



**Lincoln County Wetland Rehabilitation
and Outdoor Learning Center**

Compiled by:

**Oklahoma Conservation Commission
Water Quality Division
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Introduction

The Deep Fork of the Canadian River Watershed is recognized by both state and federal agencies for its high quality, important wetland functions, and its excellent fish and wildlife values. For example, the watershed in Lincoln County has been identified as the number one wetland site in Oklahoma in the U.S. Fish and Wildlife Services' Regional Wetlands Concept Plan (USFWS, 1991). The project efforts are also consistent with objectives of the Partners in Flight Program for conservation and management of bottomland hardwoods for neotropical migratory birds (Fitzgerald et al., 2000). Project efforts are complimentary to the *Eastern Oklahoma Wetlands Plan*, which is the state of Oklahoma's implementation plan for the Lower Mississippi Joint Venture of the North American Waterfowl Management Plan (NAWMP) (Brabander et al., 1985). This area is one of seventeen priority-one sites listed in the *1985 Texas and Oklahoma Land Protection Plan* (USFWS, 1985). In addition, it has the highest priority ranking for protection in *Oklahoma's State Comprehensive Outdoor Recreation Plan (SCORP)* (Oklahoma Tourism and Recreation Department, 1987). The majority of the watershed contains palustrine, forested wetlands of the type that have been identified as rare and/or declining habitats in the *National Wetlands Priority Conservation Plan (NWPCP)* (USFWS, 1989).



Lincoln County Conservation District Wetland Field Days October, 2007

The project with Lincoln County Conservation District (LCCD), City of Chandler, and Lincoln County will help demonstrate to the public the benefits and importance of wetlands. A large portion of the Deep Fork Watershed is located in Lincoln County, Oklahoma. The project area is about 40 miles northeast of Oklahoma City, Oklahoma. The moderately rolling landscape ranges from about 800 to 1,150 feet above sea level. The area of the county is about 973 square miles. About 17 percent of the county is bottomland, 39 percent is upland prairie and 44 percent is partially wooded. The Deep Fork River crosses the county from west to east.

The LCCD has experience in watershed based planning including five watershed protection and flood prevention (Public Law 566) projects. These upstream flood control

projects included implementation of land treatment practices on at least seventy percent of their watersheds. These practices included, but were not limited to, riparian corridor restoration to minimize erosion. The conservation district understands the need for district support and involvement in planning and management of local wetland resources. There are a number of local groups whose interests span the spectrum from flood loss reduction to waterfowl habitat enhancement.

The *Wetland Watershed Management Plan for the Deep Fork Watershed in Lincoln County* stresses public education and outreach since one of the most critical obstacles to overcome in wetland protection is lack of knowledge. Historically negative attitudes coupled with lack of proven, science-based knowledge necessitate considerable outreach efforts for wetland protection. The *Wetland Resource Management Guide for Lincoln County Landowners*, published at the recommendation of the Lincoln County wetland advisory committee, is intended for distribution to those who make decisions that affect wetland resources, including current and potential landowners. Lincoln County's location in the center of the state and its close proximity to the state's two major metropolitan areas attracts many investors with hunting and other recreational interests. By providing this publication to realtors, investment groups, hunting clubs, recreational organizations, and other such entities, the hope is to reach potential landowners and/or land users. In addition to these publications, LCCD and the City of Chandler will be able to use the wetlands at the project site to conduct outreach and education about wetlands.

Project Site

The City of Chandler, county seat of Lincoln County, owns a 75-acre area near the center of the city. Much of this area consisted of wetlands prior to conversion for agricultural use. In the summer of 2006 the City and the Natural Resources



Rehabilitated wetland area adjacent to WRP project (facing east)

Conservation Service (NRCS) completed the initial phase of a Wetlands Reserve Program (WRP) project to restore 23-acres of wetlands on this piece of property. In order to make this area more user-friendly the LCCD with OCC and other partners felt that this grant would be a valuable use for this area. The proposed project would rehabilitate two areas, one approximately 7 acres and the other about 1 acre, and connect these wetlands and the WRP wetland in the area with a series of trails. The rehabilitation activities would include some earth moving activities to create microtopography and to enable the area to retain water, while preventing the road nearby from flooding. The watershed is 38.4 acres, 39% pasture or range and 61% residential (38% impervious), with the low areas containing hydric soils capable of impounding water. A 1-year frequency, 24-hour rainfall event of 3 inches would impound approximately 1 acre-foot of water. The average annual precipitation for Lincoln County is 34.44 inches, which would be more than adequate water to sustain the hydrological needs of the wetland areas. Also, plant species management will be conducted (including removal of undesirable exotics and other species), increasing diversity by limiting monotypic vegetation, and planting diverse native species to restore the degraded areas back to wetlands. The City of Chandler will maintain these areas by including them in their existing long-term maintenance plans for their WRP project.

Project Plans

The goal of the Lincoln County Wetland Rehabilitation and Outdoor Learning Center project is to rehabilitate two wetland sites that provide recreational and educational opportunities, quality wildlife habitat, and floodplain management in concurrence with urban and farming practices. Some of the planned amenities include a system of trails, an observation blind, a covered shelter, wildlife habitat structures and interpretive signage.

Lincoln County Wetland Rehabilitation and Outdoor Learning Center



The City of Chandler is planning to provide a parking area in close proximity to the wetlands. A trail will lead visitors to a kiosk near a boardwalk that crosses the first wetland. Preliminary design plans for the kiosk incorporate the first of several wildlife habitat structures seen at the site, a Chimney Swift Tower. The kiosk itself will be 4-sided with each side bearing an information and/or interpretive panel. One side will contain a map of the site, an informational brochure about the wetland area, a wildlife checklist and a children's checklist. The other panels will include an introduction to wetlands, information on Chimney Swifts and a description of management of the wetland site. A series of interactive interpretive panels entitled "Wetland Metaphors" will be mounted near the kiosk and the boardwalk. This display will be adapted from an activity in the Project WILD curriculum and will explain the functions and values of wetlands.



Trail connecting wetland areas

A wooden boardwalk will lead visitors across the first wetland to a peninsula that connects to the embankment that separates the wetland from a second wetland (completed through the Wetlands Reserve Program). Once visitors reach the top of the wetland embankment, they can view two separate wetland units. The center embankment divides the wetlands into two distinct areas. A trail will lead visitors from the berm around the west side of the wetlands. From there the trail will go across a foot bridge over Bell Cow Creek and through a wooded area to another wetland area that has been rehabilitated on the west side of the ball fields. The city hopes to add a gazebo at the small wetland site. At the Wetland Gazebo, visitors will be able to sit and enjoy the wonders of the wetlands. They will also be able to observe and identify several species of wetland birds. Interpretive features of several species of birds including waterfowl, wading birds and shorebirds will be located inside the Wetland Gazebo. A series of interactive interpretive signs entitled "The Beauty of Mud" will also be mounted on the handrail of the gazebo. This series of signs will describe the importance of wetland mud in the food web of a wetland.

Project Activities

Activities at the project site began with the rehabilitation of an area that had been previously converted to agricultural land, north and across the street from Chandler Public Schools. Construction of the wetland area (~1 acre) included 600 cubic yards of earthwork and the installation of a water control structure. Construction continued about a half mile to the east on another previously converted wetland that is adjacent to the City's WRP project. This wetland area (~7 acres) included 2050 cubic yards of earthwork and installation of a water control structure.



Earthwork on the 1-acre wetland site

The water control structures were built into the wetland berms to provide options for managing water levels in the wetlands. In addition, microtopographic variations were built into the substrate to provide a variety of water levels throughout the wetlands. These variations in water depths provide an array of opportunities for the development of a diverse wetland plant and animal community. The soils in these areas are hydric and contain existing seed beds of wetland plants that existed before conversion to agriculture. As these wetland areas become established, they will offer a mixture of habitats for species ranging from macroinvertebrates to amphibians to birds and beyond.



Topography variations



Water control structure

Both of these wetland areas are located in a highly visible location near the Chandler community park and school system. A path was prepared and then asphalted to create a walking trail connecting the two wetland areas. In addition, a bridge was built along the trail to cross Bell Cow Creek and facilitate access to both of the wetland areas. This walking trail is an amenity to the community and it makes the wetlands a destination by leading people to them. Community awareness has been raised through local news media coverage (Appendix) and the area is already being regularly utilized by local residents. However, due to limited funding and increased costs for other project aspects, not all of the project amenities were able to be constructed at this time. OCC plans to work with the community to develop signs, boardwalk, and other educational amenities tailored to their needs.



Trail and bridge over Bell Cow Creek

Educational Opportunities

LCCD and Chandler Public Schools will use the entire area to conduct outreach and education for wetland and riparian areas. The site will be an outdoor learning center/demonstration area for agricultural producers, the public, and school groups. The learning center was modeled after several successful sites across the state. This type of facility was needed to provide a focal point demonstrating the importance of wetlands in the community. The location within the city limits near the school and a ball field complex provides a great opportunity for education because it is highly visible to the public. In addition, areas surrounding the wetland will continue to be in hay production demonstrating that agricultural and city activities can coexist with wetlands.



Lincoln County Conservation District Wetland Field Days October, 2007

In spring 2007 a local senior girl scout troop implemented wetland enhancement projects including planting of seventy-five bur oak and shumard oak tree seedlings on the island and along the north easement line of the City of Chandler's WRP unit. Members also broadcast a native seed mix along the front tow of the berm and constructed and installed six bluebird houses around the area. Four girls earned their Gold Award, the highest honor bestowed on a Girl Scout, as a result of these activities.

Wetland field days – held annually for local fifth grade students, features small student group rotations through four different stations dealing with various components of wetland ecosystems. In October 2007, 266 fifth grade students, teachers and parents from four local schools were educated about the benefits and values of wetlands to Lincoln County and surrounding areas.



Lincoln County Conservation District Wetland Field Days October, 2007

October 2, 2007

72 fifth grade students from Prague Elementary rotate through four stations presented by staff from:

- Oklahoma Conservation Commission (Karla Beatty, Education Coordinator)
- Natural Resources Conservation Service (Steve Alspach, Soil Scientist)
- Rogers County Conservation District (Robert Gibbs, Conservation Education Coordinator)

October 4, 2007

74 fifth grade students and 38 adults from Chandler's Park Road Elementary rotate through four stations presented by staff from:

- Oklahoma Conservation Commission (Karla Beatty, Education Coordinator)
- Natural Resources Conservation Service (Steve Alspach, Soil Scientist)
- U.S. Fish & Wildlife Service
- Oklahoma Department of Wildlife Conservation (Alan Stacey, Wetland Habitat Biologist)

October 9, 2007

Fifth grade students from Agra Public Schools and Wellston Public Schools combine to rotate through four stations presented by staff from:

- U.S. Fish & Wildlife Service
- Natural Resources Conservation Service (Steve Alspach, Soil Scientist)
- Rogers County Conservation District (Keith Owen, District Manager)
- Oklahoma Department of Wildlife Conservation (Alan Stacey, Wetland Habitat Biologist)

Each field day concluded with a group activity from *WOW! The Wonders of Wetlands* called "What a Boat!" where students teamed up to construct a boat of natural materials that would float their belongings (a rock) in the water. The activity is designed to reflect what homesteaders had to do to cross the land in the new Oklahoma Territory during the land run.



Lincoln County Conservation District Wetland Field Days October, 2007



Future Plans

In order to maximize the potential of this site, the City of Chandler will use it as a gateway to the rich and numerous wetlands of the Deep Fork River. Events such as the Governor's Duck Hunt and Chandler Public Schools outdoor educational days will help demonstrate the importance of wetlands to the community. LCCD will work with OCC and NRCS in developing restoration and enhancement plans for the various wetland areas in the county as well as utilize the rehabilitation process to teach students about wetland functions. Furthermore, LCCD with OCC, NRCS, and Oklahoma Department of Wildlife Conservation (ODWC) will continue to host wetland outdoor field days, natural resource days and other activities geared for youths, producers, and the general public. Also, the OCC will host WOW!WET workshops to educate the local teachers on the importance of wetlands and water quality issues, and how to incorporate these topics into their classes. Additional educational amenities will be added to the site to accommodate the needs of the community.

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APPENDIX

Wetlands walking trail being constructed in Chandler

By DANA HILL

Staff Writer

To enhance community awareness about naturally occurring wetlands resources in Lincoln County, the Lincoln County Conservation District has joined forces with the City of Chandler and Lincoln County to establish a walking trail between two restored wetlands areas in Chandler city limits.

"The conservation district restored wetlands areas in Chandler, just north of Park Road School and Wade Helm, director of the conservation district, had the idea of connecting the two with a walking trail," LCCD administrative officer Tricia Soderstrom said. "Our goal is to enhance awareness of naturally occurring wetlands in Lincoln County."

She said the wetlands areas and the walking trail will double as an outdoor classroom for Chandler Public Schools.

"We feel like hands-on learning is the most effective form of learning," Soderstrom said. "The wetlands

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WETLANDS WONDERLAND



LCN photo by Dana Hill

Tricia Soderstrom, administrative officer at the Lincoln County Conservation District, points to the spot where they'll have to build a bridge over Bell Cow Creek so the walking trail can continue east to a second wetlands area. The walking trail will begin at a restored wetlands area north of Park Road School and will run parallel with Bell Cow Creek until it turns south.



Artwork provided by
AUSTIN REEDY
Agra Elementary

Weather

Day	High	Low
Thursday	83	68
Friday	83	70
Saturday	86	66
Sunday	85	56

Cloudy and cool with chances
of rain through the weekend

TRAIL:

continued from Page 1

makes the perfect outdoor classroom for students of all ages."

She said for the past 10 years or so, the Lincoln County Conservation District has been providing a wetlands education course for fifth graders in the Chandler Public Schools on a privately owned wetlands area but now the new restored wetlands areas will be within walking distance for students in the third through 12th grades.

"We are willing to do programs for interested teachers or do teacher training where they can do their own programs," Soderstrom said. "We have a curriculum and activities we will give to them to use as well."

The walking trail begins at the wetlands area due north of Park Road School and runs parallel to Bell Cow Creek until the creek turns south. A bridge will be built to cross the creek and the walking trail will continue on to the second restored wetlands area, which is adjacent to a wetlands area restored about two years ago.

The City of Chandler owns the land that the restored wetlands and walking trail is on and Lincoln

County has agreed to pave the walking trail.

"The grant that is funding the walking trail and the restoration of the two wetlands areas was awarded to the Little River Conservation District in southeast Oklahoma first," Soderstrom said. "When they were unable to meet the qualifications, we were able to secure the grant for Lincoln County."

She said wetlands are a historically misunderstood natural resource. She said because they are so misunderstood, they have also historically been mismanaged.

"As we learn more about wetland functions, values and benefits we learn more about how to efficiently manage for the resource instead of against it," Soderstrom said. "Through the federal fiscal year 2007, more than 3,814 acres of wetlands have been restored or enhanced in Lincoln County through the Wetlands Reserve Program and many more acres have been restored through other programs and by landowners on their own."

She said according to the U.S. Fish and Wildlife Service, Lincoln County has over 20,000 acres of naturally occurring wetlands.

"Seventy-six percent of Lincoln County is in the Deep Fork Watershed," Soderstrom said. "And the

Deep Fork Watershed has the potential for a variety of wetland types and possible management scenarios."

She said each wetland restoration site will lend itself to a given wetland type that will "fit" the site. She said some sites can be developed into a wetland complex that has portions of the four wetlands that were historically present in this watershed, which are seasonally flooded bottomland hardwoods, emergent marsh, open water and shrub/scrub marsh.

"Design of the restoration unit and management skill will determine the type and quality of each individual wetland restoration unit in the county," Soderstrom said.

She said management scenarios for wetlands will vary from site to site and between landowners.

"Passive management of water levels will lead to a very different type of vegetative response within a wetland in comparison to an intensively managed unit," Soderstrom said. "The best wetlands will have a high degree of plant diversity, providing a high degree of habitat for multiple species."

She said water design depths, topography beneath and above the water surface and permanent and semi-permanent water are a few of the factors that will determine inten-

sity of use by wildlife.

"Not all wetlands have a continuous occurrence of water on the surface of the ground," Soderstrom said. "Some wetlands have surface water during only a portion of the year."

She said contrary to popular belief, wetlands are not just for ducks or duck hunters.

"Wetlands provide habitat for thousands of species of both aquatic and terrestrial plants and animals," she said. "They serve as a home to a great variety of aquatic, reptilian, avian and mammalian life forms. They also serve as a stopping point for migratory waterfowl."

Soderstrom said wetlands are brimming over with food sources for its varied inhabitants.

She said in addition to the ecological functions and values, efficient wetlands management also yields economic benefits.

"Lincoln County's location in the center of the state, coupled with rich Deep Fork bottomland resources, gives an advantage to landowners who choose to lease out their land for hunting or other recreational uses," Soderstrom said. "This advantage is consolation to those landowners who have lost the battle for conventional economic benefits from the land."