

LAKE EUCHA WATER QUALITY PROJECT - EDUCATION

July 1998 – December 2003

Final Report

Introduction

The goals set for this project are to affect long term behavioral changes of watershed residents and users that will assure continued protection of water quality in the Eucha watershed. A Watershed Advisory Group Education Committee (the “EdWAG”) was formed with representatives from Benton County, Arkansas and Delaware County, Oklahoma¹. The program coordinator invited representatives from the Cooperative Extension Services, FFA and Vo-Ag programs, the public school system, chicken producers, poultry integrators, land owners, Oklahoma Conservation Commission (“OCC”), Department of Environmental Quality, Oklahoma Department of Agriculture, EPA Region 6, City of Tulsa, and local environmental groups to participate on the EdWAG.

An initial EdWAG meeting was held April 1, 1998, with representatives from the OCC, a poultry integrator and landowner, a high school teacher, Benton and Delaware County Conservation Districts, and the Project’s coordinator and staff. The EdWAG membership fluctuated during the five years it operated. An additional teacher and Watershed Advisory Group member joined the group, as well as a representative from the OSU Extension Service. See Appendix A for copies of agendas and meeting minutes.

TASK 1: NEWSLETTER

Volume 1, Issue 1 of *The Tri-County Conservation District Newsletter* was published in July 1999 by the Delaware County Conservation District (OK), the Benton County Conservation District (AR), the Washington County Conservation District (AR), and the Lake Eucha Water Quality Project Office. Funds were donated by Tyson Foods, Simmons Industries and Peterson Farms to purchase computer equipment and programs for publication of the newsletter. The Delaware County CD agreed to edit and publish the newsletter. Each of the four publishing entities accepted responsibility for sending in articles and for paying printing and mailing costs for each person on their mailing lists. The variety of articles from the four entities has given area cooperators an opportunity to learn more about the problems and solutions being addressed by their neighbors. Since its inception, *The Tri-County Conservation District Newsletter* has been published on a bi-monthly basis.

¹ EdWAG members were: Cheryl Cheadle (Chair), Fred Reed, Mike Bryan, Billye Spencer, Marti Mefford, Joe Schneider, Otis Bennett, Jason Hollenback, Mickie Stockton, David Holcombe, Marc Cooper, Mitch Fram.

Beginning in July 2002, the Lake Eucha Water Quality Project Office's publication, *The Beaty Creek News*, ceased to be published in every addition of *The Tri-County Conservation District Newsletter*. *The Beaty Creek News* continued to be included on an "as needed" basis, to inform cooperators and other land users in the Beaty Creek watershed of information the Project Office believed essential. See Appendix B for copies of the *Beaty Creek News* and articles related to Beaty Creek.

Through the Tri-County Newsletter, landowners are receiving practical information on practices to improve land management methods. Additionally, they receive information from and about the governmental entities offering programs, educational forums, and technical assistance. They are more familiar with the names of the employees of those government entities and are more confident about whom to contact when they have questions or need assistance. The benefits of this dissemination of information will continue well past the five-year life of this project.

One example of this information received by cooperators occurred when a new BMP was added during the last year of the project. This practice included sharing the cost of building a waste storage and cattle feeding facility with a heavy use area. The newsletter featured articles concerning the facility². The articles explained how the structure would benefit both the cooperator and the environment. The articles generated a lot of interest inside and outside the Beaty Creek area. Twelve facilities were built in the Beaty Creek watershed. Cooperators were provided with copies of photos of the facilities, an article published in the *Progressive Farmer*, "The Winter Feeders of Madison County [NC]", a calculation sheet to determine the size of the building based on the number of cattle it would serve, and a schematic of the building. Several other cooperators were interested in building these facilities, but they could not schedule contractors prior to the end of the project.

The newsletter, with a circulation of 2,250, offered educational items in an effort to effect behavioral changes by watershed residents. The majority of the land users in the Oklahoma portion of the Beaty Creek watershed will continue to receive *The Delaware County Conservation District Newsletter* after the end of the 319 project.

TASK II: BROCHURES

A *Lake Eucha Water Quality Project* brochure was prepared and printed in February 2000 by the EdWAG committee to furnish information about the project's mission, location, the demonstration project in the watershed, to introduce the project staff, and to promote the Blue Thumb Project. See Appendix C.

² *The Tri-County Conservation District Newsletter*, Volume 5, Issue 3, May/June 2003 p. 1; and Volume 5, Issue 4, July/August 2003 p. 5

Copies of the brochure were given out to cooperators and interested persons at county fairs and conservation educational events in both Benton County, Arkansas and Delaware County, Oklahoma.

Additional public information in the form of flyers and brochures was used for specific events. Those publications are:

- Tent Meeting, September 9, 1999
- Blue Thumb Orientation and Earth Day Open House, April 2000
- Outdoor Classroom Event for Delaware County Fifth Graders, October 17, 2001
- Best Management Practices Bus Tour, October 14, 2000
- Outdoor Classroom for Grove Fifth Graders, October 18, 2002
- Natural Resource Day for Jay Fourth and Fifth Grades, October 29, 2003
- Blue Thumb Volunteer Training, September 16, 20 and 23, 2000 and June 14, 2002
- WOW! The Wonders of Wetlands, August 7, 2003

This task was an output under the workplan. Brochures were submitted and approved by the EdWag.

The following NRCS fact sheets were used and were given to cooperators:

- JS 633 02, Sampling Poultry Litter
- F-2207, How to Get a Good Soil Sample
- Constructing a Permanent Fence
- Poultry Litter Data Sheet
- OK-ENG-16, Pond Data Sheet
- F-2776, Thistles in Oklahoma and Their Identification
- F-7318, Integrated Control of Musk Thistle in Oklahoma
- GS-728-1, Stream Crossing

Project staff introduced several new practices to area cooperators; some of the practices had not been used in Oklahoma prior to this project. Brochures, copies of magazine articles, and fact sheets from suppliers accompanied these practices, which were:

- The use of geotextiles in heavy use areas in livestock operations to reduce nutrient and sediment loading in the Eucha watershed. The fact sheet from WebTec, Inc. contained illustrations and information concerning the product and fabric installation. Another hand-out concerning the use of geotextile was an article in *Land and Water*, March/April 1999. pp 42-46.
- The use of TerraCell® for high traffic areas, especially around freeze-proof tanks. A fact sheet from WebTec, Inc. contained information regarding the use of this product for ground

- stabilization, slope protection and retaining walls. The fact sheet included illustrations and information concerning installation.
- Waste storage and cattle feeding facilities were introduced to give cattle a consistent feeding area without the resultant trampling and erosion of the soil. An article in the *Progressive Farmer*, “The Winter Feeders of Madison County”, Mid-February 2001, pp. 44-45, reported on the popularity and success of these structures in Madison County, North Carolina. A drawing of the structures from the North Carolina NRCS office was also given to cooperators.
 - Windbreak/Cattle shade panels were introduced and featured on the Best Management Practices Bus Tour, October 14, 2000. The fact sheet produced by Daniels Manufacturing Co. stated that the panels will stop 79% of the sun’s rays and 95% of the wind velocity.
 - Project staff was instrumental in the approval by the Oklahoma NRCS of 200 gallon freeze proof water tanks for cattle. Information provided to cooperators included a recommended installation guide by Smith Cattleguard Company, Mirafount Livestock Waterers specifications and price list, Anti-Siphon C.W. 200 Livestock Waterer from Steward Concrete Products, NRCS OK-ENG-17A data sheet on energy free watering fountain, and NRCS OK-OWG schematics for watering facility freeze proof concrete tank for earth dams.
 - Project staff spearheaded the use of Wrangler® Bermudagrass. Successful stands were obtained from drilling and from ground and aerial broadcasting.

TASK III. SCHOOL EDUCATIONAL COMPONENT

The Project assisted the Delaware County Conservation District by developing, promoting and participating in educational activities for schools, 4-H clubs, community events, and, for three consecutive years, booths at the Delaware County Fair. Project staff initiated an outdoor classroom event for fifth grade students. All county schools were contacted and urged to participate.³

The topics addressed in these presentations, whether erosion, trash, water and soil contamination, or others, are lessons which will remain with the students for their entire lives. As students relate to their parents and others the information learned in these education programs, they will, in turn, become educators of those around them.

The Cherokee Nation purchased an EnviroScape® model for use by the project and district staff. This model was used for outdoor classrooms, training Blue Thumb volunteers and demonstrations at schools and campgrounds. Blue Thumb also donated educational materials and handouts.

³ See, Appendix 10 through 12 for copies of outdoor classroom brochures.

Due to the efforts of the Lake Eucha Water Quality Program, the Delaware County Conservation District offered more school education programs than it had since the inception of the District. Due to statewide budget cuts, which curtailed field days and the use of school buses, the District's plan to have annual outdoor classrooms had to be put on hold. But the District worked with county schools to hold natural classroom days on a school by school basis. Project staff worked with the District on each educational event during the term of the project.

Project staff assisted Karla Beatty, Oklahoma Conservation Commission Education Coordinator, with training teachers in a Wonders of Wetlands program held August 7, 2003 at the Northeast Technology Center, E. Campus, in Kansas, Oklahoma.

Additionally, staff:

- Took orders for trees and delivered those to schools;
- Worked with two schools on plans for a wetlands/outdoor classroom;
- Assisted with OACD poster, speech and essay contests each year;
- Met with 4-H group and discussed stream education;
- Taught 4-H group about stream monitoring
- Assisted Ottawa County Conservation District with Natural Resource Days in 2002, 2003 and 2004.

TASK IV. EXHIBIT

The Cherokee County Conservation District provided a table top display unit to the project. The unit was used to exhibit maps, information, brochures, and photographs of cooperators and Best Management Practices. It traveled from WAG meetings to Tent Meetings, to Benton County for their annual Study Day, to educational seminars and a Bus Tour, and was frequently set up at the Delaware County Fair. The exhibit also contained pieces of the materials used for the Best Management Practice – Heavy Use Area (Terratex fabrics). Task V contains additional information on dates and locations where the exhibit was utilized.

Project staff and Delaware County Conservation District staff were available to answer questions and hand out the *Lake Eucha Water Quality Project* brochure whenever the exhibit was used.

Other exhibit items used at WAG meetings and the Benton County Study Day were maps supplied by the Oklahoma Conservation Commission and by the City of Tulsa. A watershed boundary map was prepared and used to assist landowners in the Lake Eucha Watershed in determining whether or not poultry litter could be spread.⁴

⁴ A temporary ban on spreading poultry litter went into effect in July 2003 as a result of a settlement reached in The City of Tulsa, et al. v. Tyson Foods, et al., U.S. District Court for the Northern District of OK, Case No. 01 CV 0900EA(C).

TASK V. EDUCATIONAL MEETING

October 19, 1999, the Project Office hosted a tour as part of the Four-State NACD meeting held in Tulsa, OK. Stations were set up (a) at the lower Beaty Creek Bridge to show the condition of the stream, (b) for a demonstration on a cooperator's farm for taking proper soil samples and a discussion of his conservation plan showing his riparian area and buffer zones management, and (c) to demonstrate Best Management Practices on another cooperator's farm.

September 8 – 9, 1999, Lake Eucha Tent Meeting. Local poultry integrators sponsored and cooked meals served at the event. The OSU Extension Service offered up to 4 continuing credit hours to poultry producers for attendance at the tour and educational sessions. The educational sessions offered at the morning portion of the meeting included the following topics:

- What is the Lake Eucha Project?
- E.P.A. – the 319 Non Point Project.
- City of Tulsa's Water.
- How Nutrients Affect Eucha Water.
- Poultry Litter - an Asset.
- Best Management Practices for Water Quality.

On October 14, 2000, the project hosted a Best Management Practices Bus Tour to Protect Water Quality. Again, local poultry integrators supplied and cooked a meal for this event. This tour consisted of three stops demonstrating BMPs put in place by either the Beaty Creek 319 Project or an NRCS EQIP project:

- Farm One – Benton County Cooperator Jim Singleton: Conversion of cropland to permanent cover; pipelines/tanks/cross fencing with rotational grazing.
- Farm Two – Benton County Cooperator Tim Crawley and Valley View Farms: Utilizing poultry and dairy waste.
- Farm Three – Delaware County Cooperator David Holcombe (WAG chairman, Delaware County Conservation District Board member, Oklahoma Department of Agriculture board member, 2001 Oklahoma Been Environmental Stewardship Award recipient): Use of geo-cells in heavy use area; livestock shade; litter storage sheds.

The common thread of the three educational meetings was touring the Beaty Creek watershed and furnishing information about the work being done in the watershed to conserve and protect the natural resources in the area. The first educational tour was of agency personnel; the second tour was an introduction of the project to the general public; the third tour was a reflection of what could be done through various best management practices. The second and third tours were thoroughly advertised throughout the Benton County and Delaware County region. Even the people who did not attend the tours received

information through the newsletter about what was going on in the watershed and the practices being implemented.

Project staff worked with the Oklahoma Department of Agriculture to remain informed on rules, regulations and reporting requirements for poultry producers. Project staff served as the central point of information for producers in Delaware County. Staff maintained the continuing education credits required by OSU for poultry producers. Staff provided poultry producers and interested parties with copies of:

- Oklahoma Senate Bill 1170
- Poultry Feeding Operations Registration Application
- Private Poultry Waste Applicator Annual Report
- Solid Poultry Litter Application Record Annual Report Form
- Poultry Waste Applicator License Certification
- Poultry Feeding Operation Report of Poultry Litter Sold or Given Away

Project staff assisted NRCS and OSU Extension Service with several outreach and poultry education meetings, including:

- Lake Eucha Tent Meeting, September 9, 1999
- Poultry Waste Management Regulations and Proposed Applicator Rules, November 16, 1999
- Litter Marketing Meeting, January 20, 2000
- Integrated Thistle and Pasture Weed Control, May 16, 2000
- Fall Fertilization, Reduced Winter Inputs, August 15, 2000
- Best Management Practices Bus Tour, October 14, 2000
- Litter Marketing Meeting, January 31, 2002
- Farm Outreach and Farm Records, March 26, 2002
- Rodent Control in Poultry Production, October 24, 2002
- Litter Marketing Meeting, January 30, 2003
- Environmental Farm Mgmt and ODA Regulations, April 2, 2003
- Outreach for Poultry Producers, October 21, 2003

Arkansas meetings included:

- Poultry Federation Meeting, Fayetteville, AR, January 30, 2001
- Benton County Study Day
 - March 2, 1999
 - Phosphorus Removal – Forage Varieties are not Created Equal
 - Nutrient Profiling
 - Strategies for Managing Excess Litter
 - Beaty Creek 319 Project
 - Nutrient Management Planning
 - March 7, 2000

- Establishment Practices Using the Minimum or No-Till Method of Seeding
- Alternative Uses for Poultry Litter
- Update on USDA Research on Animal Manure
- Information on Watering Tanks and Fencing
- March 6, 2001
 - NRCS Programs
 - Forage Management
 - Update on the Beaver Lake and Beaty Creek Watershed Projects
 - No-Till Sprigging and Pasture Improvement
 - Water Quality Study Report
 - Cattle Health Management
 - Prescribed Grazing
- March 5, 2002
 - Recruiting Directors – Finding the Right Person with the Right Talents for the Job
 - Environmental Issues Facing Agriculture
 - How Nutrients Affect Surface Water
 - How Summer and Winter Annuals Work Together
- March 4, 2003
 - Environmental Quality Incentives Program
 - Forestry Commission Services
 - Experiences Mining Phosphorus, from High P-tested Soils, with Bermudagrass
 - Five Years of the Quality Forage Project. What have we Learned?
 - Nutrient Management Laws being proposed for Arkansas
- March 2, 2004
 - The 2004 Farm Bill
 - Poultry Waste Management Legislation
 - Revisiting Greenfield Bermuda on its 50th Anniversary
 - National NACD Poster Contest
 - Pasture Renovation
 - Prescribed Grazing

Staff assisted with and/or attended the following education meetings:

- NACD Meeting February 1 – February 4, 1999;
- EPA Water Quality Meeting April 12 – 14, 1999;
- EPA Region 6 Watershed Conference May 22, 2000;
- Clean Lakes Symposium, March 28 – 30, 2001
- OACD annual meeting, March 1 – March 2, 1999; February 25 – 17, 2001; February 24 – 26, 2002; February 23 – 25, 2003;
- OACD area meeting, November 18, 1999;

- Judge for Grove Middle School Science Fair, January 31, 2001; January 30, 2002; January 29, 2003
- NEO Land and Range Contest, March 31, 2000; April 6, 2001; April 5, 2002
- BMP and Riparian Area Training, Poteau, OK, April 13, 2000;
- Poultry judge at Delaware County State Fair, September 6, 2002
- Waste Management Training, June 26 – 27, 2001
- Participated in Conservation Day activities in 1999, 2000, 2001 and 2002
- Project Wild Workshop, July 25, 2000
- Wonders of Wetlands training June 21, 2000 and August 7, 2003.

Numerous tours were given to legislators, agency personnel, and other interested parties to educate those individuals concerning the water quality problems in the watershed and the efforts being made to address those problems.

TASK VI: BLUE THUMB PROGRAM

July 9, 1999, by unanimous vote, the Delaware County Conservation District became a Blue Thumb sponsor. Blue Thumb is a water pollution education program principally sponsored by conservation districts and the OCC. The District's staff and the Lake Eucha Water Quality Project's staff worked since that time to promote the Blue Thumb program in Delaware County. To kick off the program, the Delaware County Conservation District hosted a Blue Thumb Earth Day Celebration. The event was publicized in local newspaper and on KGVE radio station in Grove, OK. Flyers were placed in area businesses and in the OSU Cooperative Extension Office, and were mailed to each school, the Watershed Advisory Group members and the EdWAG members. Door prizes were obtained from area merchants, an oversize "Earth Cake" was especially made for the event, and exhibitors were invited to participate. The celebration took place in the Community Center at Jay, OK, on Thursday, April 27, 2000.

The Earth Day program topics included an overview of the Lake Eucha/Beaty Creek Project, an overview of the stream monitoring project being conducted by the Jay High School Stream Team, information about becoming a Blue Thumb volunteer, information about water monitoring, information about 4-H clubs, and hands-on demonstrations by Mitch Fram, OCES Area Water Quality Specialist, and by the Jay High School Stream Team. Project and District staff were available to answer questions on Best Management Practices, riparian areas and buffer zones, pest management, nutrient application rates, watershed management, and other topics of interest.

Two training sessions were conducted in Delaware County to teach water monitoring. Sites monitored included Cave Springs, Brush Creek, Wolf Creek, two sites on Honey Creek, and Beaty Creek.

Three teachers were trained as volunteer monitors and included their students in their monitoring activities. Mark Cooper, the first teacher who began a monitoring program, was selected by OACD as their secondary Teacher of the Year in 2000. Jay High School was chosen as the “Keep Oklahoma Beautiful” Educational Institution for the year 2000 in the education and promotion category. Mr. Cooper entered the contest for the school due to the efforts of several of his students who participated as members of his Blue Thumb “Stream Team”. Other volunteers included a husband and wife, a grandfather/grandson team and a father and three of his daughters. Two sites in Brush Creek were monitored, one in Spring Creek, one in Wolf Creek, one in Beaty Creek and two in Honey Creek.

In addition to the Blue Thumb monitoring, project staff monitored a site on Beaty Creek and one on Little Saline Creek for the length of the project. Staff attended a training session for instruction on air monitoring for a National Air Deposition Sampler. A monitoring station was set up at Lake Eucha in January of 2000.

Another group, from Kansas (OK) Middle School, monitored a site at Lake Eucha as part of the Oklahoma Water Watch program. Their efforts were recognized and awarded by the Oklahoma Water Resources Board and the Oklahoma State Legislature.

TASK VII: BEATY CREEK PROJECT DIRECTORY

An organized directory was planned, but cooperators, legislators and agency staff preferred tours of best management practices. Project staff participated in informal tours of best management practices and discussions within the watershed. Photographs of practices were maintained at the project office for use in instances where a tour was not feasible. Photographs have also been used in the newsletter, as exhibits on the tabletop display, and have been framed for display on the Project office walls.

TASK VIII: COOPERATOR SEMINARS

In addition to the cooperator seminars noted in Task V – Educational Meetings, project staff conducted meetings with cooperators on a one-on-one basis. This allowed the cooperator to receive assistance on his or her individual farm. Cooperators were also invited to each seminar held in their respective counties. For four of the five years of the project, project staff took soil samples from farms in the Lake Eucha (OK) watershed to assure uniformity of the soil sampling. The Oklahoma state legislature set up a special grant program to enable the Delaware County Conservation District to pay for costs of the soil and litter tests. Staff frequently gave instructions to the cooperators on those farms

concerning the correct way to take soil samples. Project staff also maintained a list of soil sample results for that time period.⁵

By state law, Senate Bill 1170, poultry growers are required to attend an initial nine hours of educational meetings and maintain three hours continuing education credits each year. Project staff assisted with preparations for and during those seminars.

In 1999 and 2000, rainfall simulators were established by the University of Arkansas on the Avery Hoke farm in Benton County, Arkansas and on the Dave Chamberlain and Jim Pigeon farms in Delaware County, Oklahoma. The simulators and the results were frequently used on tours and in seminars.

TASK IX. SALUTE TO COOPERATORS BANQUET

On the evening of July 29th, 2004, the Lake Eucha Watershed Project personnel thanked the cooperators involved in the Beaty Creek Water Quality Project. The meeting was hosted by the Oklahoma Conservation Commission (OCC) Water Quality Division, and Delaware County Conservation District (DCCD). Woody Wilson and friends prepared a great dinner of hog, beans, and potatoes for approximately 100 people. Pepsi-Cola helped supply drinks for the event, and Serendipity, a floral shop in Jay, supplied the table decorations.

The meeting was moderated by David Holcombe, chairman of the Delaware County Conservation District Board and former chairman of the Watershed Advisory Group. Mr. Holcombe introduced each speaker, beginning with Shanon Phillips, Technical Writer for the Oklahoma Conservation Commission's Water Quality Division. Ms. Phillips provided an update on the declining phosphorus levels in Lake Eucha, due in part to the BMPs established on Beaty Creek in East Central Delaware County. Ms. Phillips also gave the statistical analysis of the number of BMPs completed, and shared that approximately One Million dollars has been cost-shared in Delaware and Benton Counties under the Beaty Creek Water Quality Project. Eighteen contracts were completed in Benton County and seventy-two contracts were completed in Delaware County.

John Everett, the court-appointed Special Master for the Eucha-Spavinaw Watershed Team, discussed the methods used for the calculation of the litter management plans that his team uses for their plans for litter disposal and application rates. This tool is called the Pasture Phosphorus Management Calculator, and different variables can be entered to help determine the amounts of nutrients that are needed for each field.

John Littlefield, Department of Agriculture Inspector, discussed the proper procedures and channels to go through in acquiring and/or selling poultry operations in order to prevent any problems in the transfer of the poultry operation.

⁵ Appendix 13 through 16, pie charts showing the amount of phosphorus for years 1999 through 2001, for samples taken by project staff.

Jason Hollenback, Delaware County OSU Extension Agent, spoke about the benefits and procedures of a controlled burn practice to promote new growth in overgrown and/or woody areas. He pointed out practice would also help with fall pasture fertility, which was the other topic Mr. Hollenback discussed. His purpose was to help educate producers on the benefits of handling pasture fertility issues in the fall, not just in the spring.

In addition to the cooperators' banquet, promotional caps and coffee mugs were purchased during the final year of the project. Caps and mugs were given to cooperators. Additional coffee mugs were given to attendees of the cooperators' banquet.

TASK X. PROMOTIONAL SIGNAGE FOR COOPERATORS

Signs for the original group of cooperators were purchased in April 2000, and were installed on the cooperators' properties. One sign was featured in a *Beaty Creek News* article.⁶ Late in the project, new cooperators required new signage. During a visit with a prospective cooperator, the Project Coordinator was asked if they would receive a sign if they participated. They were assured they would and they have. The signs are a symbol to their communities of the pride the cooperators have in their efforts to clean up the water for themselves and future generations.

TASK XI. BUFFERS BROCHURE

Due to the number of brochures and handbooks⁷ presently available, the project used those instead of developing a new brochure.

Buffers were established on farms in the project. Best Management Practices (BMPs) included incentive payments for the establishment of riparian areas along creeks and tributaries in the project area. Cost-share payments for establishment of permanent vegetation, establishment of a riparian forest buffer, fencing cattle out of creeks and tributaries, and construction of alternate watering sources for cattle (wells, freeze-proof tanks and pipeline) were some additional BMPs which were available.

An extra practice, which was not included as part of the BMPs for this project but was implemented with the assistance of project staff, was planting of a pecan grove buffer in Delaware County and a walnut grove buffer in Benton County. Both buffers were fenced to keep cattle out of the area and creek banks. This buffer project was the result of a grant from the NRCS regional office as a demonstration project.

Articles about the benefits of riparian and field buffers were also featured in several newsletter articles.

⁶ Appendix 17, *Beaty Creek News*, September/October 2001.

⁷ See, Oklahoma Extension Service. 1998. Riparian Area Management Handbook, E-952. 90p.

SUMMARY

The watershed education program helped obtain the project objectives by:

- *Providing educational assistance to producers through producer meetings, workshops and individual contact.* In addition to scheduled educational activities, the project coordinators were available when checking installation progress of BMPs, in informal gatherings, and in their offices. Help was provided to producers to conduct assessments of factors affecting water quality on their farms.
- *Demonstrating practices on a sub watershed necessary to achieve the nutrient control needed to protect Lake Eucha.* This project covered the entire Beaty Creek Watershed, a sub watershed of the Spavinaw Creek/Lake Eucha Watershed. BMPs were demonstrated on tours and newsletter articles notified area residents of improvements made under the project.
- *Coordinating activities of the various agencies and groups working within the watershed.* The project coordinator and staff were participants in various workgroups in the region. Additionally, they attended the majority of poultry meetings over the five-year span of the project and served as a source of information for poultry growers. Staff assisted with programs presented by Delaware County Conservation District, Ottawa County Conservation District, OSU Extension Service, and NRCS and also worked with the Oklahoma Department of Agriculture and Benton County (Arkansas) Conservation District.
- *Providing youth education.* The educational activities provided to schools, 4-H clubs, community groups, and fair attendees are lessons which will remain with students well beyond this project. Through interaction with parents, teachers and others those students then become the “educators”.
- *Monitoring the effectiveness of the program.* As mentioned previously, cooperators proudly displayed signs proclaiming their participation in “Clean Water – We do our part”. During the final six months of the program, cooperators were not actively sought. However, eight additional cooperators were added during that time. Those new cooperators had been told of the project by their neighbors and were encouraged to participate. Several existing cooperators installed additional best management practices during the last six months of the project.

LAKE EUCHA PROJECT PHOTOS



Signing of first cooperative agreement

Bus Tour Heavy Use Area



Tent Meeting



**Jay Elementary School -
Enviroscape**

Grove Elementary Outdoor Classroom



**Tree Delivery Moseley
Elementary**





Jay High School Stream Team



Tent Meeting Exhibit

Rainfall Simulator



Managing Pasture Grasses