

Blue Thumb Final Report  
FY 2000 319(h) #C9-996100-08 Task 500

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# Statewide Blue Thumb Program Water Pollution Education

## Oklahoma Conservation Commission Water Quality Division

FY2000 319(h) CA# C9-996100-08 Task 500  
October 1, 2000 – September 30, 2001

### Final Report

#### **BLUE THUMB WATER POLLUTION EDUCATION PROGRAM**

The Blue Thumb Water Pollution Education Program began in Tulsa County in 1992 as a joint venture between the Tulsa County Conservation District and Tulsa County/OSU Cooperative Extension Service with funding and guidance provided by USEPA and the Oklahoma Conservation Commission. The “Blue Thumb” logo was adopted with permission from the American Water Works Association. If you have a Blue Thumb, then you know how to protect water against nonpoint source pollution!

Blue Thumb was a successful program in Tulsa County, and moved to Oklahoma County in 1994. Region 6 US Environmental Protection Agency granted funds to take the Blue Thumb Program statewide in 1996. This final report covers the statewide Blue Thumb activities that took place from October 1, 2000 to September 30, 2001.

#### **PROGRAM TASKS**

The Statewide Blue Thumb Program for this time specific funding episode was divided into seven tasks.

Task 1: Satellite Office/Funding/Staff/Vehicle

Task 2: Support to Conservation Districts through brochures and displays

Task 3: Mini-grants to Conservation Districts for environmental education activities

Task 4: Expansion of monitoring program

Task 5: Conservation Leadership Training Program

Task 6: Natural Resource Days

Task 7: Statewide Blue Thumb Newsletter

### *Task 1: Satellite Office/Funding/Staff/Vehicle*

The Blue Thumb staff for the duration of this funding episode consisted of a program coordinator and a part-time quality assurance officer. Both staff members housed with the Tulsa County Conservation District per contract between the conservation district and the Oklahoma Conservation Commission. Day to day operations took place from the office located at 5401 South Sheridan Road, Suite 201 in Tulsa. Telephone service and a vehicle (one Chevrolet Blazer) were provided for this project by grant funds.

### *Task 2: Support to Conservation Districts through brochures and displays*

Late 2000 and 2001 were times of growth for the Statewide Blue Thumb Program. Several conservation districts requested assistance with brochures within this time frame. Informative brochures that were created in conjunction with conservation districts include:

- Illinois River Training Flyer
- Training agendas
- Comanche County Blue Thumb Program
- Illinois River Blue Thumb Program
- The Wonderful World of Curb Marking
- Spring Creek Tree Planting
- Panhandle Blue Thumb
- Texas County Conservation District Blue Thumb
- Phase II and Your Community
- Okmulgee County Blue Thumb
- Lincoln County Conservation District Blue Thumb
- Guide to Pesticides
- Stream Teams
- Alternative Insecticides

Samples of these brochures can be found under Task 2 appendix. Blue Thumb paper stock was printed in advance, and it was simply a matter of laying out text to fit with the graphics. This allowed for easy changes and updates. Additional brochures and flyers were created for specific programs. Many examples of the brochures and flyers created appear in the appendices.

Brochure holders were provided to Latimer County, Okmulgee County, Tulsa County and Comanche County Conservation Districts. These holders turned out to be a little cumbersome, and many districts chose to not display a large number of Blue Thumb brochures at any one time. The idea of providing brochure holders was abandoned after this year.

Blue Thumb displays were purchased and made available to conservation districts for check out. These displays came with Blue Thumb information, but were also easily manipulated to hold other information the districts chose to display.

### *Task 3: Mini-grants to districts for Environmental Education Activities*

Mini-grants of \$500 each were provided to conservation districts that submitted a successful proposal for children and/or adult environmental education events. Districts embraced this opportunity to receive funding for educational activities. The districts/activities that were awarded mini-grants in 2001 were:

- Blaine County Conservation District – Blaine County Ag Appreciation Expo and Banquet
- East Woods County Conservation District – Natural Resource Day
- Tulsa County Conservation District – Adams Creek Watershed Education Event
- Texas County Conservation District - Water Festival and Conservation District Open House
- Ottawa County Conservation District – Wyandotte Public Schools Natural Resource Day
- Harper County Conservation District – Pond Management Tour and Event

- Cherokee County Conservation District – Durrett Outdoor Classroom Dedication Event

The Blaine County Conservation District held their event on April 7, 2001, in conjunction with the Blaine County Farm and Garden show. The district used the theme of “Habitat for Life” from the year’s Soil and Water Stewardship Theme. Seven hundred and seventy-five people attended, with 330 guests staying for the evening Ag Appreciation Banquet. This offered an excellent opportunity for the Blaine County Conservation District to provide conservation, stewardship, and water quality information to their area landowners and cooperators.

East Woods County Conservation District sponsored a natural resource day on May 15, 2001. Area children from Waynoka and Alva participated. In keeping with a conservation theme, particularly water quality, two stations contained water resource education demonstrations and activities. One was the Oklahoma State University stream table, which is used to demonstrate the dynamics of flowing water, the other was a water quality table with testing information and experiments. Other stations included bats, rocks, wildlife, and soils. Approximately one hundred and sixty students and about 12 adults participated in the learning activities.

Tulsa County Conservation District held a watershed education event to convey information about Adams Creek on September 17, 2001. Adams Creek had been monitored for approximately two years by Blue Thumb volunteers. Information on the findings was provided to those in attendance. Basic conclusions covered suggested that Adams Creek is in moderate to good condition, but is in a rapidly urbanizing area. Care and concern from those in the watershed are needed if Adams Creek is to remain a living resource.

Texas County Conservation District sponsored a “Water Festival and District Open House” on April 24, 2001. Components of the day included a groundwater screening in which volunteers ran tests on approximately 60 groundwater samples from area private wells; children from several grades stopped by a series of conservation stations; and other people came by to view exhibits and observe the groundwater testing. Approximately 247 children and adults participated in the day’s events.

Ottawa County Conservation District held a natural resource day in Wyandotte that used Blue Thumb volunteers (high school students) to staff learning stations for 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grade students. Wyandotte High School has many biology students who work as volunteer monitors. The natural resource day was held on March 29, 2001, and over 100 students, teachers, and parents were involved. Stations included animal waste planning for farms; buffer zones; water testing; pond biology; watersheds; and more.

Harper County Conservation District combined adult and child education in a pond management tour and seminar for area cooperators and the public in general. The adult portion of the event included slide presentations on managing ponds – for habitat and as water for livestock and wildlife. A tour was held to observe area ponds and discuss management options. The children’s portion included activities from the Soil and Water Stewardship week packet and an introduction to pond life. Approximately 28 adults and 11 children participated.

Cherokee County Conservation District used local donations and grant money to create an outdoor classroom in the community of Tahlequah. The outdoor classroom contains a wetland area, pavilion, gravel trails, butterfly garden, dock to access water, and informational kiosk. Funds from their mini-grant helped to make possible a sign, the kiosk, and events for an

open house honoring the new facility. Teachers wishing to take students to the site can contact the Cherokee County Conservation District and check out educational materials as well.

These seven activities/events, or in the case of Cherokee County, a new outdoor classroom, are viewed as excellent ways to expend water quality educational funds. The positive themes observed here include:

- Older volunteers making an effort to educate younger volunteers
- Water Quality themes taking center-stage at educational events
- Creation of an outdoor classroom that can be used for educational purposes for years to come
- People in communities becoming more familiar with their local resources and conservation districts
- Urban people becoming more familiar with farm and ranch conservation issues

#### *Task 4. Expansion of Monitoring Program*

Blue Thumb Training Sessions for new Volunteers took place:

- Tulsa County Conservation District – October 20, 21, and 28, 2000
- Cherokee County Conservation District – November 16, 17, and 18, 2000
- Lincoln County Conservation District – January 9 and 10, 2001
- Oklahoma County Conservation District – August 3, 4, and 11, 2001
- Murray County Conservation District – August 7, 8, and 9, 2001
- Cherokee County Conservation District – September 20, 21, and 22, 2001

Groundwater Screening Training

- Texas County Conservation District – December 8 and 9, 2000

Orientations/Open houses:

- Tulsa County Conservation District – April 17, 2001
- LeFlore County Conservation District – May 10, 2001
- Murray County Conservation District – May 15, 2001
- Creek County Conservation District – September 11, 2001

During the time frame of October 1, 2000 through September 30, 2001, the following counties/conservation districts had active, stream monitoring volunteers working on the creeks listed below:

#### *Tulsa County –*

Adams Creek

Fred Creek

Haikey Creek

Mooser Creek (two sites)

Nickel Creek

Polecat Creek

Elm Creek Wetlands

Ranch Creek

Mill Creek

Delaware Creek

Crow Creek

Coal Creek

#### *Oklahoma County –*

Crutcho Creek

Deep Fork Creek

Spring Creek

Chisholm Creek

Bluff Creek

Mustang Creek

West Elm Creek

#### *Hughes County –*

Fish Creek

#### *Latimer County –*

Fourche Maline Creek

(three sites)

Bandy Creek

#### *LeFlore County –*

Bohannon Creek

*Cherokee County –*

Spring Creek (three sites)  
Ballard Creek

Wolf Creek  
Park Hill Branch

Tahlequah Creek, Town  
Branch (two sites)

*Pottawatomie County –*

North Canadian River

Oxbow Lake of N.  
Canadian River

*Ottawa County –*

Sycamore Creek

Lost Creek

These counties and streams monitored represent a total of 30 streams and two wetland sites monitored during the timeframe of this project. Because some streams had teams on more than one site, this makes 39 total monitoring sites for this timeframe.

A reasonable estimate of Blue Thumb volunteer hours for the reporting period of this project can be determined as:

Monthly monitoring (small teams)	1575
Monthly monitoring (Students/teachers)	3840
Quality Assurance	424
Macroinvertebrate collections	312
Macroinvertebrate subsampling	544
Fish Collections	1430

TOTAL 8125 Blue Thumb Volunteer Hours  
(Stream and Wetland Monitoring)

Blue Thumb volunteers spent most of their volunteer time in chemical monitoring. The volunteers ran the following tests:

Temperature	Nitrate nitrogen
Secchi depth	Ammonia nitrogen
Dissolved oxygen	Orthophosphate phosphorus
pH	Chloride

Volunteers ran each test twice for accuracy purposes. It is important for volunteers to be able to duplicate results so they can have confidence in their ability to properly test water. All tests except for pH and dissolved oxygen require that a “blank” be run. The blank is simply the testing of deionized water. Deionized water that yields a result other than less than detection alerts volunteers to possibilities of problems – chemicals could be bad, glassware could be dirty, or technique could be problematic.

Volunteers visited their site, collected their sample, performed the dissolved oxygen test to the point where it is “fixed”, and completed additional site information on the data sheet in the field. In addition to recording the chemical testing results, the data sheet has spaces, symbols, and choices for the recording of information about weather, stream stage, water clarity, human impacts, signs of animal activity, etc. Additional tests, including nitrate, ortho-phosphate, chloride and ammonia are performed in a controlled environment indoors. Blue Thumb staff have found that test results are more likely to be accurate if tests are run indoors.

Additional monitoring activities in which Blue Thumb volunteers are involved include field collections of macroinvertebrates and fish and macroinvertebrate subsampling. Macroinvertebrates are collected in winter and summer, usually January and July. Where

possible, riffle samples are collected. Standard Operating Procedures that are used by the Oklahoma Conservation Commission water quality specialists are used by Blue Thumb staff and volunteers for this effort, for subsampling, and for fish collections and habitat assessments.

Volunteers collect samples and perform sub-sampling and cleaning of the raw collection, but the samples are sent to a professional taxonomist for identification. Knowing what macroinvertebrates live in the stream provides excellent information on stream health.

Fish are collected from the streams every one to five years. Blue Thumb staff members have to attend the Oklahoma Conservation Commission's week long fish identification school and make an excellent grade before they are certified as lead collectors. Like the macroinvertebrates, the presence or absence of certain species tells a tale of the stream's health.

Habitat assessments are completed on the same day as the fish collection. Information is recorded concerning stream width, depth, and flow, presence of riparian area, canopy, habitat available, and landuses near the stream as per OCC SOPs. The Blue Thumb Program uses the chemical, physical, and biological information gathered to help volunteers understand the condition of their stream.

An additional responsibility the monitoring volunteers have is attending quality assurance sessions. To make travel efficient for staff and convenient for volunteers, quality assurance sessions are held in conjunction with macroinvertebrate collecting and subsampling activities when possible. The Blue Thumb quality assurance officer prepares known standards that the volunteers test with their own test kits. QA sessions allow Blue Thumb staff to check the volunteers' precision and accuracy, and to counsel them on their testing, should this be needed. Thermometers are checked at every QA session as well.

Not only do quality assurance sessions offer the opportunity to check volunteers' monitoring capabilities, these sessions provide a time for volunteer fellowship, continuing education, and restocking of reagents and supplies. Because volunteers are active across the state, if a volunteer misses their particular quality assurance session, they have an opportunity to attend another session. During the time frame of this project, many quality assurance sessions were held at:

Tulsa  
Tahlequah  
Shawnee  
Jay  
Wilburton  
Oklahoma City  
Holdenville  
Wyandotte

The Tulsa County Blue Thumb Program sampled for fecal-coliform bacteria and chlorpyrifos for several years. From May through September, Tulsa County volunteers picked up two samples on the last Thursday of each month. One was tested for fecal coliform bacteria, the other was tested for a pesticide commonly used on lawns called chlorpyrifos. Bacterial samples were analyzed at the Tulsa City/County Health Department, and the pesticide samples were tested by specially trained Blue Thumb volunteers at the Tulsa County Conservation District using an immunoassay procedure.

Both bacteria and pesticide samples were found to be an issue in several Tulsa area streams. Some Illinois River Project sites found detectable levels of pesticides as well. Information on chemical monitoring, fish, and macroinvertebrates can be found in the appendices of this report. Pesticide testing has been limited primarily to Tulsa County, although other monitoring groups have had the option of participating. Few have done so because samples have to be transported to the Tulsa County Conservation District. For the duration of this grant cycle, samples were brought in for streams monitored by the Tulsa County Blue Thumb Program and the Illinois River Project. Results are covered in the chemical monitoring portion of the appendices.

Fecal coliform bacterial monitoring took place for the same streams as did the chlorpyrifos monitoring. Results are also indicated within the appendices. Results are not listed for bacteria of less than 400 colony forming units per 100 milliliters, or for chlorpyrifos of less than or equal to .1 parts per billion. The staff that perform the chlorpyrifos testing are specially trained. Quality assurance is built into the testing procedure, with four standards of known concentrations. The acute water quality criterion of this pesticide is .083 ppb. The Blue Thumb detection limit is .1 ppb.

During the time frame, the Blue Thumb Program also embarked upon groundwater screening events. Groundwater screening is a useful tool for areas of the state that depend heavily on groundwater. Parameters screened include:

pH	Sulfate	Alkalinity	Chloride	Nitrate
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The first groundwater screening performed by Blue Thumb volunteers took place in Texas County on April 25, 2001. The training for this took place December 8 & 9, 2000. Volunteers received information on groundwater, water conservation, the local aquifers, running the tests to screen the water, and well-head protection.

Sixty samples were brought in for the screening, which was held in conjunction with a conservation district open house. This is a very good turn out for testing. The Texas County Conservation District did a super job of publicizing the event. The screening serves as a "tool" to help local citizens gain information about their groundwater. People with concerns are encouraged to have their water collected and analyzed by staff from a certified laboratory.

The Blue Thumb Program provided a sample news release, flyers, bottles, labels, and instructions to the district. People participating in the screening were expected to come by the district office in advance of the screening to get their bottle, label, and instructions. On the back of the instructions sheet was information concerning wellhead protection.

Groundwater screening data sheets and additional information about this event are included in the appendices of this report.

#### *Task 5: Conservation Leadership Training Program*

Typically, summer classes are held in conjunction with Northeastern State University to offer advanced students a course in "Introduction to Aquatic Pollution Ecology." Numbers enrolling in the class in 2000 had been low, so an alternate course was offered in Tulsa County.

**Soilutions** was a series of workshops held in conjunction with the Tulsa City/County Library system. A series of four two-hour workshops were held at the Glenpool Public Library. The roster of topics and speakers was:

Tuesday, February 6, 2001:

*Oklahoma's Weather Extremes and How they Affect Us*  
Jeff Basara, OU School of Meteorology

Mr. Basara discussed how climate impacts the shape of the land and vegetation. He touched on several aspects of climate, including temperature, precipitation, and wind patterns. Mr. Basara addressed floodplains and flooding, and the value of leaving marginal land out of development plans. Severe weather was also a popular topic of the evening. A variety of "hands on" items from OU's weather center were available to prompt questions and be inspected by participants.

Tuesday, February 13, 2001:

*Why We Live Where We Live – A Historic Perspective*  
KC Kraft, Archeologist, USDA Natural Resources Conservation Service

Mr. Kraft covered a time frame of present to several thousand years ago. Although it is difficult to be sure just what transpired in northeast Oklahoma five thousand years ago, Mr. Kraft brought artifacts to help link the folks of today with what happened here in history. Much of Mr. Kraft's discussion focused on how early people located where water supply was good. This was indeed the case in northeast Oklahoma – thousands of years ago and now. Mr. Kraft discussed how water draws animals, and is therefore important to food supply. He also said evidence of early fish capture using weirs could be found in some area streams. He explained about how archeologists piece together clues to form possible scenarios of what took place yesterday. Mr. Kraft discussed the importance of the resources available to the early people and settlers of this area.

Tuesday, February 20, 2001:

*Getting Along with Soil and Water*  
Gary Bishop, District Conservationist, USDA Natural Resources Conservation Service

Mr. Bishop got down to the basics of the two resources that impact everyone daily – soil and water. He spoke on the types of soils in the northeast part of the state, their values and limitations. He discussed soil conservation and soil as a pollutant. Streams and rivers that fill with soils from eroding developments and farmland can loose volume, become murky, and can warm more readily, as darker water absorbs more heat than clear water. Soil can also be a substrate to which other pollutants adhere. Mr. Bishop discussed floodplains, streams, and development as well.

Tuesday, February 27, 2001:

*People, Land, Water, and Weather – Living in Harmony*  
Carolyn Mathews, Media Specialist, Glenpool Middle School

Ms. Mathews was the primary planner of the "Soilutions" series along with Blue Thumb Director Cheryl Cheadle. Ms. Mathews' talk pulled together the previous three speakers' main points and addressed how individual actions can make a difference. Environmental education materials were provided at her session as well. The Tulsa County Conservation District was covered to let people know that it is a resource with conservation information, aerial photographs of the county, and a wealth of other information.

**Soilutions** was a well-attended conservation education event in south Tulsa County. Average attendance at the sessions was 18 people. Several people came to each session, some people came to only one. Most customers were repeat customers, meaning they came to at least two sessions. Media coverage was good. Materials from the Oklahoma Conservation Commission and the Tulsa County Conservation District were provided at each session. In some cases, the speakers brought handouts and flyers as well.

### *Task 6: Natural Resource Days*

Blue Thumb personnel and volunteers worked hard to be a presence in communities. Assistance was provided by offering water quality information at local natural resource days. Natural resource days are frequently sponsored by conservation districts to introduce elementary and middle school students to conservation. A variety of stations were set up, and were staffed by conservation professionals. Some agencies and organizations that participated were the Oklahoma Department of Wildlife Conservation, Oklahoma Water Resources Board, OSU Cooperative Extension, Corps of Engineers, and of course the Oklahoma Conservation Commission.

When the Blue Thumb Program participated in natural resource days, the Blue Thumb station focused on nonpoint source pollution. Participating students learned about:

- Watersheds
- Nonpoint source pollutants
- Importance of riparian areas
- Protecting waterbodies

The focus tended to be on how everyone can make changes that will protect waterbodies. Some of the educational presentations that were provided to age groups other than elementary and middle school students are listed as well. These events are followed by either a description of the group or the presentation offered. During the course of this funding cycle, Blue Thumb participated in these natural resource days:

October 18, 2000: Okmulgee County

November 14, 2000: Cherokee County (Northeastern State University Presentation)

November 29, 2000: Wagoner County

December 4, 2000: Latimer County (Eastern Oklahoma State College (EOSC) Presentation)

December 13, 2000: Pottawatomie County (Oklahoma Baptist University Presentation)

January 2, 2001: Cherokee County (Tahlequah High School)

January 30, 2001: Lawrence, Kansas (Erosion and Sediment Control Presentation)

March 9, 2001: Texas County

March 12, 2001: Tulsa County

March 13, 2001: Delaware County

March 28, 2001: Tulsa County (Blue Thumb Presentation for Monitoring, Assessment and Evaluation Committee)

March 30, 2001: Wagoner County (Soil and Water Stewardship Breakfast)

April 17, 2001: Latimer County (EOSC Presentation)

April 18, 2001: Ottawa County

April 25, 2001: Texas County

April 30, 2001: Tulsa County

May 3, 2001: Land Judging

May 18, 2001: Tulsa County

May 31, 2001: Caddo County

June 13, 2001: Delaware County

June 27, 2001: Wagoner County

July 31, 2001: Creek County

August 23, 2001: Lincoln County

September 7, 2001: Cherokee County

September 12, 2001: Tulsa County (Rotary Presentation)

September 28, 2001: Hughes County

During these events, the following number of participants was reached:		
Elementary age children	Middle and High School	Adults
930	84	204

***Task 7: Statewide Blue Thumb Newsletter***

An important means of communicating with volunteers was through the *Blue Thumb Prints* newsletter. The newsletter was printed and distributed quarterly, normally in the months of December, March, June, and September. These distribution times worked well to inform the volunteers of activities that were to take place at the quality assurance sessions, and what additional activities would take place. Blue Thumb newsletters also contained information about safety; quality assurance pointers; test kit updates; environmental workshops and conferences; and volunteer appreciation.

Newsletters were mailed to Blue Thumb local contacts, or directly to the volunteers in some cases. Conservation district staff members were asked to have newsletter copies at board meetings for directors. Local program managers were asked to add their own information with the newsletters sent. In some cases, they had local events of importance about which they wanted to inform volunteers, or they had greater details on timing of activities. Blue Thumb newsletter copies are included in the appendices of this report.

**CONCLUSION**

This report covers activities that took place from October 1, 2000, through September 30, 2001. This was a time of growth and expansion for the Blue Thumb Program. Possible areas where more attention is needed for the program include:

- Documentation on volunteer hours worked and duties performed
- Continuing education for volunteers
- Expansion of opportunities for conservation districts that prefer not to do stream monitoring
- Timely completion of data interpretation reports and more frequent data interpretation reports to volunteers
- A fish and invertebrate collection should be completed at all sites within the first year of site establishment.
- More contact with volunteers
- More training and motivation for local program coordinators