



**Oklahoma Blue Thumb Final Report: January 1, 2020 – December 31, 2020
FY 2021-2022 §319(h) EPA Grant #C9-996100-21 – Project 4, Output 4.1.f**

Oklahoma Conservation Commission Water Quality Division
2800 North Lincoln Boulevard, Suite 200, Oklahoma City, Oklahoma 73105



Rock Creek in Murray County



TABLE OF CONTENTS

BLUE THUMB PROGRAM DESCRIPTION.....	3
SUBTASK 4.1 GENERAL PROGRAM MAINTENANCE AND PROMOTION ACTIVITIES.....	3
<i>SUPPORTING CITIZEN SCIENTISTS.....</i>	<i>4</i>
<i>SUPPORTING VOLUNTEER EDUCATORS.....</i>	<i>8</i>
<i>VOLUNTEER APPRECIATION</i>	<i>8</i>
<i>EDUCATION AND OUTREACH.....</i>	<i>9</i>
<i>PRESENTATIONS AT CONFERENCES.....</i>	<i>12</i>
<i>OTHER PRESENTATIONS.....</i>	<i>13</i>
SUBTASK 4.2 PRIORITY WATERSHED EDUCATION PROJECTS.....	14
SUBTASK 4.3 GROUNDWATER EDUCATION/SCREENING PROGRAM FOR WESTERN OKLAHOMA.....	16
SUBTASK 4.4 BLUE THUMB EFFORTS TO SUPPORT CONSERVATION DISTRICTS.....	17
SUBTASK 4.5 REVIEW ACTIVE STREAM MONITORING LIST AND DETERMINE SITE STATUS.....	18
BLUE THUMB MEASURES OF SUCCESS.....	18
COMPLETION OF SUBTASKS.....	20
APPENDIX A: 2020 ACTIVE MONITORING SITES.....	21



This report is submitted by the Blue Thumb Program as evidence of work completed in the 2020 calendar year.

BLUE THUMB PROGRAM DESCRIPTION

Blue Thumb provides public education and outreach on behalf of the Oklahoma Conservation Commission's Water Quality Division. Blue Thumb supports a network of citizen scientists who collect monthly water quality data at stream sites across Oklahoma. Blue Thumb also facilitates education and outreach events about nonpoint source pollution across the state. The mission of Blue Thumb is to recruit, train, inspire and empower Oklahomans to engage in behaviors that protect local streams. The 2020 Work Plan identifies the following subtasks for FY 2020:

- Subtask 4.1: General Program Maintenance and Promotion Activities
- Subtask 4.2: Priority Watershed Education Projects
- Subtask 4.3: Groundwater Education/Screening Program for Western Oklahoma
- Subtask 4.4: Blue Thumb Efforts to Support Conservation Districts
- Subtask 4.5: Review Active Stream Monitoring List and Determine Site Status

SUBTASK 4.1 GENERAL PROGRAM MAINTENANCE AND PROMOTION ACTIVITIES

In 2020, the Blue Thumb Program continued to support citizen scientists across the state as they collected data on local streams. Blue Thumb reached over 8,000 people through virtual and face-to-face education and outreach efforts. We offered five two-day trainings, four Mini-Academies for Monitoring and four Mini-Academies for Education. We have continued to strengthen our social media presences on Facebook, Twitter and Instagram. We also continued publishing a monthly e-newsletter for volunteers. In December, we launched a mobile data collection app to streamline the data submission process.



Blue Thumb has been profoundly impacted by COVID-19. Staff have been working primarily from home since mid-March. We have continued to meet with volunteers one-on-one to complete biological collections and quarterly quality assurance checks, but we have curtailed group interactions when COVID numbers are high in Oklahoma. Most of the class groups who were monitoring prior to COVID have suspended monitoring, or one or two volunteers are completing monthly monitoring rather than an entire class of middle school, high school

*Blue Thumb Staff (from left to right):
Candice Miller, Cheryl Cheadle,
Becky Zawalski, Rebecca Bond and
Kim Shaw.*



or college students. Consequently, our number of sites monitored has remained stable, but our number of active monitoring volunteers has decreased. Since mid-March, our education and outreach program has relied largely on virtual education rather than face-to-face interactions. During periods when statewide COVID numbers were lower, we held face-to-face trainings, but cut the number of participants in half and instituted safety protocols to minimize the risk of contracting or spreading COVID. Our virtual education and outreach efforts include producing and posting 55 educational videos, presenting at several webinars and improving our website, including adding a resource page for teachers.

SUPPORTING CITIZEN SCIENTISTS

Blue Thumb volunteers complete monthly chemical monitoring, quarterly quality assurance (QA) sessions, biannual macroinvertebrate collections, and fish collections and habitat assessments once every four or five years. Monthly monitoring and sample analyses are completed independently. During a monthly sampling run, volunteers record streamside observations, collect and “fix” two dissolved oxygen samples and collect a water sample which the volunteer later tests for orthophosphate as phosphorus, nitrate, nitrite, ammonia, chloride and pH. Typically, volunteers take their water samples indoors to complete analyses. Analyses are completed with Hach test kits. During the recreation season (May 1-September 30) volunteers have the option of collecting and analyzing *E. coli* samples. Biological collections and habitat assessments are completed in cooperation with Blue Thumb staff. In 2020, 138 active volunteers completed monitoring at 86 sites in 30 counties (Figure 1). Volunteers and staff completed 144 macroinvertebrate collections and 16 fish collections. Typically volunteers process macroinvertebrate samples during group subsampling sessions. In 2020 we held a few small subsampling sessions (two to four volunteers) but most of our subsampling sessions (36 in all) were one-on-one or with family groups. In addition, staff processed many macroinvertebrate samples without volunteer assistance in response to concerns about COVID.



Volunteers process a macroinvertebrate sample



Staff and volunteers complete a habitat assessment at Feather Creek in Stillwater

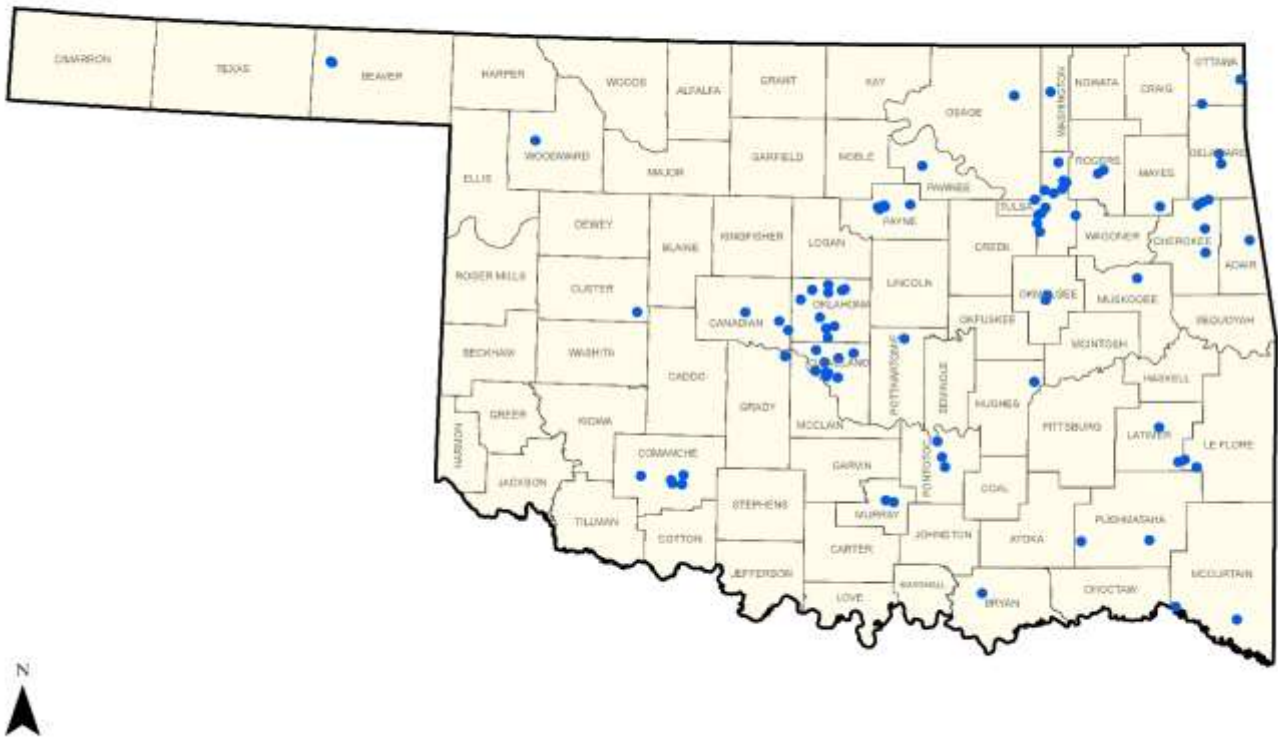


Figure 1: 2020 Active Blue Thumb Monitoring Sites (denoted above by blue circles)



The Blue Thumb Program recruited approximately 16 new volunteers who will monitor individually or in teams, and several additional volunteers who will participate as part of a school or volunteer group. New volunteers attended one of the following two-day trainings:

- Stillwater Training, January 25-26 (7 participants who will monitor individually or in teams; several additional participants who will monitor with the Environmental Science Club at Oklahoma State University [OSU])
- Muskogee, June 4-5 (9 participants who will monitor as part of the Youth Volunteer Corp in Muskogee)
- Muskogee, June 6-7 (10 participants who will monitor as part of the Youth Volunteer Corp in Muskogee)
- Ada, August 28-29 (3 participants who will monitor individually or in teams; a couple more participants who will monitor as part of the East Central University [ECU] student group)
- Claremore, September 18-19 (6 participants who will monitor individually or in teams; a few additional participants who will monitor as part of the Rogers State University [RSU] group)

We have several volunteers who teach in public schools, vocational schools or on college campuses. These teachers conduct stream monitoring with groups of students. We offer Mini-Academies for Monitoring to teach new groups of students how to complete the chemical analyses. Although COVID significantly reduced the number of groups that are monitoring, we still received several requests for Mini-Academies for Monitoring. During 2020 we held the following Mini-Academies for Monitoring:

- Mini-Academy for Monitoring, Taloga Public Schools, Taloga, January 14
- Mini-Academy for Monitoring at Southwestern Oklahoma State University, Weatherford, January 17
- Mini-Academy for Monitoring at Cameron University, Lawton, August 27
- Mini-Academy for Monitoring at Rogers State University, Claremore, October 10

We also began a modified Mini-Academy for Monitoring at BlueSTEM AgriLearning Center in El Reno but were unable to finish the training due to an ice storm and COVID. The training was scheduled to be held in four sessions. Unlike most of our Mini-Academies for Monitoring, this training focused on field protocols rather than the analyses of water chemistry samples. We were able to hold the first two sessions on October 20 and 22 but were unable to hold the last two sessions.

One of the ways the Blue Thumb Program supports citizen scientists by encouraging volunteers to write interpretations of their data upon receipt of a data package. A data package includes chemical data, biological data and habitat data. Data packages are assembled by the QA Officer, Kim Shaw,



upon receipt of fish data from the taxonomist. Kim typically offers data interpretation workshops to volunteers in the fall. Due to COVID, we were unable to offer data interpretation workshops. As a result, we only received one volunteer data interpretation in 2020.



Blue Thumb Training in Stillwater



Blue Thumb Training in Ada



*Mini-Academy for Monitoring at
Taloga Public School*



*Mini-Academy for Monitoring at
Rogers State University*



SUPPORTING VOLUNTEER EDUCATORS

In 2020 we continued to focus on developing volunteer educators who are willing and able to represent Blue Thumb at educational events. One of the ways we support volunteer educators is through Mini-Academies for Education. During a Mini-Academy for Education our Volunteer Coordinator, Cheryl Cheadle, teaches a small group of volunteers how to use a few of our educational tools. Tools that might be demonstrated included the EnviroScape®, a groundwater model and the Incredible Journey activity, among others. In 2020, we offered Mini-Academies for Education during the early part of the year, but were unable to offer Mini-Academies for Education for the remainder of the year due to COVID:

- Mini-Academy for Education in Tulsa, January 22
- Two Mini-Academies for Education in Okmulgee, March 2
- Mini-Academy for Education in Alva, March 9



Mini-Academy for Education in Alva



Mini-Academy for Education in Okmulgee

VOLUNTEER APPRECIATION

We planned to offer a two-day Outdoor Education Workshop to volunteers and Project WET, WILD and Learning Tree facilitators in October. The Outdoor Education Workshop has been postponed until October 2021 due to COVID.



EDUCATION AND OUTREACH

Blue Thumb offers education and outreach about nonpoint source pollution and water quality statewide and year-round. In a typical year, we use a variety of experiences including natural resource days, outdoor classrooms, workshops, camps, creek walks and presentations to teach Oklahomans about nonpoint source pollution and what they can do to help. 2020 was not a typical year. During 2020 our education and outreach efforts were radically altered by COVID. Most of our face-to-face events were cancelled after March of 2020. In the middle of March, we began relying heavily on virtual education and outreach. In 2020, we reached over 8,025 people through face-to-face and virtual education and outreach efforts. Face-to-face education included Blue Thumb Trainings, Mini-Academies for Monitoring, Mini-Academies for Education, a few large educational events early in the year and one-on-one creekside visits later in the year. Virtual education included presenting during webinars, launching a virtual H2Oklahoma and producing 55 short educational videos that are available on our website, YouTube channel and/or Facebook page. Some of the highlights of our 2020 educational efforts are listed below:

- “Life on the Water” at Fort Towson in support of Water/Ways exhibit, January 18
- Environmental Education Expo in Oklahoma City, February 7
- STEM Night at Bridgestone Intermediate School in Oklahoma City, March 5
- Four Facebook Live fish collections in March and April (Coffee Creek, Medicine Creek, Elm Creek and Spring Creek)
- Webinar for Natural Resources Conservation Services (NRCS) Pathways students, June 24
- OSU webinar for teachers and librarians, June 26
- OSU webinar about citizen science and undergraduate research, July 10
- Posted a video about Blue Thumb resources for homeschoolers, July 22
- National Garden Club Environmental School in Lawton, September 29-30
- Three Epic Live Charter School webinars in October and November
- Virtual H2Oklahoma, link posted on November 3



Winter Water Fun Day in Tahlequah



Creek walk with Kingston 5th graders



*Training at BlueSTEM AgriLearning
Center*



*Rebecca films Cheryl and a volunteer
for an educational video*



Individualized creek-side visits with volunteers; Horse Creek (above) and Baron Fork Creek (below)



Long-time volunteer, Dennis Wilson, speaks to students about water availability in the old days when Fort Towson was an active fort



STEM night at Bridgestone Intermediate School

PRESENTATIONS AT CONFERENCES

In 2020, Blue Thumb staff offered six presentations at four professional conferences:



- Candice offered a workshop, Becky and Amy offered a presentation and Rebecca offered a flash talk at the Environmental Education (EE) Expo in Oklahoma City, February 7
- Candice, Kim, Becky, Cheryl and Rebecca presented an Outdoor Education Workshop at the Oklahoma Natural Resources Conference in Norman, February 10
- Rebecca presented at a prequel workshop to the National NPS Conference, October 27



Candice leads an activity during the Outdoor Education Workshop at the Oklahoma Natural Resources Conference



Cheryl works with a group during the National Garden Club Environmental School

OTHER PRESENTATIONS

In addition to the presentations offered at professional conferences (above), staff presented at the following events:

- Cheryl did a presentation at Southwestern Oklahoma State University (SWOSU) in Weatherford, January 13
- Cheryl, Amy and Candice presented at the Oklahoma Association of Conservation Districts (OACD) State Meeting in Edmond, February 24



- Candice did a presentation at Tulsa Community College in Tulsa, February 27
- Amy and Cheryl gave a presentation for the Green County Sierra Club in Tulsa, February 27
- Cheryl offered a presentation at the Glenpool Library in Glenpool, March 7
- Rebecca presented at the Interagency Monitoring Luncheon in Edmond, March 12
- Candice, Becky and Cheryl presented during a webinar for NRCS Pathways students, June 24
- Candice and Cheryl presented during an OSU webinar for teachers and librarians, June 26
- Kim, Rebecca and TJ presented during an OSU webinar about undergraduate research and citizen science, July 10
- Rebecca offered three presentations and Cheryl offered two presentations at the National Garden Club Environmental School in Lawton, September 29-30
- Cheryl presented during an Epic Live webinar for Epic Charter School, October 22
- Rebecca presented during an Epic Live webinar for Epic Charter School, October 29
- Candice presented during an Epic Live webinar for Epic Charter School, November 5

SUBTASK 4.2 PRIORITY WATERSHED EDUCATION PROJECTS

The Blue Thumb Program recognizes two types of priority watersheds. The first type is watersheds identified in the *2014 State of Oklahoma Unified Watershed Assessment (UWA)* (OCC, 2014). The UWA is available at:

<https://www.ok.gov/conservation/documents/Unified%20Watershed%20Assessment%202014%20%28Report%29.pdf>.

In the UWA, waterbodies are ranked according to three sets of variables: severity of threat or impairment, impact of threat or impairment on human health, and restoration potential. The document identifies 50 high priority watersheds in the eastern half of the state and 50 in the western half. These watersheds are known as Category I watersheds. During 2020, Blue Thumb did work in three Category I watersheds: the Illinois River watershed, the Waurika Lake-Beaver Creek watershed and the Lake Wister watershed. The collaboration with the Illinois River Watershed Partnership (IRWP) was extensive and included collecting data three times at 12 sites in the watershed, for a total of 17 sampling days. Candice also analyzed all the water chemistry samples from the April run, coordinated volunteers to assist with sampling events in August and November and helped the IRWP produce an educational video about the project. In the Little Beaver watershed, Cheryl promoted the Yard by Yard Program. In the Lake Wister watershed, Rebecca began developing a watershed based plan for the lake in partnership with the Poteau Valley Improvement Authority. The plan is scheduled to be completed by the end of June 2021.



August IRWP sampling event



November IRWP sampling event

Blue Thumb also considers watersheds in which the local community is mobilized to act as “priority watersheds” even if these watersheds are not identified as Category I watersheds in the UWA. Crow Creek watershed, in Tulsa County is such a watershed. In 2020, we participated in the following meetings and events pertaining to the Crow Creek watershed:

- Crow Creek watershed based plan meeting in Tulsa, January 15
- Crow Creek Community educational programming meeting in Tulsa, February 3
- The Crow Creek Watershed Based Plan was submitted to Oklahoma Secretary of Energy and Environment (OSEE), July 9
- Crow Creek Community call, July 21
- Maintenance at Crow Creek Meadow on July 17, August 27, September 8 and September 11
- Updated the Crow Creek Community e-mail list and sent out a newsletter, November 9
- Promoted the Yard by Yard Program in the watershed
- Monarchs on the Mountain “Mobile Monarchs” visited the Meadow, September 19



- Worked with students from the Oklahoma School of Innovation and Experiential Learning on a project about Crow Creek. The students learned about Crow Creek's impairments and designed a model of a structure to improve upstream passage of fish.



Residents of the Crow Creek watershed proudly display their educational yard sign

SUBTASK 4.3 GROUNDWATER EDUCATION/SCREENING PROGRAM FOR WESTERN OKLAHOMA

During a groundwater screening event, our Quality Assurance Officer, Kim Shaw, supervises volunteers as they analyze groundwater samples for alkalinity, sulfate, chloride, nitrate and pH with Hach test kits. Following a groundwater screening, well owners receive their results and are encouraged to contact the Oklahoma Department of Environmental Quality (ODEQ) if their results suggest the need for additional testing. We held the following groundwater screening events in 2020:

- Oklahoma County Conservation District (CD) in Spencer, March 14
- North Caddo CD in Hinton, October 14



- West Caddo CD in Fort Cobb, October 21
- Central North Canadian CD in Geary, November 17

Results from the groundwater screenings are available upon request.



Volunteers analyze water samples during the North Caddo Conservation District groundwater screening event (left) and the West Caddo Conservation District event (right)

SUBTASK 4.4 BLUE THUMB EFFORTS TO SUPPORT CONSERVATION DISTRICTS

The Blue Thumb program strives to be responsive to the needs of conservation districts (CDs). We partner with CDs to facilitate Natural Resource Days and Outdoor Classrooms and we loan educational equipment to CDs for other outreach events. We facilitate groundwater screenings, provide water quality data on request and offer Blue Thumb Trainings and Full Circle Citizenship Workshops. We attend CD board meetings to give board members the opportunity to ask questions and seek assistance. We provide Blue Thumb Calendars to CDs to use in their education and outreach efforts. Although most districts cancelled education and outreach events in 2020, we were able to support CDs in the following efforts:

- Oklahoma County CD STEM night, Northridge Elementary, January 30
- Presentation at the OACD State Meeting, February 24
- Attended Pawnee County CD board meeting, March 4



- Oklahoma County CD groundwater screening event, March 14
- Meeting with Tulsa County CD about Yard by Yard Program, July 23
- Meeting with Tulsa County CD about Yard by Yard Program, August 13
- North Caddo CD groundwater screening event, October 14
- West Caddo CD groundwater screening event, October 21
- Central North Canadian CD groundwater screening event, November 17
- Meeting with OACD about the Modern Conservationist, December 19

In addition, we supported the Yard by Yard Community Resiliency Project in Oklahoma and Tulsa County Conservation Districts. Yard by Yard is a collaboration between the Oklahoma and Tulsa County Conservation Districts, OCC Soil Health and Blue Thumb Programs, the Oklahoma Association of Conservation Districts and Friends of Blue Thumb. The program is scheduled to go statewide in 2021.

SUBTASK 4.5 REVIEW ACTIVE STREAM MONITORING LIST AND DETERMINE SITE STATUS

In September 2020 and January 2021, Kim Shaw, the QA Officer, reviewed and updated the active site list. A site is considered “active” if the volunteer has submitted chemical and observational data at least once in the past 12 months. The concept of “active” sites is useful but does not perfectly capture volunteer participation. Our method of determining active sites underestimates volunteer effort because we have some volunteers that collect data but fail to turn it in, and some who neglect monthly monitoring, but consistently show up for macroinvertebrate collections, bug picking sessions and fish collections. In 2020, we had 86 sites that met our definition of “active.” Please see Appendix A for a list of active sites. Before sites are moved from “active” to “inactive” status, the field representative contacts the volunteer and attempts to negotiate any barriers that may make monitoring difficult. We make every effort to encourage and support volunteers to continue or resume submitting data.

BLUE THUMB MEASURES OF SUCCESS

This section contains an assessment of the measures of success documented in the FY 2020 Blue Thumb Workplan. The workplan was developed with the assumption that staff would meet with the public individually, as well as in small and large groups. Because most group gatherings were curtailed after the middle of March 2020, we had to think outside the box regarding program delivery. Because most of our educational programming for 2020 was delivered in a virtual format, it is difficult to track numbers reached. These numbers continually change as social media posts are shared and viewed by new audiences. As a result, the number of people reached is likely underestimated. In addition, we did not track numbers reached through our usual social media activity, only through social media activity above and beyond our usual engagement. These posts consisted primarily of short educational videos



or posts which shared online educational materials. It is likely that we should reevaluate measures of success in light of COVID. In summary, Blue Thumb continued to deliver programming, but in very different formats from prior years, making the workplan measures of success an awkward fit in some circumstances.

1. Continue at least 75% of existing programs (monitoring and education).

In 2019, Blue Thumb had 84 active monitoring sites in 30 counties. In 2020, Blue Thumb had 86 active monitoring sites in 30 counties. In 2019, Blue Thumb reached over 19,000 people through approximately 165 events in 42 counties. In 2020, Blue Thumb reached over 8,096 people through approximately 62 face-to-face educational events in 22 counties and through virtual education and outreach efforts in response to COVID. The number of people reached was significantly lower than in 2019 because most educational events were cancelled after March 2020. We were able, however, to reach new audiences through 55 educational videos, webinars and a Virtual H2Oklahoma. We also initiated individual or small group creekside visits and supported the Yard by Yard Program Community Resiliency Project. Both efforts involved face-to-face interactions that occurred one-on-one or in small groups, usually outdoors and with COVID safety precautions in place.

2. Continue monitoring active Blue Thumb stream sites and draft data reports on approximately five sites.

Blue Thumb volunteers monitored 86 stream sites in 2020. One volunteer submitted a data interpretation which will be made available on the OCC website and the Blue Thumb website after they have passed a quality assurance review. We did not hold data interpretation workshops in the fall because of COVID. Consequently, volunteers submitted fewer reports than in previous years.

3. Blue Thumb volunteers will staff exhibits or offer presentations to at least two professional organizations.

Five volunteers helped staff an exhibit at the EE Expo in February. After March, most conferences and professional meetings were cancelled or went to a virtual format due to COVID. Blue Thumb staff, however, offered six presentations at four professional conferences and approximately 17 presentations in other venues.

4. The Blue Thumb Program will provide leadership and support volunteers to use data reports to support at least two watershed events.



Because most group events were cancelled in 2020, volunteers did not have the opportunity to use data reports to support watershed events.

5. All subtasks and outputs will be met by projected dates.

All subtasks and outputs, apart from 4.1.b, were met by projected dates. Only one volunteer submitted a volunteer data interpretation because we were unable to hold data interpretation workshops due to COVID.

TABLE 1: COMPLETION OF SUBTASKS

Subtask #	Outputs Identified in Work Plan	Completed Outputs
4.1.a	Hold at least four new volunteer training sessions across the State to both cultivate new groups and maintain/support existing groups	Held five two-day trainings, four Mini-Academies for Monitoring and four Mini-Academies for Education
4.1.b	Work with volunteers to complete data reports/interpretations for the streams on which fish collections have most recently been completed and data has been received	No data interpretation workshops were held due to COVID. One volunteer submitted a data interpretation.
4.1.c	Semi-Annual Reports	Submitted in July 2020 and January 2021
4.1.d	Update and/or recertify Blue Thumb QAPP	Submitted June 2020
4.1.e	Staff and/or volunteers will attend and present at a minimum of two conferences	Staff presented at the EE Expo, the Oklahoma Natural Resources Conference and a prequel workshop to the National NPS Conference.
4.1.f	Blue Thumb Final Report summarizing program activities for CY 2019	Submitted March 2020
4.2.a	Staff or volunteers will participate in or hold an average of at least five education events per month during the project period	We held or participated in approximately 62 face-to-face education events; we also presented at six webinars and published 55 educational videos.
4.2.b	Continue efforts in priority watershed education projects and seek opportunities to expand.	Supported activities in the Crow Creek, Little Beaver, Lake Wister and Illinois River watersheds
4.3	Target at least two areas or Conservation Districts to conduct groundwater education and screening programs	Facilitated groundwater screenings in four CDs



Appendix A: 2020 Active Monitoring Sites

Site Name	County	Latitude	Longitude
Shell Branch: Pruitt's	Adair	35.93278	-94.5992
Sharp Creek: Smith Grove	Beaver	36.810928	-100.820092
Sharp Creek: Smith Silo	Beaver	36.816239	-100.830817
Chuckwa Creek: Carl Albert Park	Bryan	34.01668	-96.3865
Fourmile Creek: Adams Park	Canadian	35.53243	-97.97684
Mustang Creek: Morgan Road	Canadian	35.4391389	-97.6886389
Trib. To N. Canadian River: Chisholm Trail Park	Canadian	35.487053	-97.74976
Baron Fork River: Welling Road	Cherokee	35.8681111	-94.897
Cedar Hollow Creek: Nickel Preserve	Cherokee	35.99871	-94.89736
Spring Creek: Fram	Cherokee	36.1254722	-94.947
Spring Creek: Rocky Ford	Cherokee	36.144477	-94.90732
Spring Creek: Three Spring Farm	Cherokee	36.1559	-94.87267
Bishop Creek Tributary: Basket 12	Cleveland	35.20769	-97.41724
Bishop Creek: Constitution Street	Cleveland	35.1895778	-97.4289333
Bishop Creek: Eastwoods Park	Cleveland	35.21316	-97.43333
Brookhaven Creek: North of Main	Cleveland	35.219267	-97.502944
Dave Blue Creek: 60th Ave. SE	Cleveland	35.18458	-97.353115
Elm Creek: Indian Hills Road	Cleveland	35.2907	-97.34877
Hog Creek: SE 149th	Cleveland	35.319135	-97.249651
Little River: Little River Park	Cleveland	35.333	-97.49947
Little River: N. Porter Ave.	Cleveland	35.2688	-97.44136
East Cache Creek: Big Green	Comanche	34.586917	-98.370667
East Cache Creek: Rodgers Lane	Comanche	34.63778	-98.3618
West Cache Creek	Comanche	34.62699	-98.64412
Wolf Creek: Gore Blvd.	Comanche	34.60876	-98.44398
Wolf Creek: McMahan Soccer Park	Comanche	34.59065	-98.4349333
Little Deep Creek: Weatherford, Upstream of Treat	Custer	35.5185278	-98.7000833
Beaty Creek	Delaware	36.35007	-94.783425
Brush Creek: 460 Road	Delaware	36.4053	-94.7955
Coal Creek: N. Sara Rd.	Grady	35.2967	-97.7063
Middle Creek: Buzzard Roost Ranch	Hughes	35.17027	-96.04508
Fourche Maline Creek: Black Loop	Latimer	34.9184	-95.2174
Jackson Creek: Pearce	Latimer	34.730183	-95.092756
Frazier Creek: Williams	LeFlore	34.6998	-94.97273
Rock Creek: Williams	LeFlore	34.741294	-95.049554
Pipe Spring Branch: Coverdell	Mayes	36.120794	-95.200292
Clear Creek	McCurtain	33.94025	-95.12032
Mud Creek: E 2170 Road	McCurtain	33.8665666	-94.72015



Site Name	County	Latitude	Longitude
Guy Sandy Creek	Murray	34.519045	-97.025526
Rock Creek: Oklahoma Street	Murray	34.5104444	-96.9717777
Trib to Coody Creek: Robison Park	Muskogee	35.7318	-95.3565
Chisholm Creek: NW 186th	Oklahoma	35.66045	-97.5324
Coffee Creek: Hwy 66	Oklahoma	35.65996	-97.33218
Coffee Creek: N. Sooner Rd.	Oklahoma	35.68991	-97.425225
Crutcho Creek: First Baptist Church	Oklahoma	35.401388	-97.4232
Crutcho Creek: I-40	Oklahoma	35.45151	-97.43491
Northeast Creek: MetroTech	Oklahoma	35.511583	-97.478173
Soldier Creek: Hwy 66	Oklahoma	35.66681	-97.31393
Soldier Creek: Reno Avenue	Oklahoma	35.4644	-97.3804
Spring Creek: I-35	Oklahoma	35.64744	-97.424
Spring Creek: Martin Park	Oklahoma	35.6067	-97.60837
Okmulgee Creek: Creek Complex	Okmulgee	35.6405	-95.9599722
Okmulgee Creek: 13th St.	Okmulgee	35.6154	-95.9693
Sand Creek: Osage Hills State Park	Osage	36.72837	-96.18233
Horse Creek: S 540 Road	Ottawa	36.677748	-94.908947
Sycamore Creek: D 4685	Ottawa	36.8078333	-94.645
Black Bear Creek: Railroad Yard	Pawnee	36.342272	-96.80223
Boomer Creek: 3rd Ave	Payne	36.1190586	-97.0518204
Cow Creek: Hwy 51	Payne	36.1160472	-97.0990416
Duck Creek: Myers Park	Payne	36.11162	-97.08418
Feather Creek: Old Hwy 51	Payne	36.1308888	-96.8801944
Sanborn-Hazen Lake Creek: Strickland Park	Payne	36.125329	-97.0584095
Stillwater Creek: Babcock Park	Payne	36.10425	-97.0876111
Clear Boggy Creek: Hwy 377	Pontotoc	34.703326	-96.63493
Lake Creek: Wintersmith Bridge	Pontotoc	34.75786	-96.65497
Little Sandy Creek: Hwy 99	Pontotoc	34.84261	-96.686
Rock Creek: Hwy 18	Pottawatomie	35.400348	-96.912166
Cloudy Creek: Glass	Pushmataha	34.3037	-95.2874
Tenmile Creek: Davis	Pushmataha	34.298889	-95.737222
Cat Creek: Park on Muskogee Ave.	Rogers	36.302753	-95.615872
Dog Creek: Blue Starr Dr.	Rogers	36.321794	-95.57908
Adams Creek: Broken Arrow High School	Tulsa	36.0747222	-95.7686111
Cherry Creek: Rainwater	Tulsa	36.3647	-95.883
Coal Creek: Hwy 11	Tulsa	36.1955556	-95.915
Coal Creek: Morris Park	Tulsa	35.9860833	-96.007
Crow Creek: Zink Park	Tulsa	36.1180556	-95.97
Elm Creek: 66th Street North	Tulsa	36.2545556	-95.83
Flat Rock Creek: Peoria	Tulsa	36.213253	-95.975761
Harlow Creek: Edison	Tulsa	36.1610277	-96.0434444
Mingo Creek: 46th Street North	Tulsa	36.2203333	-95.8577777



Site Name	County	Latitude	Longitude
Mooser Creek Trib: Riverfield School	Tulsa	36.0792	-96.0184
Mooser Creek: Pepsi	Tulsa	36.0855833	-95.999
Nickel Creek: 91st Street	Tulsa	36.0319	-96.0284
Owasso Creek	Tulsa	36.264838	-95.849422
Turkey Creek	Washington	36.7478	-95.9369
Salt Fork Arkansas River: Hwy 281	Woods	36.435	-99.4209