

2017 ANNUAL REPORT



The USEPA provided partial funding for activities discussed in this report through §319(h) FY2018, C9-996100-19, Project 6, Output 6.4.1a

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



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.

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 2017:

The OCC implemented its 2017 NPS Management Program efforts with \$2.1 million in U.S. Environmental Protection Agency (USEPA) Clean Water Act Section 319(h) funding, and \$3.2 million in state funds. The monitoring program is allotted 29% 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 2017 include 1) progress in partnerships and projects in watersheds including Little Beaver Creek, New Spiro Lake, Grand Lake, Elk City Lake, and Wister Lake, 2) completion of multiple streambank restoration projects in the Illinois River Watershed, 3) 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, and others, and 5) continued water quality monitoring of streams across the state continuing the fourth cycle of the Rotating Basin Monitoring Program. In addition, Oklahoma program strategies for success were published and highlighted in National Studies completed by the USDA NRCS, the World Resources Institute, Lakeline- a publication of the North American Lake Management Society, and the Environmental Law Institute.

Highlights of Oklahoma's progress in implementing the NPS Management Program during FY2017 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 the NPS Management Program are summarized in the table below and described in detail in the Plan. These goals are guided by the mission statement of the NPS Management Program: "To conserve and improve water resources through assessment, planning, education, and implementation."

The primary components of the Program are planning, implementation, education, and assessment.

Long-Term Goals	Progress Toward Attaining
By 2020establish 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 2016 303(d) list, unless the original basis for listing is no longer valid.	 Oklahoma currently has: 823 TMDLs for waterbodies impaired by bacteria, turbidity, low dissolved oxygen, and nutrients. Work to address additional impairments is ongoing. Eleven WBPs, and implementation of CPs to improve water quality is ongoing in five of these. 60 published success stories on the EPA's §319 website, indicating delisting of impaired waterbodies due to CP implementation and education.
By 2040attain and maintain beneficial uses in waterbodies listed on the 2002 303(d) list as threatened or impaired solely by NPS pollution.	Oklahoma ranks second in the nation for NPS delisting success stories, with a total of 60. 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 14,665 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.	Eleven WBPs are currently approved. All watersheds in the state were assessed with the new prioritization scheme, and the OCC plans to update or draft 10 WBPs per year starting in 2017.
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 31 of the 77 counties of the State, with 71 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 watersheds.

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
- <u>Local leadership and buy-in</u>: get support of local Conservation District and hire local coordinator; establish a Watershed Advisory Group (WAG) that includes all interests to drive implementation planning
- <u>Targeting</u>: use an effective model (e.g., SWAT) to locate pollution hotspots to target for implementation
- <u>Effective monitoring</u>: 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
- <u>Partnerships</u>: look for creative ways to engage other agencies, leveraging hard dollars and matching funds
- <u>Long-term commitment</u>: 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 FY2017, approximately \$122,000 dollars in federal §319 funds, Oklahoma state funds, and private landowner funds were expended for implementation of CPs in four priority watersheds (see map). Cost-share funds from participating landowners comprised a significant portion of these monies.

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*. The Oklahoma Conservation Commission (OCC) has an extensive and unique monitoring program. Effective monitoring and assessment are essential to being able 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 more and more 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 production of food and fiber in agriculture 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 17, NRCS developed 10 contracts for over \$220,000 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 will be used to develop a watershed based plan to address water quality needs and critical acres contributing to identified impairments. This will support funding opportunities, new partnerships and implementation of needed conservation practices.





Rotating Basin Monitoring Program:

The Rotating Basin (RB) Monitoring Program has allowed 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 NRCS, local conservation districts or other partners, and the use of data by Oklahoma Department of Environmental Quality (ODEQ) create total maximum daily loads for impaired streams.

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

In 2017, the OCC finished the third cycle of monitoring in Basin Group 5, continued the second year of the fourth cycle of Basin Group 1 and began the fourth cycle of Basin Group 2.

Oklahoma continues to experience drastic climatic shifts which present a challenge in ambient monitoring of small and medium sized streams. OCC has revisited planning efforts and made some revisions to the RBMP 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:

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













Estimating Load Reductions

The OCC conducts intensive monitoring and assessment efforts to determine the impacts of CP implementation in all watershed implementation projects. Automated water samplers are installed in either an upstream/downstream design, with CP implementation occurring in the area between the samplers, or in a control/treatment design, where an adjacent watershed is used as a control for the implementation watershed. Load reductions have been calculated for several of the implementation projects based on this continuous flow-weighted sampling, and ongoing monitoring will allow further assessment in the future. In addition, load reductions are estimated for each project annually using the EPA's Spreadsheet Tool for Estimating Pollutant Loads (STEPL) and submitted through EPA's Grants Reporting and Tracking System (GRTS). Estimates of statewide load reductions as a result of CP implementation through the statewide Locally-Led Cost-Share Program (discussed later in this report) are also calculated.



	2017 Load Reduction Estimates*			
watersned / Program	Nitrogen	Phosphorus	Sediment	
Illinois River	238,935 lbs/yr	20,951 lbs/yr	3,055 tons/yr	
RCPP Projects	3,722 lbs/yr	424 lbs/yr	98 tons/yr	
Statewide Locally-Led Cost-Share	52,906 lbs/yr	5,563 lbs/yr	581 tons/yr	
and Soil Health Program				

*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

SAVING AL PROTECTION

NONPOINT SOURCE SUCCESS STORY

klahoma

The OCC Water Quality Division submitted five NPS success stories to EPA in 2017. 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.

Site	Parameter Delisted	Watershed Counties	Year delisted (per parameter)
Cottonwood Creek	Turbidity	Canadian, Kingfisher, Logan & Oklahoma	2010
Curl Creek	<i>E. Coli,</i> Turbidity	Nowata & Washington	2010, 2012
Sulphur Creek	Turbidity	Bryan	2012
Turkey Creek	Turbidity	Alfalfa, Garfield, Kingfisher &	2012
Winter Camp Creek	Turbidity	Canadian & Kingfisher	2010

Oklahoma's 2017 Success Stories:

With the submission of the 2017 stories, Oklahoma has 60 streams that are recognized as EPA NPS Success Stories. Oklahoma is now second in the nation for documenting NPS pollution reduction, and the lead in the nation in the number of independent watersheds where our program has documented successful water quality restoration through voluntary NPS programs.





Middle and Lower Neosho River Basin/Grand Lake



Grand Lake is an important water supply, flood water retention, electrical power generation, and recreation source for the region. Eutrophication in the lake led to severe blue-green algae blooms in 2011 and bacteria outbreaks at beaches in 2014.



- The Neosho River Watershed is a high priority for both Kansas and Oklahoma and each state has devoted significant effort towards diagnosing and solving water quality degradation in the watershed.
- The Regional Conservation Partnership Program (RCPP), created by the farm bill of 2014, promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners.



 Many of the streams, rivers, and reservoirs in the watershed have water quality problems and impairments related to excess nutrients, sedimentation, and bacteria. Of particular concern to both states are watersheds in the Middle and Lower Neosho Basin, because of concerns raised by stakeholders in the watershed and, in part, because these watersheds contribute directly to water quality degradation in Grand Lake.









- Water monitoring continues in five streams on a monthly basis.
- Outreach letters mailed to all landowners.
- 15 field visits for conservation planning.
- Five federal contracts obligated for \$391,835.
- State contract agreements for \$66,058, which included 149 acres of riparian area exclusion.

Regional Conservation Partnership Program Project





Elk City Lake





- The Elk City Lake was constructed in 1970 primarily for flood control but is now operated by the City of Elk City for recreation.
- Elk City Lake has had both water quantity and quality problems related to excess nutrients, sediment, and bacteria.
- The primary purpose for the project is to restore water quality and protect West Elk Creek, and downstream Elk City Lake from future degradation.
- Land use in the watershed is primarily range, pasture, and cropland with little to no riparian buffer along much of the stream courses and direct access by livestock.

Partners in the Elk City Lake Watershed RCPP will work cooperatively with landowners to install conservation practices on cropland and rangeland in the watershed that contribute to nutrient and sediment related water quality impairments in downstream waterbodies.



- Monitoring continued on West Elk Creek with monthly grab samples and additional runoff samples after rain events.
- Conservation Practices installed: Grass planting (80 acres) Cross fencing (6,651 feet) Cover crops (160 acres) Brush management (30 acres)
- Performed grid soil sampling on 545 acres.
- Completed a solar powered pump and well drilling.





National Water Quality Initiative Program Project





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.

National Water Quality Initiative

Conservation Beyond Boundaries NWQI

United States Department of Agriculture





 Multiple water quality models were evaluated to determine best fit for watershed characteristics and available data. Model outputs are anticipated in early 2018 and will be used to develop a watershed based plan and outreach plan by July of 2018.

Conservation practice implementation continued to be strong in 2017 with the majority of contracts including some component of reducing

Water monitoring continued on Little Beaver Creek.

livestock access to streams.



National Water Quality Initiative Program Project





New Spiro Lake/Holi-Tuska Creek

- The water quality of New Spiro Lake has deteriorated over recent decades. The lake has excessive chlorophyll-a, too little dissolved oxygen, and high turbidity impairing its beneficial uses as a public water supply and warm water aquatic community.
- In 2015, through the collaboration of NRCS, the OCC, the Oklahoma Department of Environmental Quality and local input, Holi-Tuska Creek was selected for the National Water Quality Initiative (NWQI) Program. NRCS is providing financial and technical assistance to the landowners and farmers to work the land in a sustainable way which provides cleaner water.
- The New Spiro Lake Monitoring Program has three components: watershed load monitoring, volunteer creek monitoring, and lake monitoring. Monitoring is being conducted by the private consulting firm Bio x Design, with the assistance of the Town of Spiro and the Oklahoma Conservation Commission.



In FY 2017:

- Water quality monitoring on Holi-Tuska Creek began in 2015 and continues through 2019. Water quality monitoring has been maintained in New Spiro Lake for more than a decade.
- Installation of conservation practices has been slow to begin in the watershed. Many producers were interested in conservation practices that weren't appropriate for their natural resource concerns. As a result, OCC, the Choctaw Nation, and the City of Spiro are seeking to fund a watershed coordinator who can educate landowners and complete preliminary conservation planning.
- Watershed reconnaissance reveals that road and roadside erosion are significant sources of sediment in the watershed. Partners will work to complete a road/roadside erosion survey to estimate sites contributing most significantly to sediment loading and to demonstrate effective techniques to reduce roadside erosion.

National Water Quality Initiative





Blue Thumb Education Program

CONSERVATION



The Blue Thumb Program is the education arm of the Oklahoma Conservation Commission's Water Quality Division. Blue Thumb is a statewide citizen science effort focused on training volunteers to share their knowledge of water quality with others, with the goal of 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 2017, 163 active Blue Thumb volunteers, along with students, teachers and others,

logged just over 6,000 volunteer hours.

In 2017, the Blue Thumb program achieved the following:

- Conducted educational programming 103 times, reaching ~20,000 people
- Provided water education at 15 Natural Resource Days across the state
- Held 4 Mini-Academies with students and teachers at their classroom and creek
- Educated at 5 Earth Day events during the month of April
- Reached over 1,000 followers on social media
- Conducted 132 benthic macroinvertebrate collections at 80 sites statewide



Blue Thumb's first director, Cheryl Cheadle, retired at the end of 2016 and was replaced in the role by Jean Lemmon. Shortly after that, Blue Thumb hired a new Educator, Robert Barossi, who started in January 2017. Close to year's end, Blue Thumb's Communications Director, Jeri Fleming, left the program to pursue an opportunity at University of Oklahoma. A new staff member will be hired early in 2018.

Candice Miller, Blue Thumb Education Coordinator, has taken on the role of Statewide Project WET Coordinator. Project WET, Water Education for Teachers, provides formal or informal educators with tools to teach about water in their classrooms, at any grade level and across many subjects. During the time covered by this report, Candice led 6 Project WET teacher workshops or facilitator trainings, attended by 52 people.





Blue Thumb, along with Grand River Dam Authority (GRDA) and Oklahoma State University (OSU) Extension, provided two multi-day educational camps for kids. Forty-two kids, ages 6 to 13, attended the camps, held in Tahlequah and Langley. Both groups participated in many educational activities related to watersheds, water conservation, and nonpoint source pollution. Tahlequah campers visited a local creek to search for bugs and fish and took a float trip down the Illinois River, while Langley campers had an educational experience on Grand Lake and a tour of the Grand Lake Pensacola Dam.



Blue Thumb also partnered with GRDA and OSU Extension on a three-day teacher's workshop titled Riverology 101. Teachers received room and board over the three days and took part in a variety of activities from the Project WET curriculum. Every teacher left the workshop with their own Project WET curriculum/activity guide book for use in their classroom. Over the three days, they also participated in a boat tour of Grand Lake, a tour of the Grand Lake Pensacola Dam, and an educational float trip down the Illinois River on the final day.



It was a remarkable year for Blue Thumb volunteer trainings, with a new record for the most trainings held in one year. We had nine trainings in a variety of locations around the state: Oklahoma City, Pawhuska, Beaver County, Stillwater, Tahlequah, Idabel, Broken Arrow and twice in Ada. These trainings demonstrated an increased level of interest in Blue Thumb from a wide range of citizens and organizations around the state, hopefully a sign of the program's further growth in the near future.







The OCC Soil Health Education Program is a statewide initiative that teaches about the relationship between soil health, air and water quality. This Water Quality Division program uses hands-on learning to delve into soil health principles by teaching easy-to-use techniques for understanding, assessing, and restoring soil health. 2017 activities included trainings, demonstration farm support, educational field days, and exhibiting at conferences and other events.

Trainings. The program held 16 Soil Health, Cover Crop, and Plant ID trainings across the state in partnership with Oklahoma NRCS and conservation districts. There were 611 attendees, including agriculture producers, district directors, college and HS students, and staff from partner agencies. Feedback was excellent, with many participants suggesting additional trainings in the future. Trainings provided an overview of using cover crops to increase soil quality, function, and water infiltration, examining for grazing and residue management, weed suppression, discussing challenges with no-till agriculture, and plant identification. Understanding soil and plant dynamics encourages producers to implement practices that reduce soil erosion and NPS runoff from land into waterways.



On-Farm Demonstration Education. The program partnered with OSU, the Oklahoma Association of Conservation Districts, and local conservation districts to provide financial, administrative, and educational support to four On-Farm Soil Health Demonstrations. The producer-led projects provide opportunities for local producers in the areas to learn that demonstrated practices increase yields and improve soil health. Practices underway include cover crop mixes on cropland, pasture, and no-till fields.



Event Education & Exhibits. Program staff provided soil health education at over 30 events with more than 2,000 attendees, including Natural Resource Days and Soil Health Field Days held by conservation districts, OACD Meetings, Conservation Day at the Capitol, Farm Shows, Elementary School classroom demos, and Conservation conferences. Staff also provided educational support to the National Land and Range Judging Contest and Envirothon Teams.





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 2017, approximately \$265,572 in non-§319 EPA funds were used to accomplish the activities below:



- Continued to manage and further develop 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.
- Cooperated with Oklahoma State University and the Oklahoma Water Resources Board to further develop and validate the Oklahoma Rapid Assessment Methodology (OKRAM) for wetlands. Modifications and validation will continue as grant funds are available.
- Completed wetland mapping revisions in the Little Deep Fork and Pennington Creek Watersheds. These maps are hosted on the Oklahoma Wetlands Program website as well as submitted for incorporation in the U.S. Fish and Wildlife Service National Wetland Inventory.
- Continued work on a cooperative project with OSU to use wetland mapping to guide restoration decisions and determine
 wetland trends in Oklahoma. OSU and OCC will develop a protocol to determine historic wetland gains/losses in priority
 watersheds using current and historic aerial photography. Wetland gains and losses were calculated for the Little Deep
 Fork and Pennington Creek Watersheds.
- Continued to work on a cooperative project with ODOT to identify current and future ODOT mitigation needs and link those
 needs with mitigation opportunities at the watershed scale. Estimated potential wetland and stream liability for current and
 future road construction projects.
- Applied the restorable wetlands identification protocol in five watersheds to identify locations with the greatest potential to serve as wetland restoration opportunities. The sites ranked with the greatest potential for restoration success and downstream water quality improvement were entered into the Wetland Registry hosted on the Wetlands Program Website.
- Completed Oklahoma's expanded field survey portion of the National Wetland Condition Assessment (NWCA) which included a wetland method development component for further development of the OKRAM. Thirty wetlands were assessed with both NWCA and OKRAM protocols between June and September.
- 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

CONSERVATION

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 FY2017 totaled \$1.47 million and were completed in 69 conservation districts. Conservation practices installed are shown in the table on the right.

Cost-Share	a Healthy Land
Program	Charles Constant Constants & Constant United
ALL AND	and the
A.D. A.	The should be
and the second	
Contrian Provident	No. of Concession, Name
States of the second seco	

Alternative water (units)	81
Ponds (units)	107
Cover crop planting (ac)	982
Diversions (units)	7
Fencing (ft)	54,293
Grade stabilization structures (units)	1
Grassed waterways (units)	9
Pasture/hayland planting (ac)	2,380
Range seeding (ac)	171
Terraces (ft)	14,423

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, which is enjoyed by many primarily for its aesthetic value. The stream has been degraded over the last decade by various activities, and the biological community has almost disappeared. In addition, the stream has high bacteria, which is of concern since local children like to play in and around the water.

The Crow Creek Community was organized in spring, 2015 by Blue Thumb volunteers who have been monitoring the creek for 20 years. It is currently a collaboration of citizens living in the watershed and Federal, State, County, and City agencies working together to increase awareness and take action to save this stream.

- Developed Crow Creek Meadow; turning lots into a demonstration meadow to show ways to decrease runoff, increase water filtration and provide habitat for pollinators and songbirds.
- Monarch Watch donated 200 milkweeds.
- Creek clean-up coordinated with the Trash-Free Seas Program of the Ocean Conservancy.
- Continued work on fixing erosion/stream bank stabilization and holding educational activities in the watershed.









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 Department of Agriculture, Food, and Forestry (ODAFF)



The Agricultural Environmental Management Services Division of ODAFF through a cooperative agreement with the Natural Resources Conservation Services of U.S. Department of Agriculture is continuing NPS mitigating projects.

AEMSD develops Nutrient Management Plans (NMPs) for poultry feeding operations (PFOs) located in the eastern part of the state, where four scenic river watersheds are situated. Based on soil types and topographic features of the farms, potential environmental risks associated with manure handling, storage, application, and carcass disposal were evaluated and mitigated. As the PFOs' owners implement these plans, most of the nutrients from the litter is utilized by crops grown on the fields; thus, reducing the

amount of nutrient built-up in the soil. These practices eventually reduce and eliminate the likelihood of nutrients being carried out to the priority watersheds of scenic rivers.

Other notable achievements include:

- Technical assistance opportunities performed with producers (cattle/swine/poultry).
- Collected soil and water samples for nutrient analysis.



Oklahoma Department of Transportation (ODOT)



The Oklahoma Department of Transportation (ODOT) uses best management practices (BMPs) to control and manage storm water. These include structural devices, maintenance procedures, and management practices that prevent or reduce the harmful effects of storm water runoff; such as pollution, erosion and flooding. BMPs may include:

Pollution prevention practices on road construction projects.

Maintenance operations that keep highways clean of litter and debris that could make its way into streams and rivers.

Increasing the monitoring and maintenance frequency of structural BMPs.

A requirement of ODOT's Phase I and II storm water permits require the development and implementation of a Storm Water Management Plan (SWMP). A component of ODOT's SWMP is the Illicit Discharge Detection and Elimination (IIDE) program. The purpose of ODOT's IDDE Program is to identify and eliminate any discharge to a Municipal Separate Storm Sewer System (MS4). Our employees and consultants are the eyes of the program and yearly training is conducted with maintenance personnel to ensure we do our part to prevent the discharge of pollutants to Oklahoma rivers, streams, creeks and lakes.







NPS Program Partner Activities

Conservation Reserve Enhancement Program (CREP)

The CREP, which began in 2007, is working to protect and improve water quality by restoring land in agricultural production to natural riparian areas through 15-year easements in the Eucha/Spavinaw and Illinois River watersheds. The program is a partnership between state and federal partners, including the US Department of Agriculture (USDA), Farm Service Agency (FSA), Natural Resources Conservation Service (NRCS), EPA, OCC, City of Tulsa, Oklahoma Scenic Rivers Commission, local conservation districts, and landowners.

In FY 2017, limitations in funding that piggy-backed with CREP began to limit CREP enrollment. As a result, Oklahoma discontinued new enrollments in CREP and sought alternative mechanisms to accomplish the same goals. The 673 acres of riparian exclusion enrolled in the CREP program remain active, as do approximately 2,000 acres of riparian exclusion established under recent Illinois River 319 Watershed Implementation Projects. In addition, OCC has entered into a partnership with the Grand River Dam Authority to fund additional riparian protection agreements in the Illinois River Watershed. These agreements extend for 30 years and are currently slated to enroll 150 acres, of which 50 acres are currently enrolled at a cost of \$112,537.

CREP in Oklahoma

City of Oklahoma City



The purpose of the Oklahoma City Storm Water Quality Division (SWQ) is to provide inspections, water quality assessments, household hazardous waste services, and public outreach to residents, businesses, and government agencies.

In 2017, SWQ reached out to 4.6 million people through press releases, newspaper articles, interviews and presentations. Through the floatable

debris program, over 580,000 pounds of debris was removed from the Oklahoma River and properly disposed. Over 9,500 residents delivered 712,911 pounds of waste to the Household Hazardous Waste Collection Facility which included paint, used oil, pesticides, pool chemicals and other types of harmful waste.

Additionally, 96,844 pounds of household hazardous waste was collected, separated and released to the public for reuse. SWQ inspectors completed 9,005 construction site and industrial facility inspections.

Environmental Technicians also responded, investigated and resolved 692 pollution and hazmat requests.





City of Tulsa



The City of Tulsa's Stormwater Quality Program includes monitoring, enforcement, and education programs, all aimed at keeping Tulsa's waterways pollutant free. Tulsa has continued its increased outreach campaign to include more facets of media such as billboards, radio, TV and mobile advertising. The goal of this campaign 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 2017 which has proven very successful. Last year over 90,000 lbs. of pollutants were properly disposed of, keeping our streams and lakes cleaner and healthier.

Tulsa's Watershed Characterization Program wrapped up its rotating basin monitoring efforts in 2016, having sampled all the major watersheds within the City limits of Tulsa. Data from this effort has been sent to ODEQ for inclusion in their Integrated Report. Information on Tulsa's Stormwater Quality Program from the past fiscal year can be found at www.cityoftulsa.org/sos





NPS Program Partner Activities

City of Norman



The City of Norman's Environmental Services Division oversees many environmental programs including the Industrial Pretreatment Program; Fats, Oils and Grease (FOG) Program; the annual household hazardous waste (HHW) collection event; and Earth Day. In 2017 approximately 100,000 pounds of chemicals were collected at the HHW Event and 158,000 gallons of grease were kept out of the sanitary collection system through the Fog Program helping to prevent sanitary sewer overflows. Educational materials and activities were provided at Earth Day for several thousand citizens. In addition, year-round collection for oil, antifreeze, oil filters, kitchen grease and tires was provided at no charge to citizens at Norman's transfer station. The Sanitation Division provides curbside recycling and yard waste collection that helps keep our streams and creeks clean. In 2017, over 7,000 tons of recyclables were collected and 17,000 tons of yard waste.

The Environmental Control Advisory Board held many activities which included a "Water's Worth It" poster contest for elementary age children; an Art Show; the distribution of 18,000 door hangers and recycling stickers with information on recycling and water conservation; awarded three Water's Worth It Landscape awards; had a rain-barrel giveaway and presented a Water's Worth It Proclamation to City Council; and established a social media presence on environmental issues.



Throughout the month of October 2017, the City of Norman Stormwater Division hosted the Lake Thunderbird Watershed Clean-up Blitz, which culminated in a workshop and clean-up event at the lake itself. The parks chosen for this series of events were as follows: NE Lions Park (October 1), Griffin Community Park (October 8), John H. Saxon Park (October 22), and Lake Thunderbird State Park (October 29). The weather cooperated for all events, and almost eighty people participated. A total of five hundred fifty-three (553) pounds of trash and recyclables were removed from the watershed. At every event, certificates were awarded for the most recyclables removed and for the most unusual item found. Students without Borders removed the largest amount of recyclables (30 pounds) by one team. The most unusual items found included a Barbie doll, part of a car, a boat seat, part of a wheel barrow, and a witch's hat. Make plans to join us for next year's blitz; it's a fun way to make a difference in your community!

The City of Norman Stormwater Division is responsible for keeping Norman's stormwater clean through implementation of public education and outreach, construction stormwater inspections, and illicit discharge detection and elimination, as well as maintaining the pipes, channels, and ditches that move water away from houses and businesses and into the local creeks and streams. Establishing a dedicated source of funding for these efforts is a key component that will allow the City to improve stormwater quality, manage streambank erosion and stability, protect drinking water supplies, enhance public recreational opportunities at Lake Thunderbird, and prevent flooding events throughout Norman. On April 25th, 2017, the City of Norman established a Stormwater Citizen Steering Committee consisting of 16 Norman residents and 4 Council liaisons to focus on developing long range funding sources for the stormwater management. Since that time, the Committee has been meeting every two weeks to discuss a variety of topics, including the Stormwater Division's functions and services, budgeting and funding needs, and different methods and combinations of funding mechanisms. The ultimate goal of the Committee is the development of a stormwater program funding report with recommendations to be presented to City Council.







CONSERVATION Responsible Care for Oklahoma's Natural Resources

COMMISSION

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 for reported 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, Oklahoma Legislature, and hundreds of private landowners whose voluntary participation is paramount to the conservation and restoration of Oklahoma's natural resources. The OCC will continue to strive for fishable, swimmable waters statewide, with the hope that, one day, all Oklahoma streams fully meet their designated uses.