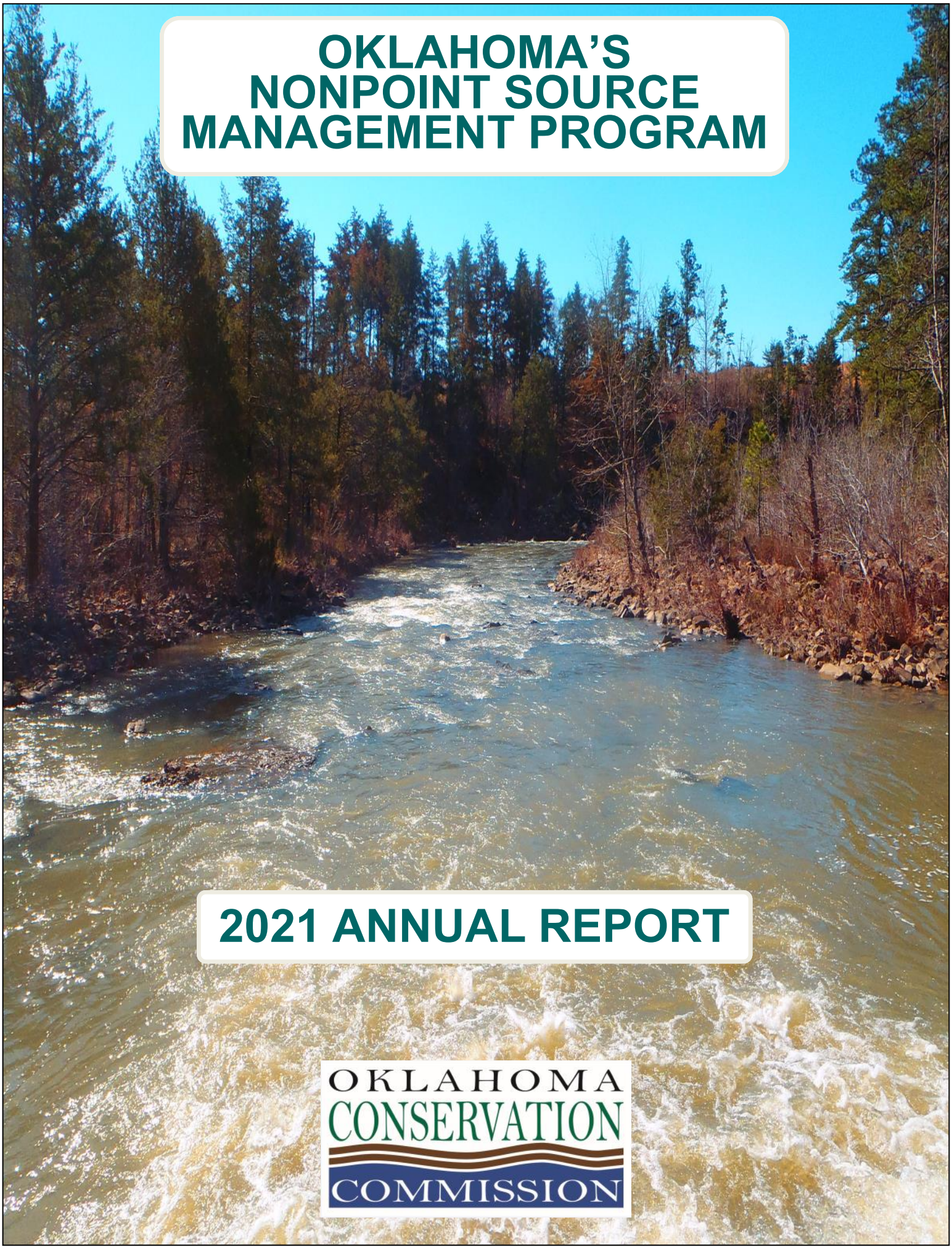
OKLAHOMA'S NONPOINT SOURCE MANAGEMENT PROGRAM



2021 ANNUAL REPORT

OKLAHOMA CONSERVATION COMMISSION

The USEPA provided partial funding for activities discussed in this report through §319(h) FY 2021, C9-996100-21, Project 6, Output 6.4.1a

For more information on activities discussed in this report, visit our website:
www.conservation.ok.gov

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Cover photo: Terrapin Creek, McCurtain County, Oklahoma
Back photo: Big Eagle Creek, Pushmataha 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, insuring 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 2021:

The OCC implemented its 2021 NPS Management Program efforts with $2.5 million in U.S. Environmental Protection Agency (USEPA) Clean Water Act Section 319(h) funding and $1.7 million in state funds. The monitoring program is allotted 23% of the budget, the Blue Thumb education program receives 15%, and the remainder is used for technical support and implementation. Major accomplishments for the NPS Management Program in 2021 include 1) progress in partnerships and projects in watersheds including Little Beaver Creek, Illinois River, Grand Lake, 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 fourth cycle and commencing the fifth cycle of the Rotating Basin Monitoring Program. Highlights of Oklahoma's progress in implementing the NPS Management Program during FY2021 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.

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
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.	Oklahoma currently has: • 723 TMDLs for waterbodies impaired by bacteria, turbidity, low dissolved oxygen, and nutrients. Work to address additional impairments is ongoing. • Fourteen WBPs, and implementation of CPs to improve water quality is ongoing in five of these watersheds. • 94 published success stories on the EPA's §319 website, indicating delisting of 138 pollutants from 94 impaired waterbodies due to CP implementation and education.
By 2050...attain and maintain beneficial uses in waterbodies listed on the 2002 303(d) list as threatened or impaired solely by NPS pollution.	Oklahoma has delisted more NPS impaired streams than any other state with a total of 94. Strong partnerships with other agencies, particularly the NRCS, are resulting in additional funding for implementation of practices focused on water quality improvement.
Short-Term Goals	**Progress Toward Attaining**
Monitor at least 250 streams, rivers, and other waterbodies every five years to determine causes and sources of NPS impairments.	The water quality of more than 14,338 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.
Prioritize watersheds using the process described in the NPS Management Plan, then draft and update WBPs or similar planning documents for top priority watersheds.	Fourteen 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.
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.	Oklahoma's Blue Thumb Education Program currently has active volunteers in 32 of the 77 counties of the State, with 84 active monitoring sites. Forty-seven Conservation Districts have joined the nonprofit Oklahoma Blue Thumb Association.
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.	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

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 FY2021, approximately $529,874 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 $2,052,139.12 in state and matching fund implementation dollars were invested statewide in NPS projects through the Locally-led Cost-Share Program 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:

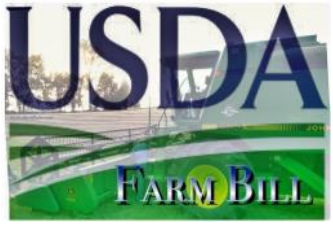
Implementation monitoring is performed to determine the effects of conservation practices (CPs) on water quality in high priority watersheds. Implementation monitoring usually involves sampling streams during defined periods before and after CPs are installed in a watershed.

Due to budget cuts, OCC and its partners are turning to collaborative projects such as the Regional Conservation Partnership Program (RCPP) 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.

Ongoing projects include: Middle and Lower Neosho River Basin/Grand Lake RCPP Project; Elk City Lake RCPP Project; Little Beaver Creek NWQI Project; and the New Spiro Lake/Holi-Tuska Creek NWQI Project.

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).

In FY 21, NRCS continued to assist landowners with the installation of key conservation practices addressing gully erosion and grazing management. Key practices included grade stabilization structures, watering systems and prescribed grazing. NRCS and OCC have partnered on a pilot project through NWQI to conduct watershed assessments in two HUC 12 watersheds in SW Oklahoma. The outcome of these assessments was being used to develop a watershed based plan to address water quality needs and critical acres contributing to identified impairments. Additional funding for conservation practices has been budgeted and partners are currently working to design education and outreach activities to support additional installation of CPs.



Water Quality Monitoring

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.

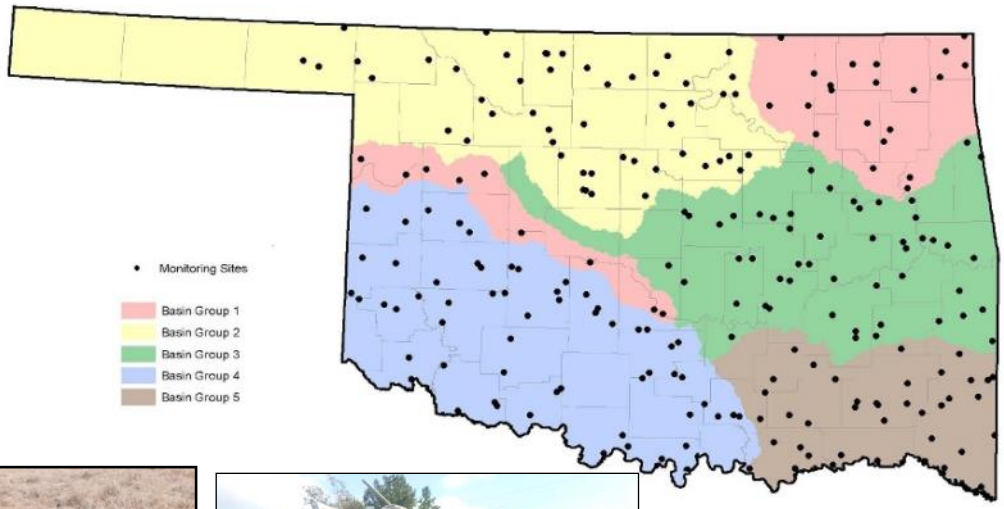
For the RB program, a total of 250 fixed sites are monitored on a rotational schedule by basin (see map). Sites within a basin are sampled every five weeks for two consecutive years to gather water quality data. In addition, a fish collection and habitat assessment is performed. Benthic macroinvertebrates 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 2021, OCC finished the fourth cycle of monitoring in Basin Group 4, continued the second year of the fourth cycle of Basin Group 5 and began the fifth cycle of Basin Group 1 .

Oklahoma continues to experience climatic variations which present a challenge in 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 as-

In field:	*Lab:*
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



Estimating Load Reductions


Automated Sampler

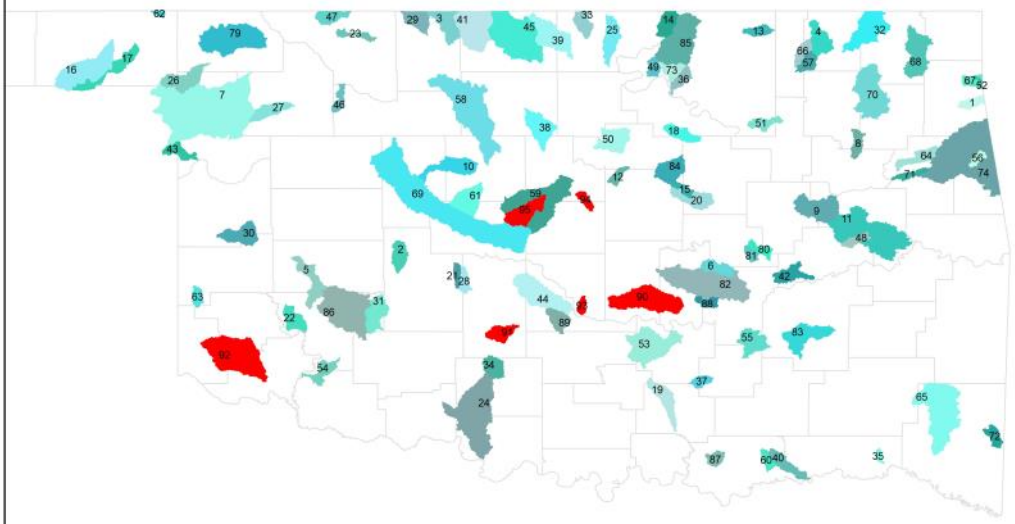
In addition to tracking change in actual stream water quality results through its extensive monitoring and assessment program, the OCC determines conservative estimates of CP impacts on reducing priority NPS pollutant loads delivered to streams. Load reductions for nitrogen, phosphorus, and sediment 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	2019 Load Reduction Estimates*		
	Nitrogen	Phosphorus	Sediment
Riparian easement (Illinois River and Eucha/ Spavinaw watersheds) and RCPP Projects	356,901 lbs/yr	30,768 lbs/yr	4,039 tons/yr
Statewide Locally-Led Cost-Share, Soil Health Program, and Poultry litter transfer	418,038 lbs/yr	423,022 lbs/yr	875 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.

Documenting Success

EPA approved 6 new Oklahoma NPS Success Stories in 2021. 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.



2021 Oklahoma Nonpoint Source Success Stories
6 New Streams

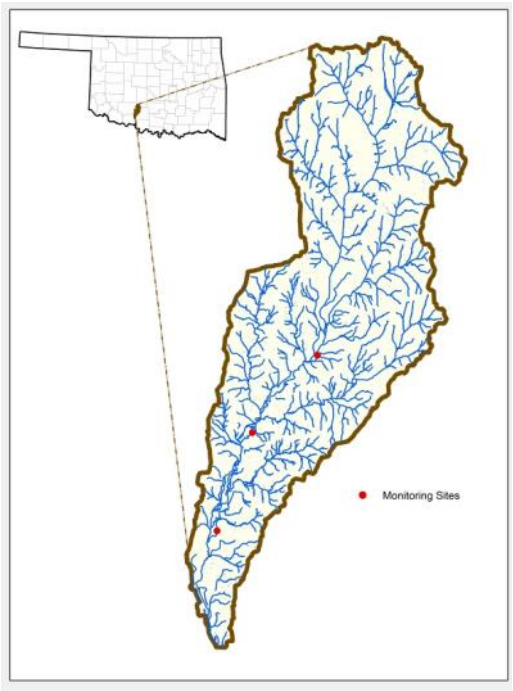
Oklahoma's 2021 Success Stories:
With the submission of the 2021 stories, Oklahoma has 94 streams that are recognized as EPA NPS Success Stories, detailing removal of 138 pollutants. Oklahoma is now first in the nation for documenting NPS pollution reduction through NPS Success Stories.

National Water Quality Initiative Program Project

Little Beaver Creek

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

- 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 2021:

- Water Quality monitoring continued on Little Beaver Creek.
- Conservation Practice implementation continued where USDA COVID office constraints allowed.
- A "Full Circle Citizenship" training event was held in the watershed. This involved producers, conservation board members, NRCS staff, teachers, and multiple citizens in a full day of training on topics related to nonpoint source pollution, soil health principles, stream life, pollinator promotion and other areas of environmental education and engagement.

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 2021, the Blue Thumb program achieved the following:

- Supported approximately 133 certified volunteers who monitor
- Supported an additional 150 students who monitor with their teacher or professor
- Logged 4,985 volunteer hours (monitoring and education volunteers)
- Collected water quality data at 83 stream sites across Oklahoma
- Collected 124 macroinvertebrate samples and completed 20 fish collections in coordination with volunteers

Highlights from 2021 include:

- Continued to publish a monthly e-newsletter for volunteers
- Produced 26 short educational videos
- Worked with the Illinois River Watershed Partnership to collect chemical, biological and habitat data at 12 sites in the Oklahoma portion of the watershed
- Published the 2022 Blue Thumb calendar which focused on urban conservation
- Expanded the Yard by Yard Program to 10 new conservation districts
- Supported the Lake Thunderbird Watershed Alliance by producing educational materials
- Participated in the Urban/Suburban Riparian Protection Committee; supported this effort by working with the City of Norman to develop outreach materials about riparian protection
- Served on the Volunteer Monitoring Workgroup of the National Water Quality Monitoring Council
- Served on the National Project WET Council
- Supported a faculty learning community of professors and instructors engaged in citizen science in higher education

Soil Health Education Program

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.

Highlights from 2021:

- The Soil Health program has continued a partnership with American Farmland Trust to complete studies showing the economic benefits of soil health practices. We know these practices improve water quality and provide benefits to communities downstream, but we have never studied the direct economic benefit to farmers. Actual producers will be interviewed, and case studies will be published. Following this project, a predictive tool will be designed to help producers estimate the benefits derived from soil health practices. One Study is complete, pending review by producer. One study is in progress, and 2 additional studies will begin January 2022.

- The Soil Health team and four of our conservation districts are working with General Mills to expand conservation, namely soil health practices, in north central Oklahoma. Producers, under guidance of GM Project Mentor Jimmy Emmons, have implemented several soil health/regenerative agriculture practices in the project area.

- The Soil Health team has continued to work towards engaging and educating citizens through traditional and nontraditional means. This has included in person field days/workshops, Zoom webinars and YouTube educational videos, which reached over 2000 people, and impacted over 10,000 ACRES. In addition, Facebook posts continue to reach hundreds. Lastly, over 10,000 people have subscribed to receive Soil Health emails and text messages.

- 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, safe approach to educate urban citizens about their lawn management. OCC staff provided necessary guidance and technical assistance to get this program developed and launched in Oklahoma and Tulsa Counties. 11 Conservation Districts participate currently.

- 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. CARE participants will then host a field day demonstrating Soil Health/Community Health related activities. 12 producers are currently participating in OK.

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 2021 approximately $70,404 in 104(b)(3) federal funds and $166,037 in 106 federal funds were used to accomplish the activities below:

- Participated in the third round of the National Wetland Condition Assessment (NWCA), which involved sampling 35 wetlands in the summer of 2021. 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 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.
- Attended the Association of State Wetland Managers virtual meeting in April 2021.
- 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

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 FY2021 totaled $2.05 million and were completed in conservation districts statewide. Conservation practices installed are shown in the table on the right.

Alternative water (units)	87
Ponds (cubic yards)	1,737,576.7
Cover crop planting (ac)	2,492
Critical Area Planting (ac)	1.6
Fencing (ft)	109,390
Firebreak (ft)	159,679
Grade stabilization structures (cy)	6,961
Grassed waterways (ac)	51.1
Heavy Use Area Protection (yd3)	21,252
No till/Strip Till and Residue Mgt (ac)	517
Nutrient Management	885
Pasture/hayland planting (ac)	6,064
Pipeline (ft)	20,640
Prescribed burning (ac)	9,609
Prescribed grazing (ac)	128
Range seeding (ac)	582
Watering Facilities/Wells/Pumping Plants	25/55/27

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 2021:

- Crow Creek watershed based plan was accepted by EPA (1/11/2021)
- Hosted a Summer Sunset Watershed Wa-Tu-Kla at Zink Park (July 17)
- Held four planning meetings
- Hired a contractor to complete end-of-year maintenance at the Meadow
- Participated in one maintenance day at the Meadow
- Held a "planting day" for the installation of new native plants at the Meadow in conjunction with Tulsa's "Monarchs on the Mountain" event
- Held "Trash or Treat" at Zink Park (10/30/2021)
- Designed new educational signage for the Meadow (will be installed in 2022)
- Met with Byers Creative for assistance with social and printed media outreach in the watershed
- 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.

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 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, the AEMS Division has issued 225 CGP authorizations associated with Ag related construction sites.

Settling a basin to retain stormwater runoff

Using vegetation as a buffer strip

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

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. Through Yard by Yard urban citizens are recognized for having "nature friendly" practices in their yards. The Oklahoma County Conservation District, and urban soils specialist Kevin Mink, are credited with starting the program in the summer of 2020, with the Tulsa County Conservation District coming aboard one month later. Then as 2020 was closing out, Friends of Blue Thumb and the Oklahoma Association of Conservation Districts, with OCC support, took the Yard by Yard Project statewide.

Friends of Blue Thumb (FBT) and the Oklahoma Association of Conservation Districts (OACD) accepted applications and brought aboard nine conservation districts including Shawnee, Deer Creek, Murray County, Delaware County, Muskogee County, Payne County, Cherokee County, Bryan County, and Johnston County.

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. The benefits of the community conservation effort are numerous.

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.
- Providing a water source – insects and birds benefit from water offered through bird baths and water features, especially on hot summer days.

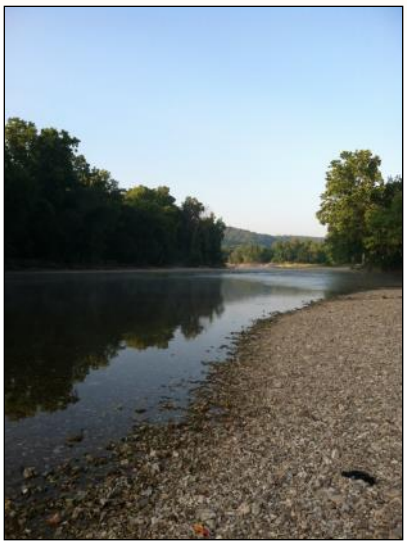
The whole "Yard by Yard" Community Resiliency Project is designed to do good. Greater beauty in yards, less chemicals, increased infiltration (so reduced flooding), greater tolerance to drought, more nutritious local food, feeding opportunities for birds, bees, and butterflies, and an opportunity for 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!

Yard by Yard is slated to again be offered to conservation districts for participation in 2022.

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 31 landowners in the Illinois River Watershed. These total 1,455 ac. in Adair (1,050.8 ac.), Cherokee (328.3 ac.), and Delaware (75.9 ac.) counties at a cost of $88,710.30 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

Oklahoma Department of Transportation (ODOT)

The Oklahoma Department of Transportation (ODOT) continues to utilize best management practices (BMPs) to manage storm water on our projects. Over the last year, there has been a large emphasis on our efforts concluding projects and final stabilization. The agency has collaborated with the Oklahoma Association of General Contractors as well as Oklahoma Department of Environmental Quality in this effort through meetings and site visits. As every year, we have held the work in the field a priority and continue to aid in ways we can assist reduce sediment transport and maintain compliance with our state and federal regulations while safely building roads and bridges. ODOT Environmental Staff concluded the year by traveling to each field district for trainings on the environmental process within a "How to Build a Bridge" concept. BMP standards are being finalized for use during construction and soon ODOT personnel will be working to create a sediment and erosion control section to our Approved Product List.

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 7.8 million advertising impressions through media releases, news coverage, radio and printed advertisements. An additional 29,850 personal contacts were made through email correspondence, newsletters, workshops, 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 crews, street sweeping contracts and the storm water netting programs accounted a total of 7,029,000 pounds of debris removed from the urban areas and waterways. Volunteer initiatives including the Adopt-a-City Street and Waterway Clean Sweep Programs included 947 volunteers that provided efforts to remove over 31,893 pounds of debris. The Household Hazardous Waste Collection Facility served 11,542 facility participants that delivered 740,098 pounds of household hazardous waste such as paint, used oil, and pesticides. 263,564 pounds of that waste stream was separated and either recycled or released for public reuse. Storm Water Quality Management staff completed 11,586 construction site and industrial facility inspections. Staff managed 175 pollution incident reports ensuring proper cleanup of spills and illicit discharges.

NPS Program Partner Activities

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; annual household hazardous waste (HHW) collection events (and soon, the new permanent 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 2021, approximately 42,586 pounds of electronics were collected at two, one-day events (April 24, 2021 and October 23, 2021), 62,810 pounds of paint were collected at a one-day event on November 13, 2021, and 226,954 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 was 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 2021, over 5600 tons of recyclables and 10 million tons of yard waste were collected. Additionally, 40 million 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 over 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 2021, the City was able to plan and implement several clean-up events, host workshops for targeted and general audience members, and facilitate the installation of the Third Annual Artful Inlets pieces.

<u>Workshops and Activities for the Construction Industry Stakeholders</u>
The Stormwater Division works closely with building and development stakeholders throughout the year. On May 13, 2021, the Spring Builders Workshop was presented at West Franklin Sod Farm. This event was in partnership with the sod farm, Ideal Homes, Fertile Ground and Triangular Silt Dike. Participants gained hands-on experience with construction site Best Management Practices (BMPs) designed to minimize stormwater runoff pollution from construction sites. BMPs were installed on site, and participants learned when they could be used and how they should be maintained.

<u>General Clean-up Events</u>
Clean-up Events were scheduled in March, April, May, July, October, November and December of 2021. In March and April, a suite of cleanup events was held. Five (5) clean-up events were held in both major watersheds (Canadian River, Lake Thunderbird). During these events, almost 80 participants removed almost 1000 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 almost 2000 pounds from both watersheds.

City of Norman cont.

City of Norman

6th Annual Lake Thunderbird Workshop and Clean-up Event

On October 31, 2021, the Stormwater Division hosted the 6th Annual Lake Thunderbird Workshop and Clean-up Event at Lake Thunderbird State Park. With a beautiful setting and wonderful weather, forty-seven (42) volunteers discussed the lake and ways to help its water quality, enjoyed a rainfall simulator demonstration by the Assistant Director of the Soil Health Program at Oklahoma Conservation Commission, and then helped remove over 900 pounds of material from the Lake Thunderbird State Park. The Lorax made a special appearance.

3rd 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 29 and 30, 2021, six artists installed their pieces around five pieces of stormwater infrastructure located along Jones during the 3rd Annual Artful Inlets installation. Additionally, two more artists installed a replacement piece for a retired work on Main Street. The retired piece, Do Something by Jazmin Crawford, had to be replaced because of unrepairable damage. These canvases join the previous installations, along Main Street from Porter Avenue to Webster Avenue. Eventually, the Stormwater Division hopes to bring Artful Inlets works to areas throughout the City of Norman, highlighting the importance of protecting stormwater quality. The selected pieces for 2021 were “Cool by the Pool” by Ken and Sarah Hall, “Green and Clean” by Aurora Land, “Drainage” by Laura Nelsen, “The Message is the Medium” by Chase Spivey, and “Here Be Monsters” by Ame Aziere. The replacement piece was “Happy Roots” by Michael Wilson and Bonnie Amspacher. They 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 over the last few years enhanced its outreach program, including social media, radio, TV and digital advertising. The goal of our outreach is to simply make Tulsans more aware of stormwater issues and help them to realize how everyone has an impact on our watersheds and streams.

Tulsa opened a Household Pollutant Collection Facility in Jan. of 2016 which has proven very successful. Recently marking our 5 year anniversary noting the acceptance and properly disposal of 1,000,000 lbs. of pollutants and 10,000 customers, keeping our streams and lakes cleaner and healthier.

Tulsa's Watershed Characterization Program continues rotating through all our major watersheds over our 5 year Permit cycle. Information from this program has been insightful to stop illicit discharges and identify better best management practices. 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 streams. Information on Tulsa's Stormwater Quality Program from the past fiscal year can be found at www.cityoftulsa.org/sos

Save the Illinois River (STIR)

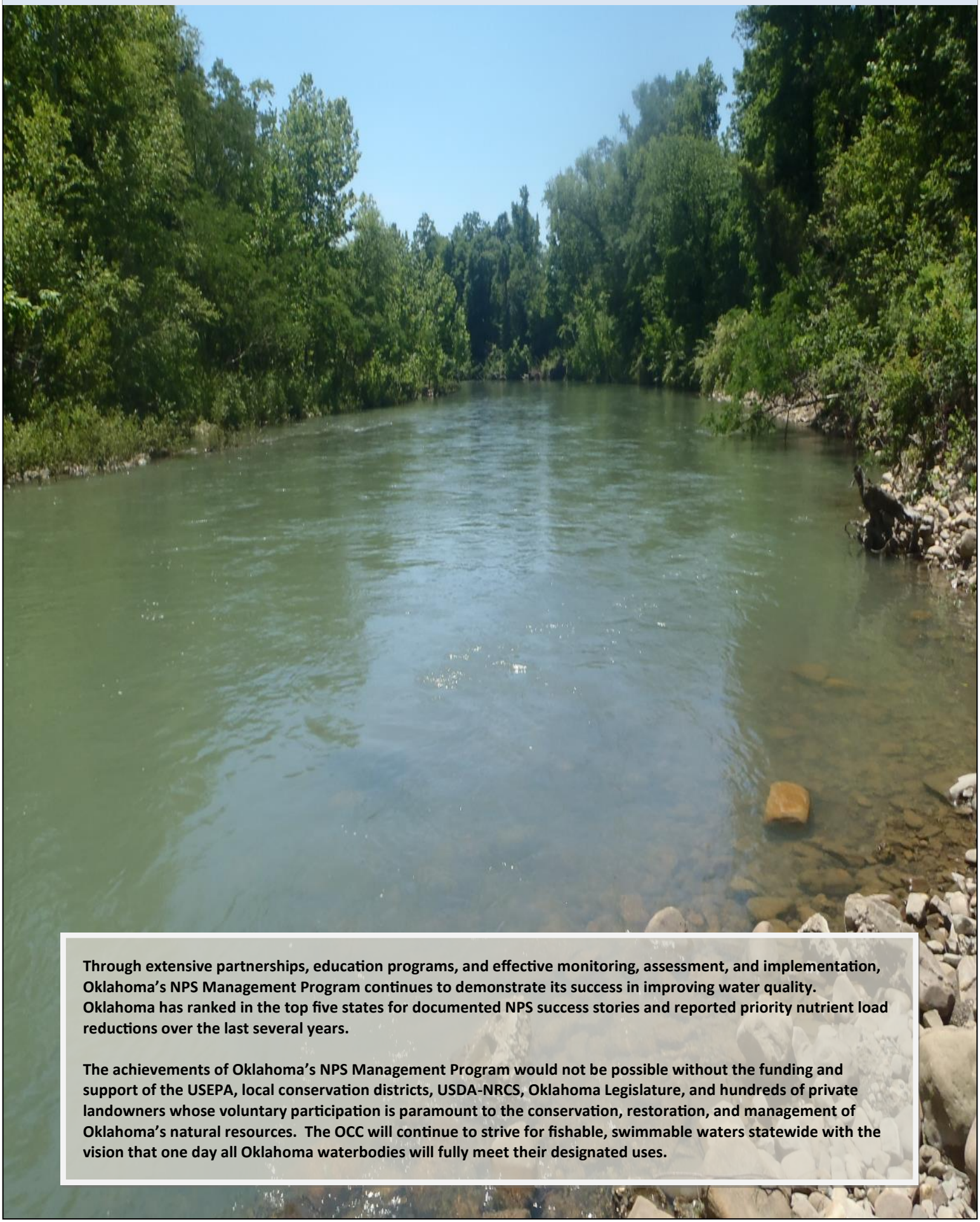
Save the Illinois River, Inc., STIR, is a private, not-for-profit organization chartered exclusively for the preservation of the Illinois River (Upper and Lower), Flint Creek, Barren Fork Creek, Tenkiller Lake, and their tributaries.

STIR aims to inform the public about Illinois River watershed nonpoint pollution issues. One way STIR attempts to reach the public is through local advertising. See their most recent advertisement placed in the 2021 Greater Tenkiller Area Association Lake Guide below. In addition, STIR provides articles, editorials, and letters to area newspapers about nonpoint source pollution including extensive coverage of the data presented at the meetings of the Arkansas-Oklahoma Arkansas River Compact Commission.

Also, STIR continues to make disposable pet waste stations available to Illinois River watershed entities including the Grand River Dam Authority and the City of Tahlequah.

OKLAHOMA CONSERVATION COMMISSION

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.