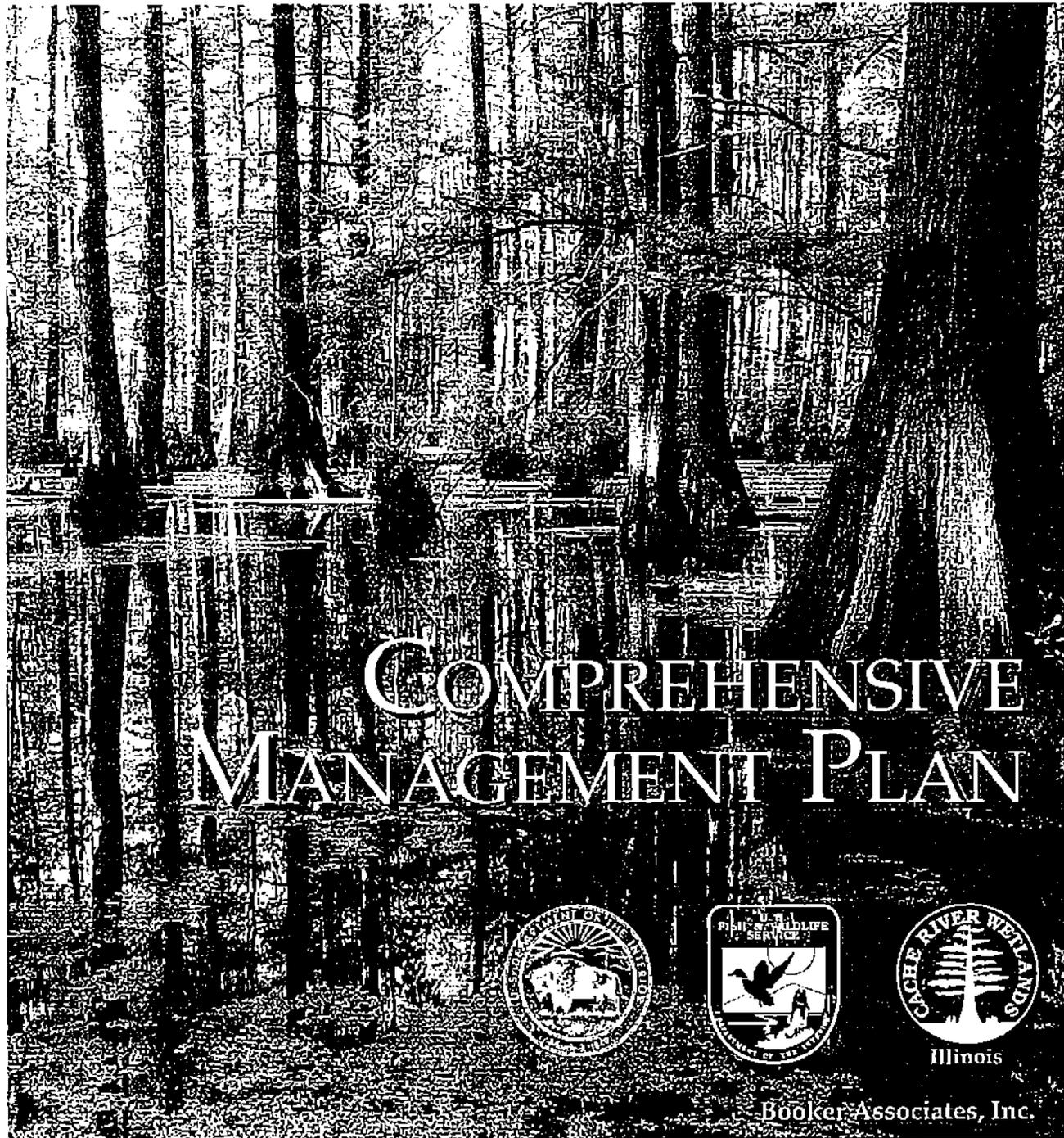


Cypress Creek

*National Wildlife Refuge
Comprehensive Management Plan*

U.S. Fish & Wildlife Service

CYPRESS CREEK NATIONAL WILDLIFE REFUGE



COMPREHENSIVE MANAGEMENT PLAN



Booker Associates, Inc.

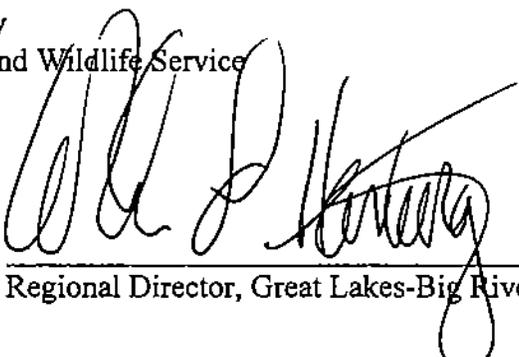
Cypress Creek

National Wildlife Refuge

COMPREHENSIVE MANAGEMENT PLAN

March 1997

Prepared by
U.S. Fish and Wildlife Service

Approved: 
Regional Director, Great Lakes-Big Rivers Region (3)

Date: 4-14-97

Implementation of this comprehensive management plan and alternative management actions/programs have been assessed consistent with requirements of the National Environmental Policy Act (42 U.S.C. 4321 et seq.). A copy of the EA-FONSI can be found in Appendix E.

Finding of No Significant Impact Cypress Creek National Wildlife Refuge Comprehensive Management Plan

An Environmental Assessment has been prepared to publicly disclose the possible environmental consequences that implementation of the Cypress Creek Comprehensive Management Plan (CMP) could have on the quality of the environment, as required by the National Environmental Policy Act of 1969 (NEPA). The EA presented and evaluated two alternatives, a "No Action" alternative 1 (maintain the status quo) and an "Action" alternative 2 (implement the Cypress Creek CMP).

The alternative selected for implementation is Alternative 2, implement the Cypress Creek CMP and establish Refuge management direction pursuant to the goals, objectives and strategies contained in the CMP.

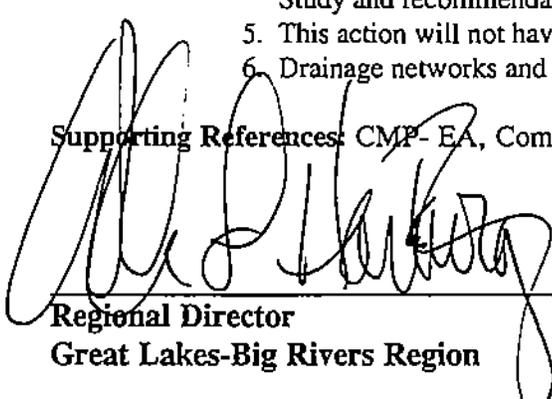
Background: In 1991 the U. S. Fish and Wildlife Service (Service), Illinois Department of Natural Resources, The Nature Conservancy and Ducks Unlimited joined forces to create a unique 60,000 acre federal/state/private conservation partnership for watershed protection and ecosystem restoration. The Cypress Creek National Wildlife Refuge, a major component within this partnership, has acquired and now manages over 13,000 acres of its proposed 35,320 acres. The purpose of the Cypress Creek Comprehensive Management Plan is to guide management activities of the staff and the physical development of the Refuge by identifying appropriate habitats, programs and facilities which fulfill the purposes for which the Refuge was established. The CMP also communicates the Service's contribution to the joint venture partnership and to the Southernmost Illinois region.

This Finding of No Significant Impact (FONSI) and supporting EA will be made available to the public for 30 days from the date below. During this 30-day period the FONSI will not be final, nor will the Service implement the selected alternative. A final decision will be made on whether to carry out the alternative selected at the conclusion of the 30-day period.

For the following reasons and based on the information contained in the Environmental Assessment, we have determined that **Alternative 2** is not a major federal action which would significantly affect the quality of the human environment, within the meaning of Section 102(2)(c) of NEPA.

- Reasons:**
1. The Refuge will add economic diversity and stability to the local area as visitor use increases.
 2. Acquisition of lands has been and will continue to be from willing sellers only.
 3. Annual Revenue sharing payments are made to the counties to help off-set potential impacts to the tax base.
 4. Cultural resource surveys are planned based on the CMP cultural resource Overview Study and recommendations in the CMP.
 5. This action will not have an adverse impact on threatened and endangered species.
 6. Drainage networks and floodplains will not be affected.

Supporting References: CMP- EA, Comprehensive Management Plan, Establishing EA, 1990



Regional Director
Great Lakes-Big Rivers Region

Date

4-14-97

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- COVER AND SPINE PHOTOS KIM HARRIS
- SKETCHES ILLINOIS ENDANGERED SPECIES
 (BEWICK'S WREN, DUSKY SALAMANDER, PROTECTION BOARD
 GOLDEN MOUSE, SWAINSON'S WARBLER)

A VISION FOR CYPRESS CREEK NATIONAL WILDLIFE REFUGE

Few wild places exist in North America today that exhibit such a wide diversity of flora, fauna, and geomorphic conditions as the Cache River Basin in southern Illinois. Moreover, few such areas have withstood the on-going onslaught of humanity's attempts to "tame" the land. Still fewer wild places are given the opportunity to return from the brink of elimination. The Cypress Creek National Wildlife Refuge, located in the heart of the Cache River Basin, is one of the last remnants of a uniquely diverse environment that can, to a large extent, be returned to a functioning ecosystem.

The Cypress Creek National Wildlife Refuge will someday be a 35,000 acre contiguous tract of land pieced together by connecting remnants of cypress-tupelo swamps, oak barrens, buttonbush groves, and vast stands of bottomland forests. The foreseeable future is one of preservation, acquisition of land, reforestation, intensive management, and people enjoying the bounty of this rare resource.

Wildlife abundance and high quality facilities will attract thousands of visitors each year. Partners will collaborate to provide a wide range of environmental programs and activities. Local communities will enthusiastically identify and promote the area as a regional tourist destination that contributes to economic development and enhances the quality of life in southern Illinois.

ACKNOWLEDGMENTS

The preparation of this Comprehensive Management Plan was possible through the guidance and assistance of dedicated people with diverse backgrounds and interests. The Planning Team met to guide the formation of this document. Review and comments of the draft report were also provided. We gratefully acknowledge the support and work of:

Henry Barkhausen
Citizens Committee to
Save the Cache River

Curt Carter
Program Director
Touch of Nature
Environmental Center
Southern Illinois University

Ned Enrietto - DNR
Regional Landscape Architect

John Penberthy
Southern IL Area Director
The Nature Conservancy

Max Hutchison
Ecologist
The Nature Conservancy

Dick Miller
District Conservationist
Natural Resources
Conservation Service

Diane Murphy
Illinois Forest Resource Center
University of Illinois

Roy Eichhorst
Area Resident

Judy Faulkner
Illinois Nature
Preserves Commission

Bob Lindsay - DNR
Natural Heritage Biologist

Bill Reynolds - DNR
Complex Manager
Ferne Clyffe State Park

Jim Waycuilis - DNR
Site Superintendent
Cache River State Natural Area

Dan Woolard - DNR
District Wildlife Manager
Union County Refuge

Tom Prang
Graduate Student
Southern Illinois University

Jerry Updike - FWS
Refuge Manager
Cypress Creek NWR

Elizabeth Jones - FWS
Refuge Operations Specialist
Cypress Creek NWR

Al Novara - FWS
Wildlife Biologist
Cypress Creek NWR

Michael Marxen - FWS
Regional Project Planner
Minnesota Valley NWR

Jerry Pirtle - DNR
Area Forester

DNR - Illinois Department of Natural Resources
FWS - U.S. Fish and Wildlife Service

PLAN SUMMARY

Cypress Creek NWR
Comprehensive Management Plan



PLAN SUMMARY

The Comprehensive Management Plan for the Cypress Creek National Wildlife Refuge will serve as a management tool to be used by the Refuge staff and its partners in the preservation and restoration of the Refuge. In that regard, the plan will guide management decisions over the next fifteen years and set forth strategies for achieving Refuge goals and objectives within that time frame.

The results of the planning process are perhaps best summarized by six major Refuge goals that are supported by a series of quantifiable objectives and specific implementation strategies. Those goals and key objectives include:

GOAL I: RESOURCE PROTECTION

Through land acquisition, protect the integrity of the areas natural and cultural resources.

GOAL II: HABITAT RESTORATION

Through ecological restoration, re-establish native plant communities throughout the Refuge for wildlife and educational and recreational opportunities.

GOAL III: RESOURCE MANAGEMENT

Maintain the Refuge through active management programs, cultural resource monitoring and research.

GOAL IV: DYNAMIC PARTNERING

Extend the cooperative action approach to local communities, agencies, and organizations to maintain, enhance, and create new partnerships that are mutually beneficial and further the goals of the Refuge.

GOAL V: ENVIRONMENTAL EDUCATION PROGRAM

Develop public appreciation and understanding of wildlife and plant communities and resource issues within the Cache River Wetlands through a formal, hands-on, educational program that results in environmentally literate and active citizens.

*GOAL VI: WILDLIFE-DEPENDENT RECREATION &
INTERPRETATION*

Provide opportunities for visitors to understand, observe, and enjoy wildlife and native habitats of the Cache River Wetlands.

The achievement of these goals will result in the following major accomplishments over the next fifteen years:

- ❖ Acquisition of 7,500 acres of additional land within the Refuge;
- ❖ Restoration of 5,250 acres to native hardwoods;
- ❖ Restoration of 1,500 acres of former wetlands;
- ❖ Restoration of 100 acres of herbaceous wetlands;
- ❖ Construction of 330 acres of additional moist soil units;
- ❖ Restoration of 100 acres of unique habitat;
- ❖ Construction of a 23,000 square foot Cache River Wetlands Visitor Center.
- ❖ Development of a conservation network among communities, schools and volunteers.

In the final analysis, the cost associated with the achievement of the vision and the goals for the Refuge is, in 1996, estimated to be \$27,000,000.

1. INTRODUCTION

Cypress Creek NWR
Comprehensive Management Plan



CHAPTER 1 - INTRODUCTION

Cypress Creek National Wildlife Refuge (Refuge) was authorized June 26, 1990 under the Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3901 b, 100 Stat. 3583, PL 99-645). The primary purposes of the Refuge are 1). *to protect, restore and manage wetlands and bottomland forest habitats in support of the North American Waterfowl Management Plan;* 2). *to provide resting, nesting, feeding and wintering habitat for waterfowl and other migratory birds;* 3). *to protect endangered and threatened species and their habitats;* 4). *to provide for biodiversity;* 5) *to protect a National Natural Landmark;* 6). *and to increase public opportunities for compatible recreation and environmental education.*

The Refuge is also an important component of the New Madrid Wetlands Project initiative which is a part of the North American Waterfowl Management Plan (North American Plan). The North American Plan is an international accord between the United States, Canada, and Mexico; its purpose is to restore waterfowl populations and their habitats to levels that existed between 1970-79. *Under this authority of the North American Plan, the Refuge is responsible for the management and restoration of bottomland hardwood forests and wetlands habitat for migratory birds.* The Refuge, once fully restored, will include nearly 16% of the wetlands in the New Madrid Wetlands Project and provide invaluable habitat for migratory and resident wildlife.

The Refuge purposes and North American Plan responsibilities provide a foundation for this Comprehensive Management Plan (Plan). This document will guide management decisions and activities on the Refuge over the next 15 years.

THE SETTING

NATIONAL WILDLIFE REFUGE SYSTEM

The U. S. Fish and Wildlife Service (Service) is the principal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats. The Service manages a diverse network of over 500 National Wildlife Refuges, a System which encompasses 92 million acres of lands and waters. National Wildlife Refuges are set-up for specific purposes and provide habitat for over 5,000 species of birds, mammals, fish, and insects. Cypress Creek National Wildlife Refuge is one of the most unique and diverse refuges in this System. Other National Wildlife Refuges within a 75 mile radius of Cypress Creek include: Crab Orchard, Patoka River, Mingo, Reelfoot, Cross Creeks, and the recently established Clark's River Refuge in Kentucky. Cypress Creek is in the Great Lakes - Big Rivers Region, with its office in Minneapolis.

*Refuges are "the only network of lands dedicated to preserving the quality of life for Americans by protecting their wildlife heritage."
U.S. Fish and Wildlife Service*

THE ECOSYSTEM

Cypress Creek National Wildlife Refuge is in the **Upper Mississippi River/Tallgrass Prairie Ecosystem.** Future direction will emphasize the ecosystem approach to management with the Refuge being a focus area within this ecosystem.

In 1995, the Service designated 52 ecosystems for the United States. The Cache River watershed is located at the juncture of three ecosystems: the Ohio River Valley, the Lower Mississippi River, and the Upper Mississippi River/Tallgrass Prairie. There was good justification to place the Refuge in any one of these ecosystems as the Cache River empties into both the Ohio and Mississippi Rivers. As such, the Upper Mississippi River/Tallgrass Prairie Ecosystem was chosen to administratively associate the Refuge with several other Region 3 refuges located in the ecosystem.

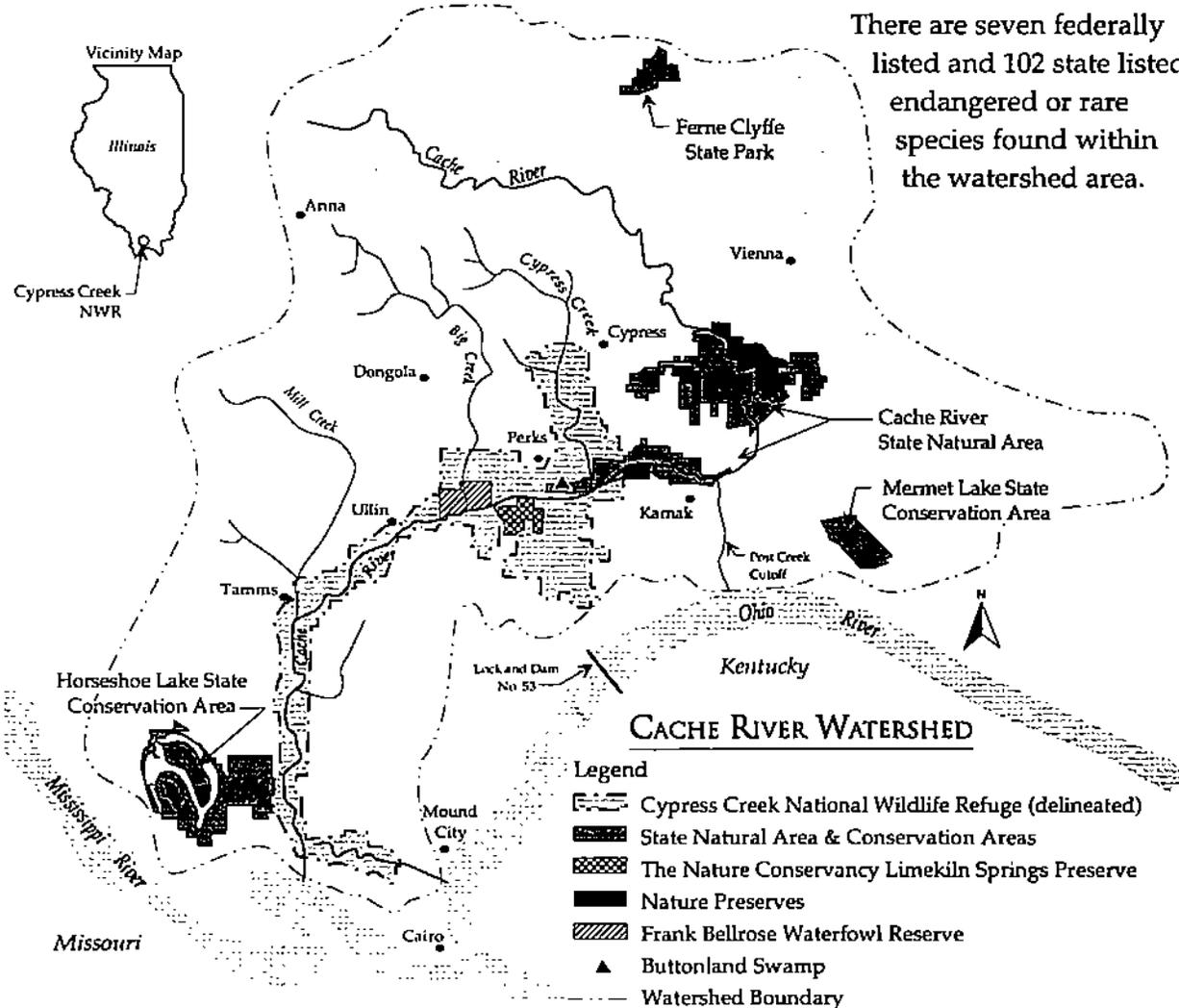
Within the United States there are only six areas where four or more physiographic provinces come together and intermingle their plant communities (Physiography of the

United States, Loomis, 1937). The Cache River watershed is probably the most diverse of these six. The four provinces that join in the Cache River watershed are: Central Lowlands, Interior Low Plateaus, Ozark Plateau, and Coastal Plain. Biological diversity of the Refuge is high compared to most of the Midwest due to this unusual combination of environmental influences.

THE WATERSHED - THE CACHE RIVER BIORESERVE

The 475,000 acre Cache River watershed is bounded on the west by the Ozark Hills, on the north and east by the Shawnee Hills and on the south by the Mississippi and Ohio Rivers. This watershed was designated the "Cache River Bioreserve" by the Nature Conservancy in 1991, the first to be so dedicated in the United States.

There are seven federally listed and 102 state listed endangered or rare species found within the watershed area.



Prior to 1916, the Cache River emptied into the Ohio River near Mound City. Today the Cache empties into the Ohio River near Grand Chain through the Post Creek Cutoff, the Mississippi River near Cache through the Diversion Ditch, and into the Ohio at the original location. The most dramatic unnatural feature associated with the hydrology of the watershed is the Post Creek Cutoff which was dug in 1915.

A Cache River Watershed Resource Plan was completed in 1995 by a Resource Planning Committee of local citizens with technical advice from agency personnel. The project was made possible by a grant from the U.S Environmental Protection Agency through the Illinois Department of Natural Resources, to The Nature Conservancy. Resource concerns identified by this team include:

1. *Erosion*
2. *Open Dumping*
3. *Private Property Rights*
4. *Water Quality*
5. *Continuation of Government Farm Conservation Programs*
6. *Post Creek Cutoff*
7. *Open Flow on the Cache*
8. *Disseminate Accurate and Timely Information Throughout the Watershed*
9. *Impacts of Wildlife on Farming and Vice-Versa 2*

Funding to address and correct these concerns will be sought through the Resource Planning Committee. A new program, Illinois Department of Natural Resources Conservation 2000, has great potential as a source of funding.

The U.S. Army Corps of Engineers, St. Louis District (Corps) is conducting The General Investigations Study of Alexander and Pulaski Counties, Illinois, focusing on the area between Vienna, Karnak, and Perks. This is a three year study with the Illinois Department of Natural Resources as the non-federal sponsor. Problems being addressed by the Corps include sedimentation in the Lower Cache River and entrenchment of the Post Creek cutoff.

"A wetland is an ecosystem that depends on constant or recurrent shallow inundation or saturation at or near the surface of the substrate."

*National Research
Council Committee on Wetlands*

CACHE RIVER WETLANDS

The core of the Bioreserve is the 60,000 acre land acquisition and management project being undertaken by the Joint Venture partners. Areas covered include: Cache River State Natural Area, Horseshoe Lake State Conservation Area, Cypress Creek National Wildlife Refuge, and Limekiln Springs Preserve. Of the 60,000 acres, approximately 40,000 acres have been acquired to date. This is the heart of the watershed relative to wetlands protection and ecological restoration.

The variety of plants, the quantity and size of old growth trees and woody shrubs in this middle Mississippi Valley location all contribute to the uniqueness of the ecological community that is found in the Cache River Wetlands. Buttonland Swamp, with its massive 1,000 year old cypress trees is a highlight of the Cache River Wetlands and is recognized as a National Natural Landmark.

RAMSAR - INTERNATIONAL DESIGNATION

The Cache River -Cypress Creek Wetlands were designated as a "wetlands of international importance - especially as waterfowl habitat" on November 11, 1994 under terms of the Ramsar Convention. A celebration event in May 1996 was attended by national and international dignitaries. There are only 15 Ramsar sites in the United States; there are 390 sites in the world. This designation brings international attention to this area.

CYPRESS CREEK NATIONAL WILDLIFE REFUGE

The Refuge will someday be a 35,320 acre contiguous tract of land pieced together from remnants of cypress-tupelo swamps, oak barrens, and vast stands of bottomland forests. The foreseeable future is one of land acquisition, intensive management, reforestation, education and citizen involvement in the restoration process.

The Refuge currently totals 13,000 acres acquired by the Service from willing sellers at a cost of \$10 million (average \$770/acre). From 1990-95 the annual land purchases averaged 2,000 acres. This average is expected to fall to

500-1,000 acres annually. Other Joint Venture Partners also own land within the Refuge purchase boundary. They include the Illinois Department of Natural Resources with 1,500 acres, and The Nature Conservancy with 1,100 acres.

To offset the loss of tax revenues to local counties the Service makes annual payments "in lieu of taxes" to counties under the Refuge Revenue Sharing Act of 1935. Payments represent 3/4 of 1% of the assessed land value. In 1995, payments totaled \$48,000 for 12,500 acres (average \$3.98/acre).

Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System (signed March 25, 1996 by President Bill Clinton) sets the direction for National Wildlife Refuge public use, habitat improvement partnerships, and public involvement. Cypress Creek National Wildlife Refuge can be a model of the intent of this Executive Order. Implementation is well underway.

EXISTING PARTNERSHIPS

Partnering (cooperative action) is recognized as the best solution to the restoration of the Cache River Wetlands ecosystem. Existing partnerships include:

JOINT VENTURE - 1993 (PRINCIPAL LAND OWNERS IN THE CACHE RIVER WETLANDS)

The U. S. Fish and Wildlife Service, Illinois Department of Natural Resources, The Nature Conservancy, and Ducks Unlimited entered into a Memorandum of Agreement forming a Joint Venture Partnership for protecting the biological diversity and improving the quality of the human environment in the Cache River Wetlands. Common purposes of the Joint Venture Partnership are to:



- ❖ protect natural habitat and endangered species and to restore and manage habitat for native species;
- ❖ assist in accomplishing the objectives of the North American Waterfowl Management Plan and the Illinois Natural Areas Plan;
- ❖ protect unique areas of ecological and cultural importance;
- ❖ protect important or unique natural features; and
- ❖ protect and improve the condition and functional integrity of the entire Cache River ecosystem.

CACHE CONSORTIUM - 1994

A group of federal and state agencies and a not-for-profit organization united as the Cache River Consortium. The signatories of the Memorandum of Agreement recognize that each has specific responsibilities for addressing the natural resource management challenges of the Cache River Basin. Currently membership in the Consortium consists of:

- ❖ Illinois Department of Natural Resources - including Natural History Survey and Water Survey.
- ❖ Illinois Environmental Protection Agency
- ❖ Illinois Nature Preserves Commission
- ❖ The Nature Conservancy
- ❖ U. S. Forest Service
- ❖ Natural Resources Conservation Service
- ❖ Southern Illinois University
- ❖ U. S. Army Corps of Engineers
- ❖ U. S. Fish and Wildlife Service

CITIZENS COMMITTEE TO SAVE THE CACHE RIVER - 1979

A small private, local advocacy group of citizens became concerned about land clearing, erosion, and sedimentation along the Cache River and adjacent wetlands. They organized "to promote conservation practices in the Cache River Basin and to preserve the natural values of the Lower Cache River". Their objectives are to support: land acquisition funding, habitat protection and enhancement, public hunting and other compatible public uses, compatible development to boost the area economy, information and education, monitoring, and volunteering. The Citizens Committee to Save the Cache River has received national and international recognition.

LOCAL SCHOOLS PARTNERSHIPS- 1995

Cypress Creek Refuge has partnership agreements with Bennett Elementary School of Cairo, Anna-Jonesboro High School, Egyptian Elementary School, and the JAMP Special Services office. Partnerships also exists with the Illinois State Museum in Springfield and the Regional Office of Education (Alexander, Johnson, Massac, Pulaski, and Union Counties).

HISTORIC CONTEXT

Although the history of the area in and around the Cache River is both long and varied, the greatest changes began around the time that Joliet and Marquette first traveled the Mississippi River in 1673. A chronology of the major events since that time is provided below.

- 1673 Joliet and Marquette came down the Mississippi River. Habitat was a mix of upland forest, herbaceous wetlands, cypress-tupelo swamps, floodplain woods, and prairie remnants.
- 1702 French fur trading became active and thousands of buffalo hides were processed at Juchereau's tannery.
- 1795 William Bird landed at Mississippi and Ohio Rivers confluence; present day Cairo.

"Nowadays almost all man's improvements, so called, as the building of houses and the cutting down of the forest and of all large trees, simply deform the landscape, and make it more and more tame and cheap."

Henry David Thoreau

- 1803 Southern Illinois is acquired by treaty from the Kaskasia Indians.
- 1804 Public Land Survey began in southern Illinois and first permanent settlers arrived in Cache Basin.
- 1811-12 Major destruction to area by New Madrid earthquakes.
- 1840's Farmsteads and small sawmills established and dams for navigation and mills; first levees and drainage ditches planned.
- 1870-1900 Logging, railroads, and Main Brothers Mill established.
- 1911-16 In an effort to control flooding and drain wetlands to support logging and agriculture the Cache River Drainage District formed, Post Creek Cutoff dug, Cypress Creek Ditch dug, ditching near Ullin, and levees constructed.
- 1920 & 30's Extensive clearing of bottomland forests and straightening of sections of Lower Cache River and Big Creek.
- 1937 Greatest flood on record from Ohio River, followed by extensive levee work.
- 1937 Biologists believe this is when the "point of equilibrium" in natural land conversion was reached in the Cache River Basin. All of the ground which was economical to farm was under cultivation, and wetlands were not greatly or adversely impacted.
- 1950-51 Diversion levee and cutoff from Cache River to Mississippi River constructed by Corps of Engineers; also Forman Floodway constructed which cut Cache River in two.
- 1950's Out-of-state farmers acquired large tracts of Cache bottomland.
- 1965 Illinois Nature Preserves Commission passed a resolution to support public land acquisition and nature preserve designation for Heron Pond area.
- 1969 Natural Land Institute, private conservation agency in Rockford, Illinois, acquired the first land along the Cache River for natural areas protection.

- 1970 Illinois Department of Conservation acquired first land as part of the Cache Project at Heron Pond.
- 1976 The Nature Conservancy became active in the Cache River wetlands preservation effort.
- 1978 Illinois Natural Areas Inventory was completed and documented 60 natural areas of state-wide significance within the Cache River watershed.
- 1979 The Citizens Committee to Save the Cache River formed.
- 1980 Buttonland Swamp is designated by the National Park Service as a National Natural Landmark.
- 1990 Cypress Creek National Wildlife Refuge established June 26.
- The Joint Venture office, Cypress Creek Refuge and The Nature Conservancy, was established on the campus of Shawnee Community College, November 4.
- Cache River State Natural Area staff and office established at Belknap.
- 1991 Cypress Creek Refuge dedication event attended by 500 people on May 18.
- Cache River Watershed designated a Bioserve by The Nature Conservancy.
- Ducks Unlimited developed the Frank Bellrose Waterfowl Reserve.
- 1994 Cache River - Cypress Creek Wetlands was designated a wetlands of international importance - especially for waterfowl - under the Ramsar Convention, November 1.
- 1996 Cache River - Cypress Creek Ramsar Site and 25th Convention Celebration was held May 4.

Cypress Creek Refuge has a staff of six with 13,000 acres acquired. Cache River State Natural Area has a staff of four with 10,500 acres acquired. The Nature Conservancy has a staff of five and currently owns 1,300 acres along the Cache River.

GEOGRAPHIC AND SOCIO-ECONOMIC CONTEXT

The Cache River Basin, at the confluence of the Mississippi and Ohio Rivers, covers portions of Alexander, Johnson, Massac, Pulaski, and Union counties in southernmost Illinois. Topography of the 475,000-acre watershed varies from 280' above mean sea level to 890' above mean sea level. Climate includes warm, humid, summers and cool to cold winters. Average annual precipitation is 45 inches, average snowfall is 10 inches, and frost free days average 230. Temperatures range from -20° F. to 105° F.

SOCIO-ECONOMIC

The counties of Johnson and Pulaski are in the 19th U.S. Congressional District while Union and Alexander Counties are in the 12th U.S. Congressional District. These counties are sparsely populated. The 1990 census was 62,000, with only four cities having more than 1,000 people. The largest city, Anna, has 4,700 people. The area is the most economically depressed in Illinois with unemployment averaging 14% and with 22% of the residents living below the national poverty level.

Agriculture is diversified and includes row cropping, haying, livestock grazing, and fruit and vegetable production. Agriculture is a major element of the landscape but is not a major contributor to personal income within the region. Farm income as a percentage of total personal income has been below six percent for the past 20 years in the region.

Tourism and recreation are industries that appear to be growing in southern Illinois. There are 20+ state and federal outdoor recreational facilities within a 50-mile radius of the Refuge. These other facilities complement the activities that are planned for the Refuge. "Although there appears to be an adequate supply of outdoor recreation areas in the region, the Refuge will offer an attraction and facilities that are not currently available or even planned." The Refuge will draw visitors interested in the unique natural features of the Cache River and the environmental educational opportunities provided by the Wetlands Center.

EDUCATIONAL INSTITUTIONS

Shawnee Community College, which has an enrollment of 1,800 students, is located adjacent to the Refuge. Southern Illinois University - Carbondale, with 20,000 students, is 40 miles northwest of the Refuge. Century School is surrounded by the Refuge delineated boundary. Other schools in the vicinity include Anna-Jonesboro, #5 Community School, Cypress, Dongola, Vienna, Egyptian, Meridian, Bennett, Emerson and Cairo. The Regional Office of Education and JAMP Special Services offices are also located near the Refuge. Touch of Nature, a residential environmental education facility is located 30 miles to the northwest and is a part of Southern Illinois University. Facilities and access for environmental educational opportunities on the Refuge are currently very limited.

2. THE PLANNING PROCESS

Cypress Creek NWR
Comprehensive Management Plan



CHAPTER 2 - THE PLANNING PROCESS

Given the complexities of the planning and environmental issues associated with this project, it was critical that the planning process be coordinated with federal, state and local agencies and with local organizations that have demonstrated a common interest in the Refuge. Close coordination was also essential from the perspective that the project is beyond the capabilities of any single entity and, as such, the formation of partnerships was and remains an important component of this body of work.

Coordination also involved participation by the local communities. Opportunities for participation in the planning process were available in the following formats:

PLANNING TEAM MEMBERS

Approximately 20 people were asked to serve as Planning Team Members and to help shape the management strategy for the Refuge for the next 15 years. This group met three times to review the progress of the plan and to offer recommendations. Members included staff from The Nature Conservancy, Illinois Department of Natural Resources, Citizens Committee to Save the Cache River, Touch of Nature Environmental Center, Natural Resource Conservation Service, Illinois Forest Resource Center, a local farmer, Illinois Nature Preserves Commission, a graduate student from Southern Illinois University, and representatives of the U. S. Fish and Wildlife Service from both the regional office and the Refuge.

It is particularly noteworthy that planning team members participated in a two-day planning workshop designed to discuss and examine future alternatives. Much of the workshop focused on the appropriateness of various uses and the intensity or level of activity at which they should be provided. This two-day event was a very useful technique to evaluate development and management options and to ultimately achieve consensus on the restoration and public use plans outlined in this document.

PUBLIC INVOLVEMENT

Broad public involvement was provided through the use of focus group discussions and open public meetings. Each are described in the following text.

FOCUS GROUP SESSIONS

On December 4 and 5, 1995, five focus group sessions were held at the Refuge with individuals present representing the interests of hunters, recreationists, educators, farmers and proponents of tourism and economic development. Of the 55 people invited to participate in these sessions, 28 attended and voiced their opinions. Major issues raised include:

- ❖ Concern that private sector hunt clubs would go out of business as a result of the Service's policies related to hunting.
- ❖ Limited access points make hunting on the Refuge difficult.
- ❖ Appropriate steps must be taken to ensure the compatibility of various activities proposed for the Refuge.
- ❖ Boat and motor sizes should be controlled.
- ❖ Special areas should be designated for outdoor education activities and appropriate facilities should be provided.
- ❖ Increased wildlife populations on the Refuge may create problems for local farmers.
- ❖ Information about the Refuge needs to be readily available to the public.

PUBLIC MEETING

A public meeting was held December 4, 1995 at Shawnee Community College to solicit comments and to provide answers to questions regarding the Refuge and its short and long range role in the community. This meeting was advertised in local newspapers, and flyers were placed on public buildings throughout the area. Approxi-

mately 20 people attended the meeting (not including Fish and Wildlife Service staff or consultants), and some took time to complete questionnaires that were made available for those who preferred to respond in that manner.

The following newspapers were provided news releases of the event:

- ❖ Marion Daily Republican
- ❖ Dongola Tri-County Record
- ❖ Goreville Gazette
- ❖ Southern Illinoisan
- ❖ Paducah Sun
- ❖ Anna Gazette/The Pub
- ❖ Cairo Citizen
- ❖ Metropolis Planet/
Southern Scene
- ❖ Pulaski Enterprise
- ❖ Vienna Times

***PUBLIC REVIEW OF PRELIMINARY DRAFT PLAN
(JUNE 14 - JULY 15)***

A preliminary Draft of the Comprehensive Management Plan was distributed to the Planning Team members and to the Regional Fish and Wildlife Service office, and copies were placed in local libraries. Most of the comments received have been integrated into this revised version of the Plan. A summary of public comments can be found in Appendix A, Public Comments. The major concerns included:

- ❖ A desire to close half of the Refuge to hunting
- ❖ Opposition to farming and pesticide use on the Refuge
- ❖ Support for the Wetlands Center
- ❖ Recommendation to remove County road closure proposals from the Plan
- ❖ Support for hunting
- ❖ Concerns regarding farming program policy and direction
- ❖ Concerns regarding Big Creek flood events and siltation into Buttonland Swamp

*PUBLIC REVIEW OF FINAL DRAFT PLAN
(OCTOBER 28)*

A final Draft of the Comprehensive Management Plan was distributed to the Planning Team members, Regional Fish and Wildlife Service office, elected officials, and local Farm Bureau offices. Copies were made available at the Refuge office and local libraries. A public meeting was held October 28 to discuss the Plan and receive comment; 39 people attended. In addition, written comment was received through November 15 and 13 responses were received. Again, most of the comments received were integrated into the Plan. A summary of all the public comments can be found in Appendix A, Public Comments.

PLANNING ISSUES

As with any planning process, issue identification is critical to understanding the intricacies of an overall project. Planning has been underway within the Cache River Watershed through the efforts of the Cache River Watershed Resource Planning Committee and the Corps of Engineers. The Cache River Watershed Resource Plan was completed in 1995. The Watershed Plan identifies nine resource concerns and presents possible solutions. The Corps of Engineers is conducting a hydrological feasibility study of the Cache River, concentrating on the Cache River State Natural Area. These planning efforts have helped provide a better understanding of changes and existing challenges within the watershed.

The above studies were taken into consideration when the planning team assembled at the Refuge for two days to further discuss and identify major issues associated with the Refuge and the Cache River Watershed. This process, by considering all issues, will allow for the development of a plan that responds to resource concerns. Issues identified in the planning process and strategies to resolve these issues are outlined under Goals and Objectives - Chapter IV.

HABITAT LOSS AND FRAGMENTATION

The fragmentation and loss of habitat have been profound in and around the Refuge. The last sightings of bear and elk were reported in the late 1850s as habitat declined and hunters gained access to the area. The timber wolf was gone by 1920. Today, forest interior birds are of special concern. Their populations are down and reproductive success in the watershed is poor. Fragmented habitats may be "ecological traps" for breeding birds because they harbor high populations of cowbirds and



nest predators. Use by migrating ducks, particularly mallards, has declined dramatically from what it was historically as a result of the loss of forested wetlands and small open ponds. Populations of many aquatic species, including salamanders, reptiles and game fish, have also declined drastically in the last three decades.

Sedimentation has resulted in a loss of deep water habitat along the Cache River swamps. The existence of Buttonland Swamp is threatened by long term silt accumulation. Siltation occurred most heavily during the land clearing and ditching era, and accumulations of as much as one foot per year were recorded. Today, siltation rates are much reduced but habitat loss is still occurring.

HABITAT RESTORATION

Given the complex environmental history of the Refuge, it is a monumental task within limited budgets to restore large areas of altered vegetation and hydrology. The Refuge alone cannot solve the complex problems of restoring an ecosystem. Only through active coalitions of land management agencies and organizations backed by adequate research and financial resources can the Service and its partners restore the ecological values of the Refuge.

WATERSHED ISSUES

The Refuge represents less than 8% of the total area covered by the Cache River Watershed. The success of Refuge restoration efforts is highly dependent upon the environmental practices that are carried out in the watershed. Sub-issues that are of concern throughout the watershed are: water quality, erosion and sedimentation, drainage, and incompatible development and land use.

COORDINATION OF ACTIVITIES AND PROJECTS

Given all of the environmental issues and problems that exist, both within the Refuge and the watershed as a whole, it is critical that they be addressed in a coordinated fashion. For example, water quality within the Refuge will not be substantially improved without some measures being taken throughout the watershed to control stream bank erosion, agricultural runoff, and sedimentation. Therefore, watershed planning within the Refuge, without a coordinated plan of attack, will have limited value.

ADEQUATE STAFF AND FUNDING TO MANAGE THE REFUGE

Managing the Refuge requires providing staff and capital resources to effectively carry out and control the many activities within the Refuge. For some local residents, this is a particularly important issue. For example, concern has been expressed that budgetary cuts may leave the Refuge staff ill-equipped to manage a 35,000-acre tract of land. The federal budget crisis of 1996 rather dramatically illustrated this point.

LOCAL CITIZEN SUPPORT AND EDUCATION

A major component related to the success of the Cypress Creek Refuge is and will remain the support of local citizens and elected officials. Communication, education and outreach are key elements in developing an environmentally enlightened and supportive constituency.

COMPATIBLE PUBLIC USE

The impacts of increased tourism, outdoor recreation and related economic activities could have undesirable effects on area wildlife. Compatible use of the Refuge by the public is a major concern of many of the groups involved. Special consideration will be given to locating public use, access, and facilities near ecologically significant sites. Monitoring impacts of public use should be a priority.

ONGOING RESOURCE CHALLENGES - COORDINATION OF ACTIVITIES

Many resource issues within the Plan have been addressed with specific strategies. However, for other resource concerns specific strategies or resolutions could not be identified at this time. These concerns or challenges will require ongoing attention from the Refuge, as well as, the Joint Venture Partners. It is recognized that future resolutions to these issues are critical to the success and overall health of the Cache River Wetlands. Future strategies and actions are dependent upon data collection and monitoring results, involvement from other agencies and organizations, ongoing research, funding, and land acquisition. Ongoing resource challenges within the Cache River Wetlands include:

Hydrology - The St. Louis District Corps of Engineers is currently conducting a hydrological and habitat restoration study of the Cache River (Alexander/Pulaski Counties, Illinois Feasibility Study). The water level and the affects of flooding have been a significant point of concern for land owners for over 100 years. The regulation and drainage of the Cache River has greatly affected the plant and animal species and indeed the entire ecosystem of the Cache River Watershed.

Post Creek Cutoff - This 1915 dug ditch causes eastward flow of the Lower Cache River and unnaturally drains swamps during dry periods. Measures to reduce this unnatural flow and to put some water back into the Lower Cache from the Upper Cache River during dry periods would be desirable. This is part of the Corps of Engineers study.

Big Creek Sedimentation - Heavy precipitation results in high silt laden flows of water down Big Creek and into the Cache River floodplain. Alternatives to handle the silt laden flood water and reduce the impact upon Buttonland Swamp and the Frank Bellrose Waterfowl Reserve are being studied as part of the Corps of Engineers study.

Weed Control - As agricultural lands are converted from farm land to forested areas, weed growth will inevitably appear prior to full canopy establishment. This can cause problems with adjacent agricultural lands when weed growth such as Johnson grass appears. Weed control is considered an established ongoing program that is not affected by this plan.

Mosquitos - The threat of disease to humans from insects as a result of this Plan's recommendations is currently not known. Discussions with health authorities and Environmental Protection Agency personnel need to take place to assess this situation and formulate a strategy for control of any disease outbreaks before they occur.

The preceding discussion of planning issues is intended to set the stage for the remaining sections of this document. It provides broad statements or messages regarding the general views and attitudes of the Planning Team relative to each issue.

RESOURCE MATERIALS

The planning effort that was organized for this project included the review of over 20 separate reports and numerous private publications dealing with the Cache River Watershed, the Cypress Creek Wetlands, and/or the Refuge. A bibliography containing these materials is provided at the end of this document. In addition, the planning process followed U. S. Fish and Wildlife Refuge Management guidelines, Part 602, FW 1-1 FWM 201, Writing Refuge Management Goals and Objectives; and a handbook (602 FW 1-3) dated March 1996.

3. RESOURCE DESCRIPTION

Cypress Creek NWR
Comprehensive Management Plan



CHAPTER 3 - RESOURCE DESCRIPTION

In the early 1800's, government-sponsored land surveyors were commissioned to "quadrant off" new land. Their tasks included dividing land into sections and marking their corners. In the process, these men were directed to describe the land they saw, including terrain, vegetation, and wildlife. Their records of the Cache River area tell a much different story than today's Cypress Creek National Wildlife Refuge. Thousands of acres of sometimes impenetrable swamps, vast stands of timber, and unique wildlife species abounded in the area. While remnants of that thriving ecosystem exist today, most of it has fallen to axes, saws, plows, and shovels.

WILDLIFE RESOURCE

The Cache River and its associated wetlands (mostly bottomland forest, shrub cypress swamp) are well known for their diversity and outstanding wildlife values. Waterfowl, shorebirds, wading birds, raptors, songbirds, reptiles, amphibians, furbearers and other mammals utilize the area.

Threatened and Endangered Species: Seven federally listed species are known to occur within or near the boundary of the Refuge. Listed species include: pink mucket pearly mussel, gray bat, Indiana bat, orange footed pearly mussel, interior least tern, pallid sturgeon, and the bald eagle. In addition to federally listed species, nearly 102 state listed species exist in or near the Refuge.

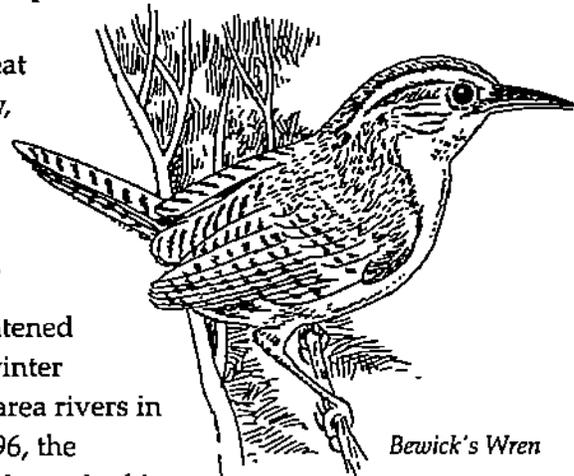
Waterfowl - A Trust Species: Even though this area has undergone intense degradation, the small amount of habitat left still supports a diverse wildlife community. The area has traditionally been important to waterfowl and other migratory birds. Due to its strategic location in the Mississippi flyway, the area continues to provide excellent habitat for most birds using the flyway, especially during the fall and spring migration periods. Peak migrational counts number in the hundreds of thousands and include geese, ducks, shorebirds,

wading birds, and countless other avian species. Recent harvest analysis indicates that the Cache River Wetlands is among the best in the State for the propagation of wood ducks. Restoration and management of wetlands within the proposed boundaries of the Refuge would improve existing habitat and create additional resources for dabbling ducks. It is expected that management activities will result in an estimated increase to a peak of 100,000 ducks annually using the Refuge.

Other Avian Species: A wide array of other avian species occur because of the diversity of habitats within or near the purchase boundary. To date, 251 species have been identified in the Cache River basin. Many species of birds are on the Illinois' endangered, threatened, or species of special concern lists. Among the species included on these lists are the barn owl, Cooper's hawk, red-shouldered hawk, great egret, Mississippi kite, Bachman's sparrow, Bewick's wren, Swainson's warbler, and loggerhead shrike. Other species present include wild turkey, northern bobwhite, mourning dove, and American woodcock.

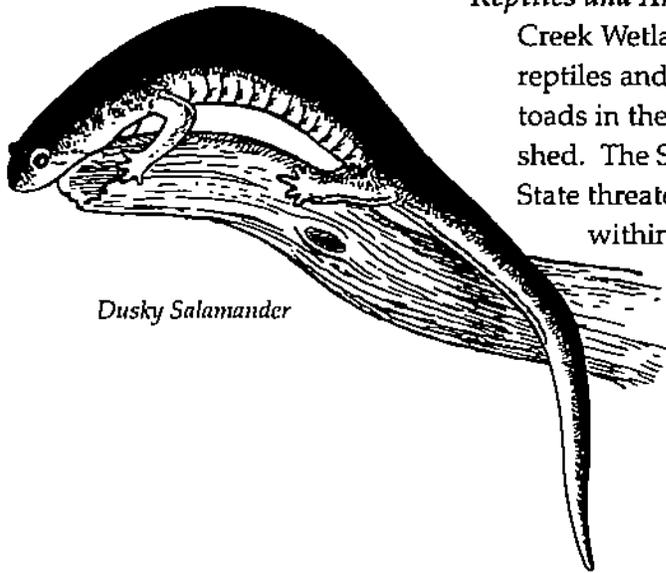
The bald eagle, a Federally listed threatened species, is a fairly common migrant and winter resident along the Mississippi, Ohio, and area rivers in southern Illinois. During the spring of 1996, the Refuge had an active bald eagle nest which resulted in the fledgling of one eagle. This was the first occurrence of eagle nesting in the Refuge area since 1909.

Neotropical migrant bird sightings indicate that the Cache River - Cypress Creek Wetlands area may contain the most diverse assemblage of such species remaining in the Midwest. More rigorous studies are needed to confirm which species are breeding here and how successfully they are reproducing.



Bewick's Wren

Mammals: The Refuge area contains 47 known species of mammals. The gray bat and the Indiana bat are on the list of Federally endangered species. The gray bat inhabits limestone karst areas in southern Illinois. The only known cave inhabited by the gray bat in Illinois is 40 miles to the east of the Refuge. However, the Department of Natural Resources has trapped gray bats at a site near Karnak, Illinois, which is within the Cache River and Cypress Creek Wetlands area. The Indiana bat winters in caves and abandoned mine tunnels. Females have their young in hollow trees or beneath the bark of trees while males summer in caves or wander in small groups. Indiana bats forage for food over forested areas or among trees along streams or river floodplain. The Refuge contains excellent habitat for the Indiana bat. Mammals considered to be resident species include an abundance of white-tailed deer, squirrel, and rabbits. Other mammals include bobcat, otter, and swamp rabbit.



Dusky Salamander

Reptiles and Amphibians: The Cache River and Cypress Creek Wetlands area contains 54 known species of reptiles and amphibians. Of the 20 species of frogs and toads in the state, 18 have been recorded in the watershed. The State endangered dusky salamander and the State threatened Strecker's chorus frog are found within Refuge boundaries. Until 1986, the eastern ribbon snake had not been seen in the state of Illinois for over 100 years. This state endangered species was rediscovered within the Cache River Wetlands, near Heron Pond. The yellow-bellied watersnake and timber rattlesnake are also found in the area.

MAJOR NATURAL COMMUNITIES OF THE CACHE

The Refuge is divided into five natural communities: 1) upland forests; 2) marsh or herbaceous wetlands; 3) swamps; 4) floodplain woods and 5) lakes or deep water habitat. These categories (which are illustrated on the following page) are representative of the 35 community types found within the Cache River Basin. Remnants of these community types exist today and serve as the model for future long range restoration of the Refuge.

The major natural communities within the Refuge are described below and highlight species that are threatened or endangered; the Cache River Wetlands provides a safe haven for one-third of all state threatened and endangered species. In addition, agriculture is noted in this section; nearly 60% of land within the delineated Refuge purchase boundaries is under agricultural production. Agriculture may not be a natural community but it does provide interim habitat for some species of wildlife.

UPLAND FORESTS

These areas are generally free of flooding and consist mostly of white and black oak, shagbark hickory, tuliptree, and cherrybark oak. The soils in the upland forested areas of the Refuge are typically thin and underlain with limestone or sandstone. These areas are historically the primary places of human habitation from prehistoric cultures to modern times. Agricultural practices on upland areas often result in highly erodible conditions which are difficult to restore once damaged. Wildlife found in upland forests range from big game species such as white-tailed deer to song birds, raccoon and many fur bearing animals.

Examples of state threatened or endangered species which require upland forest habitat include:

- ❖ bobcat (*Lynx rufus*)
- ❖ golden mouse (*Ochrotomys nuttalli*)
- ❖ Coopers hawk (*Accipiter cooperii*)

Cypress Creek National Wildlife Refuge

Managing the Resources

U.S. Fish and Wildlife Service will acquire, protect, and restore major natural community types within the delineated Refuge boundary. Plans also call for protection and management of unique features and wildlife.

Major Community Types:

Upland Forests: Often occurring on thin, highly erodible soils. Long range plans call for protection and reforestation of more than 6,000 acres of upland forested land.

Herbaceous Wetlands: Approximately 900 acres of herbaceous dominated wetlands exist or are proposed for restoration in the long range plan.

Swamps: These low lying areas are covered with water several months of the year. Acquisition and restoration of more than 3,200 acres are planned.

Deep Water Habitat: Protection of key open water areas is important for fish and other aquatic species. Long range plans call for acquisition and protection of approximately 200 acres of critical remaining open water habitat.

Floodplain Woods: Historically the largest natural community type. Acquisition and reforestation of nearly 24,700 acres is ultimately planned for the Refuge.

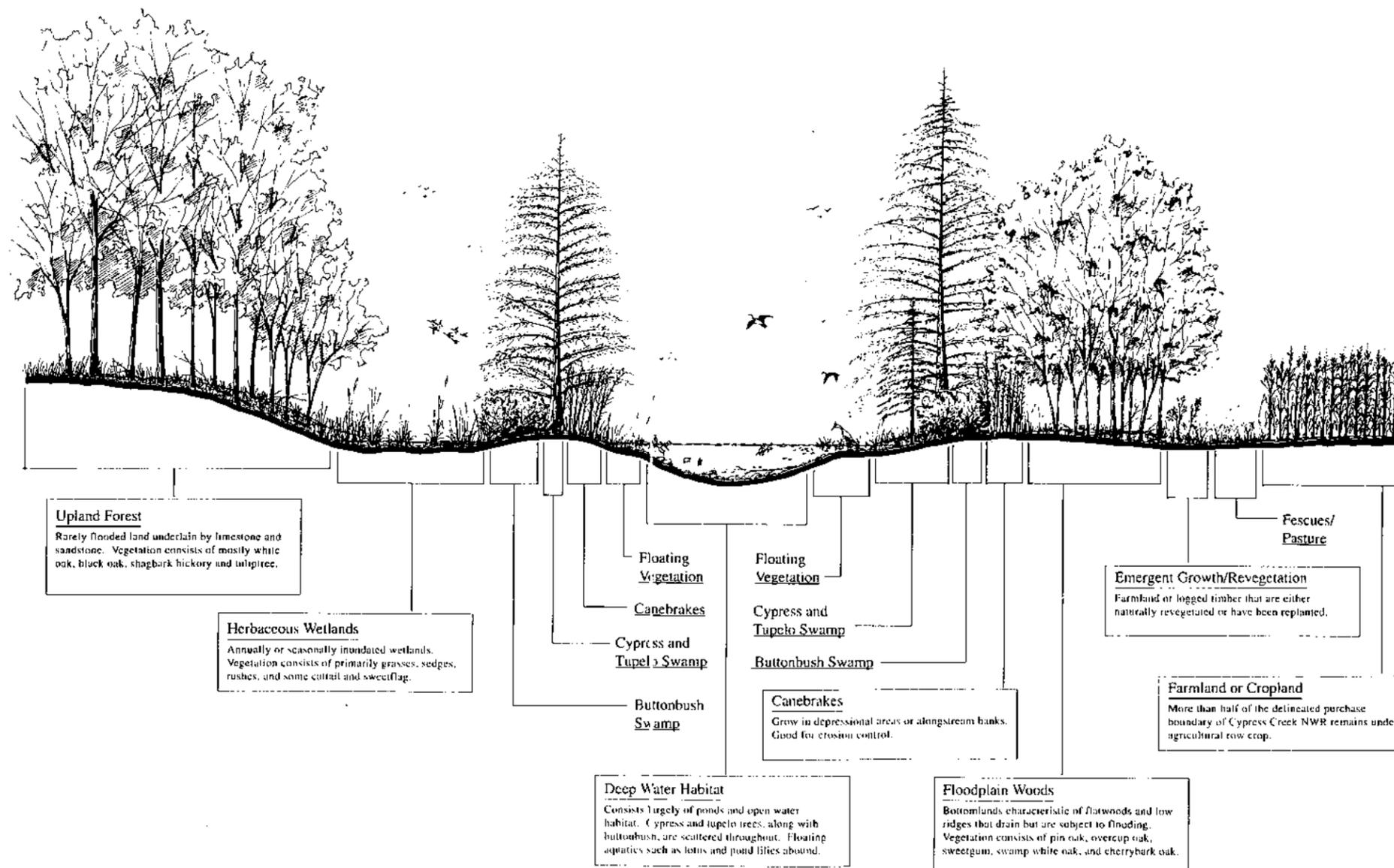
Other Unique Features:

Fresh Water Springs: Restoration and maintenance of eleven fresh water springs will help support water levels in the Cache River during drought as well as provide micronutrients to aquatic wildlife and plants.

Canebrakes: Six canebrake restorations are planned to provide erosion protection as well as unique habitat for species such as the swamp rabbit, canebrake rattlesnake, and the endangered Swainson's Warbler.

Farmland or Cropland: Much of the refuge is currently cultivated for agricultural production. Though most of the land will be converted to the major plant community types, several hundred acres will remain in production for wildlife use.

The Cache River bisects Cypress Creek NWR. This profile of the Cache River floodplain shows the typical relationship of the natural communities and unique features.



Natural Community Types Typical for Cache River Wetlands



Golden Mouse

The upland forests of Cypress Creek are also critical habitat for a myriad of songbirds including neotropical songbird species that rely on the dense hardwood forests of southern Illinois for summer breeding and nesting. Timber harvesting and agricultural activities have historically contributed to forest fragmentation which, in turn, has decimated songbird species, not only at the Refuge, but across Illinois and the Midwest. A major contributor to this is cowbird parasitism which has reached epidemic proportions in southern Illinois. Generally, the forest fragmentation makes it easier for the female cowbird to find a host nest. The host is often a neotropical songbird which raises the cowbird chick as its own. The cowbird chick repays the favor by evicting the host's real young which exacerbates the decline of the neotropical migrant songbird population.

HERBACEOUS WETLANDS

These areas are annually or seasonally inundated wetlands. They consist primarily of grasses, sedges, rushes, and cattails. These lands, with their deep rich soils, have been drained and converted to cropland. They provide ideal migrational habitat for waterfowl, shorebirds and wading birds.

Herbaceous wetlands provide critical habitat for wading birds. They also serve as unique hibernacular habitat for dozens of amphibious species. To help offset the loss of wetlands, nearly 400 acres of the Refuge have been developed into moist soil units. These systems help restore original functions and productivity.

Examples of state threatened or endangered species which utilize herbaceous wetlands habitat include:

- ❖ black crowned night heron (*Nycticorax nycticorax*)
- ❖ great egret (*Casmerodius albus*)
- ❖ rice rat (*Oryzomys palustris*)
- ❖ little blue heron (*Egretta caerulea*)
- ❖ river otter (*Lutra canadensis*)

SWAMPS

These are low-lying areas which were largely formed when the Ohio River was diverted to its present location. The flat terrain and lack of drainage created a huge wetland area. Today it totals about 45,000 acres in the Cache River watershed area.

Swamps are covered with water all, or at least several months of the year. The vegetation consists mostly of a canopy of cypress and tupelo with a mixture of pumpkin ash, swamp cottonwood, overcup oak, water locust, and water hickory. The understory is largely swamp privet and hawthorn.

Swamps provide key habitat for numerous species of aquatic birds, mammalian predators, fish and amphibians, and reptiles. The swamps embody the real image and spirit of the Cypress Creek National Wildlife Refuge. The finest example of what actually constitutes a swamp is Buttonland Swamp. Buttonland Swamp is located within the Refuge acquisition boundary and is managed by the Illinois Department of Natural Resources - Cache River State Natural Area. This unique area consists of 1,250 acres of wet forest and swamp that extends five miles along the Lower Cache River. It was designated as a National Landmark by the National Park Service in 1980. Much of the tract is dominated by water tupelo and bald cypress trees. It is an outstanding remnant of the swampy floodplain forest and open swamp that once covered an extensive area at the junction of the Mississippi and Ohio River valleys. The tract lies at the northern edge of the range for many southern species of plants and animals. It is a perfect place to see songbirds, waterfowl, wading birds, carpets of duckweed, native reptiles and amphibians, and an occasional river otter. It includes many large old trees; one national champion and five state champion trees.

Swamp habitat has been greatly degraded as a result of silt accumulation. Siltation occurred at the rate of 12' annually in the 1970's and continues today at a rate of approximately one-half inch annually. As swamp water depths decrease, vegetation such as buttonbush becomes dominant.

Since swamps could not be easily drained and farmed, they harbor cypress trees; the oldest living things east of the Mississippi River. They also provide excellent breeding habitat for wood ducks and other waterfowl.

State threatened or endangered species found in the swamp include:

- ❖ black crowned night heron (*Nycticorax nycticorax*)
- ❖ great egret (*Casmerodis albus*)
- ❖ river otter (*Lutra canadensis*)
- ❖ bobcat (*Lynx rufus*)
- ❖ spotted sunfish (*Lepomis punctatus*)

FLOODPLAIN WOODS

This is that assemblage of forested community types occurring on alluvial lands throughout the Cache Valley. A great diversity of species and tree dominants is found here on a variety of soils formed in recent sediments which border the river and its major tributaries. The land forms, all of which are subject to overflow flooding, include ridges, swales and flats. Topographic features include natural levees, river bars, sloughs, alluvial fans, and terraces. The bottomland hardwood forest represents the transition zone between permanent water areas and uplands. Soils vary from dry-mesic (well-drained) through hydric (very poorly drained) and are composed of various mixtures of sands, silts, and clays. The dominant natural class occurring here in presettlement times was forest. The natural community types include southern flatwoods, wet floodplain forest, wet-mesic floodplain forest, and mesic floodplain forest. Oaks are dominant and abundant including cherrybark oak and Shumard oak.

The kingnut and bitternut hickories are characteristic and widespread but are not as abundant as the oaks. Locally, other species are abundant, including sweetgum, green ash, and red maple. Some of the flats with hardpan soils are characterized by post oak and swamp white oak. The elms (American and red) were once much more common.

The floodplain woods comprises the largest single natural community type that provided habitat for the species of migratory birds and wildlife which made the Cache River area attractive to Native Americans and the early settlers. It was also in the floodplain woods where the great timber trees grew that the logging companies sought during the 1800's and early 1900's. Today, only remnants can be found of the once great floodplain woods. They fell to the axe and saw and to the ever-increasing loads of sediment which built up over the forest root system. They now occur only along the Cache River and its tributaries. With the exception of parts of Hogue Woods and Limekiln Slough (and Section 8 Woods which is outside the Refuge), the large and contiguous old growth tracts are gone. Floodplain woods provide critical habitat for most of the Refuge's wildlife. It is particularly important in that mast trees provide food for many species, especially birds and mammals.

Federally endangered species which require the habitat of the floodplain woods are:

- ❖ gray bat (*Myotis grisescens*)
- ❖ Indiana bat (*Myotis sodalis*)

Examples of state threatened or endangered species which require the habitat of the floodplain woods are:

- ❖ golden mouse (*Ochrotomys nuttalli*)
- ❖ red shouldered hawk (*Buteo lineatus*)
- ❖ Mississippi kite (*Ictinia mississippiensis*)

DEEPWATER HABITAT

Deepwater habitat are those areas of year-round open water. They are mostly open water areas with edges of buttonbush, and floating aquatics such as pond lilies, lotus, and duckweed. Deepwater habitat was an important characteristic of Buttonland Swamp and other reaches of the Cache River until the 1970's. Practically all the deeper water habitat has been reduced to a depth of less than three feet through siltation. Today there are only about 100 acres of open water habitat that remain in the form of "lakes" and "ponds." The remaining deeper areas are ditches, sloughs, and the main section of the Cache River. Deepwater habitat was an important characteristic of Buttonland Swamp and other reaches of the Cache River until the 1970's. Practically all the deeper water habitat has been reduced to a depth less than three feet through siltation.

Sedimentation has significantly diminished the deepwater areas which once supported game fish, rough fish, and other aquatic wildlife which require deep water for hibernating or overwintering. These areas also function as night roosting sites for many species of water birds.

Examples of state threatened or endangered species:

- ❖ spotted sunfish (*Lepomis punctatus*)
- ❖ least brook lamprey (*Lampetra aepyptera*)
- ❖ Cypress minnow (*Hybognathus hayi*)

RARE NATURAL COMMUNITY TYPES

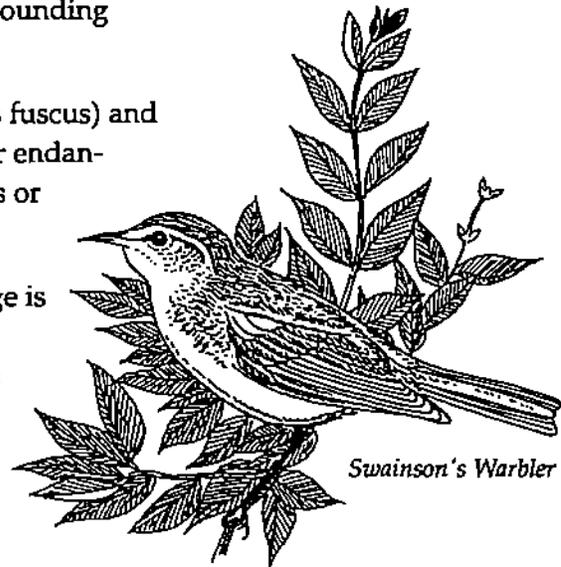
There are several other rare natural community types scattered throughout the Refuge. Examples of some of the most rare and high quality community types include:

Springs or Seeps - One of the features of the Refuge is the presence of freshwater springs or seeps. These interesting features provide year-round sources of clear, clean water to the Cache River and some of its tributaries. They provided drinking water to the early settlers and today are a source of wildlife habitat.

Many of the existing springs or seeps have been silted-in due to sedimentation and deforestation. These require reopening and the areas surrounding them should be protected.

The dusky salamander (*Desmognathus fuscus*) and cypress minnow are the State threatened or endangered species that seek habitat near springs or seeps.

Canebrakes - Another feature within the Refuge is the canebrakes. Giant cane (*Arundinaria gigantea*) is indigenous to southern Illinois and the only species of cane in Illinois. It provides two major habitat benefits. It serves as an aggressive bank stabilization plant that helps control erosion and provides habitat for state endangered species as well as neotropical migrantsongbirds. The Swainsons warbler (*Limnothlypis swainsonii*) is the only State threatened or endangered species whose habitat is known to require the canebrakes.



Existing large canebrakes within the Refuge boundaries are limited to some areas of the Limekiln Springs Slough and the southernmost tip of the Refuge. Cane regrowth can be seen in areas that were once farmed or were in pasture, such as the Hogue Woods reforested tracts. Rhizomes buried for years which are now allowed to grow are beginning to revegetate the wet seeps of the tract. The swamp rabbit, although not a listed species, is indeed rare in Illinois and nests and feeds on cane.

Barrens - The barrens is a type of savanna. It has an overstory of trees, usually hardwoods with understory of grass or other shade tolerant herbaceous layers.

Limestone Glade - These are southern prairie types and thin soils over limestone bedrock, usually on upland slopes.

Southern Flatwoods - A unique, hardwood forest type that is associated with a particular soil condition, generally with a hardpan. Trees are stressed by seasonally wet and dry conditions during the year.

AGRICULTURE

Over half the land within the proposed Refuge purchase boundary remains under agricultural production. Much land was cleared of timber in the Cache River basin and then converted to agriculture. Past agricultural practices impacted the Refuge perhaps more than any other use of the land. Agricultural production contributed to cropland erosion and sedimentation which has further increased loss of wetlands and wildlife habitat. In recent years, cropland erosion has dropped dramatically due to conservation programs within the watershed. An average of ten and one-half tons of soil per acre of land in the Upper Cache River Basin and nearly 16 tons of soil per acre in the Lower Cache River Basin are lost annually due to cultivation of land classified as highly erodible.

Today, land owned by the Service and Joint Venture partners is evaluated when acquired and most often taken out of agricultural production. Some tracts of land are maintained in agriculture until an area can be restored with native vegetation. When the Refuge was established, a commitment was made to maintain 10% of the land in agriculture within the Refuge purchase boundary. This Comprehensive Management Plan supports that commitment. Some tracts of land that have existing cover such as fescue grasses are low priority for restoration because minimal soil erosion is occurring. Other tracts acquired on highly erodible lands in row crop production are priorities for reforestation. Also, some lands are being maintained in agriculture to improve fertility and to control noxious weeds.

CULTURAL RESOURCES

In 1995, a comprehensive cultural resource overview for Cypress Creek National Wildlife Refuge was developed to provide information on the locations of known and undiscovered sites, as well as criteria to evaluate these resources. The study included the proposed boundary and a five mile radius around the perimeter of the Refuge. This cultural resources study is the first step in an overall inventory process. Under Section 106 of the National Historic Preservation Act (NHPA), archeological and historical sites and other cultural resources in the Refuge must be identified and assessed prior to disturbance or destruction.

Based on a synthesis of cultural resource locational data, this overview provides a framework for predicting the frequency and location of undiscovered cultural resources in the Refuge. The report addresses the importance of the various cultural resources found in terms of their current scientific, religious, and symbolic values. The importance of these resources is discussed in light of Refuge management objectives and concerns, and recommendations regarding cultural resource management issues are provided in the report. In this regard, it is a necessary reference component of the Plan.

4. REFUGE GOALS AND OBJECTIVES

Cypress Creek NWR
Comprehensive Management Plan



CHAPTER 4 - REFUGE GOALS AND OBJECTIVES

This section presents long-term guidance for the Refuge in the form of goals, objectives and strategies. Refuge goals are qualitative statements that define what the Refuge must be to satisfy the Refuge purpose, legal mandates, and the needs of citizens and agencies having a vital interest in what and how the Refuge performs. Objectives provide quantitative benchmarks that indicate progress toward achieving the Refuge purposes and goals. Strategies are specific actions or projects that will lead to the accomplishment of the management objectives.

Cypress Creek National Wildlife Refuge was established June 26, 1990, through an Environmental Assessment, under authority of the Emergency Wetland Resources Act of 1986. The legally described purpose of the Refuge is:

"...the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions..." 16 U.S.C. 3901 (b) 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

Defining this purpose further, the Refuge exists:

"... to protect, restore and manage wetlands and bottomland forest habitats in support of the North American Waterfowl Management Plan; provide resting, nesting, feeding and wintering habitat for waterfowl and other migratory birds; protect endangered and threatened species and their habitats; provide for biodiversity; protect a National Natural Landmark; and increase public opportunities for outdoor recreation and environmental education."

Based upon the guidance provided by the Emergency Wetland Resources Act and the 1990 Environmental Assessment, six goal statements were formulated as part of the Plan. Each goal is supported by a series of specific objectives, strategies and projects that will guide management activities and funding over the next 15 years. The six Refuge goals are:

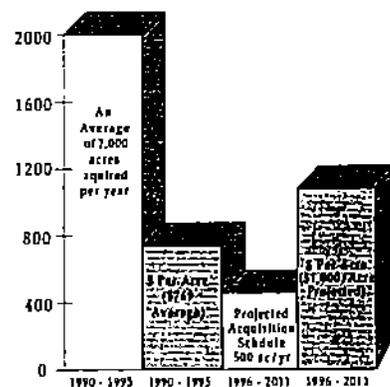
1. *Resource Protection*
2. *Habitat Restoration*
3. *Resource Management*
4. *Dynamic Partnering/Cooperative Action*
5. *Environmental Education, and*
6. *Wildlife Dependent Recreation*

RESOURCE PROTECTION

The Cache River Basin and the Cypress Creek National Wildlife Refuge will be managed to protect federally listed species, state threatened and endangered species and many other resident and migrant wildlife species. The Ramsar designation of the Cache River wetlands clearly demonstrates the true significance of the area and the important role that the Refuge staff and its partners will have in protecting and restoring wetlands to further enhance habitat for waterfowl. The unique natural landscapes and cultural resources require protection. The Service will play an active role in protecting and managing these resources within and, in some cases, beyond the limits of Refuge-owned lands.

GOAL I. RESOURCE PROTECTION

Through continued land acquisition, protect the Refuge to ensure the integrity of the areas' natural and cultural resources and help fulfill the goals of the North American Waterfowl Management Plan.



Acquisition of Land for Cypress Creek

OBJECTIVE A: LAND ACQUISITION

By the year 2011, acquire 7,500 additional acres within the Refuge purchase boundary to protect valuable wetlands and bottomland hardwoods within the middle Mississippi and lower Ohio River area drainage and contribute to efforts of the New Madrid Project initiative.

OBJECTIVE B: PROTECTION OF NATURAL LANDSCAPES

Protect significant natural landscapes and features on the Refuge (i.e. Buttonland Swamp, Hogue Woods).

- ❖ Through land acquisition, purchase property surrounding significant natural areas.
- ❖ Identify priority tracts surrounding significant natural areas and implement restoration procedures to protect and buffer these sites.
- ❖ Identify, along with Joint Venture partners, a means to implement a long-term study to monitor and collect baseline data on water quality throughout the Cache River Wetlands.

OBJECTIVE C: PROTECTION OF CULTURAL RESOURCES

Protect significant cultural resources on the Refuge from inadvertent damage that could occur as a result of Refuge undertakings.

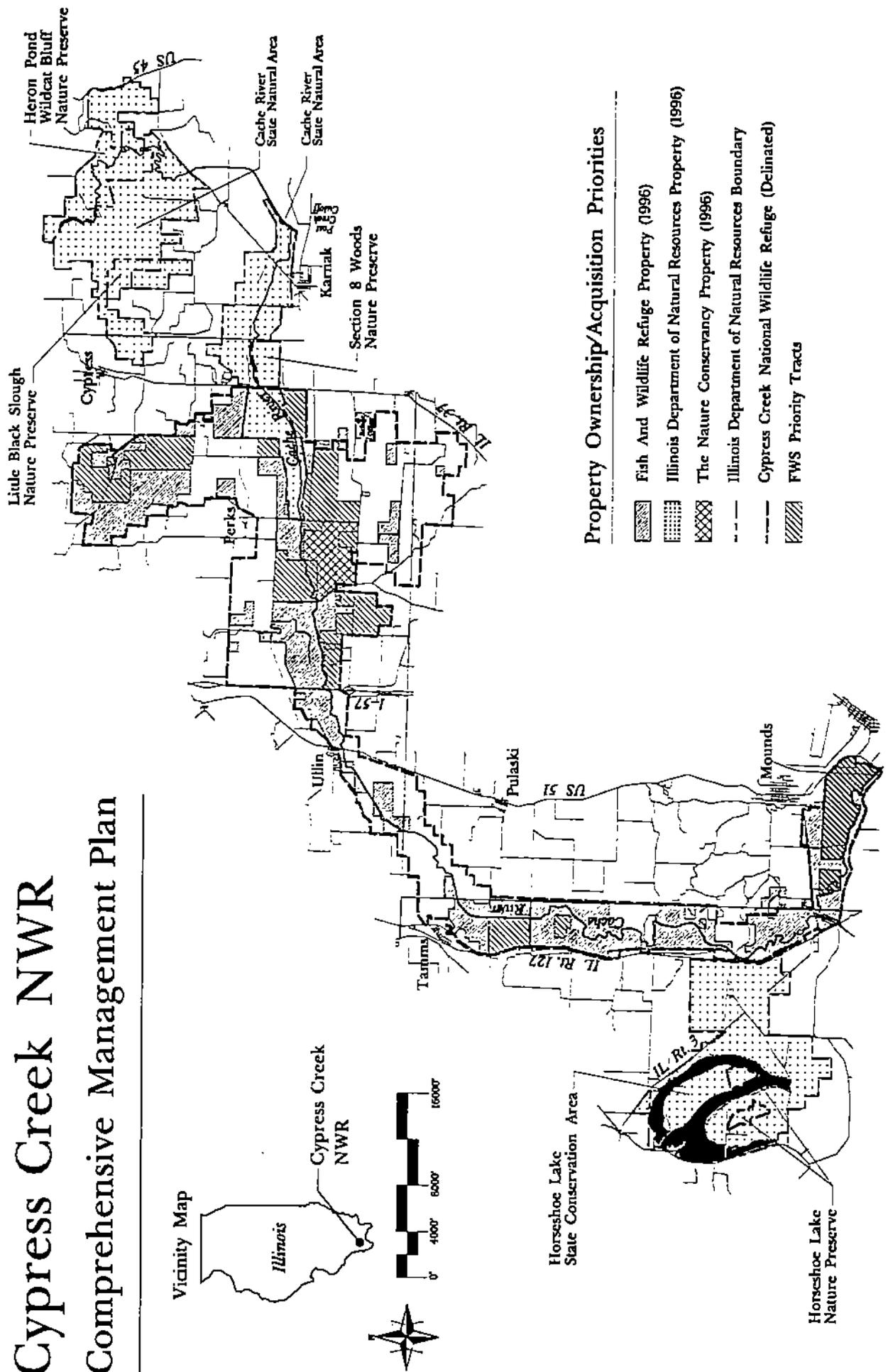
IMPLEMENTATION STRATEGIES FOR OBJECTIVES

I. A, I. B AND I. C

- ❖ Determine priority tracts for acquisition and focus on contacts with willing sellers only.
- ❖ Focus on securing areas of special interest such as cypress/tupelo swamps that are in imminent danger of being destroyed. Secure at least 1000 acres of these areas during the fifteen year period.

- ❖ Through networking or other appropriate media formats, annually inform land owners located both in and around the Refuge of the Service's land acquisition program and the benefits thereof.
- ❖ Work with TNC to assist in acquisition of targeted tracts of land as they become available, especially those identified in the Cache River Bioreserve Strategic Plan. A property ownership map is provided in this section which illustrates, in a general way, the Service's acquisition priorities.
- ❖ Work with Illinois Department of Natural Resources to identify areas that contain Federal or State listed threatened or endangered species and insure that they have a high land acquisition priority.
- ❖ Provide information to the Citizens Committee to Save the Cache River and other Joint Venture partners so they can in turn work with elected officials to secure adequate land acquisition funding.
- ❖ Work with the 1996 Cultural Resource Study and with the State Historic Preservation office to ensure the preservation of important cultural resources.
- ❖ Collect and compile oral history of the Cache River Wetlands to provide first-hand knowledge of how the land was used and has changed over time.
- ❖ Work in support of the Cache River Watershed Resource Plan recommendations.
- ❖ Work to support the Illinois Department of Natural Resources efforts to monitor silt loads and other abiotic factors within Buttonland Swamp and the Cache River.
- ❖ Work, as a Joint Venture partner, with the Corps of Engineers on recommendations to improve and restore hydrologic functions of and habitats along the Cache River.

Cypress Creek NWR Comprehensive Management Plan



HABITAT RESTORATION

The Refuge was created to protect, restore and manage the natural resources of the Cache River and to provide habitat for waterfowl and native wildlife. Within the purchase boundary of the Refuge, there are five major existing natural communities. These areas include upland forests, marsh or herbaceous wetlands, swamps, floodplain woods, and lakes or deepwater habitat. The Refuge is restoring habitat as soon as possible after the purchase of land. Special projects are planned for restoring remnant communities of giant cane and natural springs or seeps. Emphasis is also on wetland restoration and the functions and productivity of these natural communities. This effort may involve manipulation of water regimes to emulate what occurred naturally over a much larger Mississippi River ecosystem.

The results of these activities are illustrated on the Restoration Plan: 1996-2011, on the following page. It is also important to recognize that this Restoration Plan assumes completion of the thirty projects identified in Appendix D of this plan.

GOAL II. HABITAT RESTORATION

Through ecological restoration, re-establish native plant communities throughout the Refuge for wildlife and for educational and recreational opportunities.

By the Year 2011:

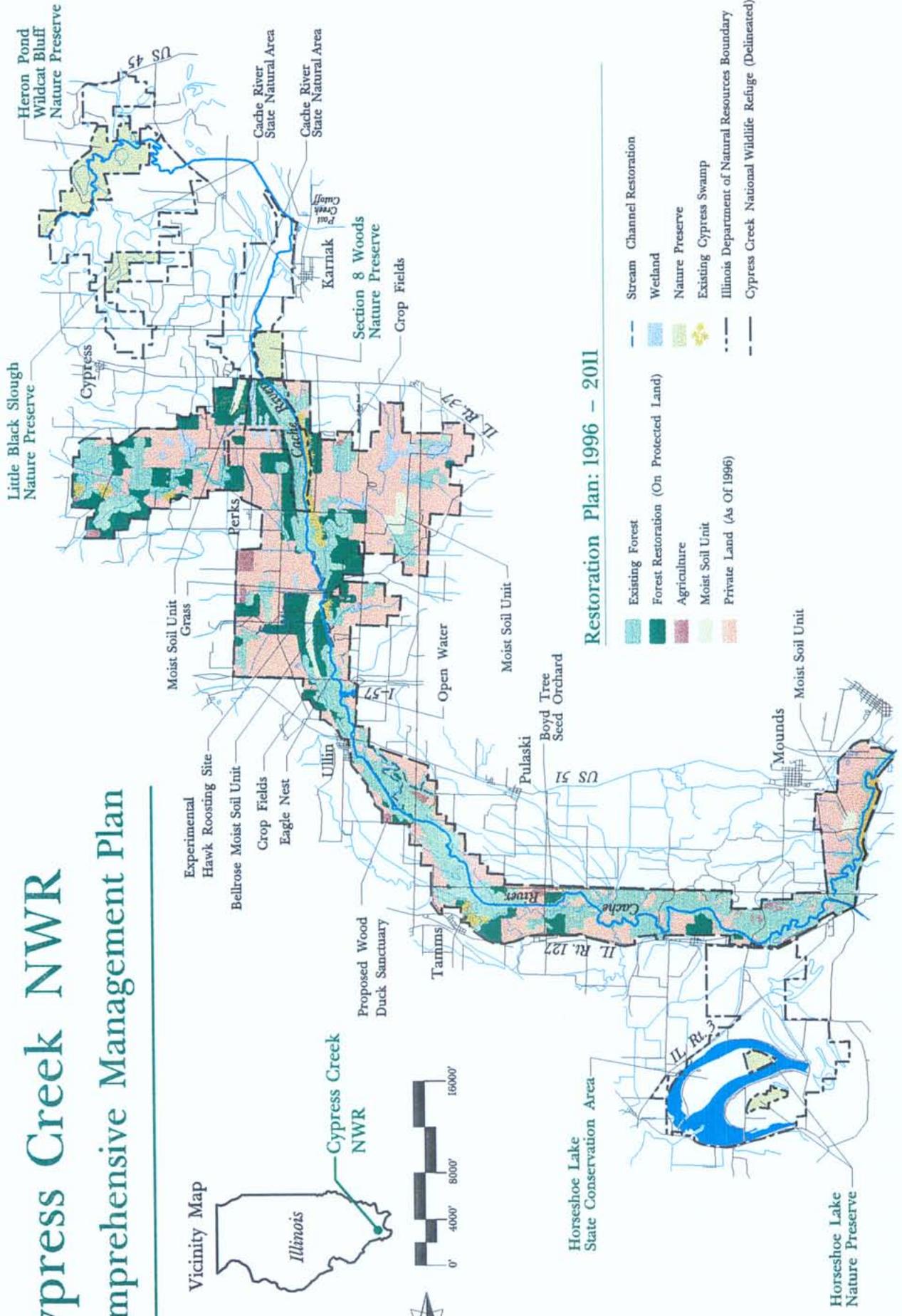
OBJECTIVE A: REFORESTATION

Restore 5,250 acres (350 acres annually) to native hardwoods on both upland and bottomland sites using planting stock indigenous to the area. (Projects A1, B1 and C1)

OBJECTIVE B: NATURAL WETLAND RESTORATION

Restore 1500 acres of Refuge wetlands to provide habitat for waterfowl, wading birds, shorebirds and other resident and migratory wildlife. (Projects A2, B2 and C2)
Restore deepwater habitat through Joint Venture partnership.

Cypress Creek NWR Comprehensive Management Plan



OBJECTIVE C: HERBACEOUS WETLAND AND MOIST SOIL UNITS

Restore 100 acres of herbaceous wetlands and construct 330 acres of additional moist soil units for a Refuge total of 800 acres as proposed in the Biological Concept Plan. (Project B4)

OBJECTIVE D: RESTORATION OF SENSITIVE/UNIQUE NATURAL COMMUNITIES

Restore, as nearly as possible, sensitive or unique areas (100 acres total) such as spring cover and canebrakes, which provide highly specialized habitats for rare and/or sensitive species of plants and animals. Restoration efforts will emphasize the least possible disturbance (Project A3, B 3 and C3).

IMPLEMENTATION STRATEGIES - II.A (REFORESTATION)

- ❖ Create large unbroken tracts of timber to offset the negative impacts of forest fragmentation.
- ❖ Select restoration areas that provide transitional travel zones from lowland to upland habitats.
- ❖ Select restoration sites along the Cache River channel and its major tributaries that provide wooded migrational corridors of at least ½ mile in width.
- ❖ Select restoration areas adjacent to existing bald cypress stands (similar to those at the Bellrose Waterfowl Reserve) that can serve as additional greentree reservoirs for waterfowl and wading birds.
- ❖ Reforest stream banks to reduce erosion and subsequent sedimentation.
- ❖ Select restoration sites that are on or near wetlands restoration sites that will provide additional forested wetlands in future years.

- ❖ Use cooperative farming program to prepare areas for tree plantings by increasing fertility or reducing noxious weeds.
- ❖ Continue operation of the Boyd Seed Orchard to insure future availability of genetically adapted seed stock for production of seedlings that will be used throughout the Refuge during annual plantings.

**IMPLEMENTATION STRATEGIES - II.B
(NATURAL WETLAND RESTORATION)**

- ❖ Revegetate and restore native wetlands at Bellrose that are not part of the moist soil management program.
- ❖ Implement Fredrickson short-term recommendations at Bellrose Waterfowl Reserve.
- ❖ Work with private landowners to restore wetland areas around the proposed visitor center site.
- ❖ Use the 1938 aerial photo series to identify Refuge wetlands for restoration.
- ❖ Emphasize and assign high priority to seasonal wetlands.
- ❖ On Refuge owned lands, reverse small drainage developments that were used to drain wetlands originally.
- ❖ Ensure that at least 5% of wetlands restored meet criteria for deepwater habitat and aquatic birds.

**IMPLEMENTATION STRATEGIES - II.C
(HERBACEOUS WETLANDS AND MOIST SOIL UNITS)**

- ❖ Encourage the Corps of Engineers to help fund a feasibility study on the Boyd area wetland restoration.
- ❖ Work with NRCS to construct or restore herbaceous wetlands on Kerley, Boutwell, Ray, and Earnhart parcels with minimal maintenance requirements.

- ❖ Construct an additional 330 acres of moist soil units at Juncker, Boyd, Greenberg, and Delta Lands parcels. These units will have dewatering capability during appropriate times of the year. (Project B4)
- ❖ Moist soil units will be placed on continued disturbance rotations to control succession and to provide maximum benefit to migratory waterfowl and shorebirds.
- ❖ Provide for at least 25% of the moist soil units to be annually flooded by October 15.
- ❖ Provide at least 150 acres of mudflat habitat for spring migrating shorebird use.
- ❖ Encourage restoration of 15 to 20 acres of deepwater habitat through the Illinois Department of Natural Resources and the Corps of Engineers.

IMPLEMENTATION STRATEGIES - II.D
(RESTORATION OF REMNANT NATURAL
COMMUNITIES)

- ❖ Initiate survey of purchase boundary to delineate unique and sensitive areas with IDNR Heritage Biologist.
- ❖ Improve flow of water in spring communities where man-made changes have attempted to redirect flows.
- ❖ Transplant five acres of giant cane (*Arundinaria gigantea*) along Cache River channel annually.
- ❖ Limit public usage near limestone caves at the Mason area which may be used as a bat hibernation area.
- ❖ Develop GIS system to display inventory locations of specialized habitat sites and animals that have been identified on The Nature Conservancy intern studies dealing with springs, rare and endangered species inventories and the coordinated study with the IDNR Heritage Biologist.

RESOURCE MANAGEMENT

Ecosystem management plays a strong role in decisions regarding the Refuge. Management decisions are made based upon several factors including biodiversity and the ecological context of the Cache River Watershed. Managing the resource can have many components. For the Refuge, it means providing staff and capital resources to effectively control activities within the boundaries. Numerous other commitments must be made by the Service outside of the Refuge boundaries as well.

GOAL III. RESOURCE MANAGEMENT

Maintain the Refuge through active management programs including fire protection, law enforcement, cooperative farming, water management, cooperative wildlife surveys, hunting and cultural resource monitoring and research. Coordinate management programs with partners and continue work in the larger watershed landscape.

OBJECTIVE A: ONGOING MANAGEMENT

Evaluate and monitor Refuge programs and public use. At five year intervals, review and update Refuge management plans to assure consistency with new information.

OBJECTIVE B: WATERSHED STEWARDSHIP

Support and participate in watershed planning and implementation of projects which protect resources within the Refuge, the Cache River Wetlands and/or the Cache River Watershed.

OBJECTIVE C: PRIVATE LANDS EROSION/SEDIMENTATION CONTROL

Promote a cooperative relationship and provide assistance to landowners that encourages citizen stewardship and action to reduce erosion and sedimentation.

OBJECTIVE D: WETLAND RESTORATION ON PRIVATE LANDS

Assist with wetland restoration on private land within the watershed at the rate of at least 10 acres per year for the purpose of improving water quality through nutrient retention, sediment control, and water storage for flood control.

**IMPLEMENTATION STRATEGIES - III.A
(ONGOING MANAGEMENT)**

- ❖ Write and update specific management plans such as; hunting plan, farming plan, public use plan, etc.
- ❖ Continue cooperative farming program (on 10% of Refuge land) in accomplishment of habitat goals to: improve fertility of tree planting sites, provide habitat resources for wildlife, control noxious weeds, and hold land "as is" until appropriate habitat restoration can be carried out.
- ❖ Work to eliminate row cropping adjacent to riparian corridors and on highly erodible land as soon as possible after acquisition.
- ❖ Do not permit livestock grazing or feeding areas on Refuge lands.
- ❖ Coordinate law enforcement with State personnel especially during hunting seasons.
- ❖ Continue hunting program as outlined in the Refuge's Hunting Plan and provide for specialized programs such as the sunflower plantings for resident game species (100 acres annually).
- ❖ Continue to emphasize goose hunting to prevent large wintering concentrations of geese.
- ❖ Fulfill all State and County regulations relative to well and septic closures.

- ❖ Annually coordinate fire control program with eight local fire protection districts.
- ❖ Complete seasonal wildlife surveys for dove, woodcock, raptor, amphibian, shorebird and waterfowl.
- ❖ Participate in U.S. Forest Service's gypsy moth monitoring program.
- ❖ Implement architectural and historical study of Churchill house and Stubblefield cabin.
- ❖ Conduct archaeological/historical studies through registered firm before undertaking any ground disturbing activities.

*IMPLEMENTATION STRATEGIES - III.B
(WATERSHED STEWARDSHIP)*

- ❖ Continue to attend and support watershed planning functions.
- ❖ Provide appropriate technical advice related to the reduction of erosion and sedimentation to the Natural Resources Conservation Service and landowners.
- ❖ Where appropriate, restore cane along stream banks within the Refuge
- ❖ Have one Refuge staff member serve on the Cache River Watershed Technical Committee.
- ❖ Support the recommendations of the Cache River Watershed Resource Plan (Chapter I - Introduction).
- ❖ Cooperate with Big Creek #2 Drainage District and comply with legal drainage obligations.

**IMPLEMENTATION STRATEGIES - III.C & D
(PRIVATE LAND EROSION CONTROL &
WETLAND RESTORATION)**

- ❖ Utilize the Service's Private Lands Program to increase wetland restoration in the watershed. Priority will be given to the Big Creek sub-watershed.
- ❖ Educate farmers and landowners within the Refuge about problems of sedimentation, chemical use, etc., and provide advice for minimizing those problems.
- ❖ Encourage "no till" farming.
- ❖ Publish the availability of the Service's private lands program through the Refuge newsletter and other local sources.
- ❖ Actively showcase demonstration projects through the media to promote the program.
- ❖ Prepare a slide presentation which features the Refuge, the watershed and recreational opportunities within the Refuge.
- ❖ Continue active communication throughout watershed communities through media, elected officials, citizen activists, etc.
- ❖ Provide a video library with educational and instructional materials for group and individual use.
- ❖ Support outside education programs, such as Touch of Nature and the Illinois State Museum, which promote the goals of the Refuge.
- ❖ Actively pursue support for the development of the Cache River Wetlands Center.
- ❖ Promote environmental education through watershed outreach programs to community members and school students.



Illinois



The Joint Venture Partners

DYNAMIC PARTNERING

The Refuge is a key member of the Cache River Joint Venture and seeks opportunities to join with various community groups, agencies, corporations and organizations to work toward advancing the Refuge and the Cache River Wetlands. Generally, the Refuge will strive to combine resources with appropriate entities to expedite and carry out planned projects. This will be done whenever the best interest of the Refuge can be furthered without negatively impacting the mission of the Service.

GOAL IV. DYNAMIC PARTNERING

Extend the Joint Venture, cooperative action approach to local communities, agencies, and organizations to maintain, enhance, and create new partnerships that are mutually beneficial and further the goals of the Refuge.

"Partners are
the way of the future."

*Daniel Yoder, Ph.D.
Department of Recreation,
Park and Tourism Administration
Western Illinois Tourism*

OBJECTIVE A: MAINTAIN AND ENHANCE EXISTING PARTNERSHIPS

Assume a leadership role in maintaining existing cooperative arrangements which are directed toward the achievement of a common set of goals for the preservation and restoration of the Refuge and the Cache River Wetlands.

OBJECTIVE B: FORGE NEW PARTNERSHIPS

Create new partnerships among federal, state and local agencies, organizations, schools, corporations and communities to promote and sustain the restoration, development and management of the Refuge.

OBJECTIVE C: VOLUNTEERISM AT CYPRESS CREEK

Continue, and increase, the volunteer program that promotes citizen involvement in Refuge operations, communicates the benefits of the Cache River Wetlands, and increases community ownership in the Refuge.

**IMPLEMENTATION STRATEGIES - IV.A
(MAINTAIN & ENHANCE EXISTING PARTNERSHIPS)**

- ❖ Continue to meet with Cache Watershed Consortium two times a year to communicate Joint Venture accomplishments and activities.
- ❖ Continue to meet with Joint Venture staff once a month to coordinate activities within the Cache River Watershed.
- ❖ Continue to share resources, expertise, equipment, and office space with The Nature Conservancy and the Illinois Department of Natural Resources.
- ❖ Seek regional support for sharing resources with partners, reducing institutional barriers, and for identifying innovative approaches to accomplish Refuge goals and objectives.
- ❖ Maintain existing signed partnership agreements in which the Refuge will continue its active role including:
 - Joint Venture Partners - 4 agencies and organizations
 - Cache Watershed Consortium - agencies and organizations
 - Shawnee Community College - office space, interns, maintenance operation
 - Boyd Seed Orchard - seedlings most productive to restoration
 - National Tree Trust - seedlings from seed provided
 - Seven County GIS Inventory - 22 agencies, organizations, county boards

- ❖ Continue forest and wetlands restoration of priority tracts, both inside the Refuge boundary and throughout the watershed.
- ❖ Continue to work collectively with TNC on land acquisition where traditional Service acquisition procedures are not successful.
- ❖ Work with all partners, the Citizens Committee to Save the Cache River and the Southernmost Illinois Tourism Bureau to bring financing to construct the proposed Cache River Wetlands Educational Center, Project A6.

**IMPLEMENTATION STRATEGIES - IV.B
(FORGE NEW PARTNERSHIPS)**

- ❖ Work with the Citizens Committee to Save the Cache River and local municipalities to obtain grants to construct boat access near Tamms, and at the south end of the Refuge near Mounds.
- ❖ Explore potential of supporting a fund-raising effort that allows outside sponsorship to develop and operate a Wetland Education Center with private funds on private land.
- ❖ Assist Shawnee College with the development of a Outdoor Environmental Learning Center on campus.
- ❖ Assist in the coalition of groups to support the development of the Wetlands Education Center (Booker study, 1994) including, but not limited to:
 - Southernmost Illinois Tourism Bureau
 - Citizens Committee to Save the Cache River
 - Joint Venture Partners
 - Dongola/Ullin Civic Group
- ❖ Promote a partnership with another Ramsar site; Caddo Lake, Texas..
- ❖ Work with Touch of Nature to promote and manage public use and interpretation.

- ❖ Work with groups in support of implementing the recommendations in the Cache River Watershed Resource Plan.
- ❖ Engage the Natural Resources Conservation Service to further outreach efforts with targeted landowners in the Cache River Watershed.
- ❖ Cooperate and coordinate with the Illinois Department of Transportation for mitigation banking for trees and wetlands.

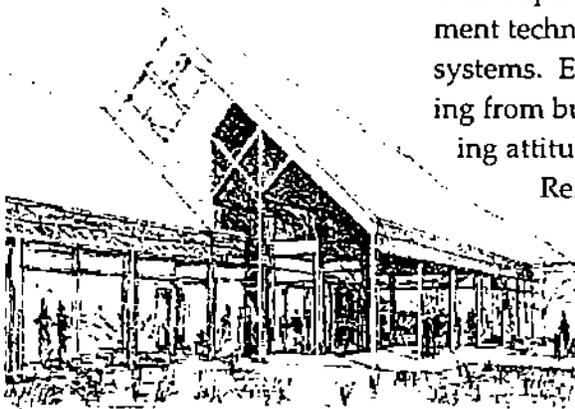
**IMPLEMENTATION STRATEGIES - IV.C
(VOLUNTEERISM)**

- ❖ Provide opportunities for students and citizens to participate in Refuge programs.
- ❖ Expand internship program.
- ❖ Provide incentive programs for participants.
- ❖ Evaluate Churchill House for volunteers/intern housing.
- ❖ Seek input and volunteer assistance from various sportsmen associations and environmental groups.

ENVIRONMENTAL EDUCATION

A crucial component of the Refuge's role to protect this resource is environmental education (EE). Environmental education can help people develop a better understanding of their dependence on the natural environment and management techniques employed to protect and restore natural systems. Environmental education includes objectives ranging from building awareness, knowledge, and skills to changing attitudes and encouraging participation. From the

Refuge's standpoint, the ultimate aim of EE is to promote responsible environmental behavior. It is imperative that efforts go beyond awareness and knowledge and empower citizens to become actively involved in resource issues - issues that affect the Cache River Wetlands.



GOAL V. ENVIRONMENTAL EDUCATION PROGRAM

Develop public appreciation and understanding of wildlife and plant communities and resource issues within the Cache River Wetlands through a formal, hands-on, educational program that results in environmentally literate and active citizens.

OBJECTIVE A: ENVIRONMENTAL EDUCATION PROGRAM

Provide innovative on-site and outreach programs and facilities for a variety of audiences that develops an awareness and appreciation for the Cache River Wetlands and other natural resources.



OBJECTIVE B: SITE-SPECIFIC CURRICULUM

Develop and implement a site-specific curriculum which conveys the Refuge is goals and objectives, ecological values and associated issues of the Cache River Wetlands, and includes interactive pre-, post- and on-site activities for students in grades 4-12th.

OBJECTIVE C: TEACHER TRAINING

With assistance from Joint Venture Partners, develop and conduct site-specific teacher workshops to orient participants in the Cache River Wetlands, site-specific EE units, and resources available to them and their students.

OBJECTIVE D: VOLUNTEER STAFF TRAINING

Perpetuate high quality environmental education through internships and training of students and volunteer staff.

IMPLEMENTATION STRATEGIES - V.A, B, C, D

- ❖ Develop series of units that incorporate Refuge themes and apply to lifestyles and issues within the Cache River Watershed.
- ❖ With partners, construct a major wetlands education center at Easter Slough to serve as a focal point for environmental education.
- ❖ Develop a network of students and citizens that assist with monitoring water quality throughout the Cache River Watershed.
- ❖ Develop four EE facilities on the Refuge (i.e. Rolwing Cabin, Bellrose EE site, Hogue Woods and Boyd Seed Orchard).
- ❖ Off-Refuge, support the Shawnee College in developing an outdoor classroom for environmental education.
- ❖ Recruit and coordinate a team of volunteers, staff and partners to develop and implement site-specific curriculum.
- ❖ Incorporate environmental education goals and strategies into public programs.
- ❖ Coordinate programs/opportunities with other entities throughout southern Illinois.
- ❖ Provide training opportunities, through innovative workshops, for teachers of partner schools.
- ❖ Coordinate and recruit participants through the seven county Regional Office of Education of Schools.
- ❖ Evaluate Churchill House for volunteer/intern staff housing.
- ❖ Continue to inform and educate residents within the watershed of issues related to resource protection and habitat restoration. Accomplished through public events, Refuge Advisory Committee, news releases, and public meetings.

WILDLIFE-DEPENDENT RECREATION & INTERPRETATION

Refuge visitors will enjoy recreational and interpretive activities that are compatible with the Refuge's purpose. These activities will be oriented toward interaction with and appreciation of wildlife and their native habitat. Wildlife dependent recreation includes wildlife observation (by hiking and canoeing), hunting, fishing, and photography. In conjunction with recreation, interpretive programs will be developed and implemented to assist visitors in exploring the Cache River Wetlands and associated wildlife through an informal learning experience. These activities will increase visitor use, but not at the expense of the natural environment.



Sensitive sites identified during a Joint Venture workshop in September 1993 include: Eagle Pond-Buttonland Swamp, Goose Pond, south Ullin swamp (wood duck roost), Hogue Woods, Mason Cave, Route 3/127 Cache River area (Swainson's warbler nesting), and lowermost Cache River corridor. Recommendations relative to fishing access, and management of these areas were made. These sensitive sites and any identified in the future, will have limited access, or if necessary be closed, to guard against negative impacts to wildlife and plant communities. Support facilities and access will be sited to disperse visitors and protect ecologically fragile areas.

GOAL VI. WILDLIFE-DEPENDENT RECREATION & INTERPRETATION

Provide opportunities for visitors to understand, observe, and enjoy wildlife and native habitats of the Cache River Wetlands.

OBJECTIVE A). FACILITIES

Establish seven accessible facilities at locations throughout the Refuge by the year 2011, that promote wildlife-dependent recreation, education, interpretation and viewing opportunities year-round. These seven areas are:

- A4 Mounds Access
- A5 Tamms Boat Access
- A6 Cache River Wetlands Education Center
- A7 Shawnee College Outdoor Learning Site
- A8 Bellrose Outdoor Classroom
- A10 Cache Levee Access and Canoe Trail
- A11 Boyd Seed Orchard & EE Site

OBJECTIVE B). INTERPRETATION

Establish a series of interpretive programs and publications that reveal the natural and cultural history of the Cache River Wetlands, resource values, and the role of human interaction with the land.

OBJECTIVE C). RECREATION

Provide and promote compatible wildlife-dependent recreational experiences through a variety of opportunities and activities year round.

OBJECTIVE D). MEASURING AND MONITORING

Monitor public use throughout the Refuge as an ongoing program to determine success of its programming and facilities, and to measure for possible overuse of sensitive sites.

IMPLEMENTATION STRATEGIES - VII. A, B., C., D.

- ❖ Implement a customer-oriented approach to promote quality wildlife experiences for all segments of the public throughout the year.

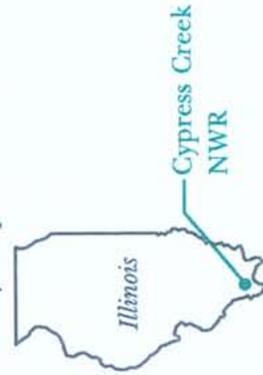
- ❖ Develop a series of interpretive programs and events that incorporate Refuge themes and natural/cultural history of the area with associated issues of the Cache.
- ❖ Develop and implement a sign plan that orients and directs visitors to Refuge facilities and programs.
- ❖ Prepare development plans for the seven high priority facilities to promote partnerships and seek matching funds for development operations and maintenance.
- ❖ Implement a volunteer interpreters program.
- ❖ Expand programming and guided opportunities through an interpretive-naturalist internship program.

RESTORATION LONG RANGE PLAN

The attainment of the preceding goals and objectives for the Refuge is critical if the Long Range Vision for this unique natural resource is to become a reality. Eventually, the 35,000 acres of the Refuge will fall under the single ownership of the Fish and Wildlife Service. There is no known time frame for the completion of the Refuge purchase boundary. However, it is possible to predict the long range natural community development of the Refuge. By looking at general topography, existing plant community remnants and hydrology, experts can predict what the ecosystem may look like. The following map illustrates conceptually what the distribution of the major natural community types may be in the distant future. Some refer to this as the 100 year plan.

Cypress Creek NWR Comprehensive Management Plan

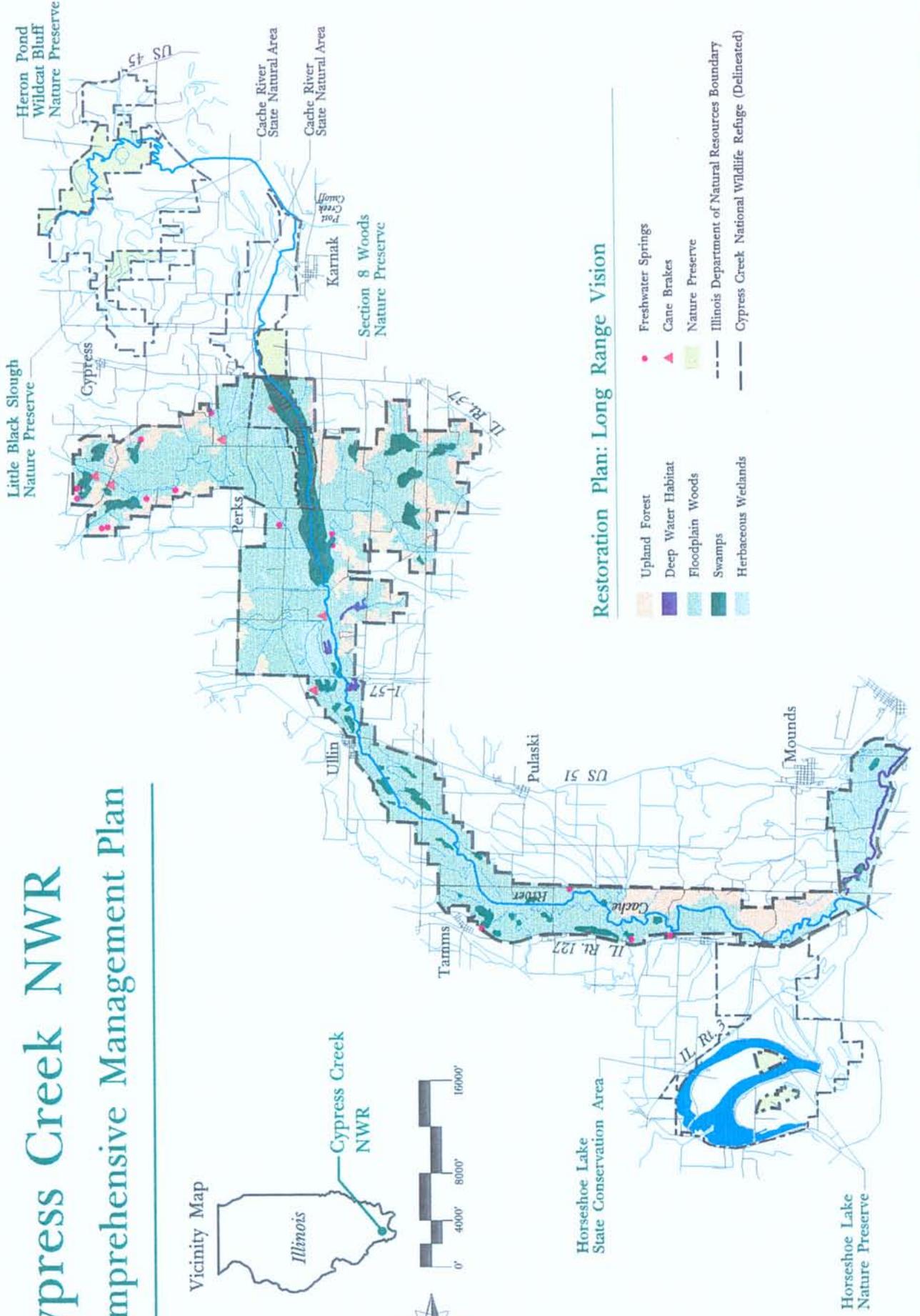
Vicinity Map



Horseshoe Lake
State Conservation Area



Horseshoe Lake
Nature Preserve



Restoration Plan: Long Range Vision

- Upland Forest
- Deep Water Habitat
- Floodplain Woods
- Swamps
- Herbaceous Wetlands
- Freshwater Springs
- Cane Brakes
- Nature Preserve
- Illinois Department of Natural Resources Boundary
- Cypress Creek National Wildlife Refuge (Delineated)

5. PUBLIC USE PROGRAM - THE CONNECTING LINK

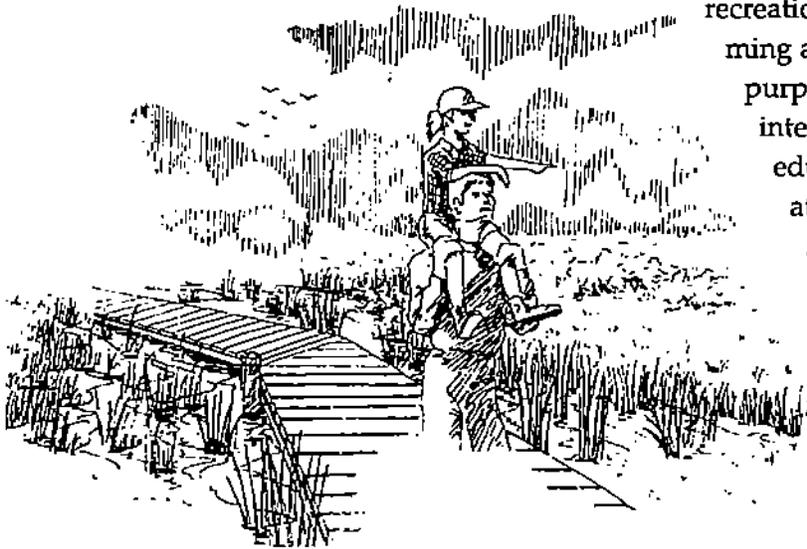
Cypress Creek NWR
Comprehensive Management Plan



CHAPTER 5 - PUBLIC USE PROGRAM - THE CONNECTING LINK

The forests and swamps of the Cache River Wetlands are valuable resources for wildlife and people, providing diverse habitats and opportunities for recreation and education. With the growing interest for quality outdoor experiences, the Refuge Public Use Program meets this need through environmental education, interpretation and wildlife-dependent

recreation. These approaches to programming are compatible with the Refuge purpose and accommodate a range of interests and abilities. Environmental education, interpretation and recreation are goals which include strategies to develop visitor appreciation, understanding and support for the natural resource and its long-term protection. The challenge is to develop a link between public use activities and Refuge management.



STORYLINE THEMES

The connection between public use activities and Refuge management activities and policies, is made through a storyline which insures that messages imparted to the public are consistent with the Refuge purpose. The storyline is a series of broad themes that are site-specific and firmly grounded in what is being done to restore, protect, and/or enhance native wildlife and plant communities on the Refuge. These themes are tied to messages and visitor experiences that are conveyed to the public through a variety of media and facilities (signs, trails, boardwalks, special events, publications, and educational units). The storyline includes six themes. They are:

1. *UNDERSTANDING THE PAST*
(NATURAL & CULTURAL HISTORY OF THE CACHE)

Sub-theme: People are dependent on the Cache River Wetlands. The area has served people throughout time. Its history demonstrates how people are connected to the land and how they have changed the landscape.

2. *EXPERIENCING THE ILLINOIS' "BAYOU"*
(A LOOK AT UNIQUE PLANT COMMUNITIES OF THE CACHE)

Sub-theme: Unique natural communities within the Refuge and the Cache River Wetlands are more reminiscent of a Louisiana Bayou than a swamp located in a state better known for its prairies.

3. *EXPLORING THE DIVERSITY OF WILDLIFE -*
(A HAVEN FOR WILDLIFE)

Sub-theme: The Refuge and associated Cache River Wetlands highlights a diversity of waterfowl, shorebirds, wading birds, neotropical songbirds, reptiles, amphibians, and mammals that provides wildlife-oriented experiences for visitors.

4. *PROTECTING A FRAGILE SYSTEM*
(RESOURCE ISSUES)

Sub-theme: The area is an internationally significant site that is threatened by inappropriate land uses within the watershed; solutions to these issues lies with environmentally literate citizens and their actions.

5. *RESTORING THE BALANCE*
(RESOURCE MANAGEMENT AND PROTECTION)

Sub-theme: Restoration and management of the Cache River Wetlands is a result of community action, partnerships, and a common vision to protect a unique resource; it provides a model for ecosystem management while accommodating compatible human use.

6. *COMMUNICATING VISITOR OPPORTUNITIES IN THE CACHE RIVER WETLANDS*

Sub-theme: The diversity and features of the area provide many opportunities to explore, enjoy, and learn about wildlife, plants, and the human connection to the Cache River Wetlands.

VISITOR ANALYSIS

Who is the visitor or audience that will be exposed to interpretive messages and public use services? As with any effective communicative effort, identifying the audience and their expectations is essential. Individuals visiting the Refuge have different levels of knowledge, different attitudes, and different interests; therefore messages should be tailored to specific visitor characteristics.

TARGET GROUPS

A target group is a definable group of people categorized by their activity interests. Four target groups are defined on the following page, with individual subgroups and characteristics specified under each heading.

DELIVERY MATRIX

A delivery matrix has been developed for the public use program at Cypress Creek (See Appendix B, Public Use Management Delivery Matrix). It is a cognitive map to communicate and link the storylines and themes to specific facilities or information resources such as brochures and signs. The six themes and associated sub-themes are presented in the delivery matrix as well as messages, visitor experiences, media and site-specific facilities. The matrix provides justification for proposed facilities/media.

VISITOR TARGET GROUPS

<u>TARGET AND SUB-GROUPS</u>	<u>CHARACTERISTICS</u>
<u>I. FAMILIES</u>	
1. With small children	1. <i>Have limited time in one spot</i> <ul style="list-style-type: none">• <i>Prefer large scale displays</i>• <i>Prefer active, hands-on activities</i>
2. With school-age children	2. <i>Prefer to be kept active</i>
<u>II. INDIVIDUALS</u>	
1. Adults (age 16-60)	1. <i>Able to spend more time reading</i>
	1. <i>Can assemble sophisticated information</i>
2. Senior citizens (age 60+)	2. <i>May not be able to walk or hike long distances</i>
	2. <i>Need resting areas</i>
	2. <i>Limited access to some areas</i>
3. Physically challenged	3. <i>Limited access to some areas</i>
<u>III. SPECIAL INTEREST GROUPS</u>	
1. Local residents (permanent)	1. <i>Have special interest in the history of the area</i>
	1. <i>Often bring visitors from outside area</i>
2. Sportsmen (fishing, hunting)	2. <i>Have special interest in management/regulation of resource.</i>
	2. <i>Prefer participation in outdoor activities</i>
3. Wildlife observers	3. <i>Seasonal visitors</i>
	3. <i>Interested in secluded, undisturbed areas.</i>
	3. <i>Dislike over-development</i>
4. Archeological enthusiasts	4. <i>Curious about Native American history and locations of artifacts, villages and/or camps</i>
5. Hikers	5. <i>Prefer varied distances (opportunities for long/short distances)</i>
	5. <i>Prefer scenic natural areas</i>
	5. <i>Prefer trails not used by horses and detest ATV's</i>
6. Bicyclists	6. <i>Prefer paved to intermediate aggregate surfaces</i>
	6. <i>Prefer varied distances (opportunities for long/short distances)</i>
	6. <i>Limited access to some areas</i>
<u>IV. ORGANIZED GROUPS</u>	
1. Adult groups	1. <i>Prefer guided tours</i>
2. Youth groups	2. <i>Prefer educational and recreational activities</i>
	2. <i>Enjoy active experiences</i>
3. Student groups	3. <i>Experience must be educational</i>

COMPATIBLE PUBLIC USE

Public use and resource protection of Refuge lands is mandated in the establishing legislation for Cypress Creek. Both can coexist successfully if they are planned and managed well. The Comprehensive Planning process has identified an appropriate balance and the best locations for wildlife-dependent recreation and educational programming. In addition, the plan calls for restricting public use in some areas and seasons to guard against negative impacts to plant and animal communities. An example is the moist soil management units. These areas will be seasonally closed to the public during migration to eliminate disturbance to resting and feeding ducks.

In order to meet compatibility mandates, all uses authorized on a Refuge must be determined compatible with the purposes of the Refuge. An overall compatibility determination is part of this Comprehensive Management Plan (See Appendix C, Compatibility Determination). Once signed, all public use proposals in this plan will have met the compatibility test.

In the interim, public activities are guided by legislation and Executive Order 12996 which includes: Compatible Wildlife-Dependent Recreational Activities - include hiking, wildlife observation, fishing, hunting, nature photography, environmental education and interpretive programming; and Unauthorized Activities - include such activities as motorized vehicles, horseback riding, camping and fires, off-road bicycling, and collecting artifacts or collecting native plants.

SPECIAL RESTRICTIONS

Special restrictions will be imposed on visitor use to shelter threatened or endangered species, protect sensitive natural communities or enhance succession and the health of areas under restoration. Special regulations may be seasonal to limit disturbance in areas where research is taking place or in prime natural habitat that is suitable for migratory and resident wildlife populations (i.e. shorebirds, waterfowl, neotropical songbirds). Special restrictions for the following activities are outlined below.

Hunting - this activity will continue to be supported and promoted as a compatible recreational use and management tool. The Refuge made a commitment to provide this opportunity in the final Environmental Assessment that authorized Refuge establishment. The Refuge hunting program follows state seasons and integrates specific recommendations for management. For example, objectives for the hunting program includes: 1). controlling large buildup of wintering populations of Canada geese (large goose buildups would eventually disrupt distribution strategies that have been agreed upon by state and federal flyway groups) and 2). controlling white-tailed deer populations to insure the herd does not exceed the carrying capacity of the Refuge and/or detrimentally impact reforestation. The Hunting Plan, approved in 1992, outlines more specific details for the Refuge's program.

Bicycling - this activity is not permitted off-road but is allowed on paved or gravel roads that cross the Refuge. No off-road trails will be developed and bikes will not be permitted on hiking trails. Development of the Rails to Trails corridor through the Refuge will be supported and provide excellent bicycling opportunities.

Hiking and Wildlife Viewing - may be seasonally restricted in areas to minimize disturbance to wildlife during nesting and/or migration.

Boating - Boats and canoes are permitted on the Cache River. The state has set a 10 horse power motor limit on waters that pass through the Cache River State Natural Area. The Refuge abides by and includes the state limit on waters within Refuge boundaries.

FACILITY DEVELOPMENT AND ACCESS

Facilities and structures will enhance public use opportunities on the Refuge and accommodate a range of interests and abilities. Trails, shelters, parking areas, observation decks, signage and kiosks will provide formal (controlled) access into the Refuge and the Cache River Wetlands.

Currently, there is very little public use development on the Refuge; five gravel parking areas have been established at former homestead sites, and one boat access exists along an old slough of the Cache River at Tamms. The Cache River State Natural Area includes 18 miles of hiking trails, a boat access, and 16 parking areas; these Illinois DNR sites have a clear identity and design. Future development on the Refuge will complement existing facilities administered by the Illinois Department of Natural Resources, tie into the natural landscape, as well as include site design features unique to Cypress Creek and the National Wildlife Refuge System.

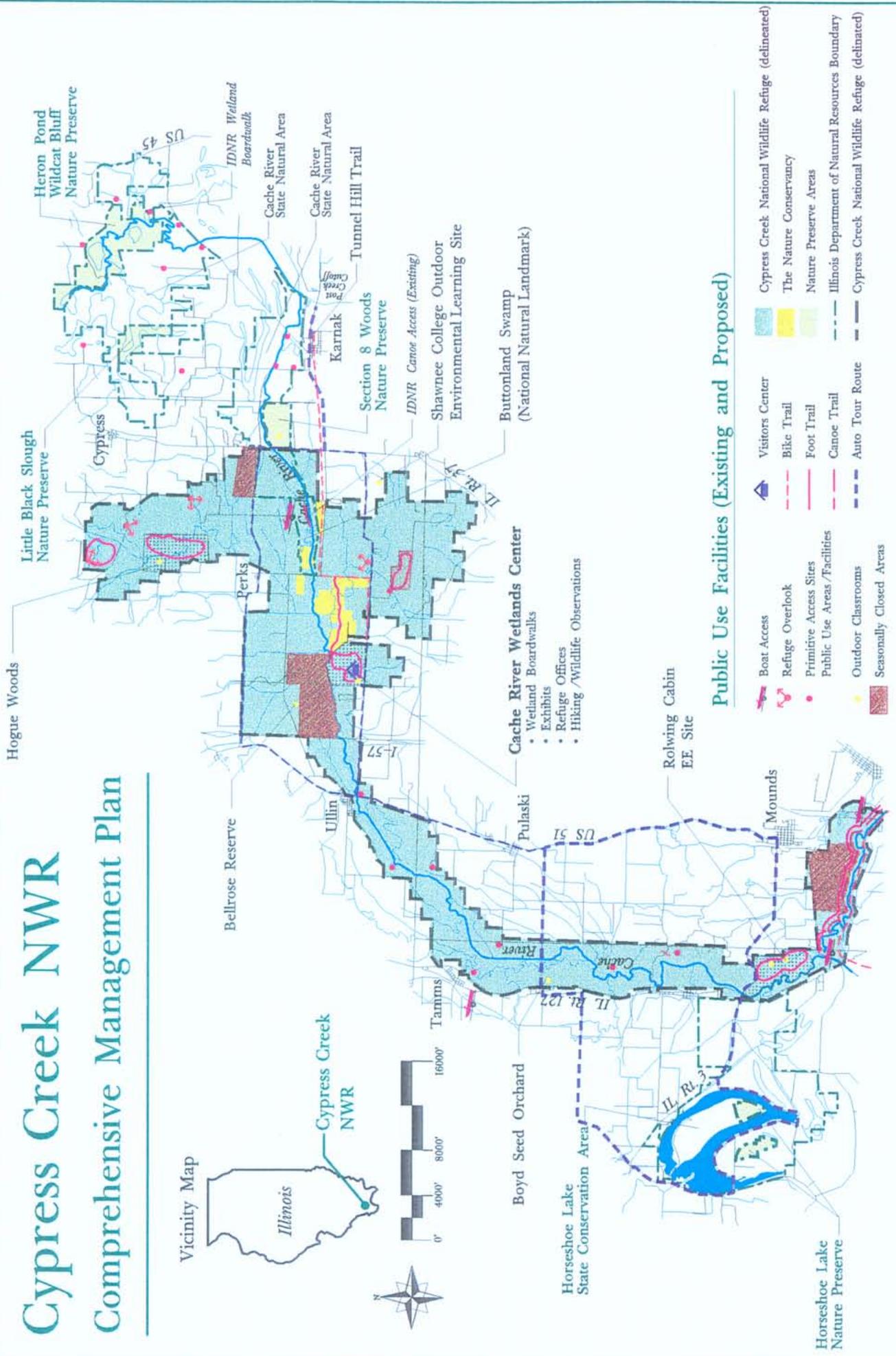
Access into the Refuge and the Cache River Wetlands will include four levels of development:

1. *Primitive Access*
2. *Outdoor Classrooms*
3. *Public Use Access*
4. *Cache River Wetlands Visitor Center*

The map on the following page illustrates many of the existing and proposed public use facilities that will ultimately be available within the Refuge.

Cypress Creek NWR Comprehensive Management Plan

Vicinity Map



Public Use Facilities (Existing and Proposed)

- | | | | | | |
|--|-----------------------------|--|-----------------|--|---|
| | Boat Access | | Visitors Center | | Cypress Creek National Wildlife Refuge (delineated) |
| | Refuge Overlook | | Bike Trail | | The Nature Conservancy |
| | Primitive Access Sites | | Foot Trail | | Nature Preserve Areas |
| | Public Use Areas/Facilities | | Canoe Trail | | Illinois Department of Natural Resources Boundary |
| | Outdoor Classrooms | | Auto Tour Route | | Cypress Creek National Wildlife Refuge (delineated) |
| | Seasonally Closed Areas | | | | |

- Cache River Wetlands Center**
- Wetland Boardwalks
 - Exhibits
 - Refuge Offices
 - Hiking /Wildlife Observations

Rolling Cabin
EE Site

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PRIMITIVE ACCESS

Primitive access sites have been located throughout the Refuge to accommodate hikers, hunters, and wildlife watchers. Facility development includes a gravel surfaced parking area for 5-10 cars with the perimeter defined with posts. Signage on a single panel kiosk will provide general information to visitors. Trails may be developed at some of these sites depending on future need.

PRIMITIVE ACCESS SITES (PROJECT WORKSHEET B7)

ACCESS	LOCATION	FACILITIES
Brushy Access	Brushy Unit <i>(South side of Shawnee College Road)</i>	Parking <i>(5-10 car)</i>
Greenberg Access	Greenberg Tract <i>(East of Hwy 127)</i>	Parking <i>(5 car)</i>
Hileman Access <i>(existing)</i>	Hileman Tract <i>(South of Cypress-Dongola Blacktop)</i>	Parking <i>(10 car)</i>
Stuckey Access	Stuckey Tract	Parking <i>(10 car)</i>
Thomure Access <i>(existing)</i>	Thomure Tract <i>(North side of Cypress-Dongola Blacktop)</i>	Parking <i>(5 car)</i>

OUTDOOR CLASSROOMS

These sites are specifically planned to accommodate organized groups and students and to fulfill the goals of the environmental education program. Each site will facilitate formal learning in a setting which represents a unique combination of natural and cultural features on the refuge. Four outdoor classrooms are proposed on the Refuge: Bellrose Reserve, Boyd Seed Orchard, Hogue Woods, and Rolwing Cabin. Each site will include a new environmental education shelter with tables and benches for group activities. A kiosk and trail will connect the parking area and restrooms with the shelter. The sites are dispersed throughout the Refuge, located where diverse plant communities and management features occur and where exploration and discovery are encouraged.

OUTDOOR CLASSROOMS

ACCESS	LOCATION	FACILITIES
Bellrose Reserve (Project A8)	Frank Bellrose Waterfowl Reserve (Off Butler Ridge Road) Waterfowl & shorebird view- ing, moist soil management	Signage/Kiosk Parking (bus) Shelter Observation Deck Trail Restrooms
Boyd Seed Orchard (Project A11)	Boyd Tract (Sandusky) Forest Restoration techniques, tree seed nursery production, spring restoration	Signage/Kiosk Parking (bus) Shelter Trail Restrooms
Hogue Woods (Project B5)	Hogue Tract (North) Mature oak/hickory forest, forest restoration techniques, spring fed bottomland, neotropical migrant songbirds	Signage/Kiosk Parking (bus) Shelter Trail Restrooms
Rolwing Cabin Outdoor Classroom (Project C6)	Rolwing Tract (Near Mounds off IL Rt. 127)	Visitor access road, gravel parking, and interpretive sign

PUBLIC USE SITES

These sites will accommodate the wildlife oriented recreational user. The public use access sites provide opportunities for wildlife observation, hunting, fishing, and canoeing and are near natural features of the Cache River. These sites include well-defined parking, restrooms, interpretive signage, boardwalks, trails, observation platforms and other structures that enhance the visitor's experience.

PUBLIC USE ACCESS SITES

ACCESS	LOCATION	FACILITIES
Bike Trail <i>(Project C4)</i>	Tunnel Hill Connection	Parking Signage/Kiosk
Cache Levee Access & Canoe Trail <i>(Project A10)</i>	Old Cache Channel	Parking & Trail to Access Levee Signage/Kiosk Parking Boat Ramp Restroom
Mounds Boat & Bicycle Access <i>(Project A4)</i>	Mounds <i>(East of Mounds)</i>	Parking & Trail to Levee Signage/Kiosk Boat Ramp Restroom
Refuge Overlooks <i>(Project C7)</i>	Goines Tract Overlook Harris Tract Overlook Rose Tract Overlook Ernhart Wetland Overlook Willingham Wildlife Overlook	Parking (5 Car) Signage/Kiosk Observation Platform
Poole - Wetland Trail <i>(Project B8)</i>	Poole Tract <i>(North Boundary)</i>	Parking (5 Car) Signage/Kiosk Trail Boardwalk Observation Deck
Tamms Boat Access <i>(Project A5)</i>	Tamms <i>(Pumphouse Road)</i>	Parking Signage/Kiosk Boat Ramp <i>(Seasonal)</i> Restroom Trail to access fishing sites

DEMONSTRATION PROJECT

The following page depicts an example of how the public use, hunting areas, and restoration of the Bellrose Reserve can be implemented.

SITE PLAN

Legend

- A** - Hunter Access
- a1** - Sign in
- a2** - 15 Car Parking
- B** - Waterfowl Viewing
- b1** - 30 Car Parking
- b2** - Interpretive Boardwalk
- b3** - Group Shelter
- b4** - Viewing Blind
- b5** - Deep Water Habitat
- C** - Gate
- D** - Road
- E** - Concrete Flood Spillway
- F** - Remote Maintenance Storage Complex (Existing)
- G** - Experimental Hawk Roosting Complex
- H** - Forest Restoration
- I** - Moist Soil Unit
- J** - Stream Meander Restoration
- K** - Existing Bridge
- L** - Existing Grain Silos
- M** - Existing Stream

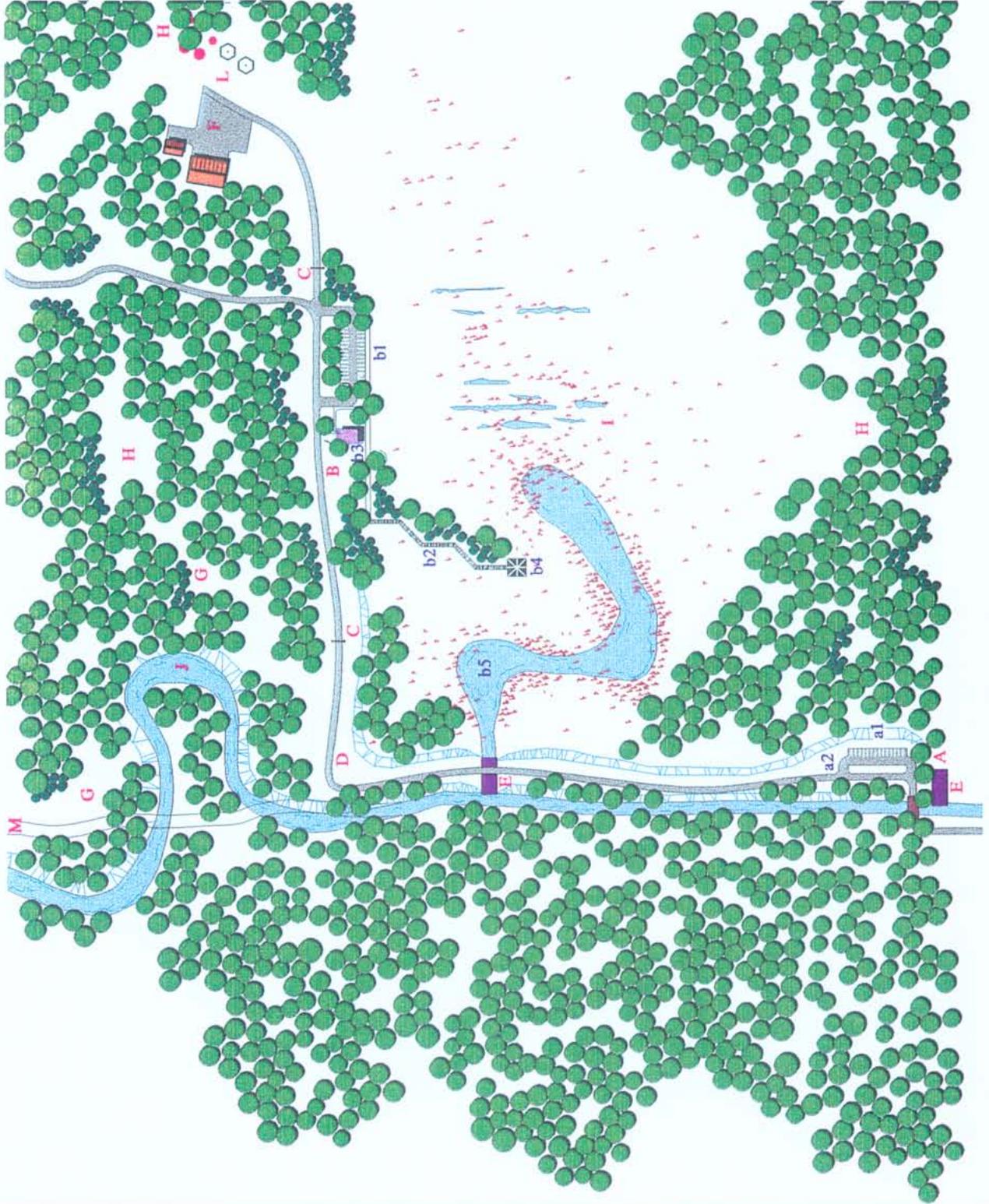


Scale: 1" = 350'

Cypress Creek
National Wildlife Refuge
Bellrose Public Access Area

Prepared for:
U.S. Fish and Wildlife Service

Booker Associates, Inc.



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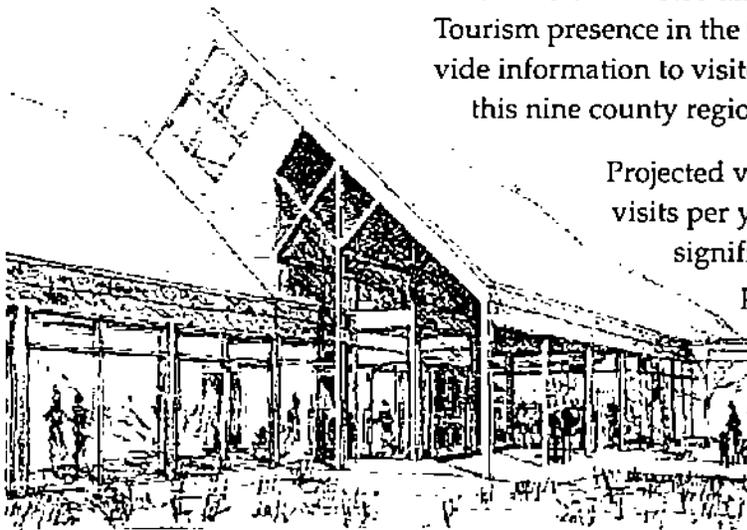
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CACHE RIVER WETLANDS VISITOR CENTER

No greater opportunity exists to exemplify the Refuge partnership vision than the proposed Cache River Wetlands Visitor Center. When constructed, the Center will demonstrate solutions to global environmental and conservation challenges using the Cache River Wetlands as a model of cooperative action.

As proposed in the 1994 Feasibility Study, the Wetland Center located near Easter Slough, will provide visitors with a clear destination upon arriving at the Refuge. The proposed facility will serve as a visitation focal point for the Cache River wetlands and as a clearinghouse for wetlands and watershed information, education and tourism. The 21,600 square foot center will provide administrative offices, research, and public education through indoor and outdoor experiences and exhibits that describe the history of the Cache River basin and the cooperative efforts to protect and restore this significant resource. Site amenities such as a wetland boardwalk, trails and observation decks around the Center will concentrate visitor use in one area, thus protecting fragile communities in the Cache River Wetlands. In addition, the Center will provide an outstanding environmental experience to those less able to hike trails or traverse difficult terrain. A Southernmost Illinois Tourism presence in the Center will orient, educate and provide information to visitors about the numerous attractions in this nine county region.



Projected visitation is approximately 200,000 visits per year. By creating a destination facility, significant economic benefits to this depressed region will be realized. The

Center has the potential to provide an immediate and long-term economic resource for southern Illinois.

The Service will continue to actively work with its partners and other interest groups to acquire the preferred site at Easter Slough. If not successful, the partners will consider other high priority sites identified in the Feasibility study. More importantly, the Service will work with others to obtain shared funding for the construction, operation and maintenance of the visitor center facility.

CONCLUSION

The public use program and facility guidance provided here is intended to communicate to local communities and Refuge partners the direction and scale of development appropriate for the Refuge. In addition, the document will be used to obtain funding and to proceed to the next step in implementing the Plan. The next steps include producing a more detailed Public Use Plan and related Sign Plan and producing site plans for those sites with funding or a high potential for funding.

6. PLAN IMPLEMENTATION

Cypress Creek NWR
Comprehensive Management Plan



CHAPTER 6 - PLAN IMPLEMENTATION

To meet the goals and objectives for the Refuge, the Plan details thirty specific projects for acquisition, development, or restoration over the next fifteen years. Projects have been categorized by type of benefit and prioritized within the fifteen year time frame of the Plan.

Acquisition of land is also a necessary component of building the Refuge. The Refuge intends to acquire 7,500 acres over the next fifteen years. To assist in the acquisition of land and the creation of the thirty projects, alternative funding services are suggested for Refuge use.

RESOURCE DEVELOPMENT PROJECTS

As noted above, individual improvement projects have been identified for implementation over the life of this Plan. Projects range from buildings renovation for educational use to restoration of springs. All of these projects have been developed for the purpose of achieving the vision for the Refuge that was articulated in an earlier section of this document. Each project provides a variety of benefits related to the environment, education/recreation (public use), or the local economies. Also, the priorities that are associated with them vary according to need and/or anticipated impacts.

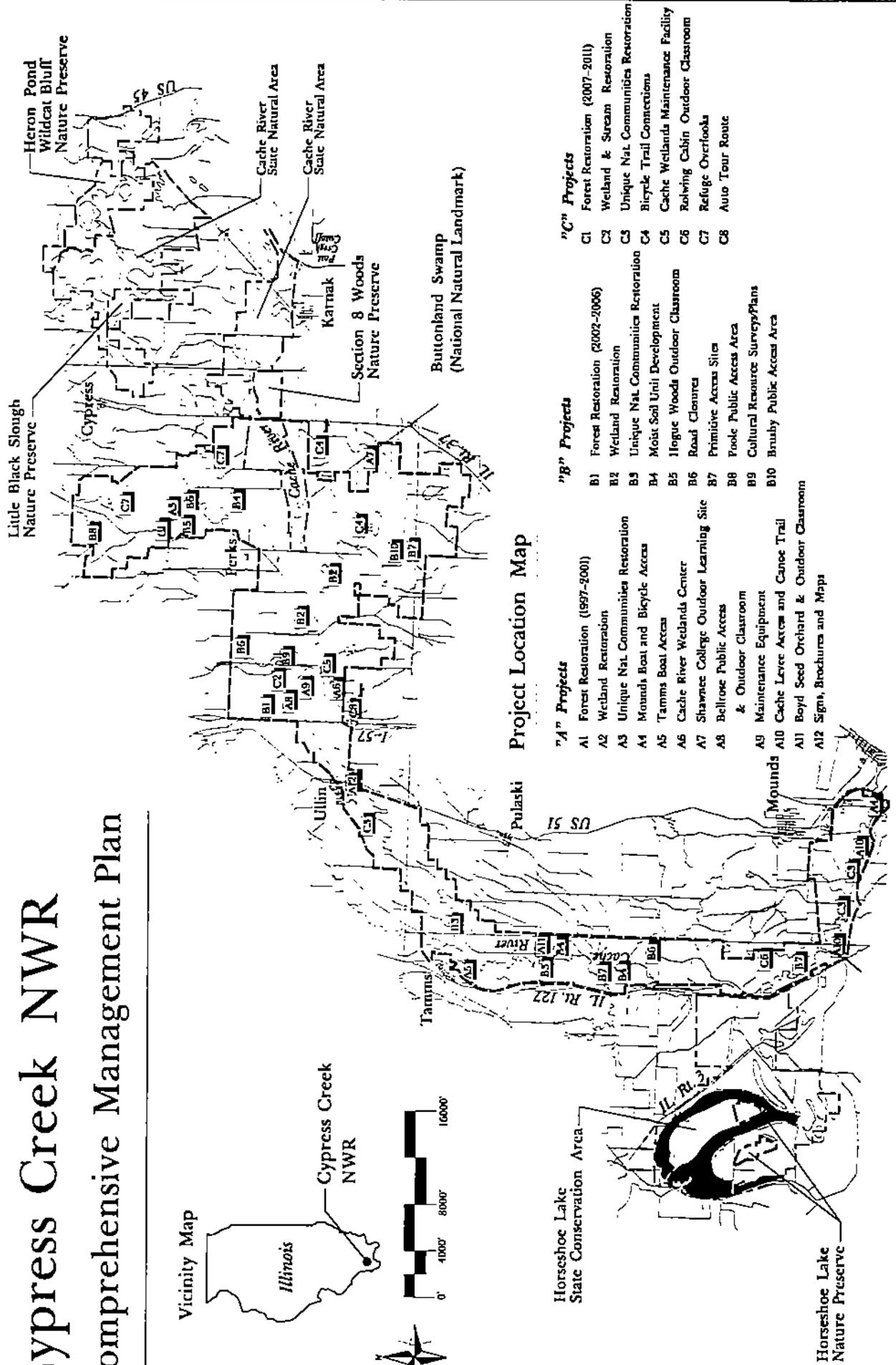
Listed on the following page are all projects proposed for implementation within the Refuge over the next fifteen years, their priority for development and an indication of the principal benefits that will be derived from them. The Project Location Map which follows the listing of projects illustrates where these projects will be found within the Refuge. Furthermore, a detailed description of each project is provided in Appendix D.

PRIMARY BENEFITS

"A" Projects		Benefits		
	Project	Habitat	Education/Recreation	Economy
A1	Forest Restoration (1997-2001)	✓		
A2	Wetland Restoration	✓		
A3	Unique Natural Communities Restoration	✓		
A4	Mounds Boat and Bicycle Access		✓	✓
A5	Tamms Boat Access		✓	✓
A6	Cache River Wetlands Center		✓	✓
A7	Shawnee College Outdoor Learning Site		✓	
A8	Bellrose Public Access & Outdoor Classroom		✓	✓
A9	Maintenance Equipment	✓	✓	
A10	Cache Levee Access & Canoe Trail		✓	✓
A11	Boyd Seed Orchard & Outdoor Classroom	✓	✓	
A12	Signs, Brochures and Maps		✓	✓
"B" Projects				
B1	Forest Restoration (2002-2006)	✓		
B2	Wetland Restoration	✓		
B3	Unique Natural Communities Restoration	✓		
B4	Moist Soil Unit Development	✓		
B5	Hogue Woods Public Access & Outdoor Classroom		✓	✓
B6	Road Closures	✓	✓	
B7	Primitive Access Sites		✓	✓
B8	Poole Public Access Area		✓	✓
B9	Cultural Resource Surveys/Plans		✓	✓
B10	Brushy Public Access Area		✓	✓
B11	Oral History of the Cache	✓	✓	
"C" Projects				
C1	Forest Restoration (2007-2011)	✓		
C2	Wetland & Stream Restoration	✓	✓	
C3	Unique Natural Communities Restoration	✓		
C4	Bicycle Trail Connections		✓	✓
C5	Cache Wetlands Maintenance Facility		✓	✓
C6	Rolwing Cabin Outdoor Classroom		✓	
C7	Refuge Overlooks		✓	
C8	Auto Tour Route		✓	✓

Cypress Creek NWR Comprehensive Management Plan

Vicinity Map



Project Location Map

"A" Projects

- A1 Forest Restoration (1997-2001)
- A2 Wetland Restoration
- A3 Unique Nat. Communities Restoration
- A4 Mounds Boat and Bicycle Access
- A5 Tammam Boat Access
- A6 Cache River Wetlands Center
- A7 Shawnee College Outdoor Learning Site
- A8 Bellrose Public Access & Outdoor Classroom
- A9 Maintenance Equipment
- A10 Cache Levee Area and Canoe Trail
- A11 Boyd Seed Orchard & Outdoor Classroom
- A12 Signs, Brochures and Maps

"B" Projects

- B1 Forest Restoration (2002-2006)
- B2 Wetland Restoration
- B3 Unique Nat. Communities Restoration
- B4 Moist Soil Util. Development
- B5 Hegue Woods Outdoor Classroom
- B6 Road Closures
- B7 Primitive Access Sites
- B8 Prue Public Access Area
- B9 Cultural Resource Surveys/Plans
- B10 Bruaby Public Access Area

"C" Projects

- C1 Forest Restoration (2007-2011)
- C2 Wetland & Stream Restoration
- C3 Unique Nat. Communities Restoration
- C4 Bicycle Trail Construction
- C5 Cache Wetlands Maintenance Facility
- C6 Rowing Cabin Outdoor Classroom
- C7 Refuge Overlooks
- C8 Auto Tour Route

PROJECT COST SUMMARY - REFUGE PROJECT PRIORITIES

<u>"A" PROJECTS</u>		TOTAL COST	AVERAGE ANNUAL MAINTENANCE
A1	Forest Restoration (1997-2001)	\$ 1,204,000	\$ 2,300
A2	Wetland Restoration	30,000	0
A3	Unique Natural Communities Restoration	6,800	250
A4	Mounds Boat and Bicycle Access	91,950	3,300
A5	Tamms Boat Access	61,400	3,100
A6	Cache River Wetlands Center	14,593,500	75,000
A7	Shawnee College Outdoor Learning Site	50,250	900
A8	Bellrose Public Access & Outdoor Classroom	172,250	7,800
A9	Maintenance Equipment	376,420	10,000
A10	Cache Levee Access & Canoe Trail	42,025	2,200
A11	Boyd Seed Orchard & Outdoor Classroom	258,000	2,500
A12	Signs, Brochures and Maps	<u>72,500</u>	<u>350</u>
<i>Subtotal</i>		\$ 16,959,095	\$ 107,700
<u>"B" PROJECTS</u>			
B1	Forest Restoration (2002-2006)	\$ 805,000	\$ 2,300
B2	Wetland Restoration	40,000	0
B3	Unique Natural Communities Restoration	10,200	450
B4	Moist Soil Unit Development	1,162,150	5,610
B5	Hogue Woods Public Access & Outdoor Classroom	93,025	3,350
B6	Road Closures	11,250	1,100 (one time cost)
B7	Primitive Access Sites	44,900	1,325
B8	Poole Public Access Area	103,550	3,150
B9	Cultural Resource Surveys/Plans	109,250	0
B10	Brushy Public Access Area	176,800	7,500
B11	Oral History of the Cache	<u>13,200</u>	<u>0</u>
<i>Subtotal</i>		\$ 2,569,325	\$ 24,785
<u>"C" PROJECTS</u>			
C1	Forest Restoration (2007-2011)	905,625	2,300
C2	Wetland & Stream Restoration	2,682,700	10,000
C3	Unique Natural Communities Restoration	13,200	450
C4	Bicycle Trail Connections	1,030,550	1,035
C5	Cache Wetlands Maintenance Facility	2,115,000	75,000
C6	Rolwing Cabin Outdoor Classroom	104,150	760
C7	Refuge Overlooks	35,325	3,840
C8	Auto Tour Route	<u>123,000</u>	<u>1,945</u>
<i>Subtotal</i>		\$ 7,009,550	\$ 95,330
<i>Grand Total (Rounded)</i>		\$ 26,500,000	\$ 228,000

FUNDING AND STAFFING SUMMARY

Over the next 15 years, there is nearly \$27,000,000 worth of projects recommended for the Refuge (see Project Cost Summary - Refuge Project Priorities on the following page). These projects range from acquisition of land, development of boat ramps and public use facilities, a new wetlands center, and numerous restoration projects.

As discussed, the projects have been divided into "A", "B" and "C" priority projects. Given that this is a 15 year plan, the projects have been separated equally into five-year periods beginning in 1996.

With regard to staffing, the plan recommends that the Refuge staff will increase over the 15 year period from six people currently, to nineteen. This represents a significant management cost that must be considered. Staffing needs under full development are proposed to be covered by the Project partners (i.e., Illinois Department of Natural Resources, The Nature Conservancy, Southernmost Illinois Tourism, Citizens Committee to Save the Cache River, etc.) Recommended staffing under full development is outlined in the following table. Positions highlighted with an "*" are proposed to be filled by agencies/organizations outside the Service.

RECOMMENDED REFUGE STAFFING UNDER FULL DEVELOPMENT

Refuge Manager	1
Refuge Ops. Spec.	1
Wildlife Biologist	1
Administrative Tech	1
Maintenance Worker	2
Maintenance Worker	2* (Partner Position)
Tractor Operator	1
Tractor Operator	1* (Partner Position)
Environ. Ed./Program Spec.	1
Biological Tech.	1
Volunteer Coord.	1* (Partner Position)
Center/Facility Mgr.	1
Maintenance/Exhibits/Facility	1
Maintenance/Grounds	1
Program Staff (EE/Interp)	1
Program Staff (EE/Interp)	1* (Partner Position)
Program/Publicity	1* (Partner Position)
Total	19 Staff (14 FWS plus 5 Partner Positions)

FUNDING SOURCES

To bring the vision of the Refuge to reality, a number of sources must be tapped to provide funding, volunteer assistance, and partnering. A list of funding sources and potential uses follows:

- ❖ U. S. Army Corps of Engineers
 - Design assistance on hydrology studies
 - Construction of wetlands, hydrological projects
 - Environmental management program
- ❖ State
 - Illinois Department of Natural Resources: Open Space Land Acquisition and Development (OSLAD) grants to acquire outdoor recreation areas
 - Illinois Bicycle Path Grant Program Boat access area development program
 - National Recreation Trails Fund Act
 - Illinois Department of Transportation ISTEA program (funding tentative) Coordination: State Highway Roadside Mgmt. Conservation 2000
- ❖ Others
 - Southern Five Regional Planning: Planning assistance for grants
 - District and Development Commission
 - Interagency connections
 - Integration into Southern Five Geographic Information System
 - Waste management coordination between communities in the Cache River Watershed
 - Cooperation and joint use of equipment, personnel, facilities, land, etc.

❖ Foundations

The following are foundation grant sources in Illinois that have a history of contributions to environmental projects and issues:

- Environmental/Cultural - McKnight Foundation, Minneapolis, Minnesota
- Environmental/Cultural - Joyce Foundation, Chicago, Illinois
- Environmental/Cultural - MacArthur Foundation, Chicago, Illinois

❖ Volunteer/Citizens Groups

- SIU-C and Shawnee Community College - Team with universities on environmental education programs, biological studies, wildlife programs
- Touch of Nature - Continue to facilitate and provide access for Touch of Nature programs
- Citizens Committee to Save the Cache - Continue to

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Comprehensive Management Plan



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APPENDICES

Cypress Creek NWR
Comprehensive Management Plan



APPENDIX A - PUBLIC COMMENTS AND RESPONSES

Cypress Creek NWR
Comprehensive Management Plan



PUBLIC COMMENTS AND RESPONSES

Following is a summary of comments received concerning the Cypress Creek National Wildlife Refuge Comprehensive Management Plan during the public comment periods. Of the responses received, some letters were lengthy but all issues and concerns are addressed here.

Some comments were statements which required no response, others are answered here or with changes in the final Plan, and some issues are beyond the scope of this Plan. These issues are being addressed in other ways.

Responses to these concerns are in italics.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

- ❖ the Plan should be subject to NEPA compliance and accompanied by an Environmental Impact Statement.
- ❖ the Plan should take into consideration the quality of the environment and public health.
- ❖ before the Plan is finalized, there should be more opportunity for public comment with the main issues and concerns publicized.
- ❖ Refuge specific projects in the Plan should be subjected to NEPA analysis.
- ❖ before any Corps of Engineers hydrology study recommendations are implemented, NEPA compliance should apply.

The Comprehensive Management Plan is subject to NEPA compliance and will be accompanied by an Environmental Assessment. The Environmental Assessment serves as the basis for determining whether implementation of the Comprehensive Management Plan would constitute a major Federal action significantly affecting the quality of the human environment. If a positive finding is made, an EIS is required. If a negative finding is made, a FONSI (Finding of No Significant Impact) is prepared and signed.

The Final Environmental Assessment and decision (signed by the Fish and Wildlife Service Regional Director) will be made available to the public for a 30 day review. The Comprehensive Management Plan will not be approved or implemented until the NEPA process is complete.

Additional "step-down" NEPA analysis will be required after the Plan is approved. Major projects proposed in the CMP such as the Wetlands Center and major public use sites will be subject to NEPA analysis prior to construction.

This Plan and its Environmental Assessment do not address Corps of Engineers programs and projects, but they as a federal agency, are subject to NEPA compliance.

LAND USE AND DEVELOPMENT

- ❖ wetlands should be restored on Refuge lands but should not be allowed to flood private land.

The Plan does not allow for flooding of private land.

- ❖ there should be minimal land maintenance and large blocks of forest should be established.

The Plan does identify areas to be reforested, including the 1,000 acre Hogue Woods block. The only land maintenance conducted on reforested land is noxious weed control.

- ❖ large sediment basins should be considered as a means of preventing sediments from entering Buttonland Swamp. Corps of Engineers hydrology study recommendations should be carefully scrutinized.

Large sediment basins are beyond the scope of the Plan but are being considered under the Corps study. Corps recommendations will be reviewed by Joint Venture Partners, the Citizens Committee to Save the Cache River, and the public.

- ❖ there is a need for a variety of habitats for the many species of migratory birds using the Refuge.

The Plan will provide these habitat needs.

- ❖ there should be no logging on the Refuge.

Logging is done on National Wildlife Refuges. However, the Plan does not propose any logging.

- ❖ consideration should be given to removal of Big Creek Ditch levees so flood waters can enter the floodplain in areas now managed as moist soil units at the Frank Bellrose Waterfowl Reserve.

This is an issue of much discussion among the Joint Venture Partners. Values relative to moist soil unit management (primarily waterfowl use) and flood water dispersal (sedimentation) are at issue. The Fish and Wildlife Service will pursue removal of a portion of levee to assess the impact. Other studies are underway relative to this issue. The Plan does not address this specific issue.

- ❖ could the proposed Juncker moist soil unit interfere with future stream or floodplain restoration of Cypress Creek?

When hydrologic restoration of Cypress Creek is undertaken, the Juncker area will cease to be used as a moist soil unit.

- ❖ Refuge habitat restoration proposed in the Plan will benefit the entire Cache Watershed.
- ❖ Cypress Creek has the potential for developing a wide variety of wetlands habitats for a broad spectrum of waterfowl species, wading and neotropical birds, and resident wildlife species.

FARMING USE

- ❖ land that was removed from agriculture adjacent to Buttonland Swamp is now being farmed; it should not be.

Agreed. Land adjacent to Buttonland Swamp is being removed from agricultural use at the end of 1996 and will be restored to forest and wetlands.

- ❖ there should be no farming or pesticide use on the Refuge. Agriculture lands should immediately be reforested or left to natural succession.

Short-time agricultural use is sometimes granted as part of land acquisition. The Refuge Environmental Assessment commits to 10% of the acquired land to remain in agriculture for wildlife. The Plan does not change this. The Refuge does not use nor does the Plan call for pesticide use for insect control.

- ❖ farming should not be conducted on highly erodible land nor adjacent to riparian corridors.

Agreed. The Plan does not allow for farming on highly erodible land nor adjacent to riparian corridors.

- ❖ as per the 10% of land to be farmed mentioned in the Refuge Environmental Assessment, this land should be identified in the Plan.

The Plan does identify some of the area to remain in agriculture but not the entire 10%, as land acquisition is less than 30% completed.

- ❖ the map entitled Restoration Plan - Long Range vision does not show agricultural land remaining within the Refuge boundary. Why?

The Service is committed to keeping 10% of the area in crop production.

- ❖ agriculture is being disregarded in the Plan.

HUNTING

- ❖ one-half of the Refuge land should be closed to hunting in fairness to the non-hunting public.
- ❖ hunting should be allowed and is a compatible use of the Refuge.

Hunting is a compatible use with certain restrictions. Refuge establishment does permit hunting. The Plan does identify hunting as a compatible use with certain restrictions. The Bellrose Public Access Area is not open for duck hunting.

- ❖ hunting should be used as a "tool" to reduce depredations to crops on private lands.

The Plan does allow for this.

- ❖ goose hunting should be encouraged to keep large concentrations of geese from building up in any one place, especially at the Frank Bellrose Waterfowl Reserve.

The Refuge hunting plan does allow for hunting of geese at the Bellrose Waterfowl Reserve, after the duck season ends.

PUBLIC USE AND DEVELOPMENT

- ❖ the environmental program proposed in the Plan is well thought out with a site specific curriculum and issue oriented focus.
- ❖ the public awareness and involvement should be a high priority. Are the Plan objectives in priority order?

The Plan does recognize the value of public education. The Plan objectives are not in any priority order.

- ❖ the Wetlands Education Center and headquarters would be a real asset to the community and should be strongly supported by everyone.

Agreed. The Plan does recognize this.

- ❖ the wetlands education center should be constructed near Eagle Pond, an existing natural feature, on land already owned by the Refuge.

A feasibility study did evaluate 13 sites including a site near Eagle Pond. The site at Easter Slough was the preferred site but further evaluation is possible up until funding is approved.

- ❖ the cartop canoe access site should be more accurately described as a small boat access site.
- ❖ the Plan should identify the Tamms public access site as needing more work done, such as walkways and a ramp at the river.

Agreed. These changes were made in the Plan.

- ❖ disability access has not been addressed in the Plan, especially access to the more sensitive areas.

The Service is committed to meeting all requirements of the Americans With Disabilities Act at all Fish and Wildlife Service facilities. This is a design issue to be addressed when specifications for each site are developed.

- ❖ public outreach efforts should be expanded as the Plan does.
- ❖ tourism is important for the future of this region and the Plan needs to recognize this.

GENERAL

- ❖ the Plan refers to the Citizens Committee, the correct title should be the Citizens Committee to Save the Cache River.

Agreed. These changes were made in the Plan.

- ❖ road closure (north) proposed in the Plan should be removed from consideration. This is a county issue, not a Refuge Plan issue.

Agreed. This recommendation was dropped from the Plan.

- ❖ the Plan proposes wetlands development. Of concern are mosquitoes and disease, such as malaria, that was present years ago.

This issue is beyond the scope of the Plan but will be pursued through public health and environmental protection agencies. There are other large swamp projects throughout the United States and malaria does not appear to be a problem. This is probably because no reservoir exists for transmission of the disease from one person to another.

- ❖ cherrybark oak is listed in the Plan as an upland species; cherrybark oak is a bottomland species.
- ❖ the Plan's emphasis on partnerships and partnership planning is impressive.

- ❖ what will be the impact of the current Corps of Engineers study of the hydrology of the Cache River and how will that dovetail with the Plan?

The Corps study is still in progress and will take time to complete. At this point it is difficult to predict the results of that study. However, there is coordination between the corps and the Joint Venture partners.

- ❖ it is possible that over time, conflicts or disputes may occur among members of the Joint Venture partnership. The Plan does not address conflict resolution. How will this be handled?

Conflict resolution is something that should be addressed in the Joint Venture Memorandum of agreement.

- ❖ does the Plan purpose to keep Cypress Creek open?

Yes. The law mandates that the Service maintain open drainage.

- ❖ the Joint Venture Memorandum of Agreement should be included in the Plan.

This document is incorporated by reference as noted in the Bibliography Section.

- ❖ what assurances do we have that we will not be forced to move?

The Service will purchase land only from willing sellers at a fair market price.

- ❖ the Plan does not discuss trails for all terrain vehicles or horseback riding.

These uses are incompatible with habitat restoration goals and are not permitted on the Refuge.

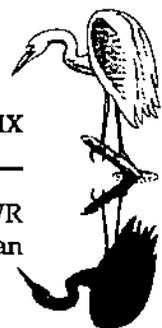
- ❖ as more land is acquired by the Service, more deer leave the Refuge to eat the crops of local farmers.

- ❖ the Department of Defense should not be a partner in the Refuge.

- ❖ the Refuge is a Ramsar site of international significance and this should be emphasized in the Plan.
- ❖ the Plan should be implemented and is impressive because of the emphasis on environmental education and stewardship opportunities.
- ❖ habitat restoration and awareness programs should move ahead quickly.
- ❖ the Plan is good, in that when implemented, it will provide an economic base for tourism growth.
- ❖ the Plan proposes to spend too much public money on facilities and there is no opportunity for industrial development.
- ❖ public comment has been disregarded ever since Refuge establishment.
- ❖ Plan implementation is needed to meet Refuge objectives of the North American Waterfowl Management Plan and to meet Service responsibilities of the endangered Species Act, the Emergency Wetlands Act of 1986, and the Fish and Wildlife Service Act of 1956.

APPENDIX B - PUBLIC USE MANAGEMENT DELIVERY MATRIX

Cypress Creek NWR
Comprehensive Management Plan



PUBLIC USE MANAGEMENT DELIVERY MATRIX

The delivery matrix is a cognitive map to communicate central themes. Six themes have been identified with associated sub-themes. These relate to the Refuge goals, objectives and site-specific resources. Related messages, visitor experiences and media are included in a delivery matrix (Table 1-6). The matrix provides justification for proposed facilities/media. Terms used in the matrix are defined below:

- Storyline:* A series of broad terms that are site-specific and firmly grounded in what is being done to restore, protect, and/or enhance native wildlife and plant communities on the Refuge.
- Theme:* A statement that relates to the goals and objectives of the Comprehensive Management Plan.
- Subtheme:* A statement that further defines the theme.
- Message:* A statement that describes concepts/messages of the subtheme.
- Experience:* A statement that describes what the interpreter media/facilities should accomplish.
- Audience:* A word that describes the primary target group.
- Media:* Services, facilities, and media related to the goals and used to convey the message.

The delivery matrix for the six central project themes is provided on the following pages.

TABLE 1

Theme I: Understanding the Past (Natural & Cultural History of the Cache)

Sub-theme: People are dependent on the Cache River Wetlands. The area has served people throughout time. Its history demonstrates how people are connected to the land and how they have changed the landscape

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Settlers of the Cache</i> - The first settlers arrived in the late 1700's and began the process of draining and clearing the land.	To understand why people were attracted to the area and the challenges that existed to make a living off the land.	All	<i>Brochures:</i> Refuge/Cache River Wetlands <i>Interpretive Trails:</i> Poole Tract, Stubblefield Tract <i>Exhibit:</i> Wetland Education Ctr. Phase I <i>Events:</i> Annual Frontier Feast
<i>Changes in the Land</i> - By 1940's farmsteads were becoming more prevalent and logging had become a major industry; geology & land features were changed. (Post Creek Cut-off and drainage Great Floods, Loss of Wetlands)	To understand how people change the land and the impacts it had on plant and animal communities, geology, hydrology, and water quality.	All	<i>Brochures:</i> Refuge/Cache River Wetlands <i>Interpretive Trails:</i> <i>Exhibits:</i> Oral History Interviews/Stories <i>Events:</i> Cache Riverways/Communities Celebrations <i>Overlooks:</i> Harris Tract, Willingham Tract <i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area (Post Creek Cut-off)
<i>Citizen Involvement</i> - Over the last 90 years, over 230,000 acres of wetlands were lost; citizens organized to stop drainage of swamps and destruction of wildlife habitat.	To understand how people have learn from the past to take action and stop the destruction of the Cache River Wetlands.	All	<i>Brochures:</i> Refuge/Cache River Wetlands, Citizens Committee to Save the Cache <i>Interpretive Trails:</i> <i>Exhibits:</i> Wetland Education Ctr Phase I <i>Events:</i> <i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area

TABLE 2

Theme II: Experiencing Illinois' "Bayou" - Unique and Dynamic Plant Communities of the Cache

Subtheme: Unique Natural Communities within the Refuge and the Cache River Wetlands are more reminiscent of a Louisiana Bayou than a swamp located in a state better known for its prairies.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Largest Remaining Wetland in the State</i> - The area includes some the oldest living things east of the Mississippi River and several state champion trees.	To create an awareness of the age and longevity of this resource.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands,</p> <p><i>Interpretive Trails:</i> Canoe/Old Channel Unit</p> <p><i>Exhibits:</i> Wetland Education Ctr., Oral History Interviews/Stories</p> <p><i>Events:</i> National River Days, Canoe Tours/Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>
<i>Junction of Four</i> - The convergence of 4 overlapping physiographic regions; Gulf Coastal Plain, Ozark Plateau, Central Lowlands, Interior Low Plateaus is a rare geologic phenomenon.	To understand the diversity of plants are enhance and influenced by the climate and topography of the area; these factors contribute to the unique ecological community found within the Refuge.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands,</p> <p><i>Interpretive Trails:</i></p> <p><i>Exhibits:</i> Wayside/Office, Wetland Education Ctr. Phase I</p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>
<i>Ecological Jewels</i> - The Refuge and the Cache River SNA contain high quality remnant native communities which include bottomland hardwood, cypress/tupelo swamps, herbaceous wetlands, springs/seeps and stands of giant cane.	To create an awareness of remnant native landscapes, their sensitivity and how they are different from each other (topography, soil, plant and wildlife species).	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands</p> <p><i>Interpretive Trails:</i> Hogue Woods, Bellrose</p> <p><i>Observation Deck:</i> Boardwalk/Pool Tract</p> <p><i>Exhibits:</i> Wetlands Education Ctr. Phase I</p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>

TABLE 3

Theme III: Exploring the Diversity of Wildlife - A Haven for Wildlife

Subtheme: The Refuge and associated Cache River Wetlands highlights a diversity of waterfowl, shorebirds, wading birds, songbirds, reptiles, amphibians, and mammals that provides wildlife-oriented experiences for visitors.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Wildlife</i> - The Refuge and Cache River Wetlands contains some of the most diversified wildlife habitat in Illinois.	To create an appreciation for the 47 species of mammals in the area and the diversity of insects, fish, birds, and other animals within the Refuge.	All	<p><i>Brochures:</i> Refuge/Cache River Wetlands, Birds of Cache River Wetlands</p> <p><i>Interpretive Trails:</i> Canoe/Old Channel Unit</p> <p><i>Observation Deck:</i> Boardwalk/Poole Tract, Willingham Tract</p> <p><i>Exhibits:</i></p> <p><i>Events:</i> Cache River Days, Canoe Tours</p> <p><i>Educational Trunks:</i> Cache River Wetlands Wildlife</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>
<i>Waterfowl: A Trust Species</i> - The Refuge is included as a component of the North American Waterfowl Management Plan; it is located in the Mississippi Flyway and provides excellent habitat for a diversity of birds using the flyway.	To create an awareness of the hundreds of thousands of waterfowl and other birds that migrate through the area during the spring and fall.	All	<p><i>Brochures:</i> Birds of Cache River Wetlands</p> <p><i>Interpretive Trails:</i></p> <p><i>Observation Deck:</i> Bellrose, Willingham Tract, M. Ernhart Tract</p> <p><i>Exhibits:</i></p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>

TABLE 3 (CONT.)

Theme III: Exploring the Diversity of Wildlife - A Haven for Wildlife

Subtheme: The Refuge and associated Cache River Wetlands highlights a diversity waterfowl, shorebirds, wading birds, songbirds, reptiles, amphibians, and mammals that provides wildlife-oriented experiences for visitors.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<p><i>Wetland Indicators</i> - Many reptiles & amphibians have adapted to the area over a long period of time. (Reptiles and amphibians - frogs and toads)</p>	<p>To create an awareness of the 19 species of frogs and toads that exist in the Cache River Wetlands and snakes that are common to the area.</p>	<p>All</p>	<p><i>Brochures:</i> Reptiles & Amphibians</p> <p><i>Interpretive Trails:</i> Canoe Trails</p> <p><i>Interpretive Programs:</i> Guided Hikes</p> <p><i>Observation Deck:</i> Boardwalk/Poole Tract, M. Ernhart Tract</p> <p><i>Exhibits:</i></p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i></p>
<p><i>Neotropical Migrants</i> - Sightings within the Cache and Cypress Creek wetlands indicate the most diverse assemblage of neotropical migrants in the Midwest.</p>	<p>To create an understanding of neotropical songbirds and an awareness of the birdwatching "hotspots" within the Refuge & Cache River Wetlands.</p>	<p>Adults</p> <p>Organized Groups</p> <p>Special Interest Groups</p>	<p><i>Brochures:</i> Birds of the Cache River Wetlands</p> <p><i>Interpretive Trails:</i> Hogue Woods, Canoe Trail/Old Channel Unit</p> <p><i>Observation Deck:</i> Boardwalk/Poole Tract, M. Ernhart Tract</p> <p><i>Exhibits:</i></p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i></p>
<p><i>Endangered Species</i> - One-third of all state listed species exist in the Cache River Watershed; the Refuge provides a safe haven for some of these species.</p>	<p>To understand the value of the Refuge and State Natural Areas for the protection of threatened/ endangered species.</p>	<p>All</p>	<p><i>Brochures:</i> CRW - Wildlife Checklist</p> <p><i>Observation Deck:</i> Poole Boardwalk;</p> <p><i>Interpretive Trails:</i> Hogue Woods, Canoe Trail</p>

TABLE 4

Theme IV: Protecting a Fragile System (Resource Issues)

Subtheme: The area is an internationally significant site that is threatened by land uses within the watershed; economically sustainable solutions to these issues lies with environmentally literate citizens and their actions.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<p><i>Watershed Issues</i> - The area is threatened by a number of resource threats which include erosion / siltation, non-point source pollution, & open dumping.</p>	<p>To understand that resource threats exist and that there are workable and economic sustainable solutions.</p>	<p>All</p>	<p><i>Brochures:</i> Refuge/Cache River Wetlands</p> <p><i>Interpretive Trails:</i></p> <p><i>Observation Deck:</i> Bellrose, Willingham Tract</p> <p><i>Exhibits:</i></p> <p><i>EE Program:</i> Site-specific Units</p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>
<p><i>Watershed Stewardship</i> - Human actions and lifestyle choices are not just local in effect; citizen stewardship is more efficient in protecting the resource on a long-term basis.</p>	<p>To understand the importance of sound landowner stewardship within the watershed & practices and programs that will benefit wildlife and their habitat on private land. Service Programs: USFWS Private Lands Program</p>	<p>All</p>	<p><i>Brochures:</i> Refuge/Cache River Wetlands</p> <p><i>Volunteer Opportunities:</i> Stewardship Saturday, Friends membership</p> <p><i>Interpretive Trails:</i></p> <p><i>Observation Deck:</i> Bellrose, Willingham Tract</p> <p><i>Exhibits:</i> Oral History of the Cache</p> <p><i>EE Sites:</i> Hogue Woods</p> <p><i>EE Program:</i> Shawnee College Outdoor EE Ctr.</p> <p><i>Events:</i> Cache River Days</p> <p><i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area</p>

TABLE 5

Theme V: Restoring the Balance (Resource Management and Protection)

Sub-theme: Sound land management practices are needed to maintain and restore wildlife and wildland resources while accommodating compatible human use.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Why Does the Refuge Exist?</i> - the Refuge is an important component of the North American Waterfowl Management Plan and includes 7 primary purposes.	To understand the Refuge purposes of managing & restoring bottomland hardwood forests and woodland habitat for migratory and resident wildlife.	All	<i>Brochures:</i> Refuge/Cache River Wetlands <i>Interpretive Trails:</i> <i>Observation Deck:</i> Bellrose, Willingham Tract <i>Exhibits:</i> Wetland Education Ctr Phase I <i>Events:</i> Cache River Days <i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area
<i>Dynamic Partnering</i> - The Refuge strives to combine resources with other groups or agencies to advance the goals and objectives of the Refuge and the Joint Venture.	To understand the Joint Venture approach of working with local communities, agencies, & organizations to maintain & enhance the resource.	All	<i>Brochures:</i> Refuge/Cache River Wetlands <i>Interpretive Trails:</i> <i>Volunteer Opportunities:</i> Internships, Stewardship Saturdays <i>Observation Deck:</i> Bellrose, <i>Exhibits/Kiosk:</i> Boyd Seed Tree Orchard <i>Events:</i> Cache River Days
<i>Restoration & Reforestation</i> - Through restoration & reforestation, Refuge staff is putting back the habitat to bring back the wildlife.	To understand the value of and actions to protect & restore natural communities on lands within the Refuge boundary.	All	<i>Brochures:</i> Refuge/Cache River Wetlands <i>Interpretive Trails:</i> <i>Volunteer Opportunities:</i> Internships, Stewardship Saturdays <i>Observation Deck:</i> Bellrose, Willingham Tract Exhibits/Kiosk: Boyd Seed Tree Orchard <i>Events:</i> Cache River Days <i>Auto Tour/Wayside Exhibits:</i> Existing roads within Project Area
<i>Moist-Soil Management</i> - Water regimes are controlled on some areas to replicate woodland function and productivity over a large area.	Moist-soil management provides a variety of resources for ducks and other wildlife throughout the year.	Adults and Individual Special Interest Groups	<i>Outdoor Classroom:</i> Bellrose <i>Observation Deck:</i> Bellrose <i>Event:</i> Van Tours <i>Interpretive Programs:</i> Birdwatching (a.m.), Duck Banding, Weeds or Wild Food <i>Volunteer Opportunities:</i> Stewardship Saturday

TABLE 6

Theme VI: Communicating Educational/Recreational Opportunities within the Cache River Wetlands

Subtheme: The diversity and features of the area provide many opportunities to explore, hike, hunt, fish, canoe, and learn about wildlife, plants, and the human connection to the Cache River Wetlands.

<i>MESSAGE</i>	<i>EXPERIENCE</i>	<i>AUDIENCE</i>	<i>MEDIA</i>
<i>Environmental Education</i> - EE is a crucial component of Refuge and includes objectives to build awareness, knowledge, and skills to change attitudes and promote responsible environmental behavior.	To create an appreciation for the Cache River Wetlands & actively involve participants in exploration & resource issues investigation.	Students, Adults, and Organized Groups	<i>Brochures:</i> Exploring the CRW <i>Outdoor Classrooms:</i> Boyd, Rolwing, Bellrose <i>Volunteer Opportunities:</i>
<i>Wildlife-dependent Recreation</i> -The unique environment and diversity of wildlife attracts and offers people a fun and relaxing experience within the Cache River Wetlands.	To increase awareness of wildlife watching, hiking, hunting, fishing, and other recreational opportunities they can enjoy on the Refuge.	All	<i>Interpretive Programs:</i> Wildlife Watching (early a.m. or evening) <i>Events:</i> Cache River Days Facility Development
<i>Interpretive Programming</i> - Special public events and programs provide visitors with a guided first-hand experience within the Cache River Wetlands.	To increase awareness and understanding of annual events, and specialized programs that are offered to the Public.	All	<i>Brochures/Publications:</i> Annual Calendar of Events, News Releases/ PSA's <i>Guided Tours:</i> Van and Canoes

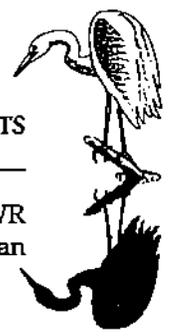
APPENDIX C - COMPATIBILITY DETERMINATION

Cypress Creek NWR
Comprehensive Management Plan



APPENDIX D - PROJECT WORKSHEETS

Cypress Creek NWR
Comprehensive Management Plan



Project Description Project includes reforestation of 350 acres per year for five years, primarily at north end of Refuge. In a five-year period, restore 1,750 acres of land to native hardwoods on both upland and bottomland sites. Use planting stock indigenous to the area. Project includes site preparation, machine or hand planting, and weed control. Planting techniques will vary depending upon success rates of previous restoration efforts in similar conditions.

Project Justification Restoration of converted crop lands is to provide large blocks of native habitat for wildlife in support of Refuge purpose and watershed and ecosystem plans.

Community/Partner Interest The Nature Conservancy, IDNR, SIU Research Consortium, National Biological Survey, North America Tree Trust.

Project Design Criteria Individual units will be evaluated prior to planting to determine tree species, spacing and special requirements.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 560,000
	Indirect Cost	\$ 644,000
	Total Project Cost	\$1,204,000
	Maintenance Cost	\$ 2,300
	Date of Estimate:	08/96

Funding Opportunities _____ ISTEAs _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		_____	
			TNC	
	Reviewed	Date	Approved	Date
_____		_____		
State DNR		Refuge Manager		

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Forest Restoration - 1997	\$300	350	\$105,000
		Forest Restoration - 1998	\$300	350	\$105,000
		Forest Restoration - 1999	\$300	350	\$105,000
		Forest Restoration - 2000	\$350	350	\$122,500
		Forest Restoration - 2001	\$350	350	\$122,500
		Subtotal (Direct Cost)			\$560,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		
	Construction Management		
	Project Management/Administration	15%	\$ 84,000
	Subtotal (Indirect Cost)		
	TOTAL COST		\$644,000

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost *
	Contract / In-House			
	Mowing/Brush Hogging (Years 1, 2 & 3)	x	2 Times/Year	\$5000 \$ 2,000
	Administration	x	15%	\$ 300
	Total			\$ 2,300

* Average cost over 5 years

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project includes the annual restoration of 100 acres of wetlands during the 5 year period of 1997 through 2001.

Project Justification To meet Refuge goals and objectives and to provide habitat for wetland dependent waterfowl and other species.

Community/Partner Interest TNC
Citizens Committee to Save the Cache River

Project Design Criteria Focus on prior covered wetlands

<i>Funds Summary</i>	Direct Cost	\$ 30,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 0
	Total Project Cost	\$ 30,000
	Maintenance Cost	\$ 0
	Date of Estimate:	9/96

Funding Opportunities _____ ISTE A _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
	1.	Natural Wetland Restoration	\$300	100 acres	\$30,000
Subtotal (Direct Cost)					\$30,000

Indirect Cost

Description	Rate	Total Cost
Design		\$ 0
Construction Management		\$ 0
Project Management		\$ 0
Subtotal (Indirect Cost)		\$ 0
TOTAL COST		\$ 0

Annual Maintenance Cost

Labor Source	Quantity	Unit Cost	Annual Cost
Contract / In-House			
Not Applicable			

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description Throughout the Refuge there are opportunities to recreate some of the unique micro-ecosystems such as the canebrakes which once flourished in the Cache. Additionally, small springs and seeps are scattered throughout the Refuge which have been covered or are threatened to be silted in by flood waters.

Project Justification Springs and seeps help regulate water levels during drought periods. Canebrakes provide unique habitat for species such as the Swainsons' warbler.

Community/Partner Interest Audubon Society
TNC

Project Design Criteria Care must be taken when collecting rhizomes not to disturb existing canebrakes. In addition care should be taken when restoring springs or seeps so as not to disturb the State endangered dusky salamander.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 6,800
	Indirect Cost	\$ 0
	Total Project Cost	\$ 6,800
	Maintenance Cost	\$ 250
	Date of Estimate:	9/96

Funding Opportunities _____ ISTE A _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	
	Reviewed	Date	Approved	Date
	State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Restoration of unique habitats such as springs, seeps & canebrakes	\$200/AC	34	\$6,800
Subtotal (Direct Cost)					\$ 6,800

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		\$ 0
	Construction Management		\$ 0
	Project Management		\$ 0
	Subtotal (Indirect Cost)		\$ 0
	TOTAL COST		\$ 6,800

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost *
	Contract / In-House			
	Back Hoe Seeps (Year 3)	X 5 annually	200	\$ 200
	Administration	X 15%		\$ 50
	Total			\$ 250
	* Average cost over 5 years			

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description The proposed boat access near Mounds will include a concrete boat ramp, parking lot and signage. Also, the site will provide access to a regional bike trail proposed for the Cache, Mississippi & Ohio Rivers levees.

Project Justification The project is at the southern tip of the refuge and will provide boat and bicycle access to the lower Cache area. Activities will include fishing, canoeing, wildlife observation and research.

Community/Partner Interest City of Mounds
 Illinois Department of Natural Resources

Project Design Criteria

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$73,550
	Indirect Cost	\$18,400
	Total Project Cost	\$91,950
	Maintenance Cost	\$ 3,300
	Date of Estimate:	03/96

Funding Opportunities ISTEA State Trails OSLAD

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		_____	
			TNC	
	Reviewed	Date	Approved	Date
_____		_____		
State DNR		Refuge Manager		

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Site Prep			\$ 5,000
		Concrete Ramp	\$8/SF	960	\$ 7,700
		Gravel Parking	\$1,000/car	10	\$10,000
		Toilets	\$12,000/EA	1	\$12,000
		Signs (Highway) & Kiosk	\$1,200/EA	1	\$ 1,200
		Post & Rail	\$15/LF	644	\$ 9,660
		Short Trail	\$5/LF	150	\$ 750
		Bike Trail Head/Kiosk	\$15,000/LS		\$61,310
		Contingency		20%	\$12,250
		Subtotal (Direct Cost)			\$73,550

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 7,350
	Construction Management	5%	\$ 3,700
	Project Management	10% (overall)	\$ 7,350
	Subtotal (Indirect Cost)		\$18,400
	TOTAL COST		\$91,950

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Trash Pick-Up	x	Bi-Weekly	\$ 25 \$ 650
	Parking Lot	x	Bi-Monthly	\$100 \$ 600
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$ 75
	Litter Clean-Up *	x	Bi-Monthly	\$ 60 \$ 360
	Mowing/Brush Hogging	x	3 Times/Year	\$100 \$ 300
	Administration	x	15%	\$ 300
	Total			\$ 3,300

* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[x]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description Boat access near Tamms to include parking lot, boat ramp, fishing dock, signage, vault toilet.

Project Justification

Community/Partner Interest Illinois Department of Natural Resources
City of Tamms

Project Design Criteria Follow IDNR requirements. This project may be a community project with little or no funding from U. S. Fish and Wildlife Service

<i>Funds Summary</i>	Direct Cost	\$49,150
<i>Detail on Page 2</i>	Indirect Cost	\$12,250
	Total Project Cost	\$61,400
	Maintenance Cost	\$ 3,100
	Date of Estimate:	03/96

Funding Opportunities _____ ISTE A _____ State Trails _____ x _____ Tamms _____ x _____ IDNR

<i>Partnership Review & Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR _____		Refuge Manager _____	

Cost Estimate:

Direct Cost	No.	Description	Unit Cost	Quantity	Total Cost
		Gravel Parking/Ramp	\$4.50/SY	2,300	\$10,350
		Toilet/Sidewalk	\$12,000/EA	1	\$12,000
		Bollards	\$150/EA	8	\$ 1,200
		Culvert	\$600/EA	1	\$ 600
		Kiosk	\$1,200/EA	1	\$ 1,200
		Canoe Guide/Steps	\$4,000/EA	1	\$ 4,000
		Trail	\$1/LF	5,000	\$ 5,000
		Dock/Platform	\$3,000/EA	1	\$ 3,000
		Contingency		15%	\$ 6,400
		Subtotal (Direct Cost)			\$49,150

Indirect Cost	Description	Rate	Total Cost
	Design	10%	\$ 4,900
	Construction Management	5%	\$ 2,450
	Project Management	10% (overall)	\$ 4,900
	Subtotal (Indirect Cost)		\$12,250
	TOTAL COST		\$61,400

Annual Maintenance Cost	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Trash Pick-Up	x	Bi-Weekly	\$ 25 \$ 650
	Parking Lot	x	Quarterly	\$150 \$ 600
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$ 150
	Litter Clean-Up *	x	Bi-Monthly	\$100 \$ 600
	Mowing/Brush Hogging	x	3 Times/Year	\$250 \$ 750
	Administration	x	15%	\$ 400
	Total			\$ 3,100

* Indicates potential volunteer or other labor source

Regulatory Clearances	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[x]	[]	_____
E.S. Section 7 Consultation	[x]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[x]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description The Cache River Wetlands Center development involves the construction of a 23,000 sf visitor center (on the west side of Easter Slough off of Shawnee College Road), wetland boardwalks, exterior revegetation, and the provision of an environmental education program. The wetlands center will include three wings: a public wing which will house a gift shop, theater and a large exhibit and observation space; an administration wing which will house offices, conference and work rooms and a library; and a research wing which will house a greenhouse, GIS work space and a multi-use room.

Project Justification Project will benefit the local economy, educate the public about the environmental importance of the Cache River, and unique ecosystem of the watershed. The visitor center will also strengthen the partnership and help provide opportunities for expanded partnerships.

Community/Partner Interest Citizens Committee to Save the Cache River
The Nature Conservancy
Ducks Unlimited
Illinois Department of Natural Resources
Southern Illinois University-Carbondale

Project Design Criteria See feasibility study

<i>Funds Summary</i>	Direct Cost	\$10,810,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 3,873,500
	Total Project Cost	\$14,593,500
	Maintenance Cost	\$ 75,000
	Date of Estimate:	03/96

Funding Opportunities _____ ISTEAs _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Wetlands Center Building	\$289/SF	23,000/SF	\$ 6,650,000
		Wetlands Center Site	\$59,140/AC	46.5/AC	\$ 2,750,000
		Contingency		15%	\$ 1,410,000
		Subtotal (Direct Cost)			\$10,810,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 1,081,000
	Construction Management	10%	\$ 1,081,000
	Project Management	15%	\$ 1,621,000
	Subtotal (Indirect Cost)		\$ 3,783,500
	TOTAL COST		\$14,593,500

Annual Maintenance Cost

	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Maintenance (1 full-time)	x			\$ 25,000
Supplies/Contracts	x			\$ 50,000
Total				\$ 75,000

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[x]	[]	_____
E.S. Section 7 Consultation	[x]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[x]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[x]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description The proposed facility is an outdoor interpretive and learning site on the Shawnee campus. As primarily an educational site the project will include demonstration features showing restoration techniques, test plots, pond construction and prairie restoration, and support facilities will include trails, signs, amphitheater, and equipment storage.

Project Justification A joint venture to aid the college in teaching students about the unique features of the Cache and restoration efforts going on in the refuge.

Community/Partner Interest Shawnee College

Project Design Criteria

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$41,250
	Indirect Cost	\$ 9,000
	Total Project Cost	\$50,250
	Maintenance Cost	\$ 900
	Date of Estimate:	03/96

Funding Opportunities _____ ISTE A _____ State Trails Wildlife Forever

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	_____
	Reviewed	Date	Approved	Date
	_____		State DNR	Refuge Manager

CMP Project Worksheet SHAWNEE COLLEGE OUTDOOR LEARNING SITE A7

Station Name: Cypress Creek NWR

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Trail	\$4/LF	2,000	\$ 8,000
		Pond Construction	\$10,000/LS	1	\$10,000
		Prairie	\$1,000/AC	3 AC	\$ 3,000
		Cane Restoration	\$2,000/LS	1	\$ 2,000
		Trail Head	\$4,000/EA	1	\$ 4,000
		Test Plot Signs	\$2,000/LS	1	\$ 2,000
		Exotic Vegetation Removal	\$2,500/LS	1	\$ 2,500
		Amphitheater	\$6,000/LS	1	\$ 6,000
		Contingency/Unscheduled Items		10%	\$ 3,750
		Subtotal (Direct Cost)			\$41,250

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 2,800
	Project Management	15%	\$ 6,200
	Subtotal (Indirect Cost)		\$ 9,000
	TOTAL COST		\$50,250

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Mowing/Brush Hogging	x	4 Times/Year	\$200 \$ 800
	Administration	x	15%	\$ 100
	Total			\$ 900

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[x]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

BELLROSE PUBLIC ACCESS & OUTDOOR CLASSROOM

CMP Project Worksheet

A8

Station Name: Cypress Creek NWR

Page 1 of 2

Project Description The primary function of the Bellrose Public Access Area will be to accommodate organized groups and students. It is one of four designated outdoor classrooms proposed for the Refuge. Facilities will include a group shelter with tables and benches, information kiosk, boardwalk, trail, parking area and toilet facilities. Goose hunting is a secondary activity to prevent buildup of large flocks of geese. The area will function as a duck sanctuary and be closed to duck hunting throughout the fall season.

Project Justification The site was chosen as an outdoor classroom because it contains diverse plant communities, excellent wildlife observation and it can demonstrate waterfowl management techniques such as moist soil management.

Community/Partner Interest Ducks Unlimited

Project Design Criteria

<i>Funds Summary</i>	Direct Cost	\$141,800
<i>Detail on Page 2</i>	Indirect Cost	\$ 30,450
	Total Project Cost	\$172,250
	Maintenance Cost	\$ 7,800
	Date of Estimate:	08/96

Funding Opportunities

_____ ISTEAs _____	_____ State Trails _____	_____	_____
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Partnership Review & Approvals

Submitted By:	Date	Reviewed	Date
_____	_____	_____	_____
		TNC	
Reviewed	Date	Approved	Date
_____	_____	_____	_____
State DNR		Refuge Manager	

BELLROSE PUBLIC ACCESS & OUTDOOR CLASSROOM

CMP Project Worksheet

A8

Station Name: Cypress Creek NWR

Page 2 of .)

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Parking (EE) (Oil Chip)	\$8.00/SY	500	\$ 4,000
		Parking (Hunter)	\$4.50/SY	300	\$ 1,350
		Hunter Access Sign	\$1,200/EA	1	\$ 1,200
		Shelter 22' x 32'	\$35,000/EA	1	\$ 35,000
		Boardwalk w/Screen	\$60/LF	600	\$ 36,000
		Interpretive Signs	\$1,000/EA	6	\$ 6,000
		Blind	\$12,000/LS	1	\$ 12,000
		Oil Chip Road	\$4,400/1 Mile	1.5	\$ 6,600
		Toilets	\$12,000/EA	2	\$ 24,000
		Contingency/unscheduled items		20%	\$ 23,650
		Subtotal (Direct Cost)			\$149,800

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 14,200
	Construction Management	5%	\$ 7,100
	Project Management	10% (overall)	\$ 9,150
	Subtotal (Indirect Cost)		\$ 30,450
	TOTAL COST		\$172,250

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Road	x	Annually	\$4,000 \$ 4,000
	Trash Pick-Up	x	Bi-Weekly	\$ 25 \$ 650
	Parking Lot	x	Quarterly	\$ 150 \$ 600
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$ 150
	Litter Clean-Up *	x	Bi-Monthly	\$ 100 \$ 600
	Mowing/Brush Hogging	x	3 Times/Year	\$ 250 \$ 750
	Administration	x	15%	\$ 1,000
	Total			\$ 7,800

* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[x]	[]	_____

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
	1.	7800 John Deer Tractor W/Batwing Mower & Offset Disk			\$ 70,000
	2.	D5C LGP III Caterpillar Tractor			\$ 78,800
	3.	446B Backhoe Loader			\$ 93,400
	4.	Dump Truck w/LowBoy Trailer			\$100,000
		Subtotal (Direct Cost)			\$342,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design Construction Management Project Management/Administration	10%	\$ 34,220
	Subtotal (Indirect Cost)		
	TOTAL COST		\$376,420

<i>Annual Maintenance Cost</i>	Labor/Source Contract / In-House	Quantity	Unit Cost	Annual Cost
	Equipment Maintenance/ Repair	x	(3%)	\$10,000
	Total			\$10,000

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description Located at opposite end of lower Cache Slough from the proposed Mounds boat launch. This facility is a small canoe access and associated development and maintenance of a 6 mile canoe trail.

Project Justification Excellent canoeing opportunities exist in the lower Cache Slough area. Access and trail marking will open up the area to wildlife observation and fishing.

Community/Partner Interest

Project Design Criteria Follow IDNR design requirements

<i>Funds Summary</i> <i>Detail on Page 2</i>	Direct Cost	\$33,650
	Indirect Cost	\$ 8,375
	Total Project Cost	\$42,025
	Maintenance Cost	\$ 2,200
	Date of Estimate:	09/96

Funding Opportunities

_____ ISTEA _____ State Trails _____

Partnership Review & Approvals

Submitted By:	Date	Reviewed	Date
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TNC

Reviewed	Date	Approved	Date
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State DNR

Refuge Manager

Cost Estimate:

Direct Cost	No.	Description	Unit Cost	Quantity	Total Cost
		Site preparation	LS		\$ 5,000
		Canoe Ramp	\$6,500/EA	1	\$ 6,500
		Parking (6 Cars)	\$1,000/car	6	\$ 6,000
		Sign	\$1,200/EA	1	\$ 1,200
		Access Drive (Oil Chip)	\$10/CY	500	\$ 5,000
		Post & Rail	\$15/LF	370/LF	\$ 5,550
		Landscape Planting			
		Contingency		15%	\$ 4,400
		Subtotal (Direct Cost)			\$33,650

Indirect Cost	Description	Rate	Total Cost
	Design	10%	\$ 3,350
	Construction Management	5%	\$ 1,675
	Project Management	10% (overall)	\$ 3,350
	Subtotal (Indirect Cost)		\$ 8,375
	TOTAL COST		\$42,025

Annual Maintenance Cost		Labor Source	Unit	Annual Cost	Cost
		Contract / In-House	Quantity		
	Trash Pick-Up	x	Bi-Weekly	\$ 20	\$ 520
	Parking Lot	x	Quarterly	\$100	\$ 400
	Litter Clean-Up *	x	Bi-Monthly	\$ 60	\$ 360
	Mowing/Brush Hogging	x	3 Times/Year	\$200	\$ 600
	Administration	x	15%		\$ 300
	Total				\$ 2,200

* Indicates potential volunteer or other labor source

Regulatory Clearances	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

BOYD SEED ORCHARD & OUTDOOR CLASSROOM

CMP Project Worksheet

A11

Station Name: Cypress Creek NWR

Page 1 of 2

Project Description Development of interpretive elements at Seed Orchard depicting restoration efforts at CCNWR. A gathering area, trail, signs, equipment storage toilets and a shelter will support environmental education efforts focused on the productions of seed for large scale ecosystem restoration.

Project Justification Seed Orchard is the primary site for seed propagation and offers unique educational opportunities for restoration efforts.

Community/Partner Interest The Nature Conservancy

Project Design Criteria Standard interpretive signage for the joint venture.

<i>Funds Summary</i>	Direct Cost	\$215,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 43,000
	Total Project Cost	\$258,000
	Maintenance Cost	\$ 2,500
	Date of Estimate:	03/96

Funding Opportunities _____ ISTEAs _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

**BOYD SEED ORCHARD &
OUTDOOR CLASSROOM**

CMP Project Worksheet

A11

Station Name: Cypress Creek NWR

Page 2 of

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Parking (5 car & 1 bus)	\$1000/Car	7	\$ 7,000
		Interpretive Trail	\$4.00/LF	5,000	\$ 20,000
		Signage (Main)	\$1,200/EA	1	\$ 1,200
		Signage (Interpretive)	\$400/EA	10	\$ 4,000
		Toilets	\$12,000/EA	1	\$ 12,000
		Irrigation System	\$5,000/Acre	15	\$ 75,000
		Shelter	\$60/SF	1000	\$ 60,000
		Contingency		20%	\$ 35,800
		Subtotal (Direct Cost)			\$215,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 21,500
	Construction Management	5%	\$ 10,750
	Project Management	5% (overall)	\$ 10,750
	Subtotal (Indirect Cost)		\$ 43,000
	TOTAL COST		\$258,000

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Trash Pick-Up	x	Bi-Weekly	\$ 15 \$ 390
	Parking Lot	x	Quarterly	\$100 \$ 400
	Restroom Pump-Out	x	Bi-Annually	\$ 75 \$ 150
	Litter Clean-Up *	x	Bi-Monthly	\$100 \$ 600
	Mowing/Brush Hogging	x	3 Times/Year	\$250 \$ 750
	Administration	x	15%	\$ 230
	Total			\$ 2,500

* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description

New lands aquired (7,500 acres) will require perimeter posting with Refuge boundary signs at 1/4 mile or less intervals. Roadway traffic control signs will also be required at new public use sites. Highway signs will be installed according to a Refuge Sign Plan.

Brochures and maps will be generated for visitor facilities and will need periodic updating and printing.

Project Justification

Refuge signs, brochures and maps are an essential part of directing access on the Refuge and reducing trespassing on private land.

Community/Partner Interest

State Highway Department, Joint Venture Partners and Tourism Group with brochure development and printing

Project Design Criteria

*Funds Summary
Detail on Page 2*

Direct Cost	\$63,000
Indirect Cost	\$ 9,500
Total Project Cost	\$72,500
Maintenance Cost	\$ 350
Date of Estimate:	09/96

Funding Opportunities

_____ ISTE A _____ State Trails _____

Partnership Review & Approvals

Submitted By:	Date	Reviewed	Date
_____		_____	
		TNC	
Reviewed	Date	Approved	Date
_____		_____	
State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Boundary Signs	\$35/EA	800	\$28,000
		Traffic Control Signs	\$50/EA	100	\$ 5,000
		Highway Signs	\$1500/EA	10	\$15,000
		Visitor Brochure	\$10,000/LS	1	\$10,000
		Visitor Maps	\$5,000/LS	1	\$ 5,000
		Subtotal (Direct Cost)			\$63,000

<i>Indirect Cost</i>	Description	Rate	Total Cost	
	Design			
	Construction Management			
	Project Management/Administration	15%	\$ 9,500	
	Subtotal (Indirect Cost)			\$ 9,500
	TOTAL COST			\$72,500

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	Replace Signs	x	10/Year	\$35 \$ 350

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project summarizes a five-year forest reforestation program for the Refuge in which 1,750 acres of land will be planted.

Project Justification Forest reforestation is one of the top priorities of the Refuge and one of the primary reasons the Refuge was established.

Community/Partner Interest TNC

Project Design Criteria Native trees are to be used.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$700,000
	Indirect Cost	\$105,000
	Total Project Cost	\$805,000
	Maintenance Cost	\$ 2,300
	Date of Estimate:	09/96

Funding Opportunities _____ ISTEAs _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	_____
	Reviewed	Date	Approved	Date
	_____		Refuge Manager	_____
	State DNR			

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Forest Restoration - 2002	\$400	350	\$140,000
		Forest Restoration - 2003	\$400	350	\$140,000
		Forest Restoration - 2004	\$400	350	\$140,000
		Forest Restoration - 2005	\$400	350	\$140,000
		Forest Restoration - 2006	\$400	350	\$140,000
		Subtotal (Direct Cost)			\$700,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		
	Construction Management		
	Project Management/Administration	15%	\$105,000
	Subtotal (Indirect Cost)		
	TOTAL COST		\$805,000

<i>Annual Maintenance Cost</i>		Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost *
	Mowing/Brush Hogging (Years 1, 2 & 3)	x	2 Times/Year	\$5000	\$ 2,000
	Administration	x	15%		\$ 300
	Total				\$ 2,300
	* Average cost over 5 years				

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project includes the annual restoration of 100 acres of wetlands during the 5 year period of 1997 through 2001.

Project Justification To meet Refuge goals and objectives and to provide habitat for wetland dependent waterfowl and other species.

Community/Partner Interest TNC
Citizens Committee to save the Cache River

Project Design Criteria Focus on prior covered wetlands

<i>Funds Summary</i>	Direct Cost	\$ 40,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 0
	Total Project Cost	\$ 40,000
	Maintenance Cost	\$ 0
	Date of Estimate:	9/96

Funding Opportunities _____ ISTEA _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____	_____	_____	_____
		TNC		
	Reviewed	Date	Approved	Date
	_____	_____	_____	_____
	State DNR		Refuge Manager	

CMP Project Worksheet WETLAND RESTORATION (2002-2006)

B

Station Name: Cypress Creek NWR

Page 2 of 4

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
	1.	Natural Wetland Restoration	\$400	100 acres	\$40,000

Subtotal (Direct Cost) \$40,000

Indirect Cost

Description	Rate	Total Cost
Design		\$ 0
Construction Management		\$ 0
Project Management		\$ 0
Subtotal (Indirect Cost)		\$ 0
TOTAL COST		\$ 0

Annual Maintenance Cost

Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
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Not Applicable

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description Throughout the refuge there are opportunities to recreate some of the unique micro-ecosystems such as the cane brakes which once flourished in the Cache. Additionally, small springs and seeps are scattered throughout the refuge which have been covered or are threatened to be silted in by flood waters.

Project Justification Springs and seeps help regulate water levels during drought periods. Canebrakes provide unique habitat for species such as the Swainsons warbler.

Community/Partner Interest Audubon Society
TNC

Project Design Criteria Care must be taken when collecting rhizomes not to disturb existing canebrakes. In addition care should be taken when restoring springs or seeps not to disturb the state endangered dusky salamander.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 10,200
	Indirect Cost	\$ 0
	Total Project Cost	\$ 10,200
	Maintenance Cost	\$ 450
	Date of Estimate:	9/96

Funding Opportunities _____ ISTE A _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	
	Reviewed	Date	Approved	Date
	State DNR		Refuge Manager	

CMP Project Works **UNIQUE NATIONAL COMMUNITIES RESTORATION** **B3**

Station Name: Cypress Creek NWR

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Restoration of unique habitats such as springs, seeps & cane brakes	\$300/AC	34	\$10,200
Subtotal (Direct Cost)					\$ 10,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		\$ 0
	Construction Management		\$ 0
	Project Management		\$ 0
	Subtotal (Indirect Cost)		\$ 0
	TOTAL COST		\$ 10,200

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost *	
	Contract / In-House				
	Back Hoe Seeps (years 6 and 9)	x	5 annually	200	\$ 400
	Administration	x	15%		\$ 50
	Total				\$ 450
	*Average cost over 5 years				

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description Construct 330 acres of additional moist soil units at Juncker, Boyd, Greenburg and Delta lands parcels. Units will have low dikes and dewatering capabilities.
(The Juncker Unit will be managed as a moist soil unit only until some time in the future when Cypress Creek is restored to its original channel).

Project Justification As a specialized form of wetland restoration, moist soil management will emulate wetland functions and productivity that occurred naturally within the Cache River ecosystem for the primary benefit to migratory waterfowl and shorebirds.

Community/Partner Interest Ducks Unlimited

Project Design Criteria Design so that at least 25% of area can be flooded by October 15. Provide at least 150 acres of 330 in mudflat-type habitat for spring shorebirds by partial drawdown capabilities.

Funds Summary Detail on Page 2

Direct Cost	\$ 860,000
Indirect Cost	\$ 302,000
Total Project Cost	\$1,162,150
Maintenance Cost	\$ 5,610
Date of Estimate:	09/96

Funding Opportunities _____ ISTE A _____ State Trails _____

Partnership Review & Approvals

Submitted By:	Date	Reviewed	Date
_____	_____	TNC	_____
Reviewed	Date	Approved	Date
State DNR	_____	Refuge Manager	_____

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Juncker	\$2000/AC	100	\$ 200,000
		Boyd	\$2000/AC	80	\$ 160,000
		Greenburg	\$2000/AC	80	\$ 160,000
		Delta Lands	\$2000/AC	70	\$ 140,000
		Brushy Moist Soil Unit	\$2000/AC	100	\$ 200,000
		Subtotal (Direct Cost)			\$ 860,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design & Hydrology Study	15%	\$ 132,000
	Construction Management	5%	\$ 64,500
	Project Management	10% (overall)	\$ 105,650
	Subtotal (Indirect Cost)		\$ 302,150

TOTAL COST **\$1,162,150**

<i>Annual Maintenance Cost</i>	Labor Source		Unit Cost	Annual Cost
	Contract / In-House	Quantity		
	Mowing, Replant, Reshaping	x	330 Acres	\$10 \$ 3,300
	Diesel Fuel for Pumping	x	330 Acres	\$7 \$ 2,310
	Total			\$ 5,610

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[x]	[]	_____
E.S. Section 7 Consultation	[x]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[x]	[]	_____
Water Quality Section 401	[x]	[]	_____
Road Closure Approval	[]	[]	_____

HOGUE WOODS PUBLIC ACCESS & OUTDOOR CLASSROOM

CMP Project Worksheet

B5

Station Name: Cypress Creek NWR

Page 1 of 2

Project Description This project is located in the north central portion of the refuge. It is a popular spot for hunters and is somewhat remote. The site has already received replanting of seedlings. Project facilities for this site include restrooms (concrete block), access road, school bus access lot, information sign, gravel parking lot, trail (develop), and gate.

Project Justification Heavily used by hunters. Has many unique characteristics for education.

Community/Partner Interest Potential hunting organizations and educational institutions

Project Design Criteria Standard signage, trail head, parking, and concrete block toilet design

<i>Funds Summary</i>	Direct Cost	\$74,400
<i>Detail on Page 2</i>	Indirect Cost	\$18,625
	Total Project Cost	\$93,025
	Maintenance Cost	\$ 3,350
	Date of Estimate:	09/96

Funding Opportunities

<u> </u> ISTEA	<u> </u> State Trails	<u> ✓ </u> Hunting Organizations
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<i>Partnership Review & Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

HOGUE WOODS PUBLIC ACCESS & OUTDOOR CLASSROOM

CMP Project Worksheet

B5

Station Name: Cypress Creek NWR

Page 2 of

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Restroom	\$12,000/EA	2	\$24,000
		Gravel Access Road	\$4.50/SY	3,000	\$13,500
		Gravel Parking	\$1,000/CAR	12	\$12,000
		Trail Development	\$4/LF	2,500	\$10,000
		Gate	\$2,500/EA	1	\$ 2,500
		Contingency/Unscheduled Items		20%	\$12,400
Subtotal (Direct Cost)					\$74,400

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 7,450
	Construction Management	5%	\$ 3,725
	Project Management	10% (overall)	\$ 7,450
	Subtotal (Indirect Cost)		\$13,625
	TOTAL COST		\$93,025

Annual Maintenance Cost

	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Trash Pick-Up	x	Bi-Weekly	\$ 25	\$ 650
Parking Lot	x	Quarterly	\$150	\$ 600
Restroom Pump-Out	x	Bi-Annually	\$150	\$ 300
Litter Clean-Up *	x	Bi-Monthly	\$100	\$ 600
Mowing/Brush Hogging	x	3 Times/Year	\$250	\$ 750
Administration	x	15%		\$ 450
Total				\$ 3,350

* Indicates potential volunteer or other labor source

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x] []	_____	_____
NPDES Permit	[x] []	_____	_____
E.S. Section 7 Consultation	[] []	_____	_____
Cultural Resources	[x] []	_____	_____
Corps Section 404	[x] []	_____	_____
Waste Water Disposal	[] []	_____	_____
Dam Permit	[] []	_____	_____
Water Quality Section 401	[] []	_____	_____
Road Closure Approval	[x] []	_____	_____

Project Description The Hogue Woods and James Tracts have old county roads which are unused. A formal road closure process should be pursued.

Project Justification Roads are in need of repair and have erosion problems.

Community/Partner Interest County

Project Design Criteria None

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$10,200
	Indirect Cost	\$ 1,050
	Total Project Cost	\$11,250
	Maintenance Cost (One Year)	\$ 1,100
	Date of Estimate:	09/96

Funding Opportunities _____ ISTEAs _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		_____	
			TNC	
	Reviewed	Date	Approved	Date
_____		_____		
State DNR		Refuge Manager		

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Remove/Revegetate North	\$2/SY	1,000	\$ 2,000
		Gates	\$1,500/EA	1	\$ 1,500
		Grading	\$5/CY	1,000	\$ 5,000
		Contingency		20%	\$ 1,700
		Subtotal (Direct Cost)			\$10,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Construction Management	5%	\$ 500
	Project Management	5% (overall)	\$ 550
	Subtotal (Indirect Cost)		\$ 1,050
	TOTAL COST		\$11,250

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
	One-year projected	x		\$ 1,100

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[x]	[]	_____

Project Description To develop five small (5-acre) hunter accesses throughout the Refuge. Locations include Greenberg, Stuckey, Brushy, Hileman, and Thomure.

Project Justification Project is used currently by hunters. Will provide a more controlled access to a remote area of the refuge.

Community/Partner Interest

Project Design Criteria Typical primitive access with standard hunter sign-in and informational kiosk.

<i>Funds Summary</i>	Direct Cost	\$40,800
<i>Detail on Page 2</i>	Indirect Cost	\$ 4,100
	Total Project Cost	\$44,900
	Maintenance Cost	\$ 1,325
	Date of Estimate:	08/96

Funding Opportunities _____ ISTEAs _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____	_____	TNC	_____
	Reviewed	Date	Approved	Date
	_____	_____	_____	_____
	State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Hunter Access	\$5,000	5	\$25,000
		Kiosk	\$1,200	5	\$ 6,000
		Entrance Sign	\$ 600	5	\$ 3,000
		Contingency/Unscheduled Items		10%	\$ 6,800
		Subtotal (Direct Cost)			\$40,800

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Project Management	10%	\$ 4,100
	Subtotal (Indirect Cost)		\$ 4,100
	TOTAL COST		\$ 44,900

<i>Annual Maintenance Cost</i>		Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
	Trash Pick-Up	x	Bi-Weekly	\$ 25	\$ 150
	Parking Lot	x	Quarterly	\$100	\$ 400
	Litter Clean-Up *	x	Bi-Annually	\$ 75	\$ 300
	Mowing/Brush Hogging	x	3 Times/Year	\$100	\$ 300
	Administration	x	15%		\$ 175
	Total				\$ 1,325

* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project is located at the northernmost end of the refuge and contains unique cypress swamps. The project will provide a mid-level public access point to a remote portion of the refuge. The project will include the following program developments:

- Foot Trail/Boardwalk
- Parking Lot (10 Cars and 1 Bus)
- Trail Head Sign
- Restrooms
- Interpretive Signs
- Observation Blind

Project Justification This is a very unique portion of the refuge, containing a true cypress swamp. The project area will provide access for environmental education, hunters and bird watchers.

Community/Partner Interest

Project Design Criteria This project shall follow typical standards for a multi-use access site with signage, trail head, parking, and restroom design.

<i>Funds Summary</i>	Direct Cost	\$81,850
<i>Detail on Page 2</i>	Indirect Cost	\$21,700
	Total Project Cost	\$103,550
	Maintenance Cost	\$3,150
	Date of Estimate:	9/96

Funding Opportunities ISTEA State Trails OSLAD Foundation

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	
	Reviewed	Date	Approved	Date
	State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Trail Development	\$4/LF	5,000	\$ 20,000
		Boardwalk	\$50/LF	400	\$ 20,000
		Parking Lot (Gravel)	\$1000/CAR	12	\$ 12,000
		Wood Signs	\$1200/EA	1	\$ 1,200
		Interpretive Sign	\$600/EA	5	\$ 3,000
		Restroom (Unisex)	\$12,000/EA	1	\$ 12,000
		Contingency/Unscheduled Items		10%	\$ 13,650
		Subtotal (Direct Cost)			\$ 81,850

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 8,200
	Construction Management	5%	\$ 4,100
	Project Management	10 (overall)	\$ 9,400
	Subtotal (Indirect Cost)		\$ 21,700
	TOTAL COST		\$103,550

<i>Annual Maintenance Cost</i>		Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
	Trash Pick-Up	x	Bi-Weekly	\$ 25	\$650
	Parking Lot	x	Quarterly	\$ 150	\$600
	Restroom Pump-Out	x	Bi-Annually	\$ 75	\$150
	Litter Clean-Up *	x	Bi-Monthly	\$ 100	\$600
	Mowing/Brush Hogging	x	3 Times/Year	\$ 250	\$750
	Administration	x	15%	\$ 400	
	Total				\$3,150

* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[x]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[x]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

CMP Project Worksheet CULTURAL RESOURCES SITE SURVEYS/PLANS B9

Station Name: Cypress Creek NWR

Page 1 of 2

Project Description Several step-down activities need to take place related to cultural resource investigations. Archaeologic clearances are needed for all development sites. Historic structures such as the Churchill House, Stubblefield House and Rolwing Cabin will need further evaluation and study for protection and/or secondary uses.

Project Justification Policy requires informal decisions based on site-specific surveys and evaluations.

Community/Partner Interest SIU architectural/engineering evaluation. Possible design school project. Possible use by community residents as gift shop or restaurant as house is near Bellrose tract.

Project Design Criteria Following FWS policy and guidances per Regional Cultural Resource Officer.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 85,000
	Indirect Cost	\$ 24,250
	Total Project Cost	\$109,250
	Date of Estimate:	09/96

<i>Funding Opportunities</i>	_____	ISTEA	_____	State Trails	_____	_____
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<i>Partnership Review & Approvals</i>	Submitted By:	_____	Date	_____	Reviewed	_____	Date	_____
					TNC			
	Reviewed	_____	Date	_____	Approved	_____	Date	_____
	State DNR	_____			Refuge Manager	_____		

CMP Project Worksheet CULTURAL RESOURCES SITE SURVEYS/PLANS

B9

Station Name: Cypress Creek NWR

Page 1 of 2

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Churchill House Study	\$10,000	1	\$ 10,000
		Stubblefield Log House	\$ 5,000	1	\$ 5,000
		Greer Log Barn	\$ 5,000	1	\$ 5,000
		Rolwing Log Cabin	\$ 5,000	1	\$ 5,000
		Arch. Clearances	\$ 5,000	12	\$ 60,000
		Subtotal Direct Cost			\$ 85,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design/Strategic Plan		\$ 10,000
	Project Management	15%	\$ 14,250
	Subtotal (Indirect Cost)		\$ 24,250
	TOTAL COST		\$109,250

Annual Maintenance Cost

Not Applicable

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project involves a mix of moist soil development and reforestation with environmental education facilities. As an intermediate level of development, the Brushy site will include perimeter access, walking trails, moist soil management, reforestation, and typical public use facilities, including parking for 10 cars and 1 bus.

Project Justification Central location and prominent visibility for a primary roadway, as well as prime acquisition target.

Community/Partner Interest

Project Design Criteria To establish a uniform image, the project should contain standard design details for the Cache Wetlands, but also contain identity with the National Wildlife Refuge System through signs and brochures.

<i>Funds Summary</i> <i>Detail on Page 2</i>	Direct Cost	\$139,800
	Indirect Cost	\$ 37,000
	Total Project Cost	\$176,800
	Maintenance Cost	\$ 7,500
	Date of Estimate:	09/96

Funding Opportunities _____ ISTEAs _____ State Trails _____ EMP

<i>Partnership Review & Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR _____		Refuge Manager _____	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Trail	\$4/LF	16,000	\$ 64,000
		Access Road/Parking (Gravel)	\$1,000/CAR	12	\$ 12,000
		Sign (Interpretive)	\$600/EA	10	\$ 6,000
		Gate for Parking	\$2,500/EA	1	\$ 2,500
		Observation Blind	\$8,000/EA	1	\$ 8,000
		Kiosk	\$5,000/EA	N/A	Maintenance
		Toilet	\$12,000	1	\$ 12,000
		Contingency/Unscheduled Items		20%	\$ 23,300
		Subtotal (Direct Cost)			\$139,800

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 14,000
	Construction Management	5%	\$ 7,000
	Project Management	10% (overall)	\$ 16,000
	Subtotal (Indirect Cost)		\$ 37,000
	TOTAL COST		\$176,800

<i>Annual Maintenance Cost</i>	Labor Source		Quantity	Unit Cost	Annual Cost
	Contract	In-House			
		x	Weekly \$50	\$2,600	
	x		Bi-Weekly	\$ 25	\$ 650
		x	Quarterly	\$ 300	\$ 1,200
		x	Monthly	\$ 50	\$ 600
		x	Bi-Monthly	\$ 100	\$ 600
		x	3 Times/Year	\$ 300	\$ 900
		x	15%		\$ 1,000
			Total		\$ 7,500

* Indicates potential volunteer or other labor source

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[x]	[]	_____
E.S. Section 7 Consultation	[x]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description

This project will provide valuable information on how the land was used by collecting 1st-hand knowledge from long-term residents of the area. The product will be a valuable component of the exhibitry in the Wetland Visitor Center.

Project Justification

The product will provide a valuable record of past traditions, changes in the land, and perspectives regarding the Cache River Wetlands.

Community/Partner Interest

Project Design Criteria

*Funds Summary
Detail on Page 2*

Direct Cost	\$13,200
Indirect Cost	\$ 0
Total Project Cost	\$13,200
Maintenance Cost	\$ 0
Date of Estimate:	09/97

Funding Opportunities

_____ ISTE A _____ State Trails _____

Partnership Review & Approvals

Submitted By:	Date	Reviewed	Date
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_____ TNC _____

Reviewed	Date	Approved	Date
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_____ State DNR _____ Refuge Manager _____

Cost Estimate:

Direct Cost No. Description Unit Cost Quantity Total Cost

Contract to collect and record interviews
with area residents \$13,200

Subtotal (Direct Cost) \$13,200

Indirect Cost Description Rate Total Cost

TOTAL COST \$13,200

Annual Maintenance Cost Labor Source Quantity Unit Cost Annual Cost

Contract / In-House

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project identifies a budget to annually reforest 350 acres of land between 2007 and 2011.

Project Justification Reforestation is one of the highest priorities for the Refuge.

Community/Partner Interest

Project Design Criteria

<i>Funds Summary</i>	Direct Cost	\$787,500
<i>Detail on Page 2</i>	Indirect Cost	\$118,125
	Total Project Cost	\$905,625
	Maintenance Cost	\$ 2,300
	Date of Estimate:	09/96

Funding Opportunities _____ ISTEAs _____ State Trails _____

Partnership Review & Approvals

Submitted By:	Date	Reviewed	Date
_____	_____	TNC	_____
Reviewed	Date	Approved	Date
_____	_____	_____	_____
State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Forest Restoration - 2007	\$450	350	\$157,500
		Forest Restoration - 2008	\$450	350	\$157,500
		Forest Restoration - 2009	\$450	350	\$157,500
		Forest Restoration - 2010	\$450	350	\$157,500
		Forest Restoration - 2011	\$450	350	\$157,500
		Subtotal (Direct Cost)			\$787,500

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design		
	Construction Management		
	Project Management/Administration	15%	\$118,125
	Subtotal (Indirect Cost)		
	TOTAL COST		\$905,625

<i>Annual Maintenance Cost</i>	Labor Source	Quantity	Unit Cost	Annual Cost *
	Contract / In-House			
	Mowing/Brush Hogging x	2 Times/Year	\$5000	\$ 2,000
	(Years 1, 2 & 3)			
	Administration x	15%		\$ 300
	Total			\$ 2,300

* Average cost over 5 years

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description Hydrologic study and construction of stream meanders at Easter Slough and Big Creek.. This project also includes the annual restoration of 100 acres of wetlands during the 5 year period of 2007 through 2011.

Project Justification Demonstration projects to reconstruct old stream meanders which have been channelized. To meet refuge goals and objectives to provide habitat for wetland dependent and other species.

Community/Partner Interest The Nature Conservancy
Possible use of Environmental Management Program (EMP) funds through the U. S. Army Corps of Engineers

Project Design Criteria Must not impact non-refuge properties

<i>Funds Summary</i> <i>Detail on Page 2</i>	Direct Cost	\$2,262,700
	Indirect Cost	\$ 420,000
	Total Project Cost	\$2,682,700
	Maintenance Cost	\$ 10,000
	Date of Estimate:	03/96

Funding Opportunities _____ ISTE A _____ State Trails _____ EMP _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	_____
	Reviewed	Date	Approved	Date
	_____		Refuge Manager	_____
	State DNR			

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Hydraulic Study	\$7,000/LS	1	\$ 7,000
		Bank Stabilizations	\$1,000,000/LS	1	\$1,000,000
		Channel Reconstruction	\$1,000,000/LS	1	\$1,000,000
		Natural Wetland Restoration	\$500	100	\$ 50,000
		Contingency		10%	\$ 205,700
		Subtotal (Direct Cost)			\$2,262,700

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design/Stream Restoration		\$ 200,000
	Construction Management/Stream Restoration	5%	\$ 100,000
	Project Management/Stream Restoration	5%(overall)	\$ 120,000
	Subtotal (Indirect Cost)		\$ 420,000
	TOTAL COST		\$2,682,700

<i>Annual Maintenance Cost</i>	Description	Annual Cost
	5-Year Management Review of Stream Restortion	\$ 10,000

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[x]	[]	_____
E.S. Section 7 Consultation	[x]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[x]	[]	_____
Water Quality Section 401	[x]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description Throughout the Refuge there are opportunities to recreate some of the unique micro-ecosystems such as the canebrakes which once flourished in the Cache. Additionally, small springs and seeps are scattered throughout the refuge which have been covered or are threatened to be silted in by flood waters.

Project Justification Springs and seeps help regulate water levels during drought periods. Canebrakes provide unique habitat for species such as the Swainsons warbler.

Community/Partner Interest Audubon Society
TNC

Project Design Criteria Care must be taken when collecting rhizomes not to disturb existing canebrakes. In addition care should be taken when restoring springs or seeps not to disturb the state endangered dusky salamander.

<i>Funds Summary</i>	Direct Cost	\$13,200
<i>Detail on Page 2</i>	Indirect Cost	\$ 0
	Total Project Cost	\$13,200
	Maintenance Cost	\$ 450
	Date of Estimate:	9/96

Funding Opportunities _____ ISTE A _____ State Trails _____

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
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_____ TNC

Reviewed	Date	Approved	Date
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_____ State DNR _____ Refuge Manager

CMP Project Works **UNIQUE NATIONAL COMMUNITIES RESTORATION** **C3**

Station Name: Cypress Creek NWR

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Restoration of unique habitats such as canebrakes, springs and seeps.	\$400/AC	33/AC	\$13,200
Subtotal (Direct Cost)					\$ 13,200

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Total Cost		\$ 13,200

<i>Annual Maintenance Cost</i>	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost *
	Back Hoe	x	Every 3rd Year	\$1,000 \$ 400
	Administration		15%	\$ 50
	Total			\$ 450

* Average cost over 5 years.

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description Two bicycle trails are proposed for Cypress Creek. Currently, the Tunnel Hill bicycle trail stops in Karnak. This project would link the Tunnel Hill trail to the proposed Wetlands Center, a distance of 6 miles. This project would be limited primarily to county roads, except where meeting the visitor center.

Project Justification This project will physically link the Refuge to local communities providing scenic, nonmotorized wildlife viewing opportunities.

Community/Partner Interest Several local communities and tourism groups could support bicycle proposal.

Project Design Criteria Must meet AASHTO standards

<i>Funds Summary</i>	Direct Cost (20% participation)	\$ 836,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 194,550
	Total Project Cost	\$1,030,550
	Maintenance Cost	\$ 1,035
	Date of Estimate:	03/96

Funding Opportunities ISTEA State Trails

<i>Partnership Review & Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Road Shoulder Widening (6')	\$60,000/MILE	6	\$ 360,000
		Bike Trail on Refuge (8' Wide)	\$80,000/MILE	2	\$ 160,000
		Bike Trail on lower Cache Levee	\$40,000/MILE	6	\$ 240,000
		Contingency		10%	\$ 76,000
		Subtotal (Direct Cost)			\$ 836,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 83,600
	Construction Management	5%	\$ 41,800
	Project Management	10% (overall)	\$ 96,150
	Subtotal (Indirect Cost)		\$ 194,550
	TOTAL COST		\$1,030,550

Annual Maintenance Cost

	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
Litter Clean-Up (Refuge)*	x	Bi-Monthly	\$100	\$ 600
Mowing/Brush Hogging	x	3 Times/Year	\$100	\$ 300
Administration	x			\$ 135
Total				\$ 1,035

* Indicates potential volunteer or other labor source

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description The Phase Two Visitor Center development involves the construction of the maintenance facility.

Project Justification See feasibility study for visitor center

Community/Partner Interest Citizens Committee to Save the Cache River
The Nature Conservancy
Ducks Unlimited
Illinois Department of Natural Resources
Southern Illinois University-Edwardsville

Project Design Criteria See feasibility study

<i>Funds Summary</i>	Direct Cost	\$1,627,000
<i>Detail on Page 2</i>	Indirect Cost	\$ 488,000
	Total Project Cost	\$2,115,000
	Maintenance Cost	\$ 75,000
	Date of Estimate:	03/96

<i>Funding Opportunities</i>	_____	ISTEA	_____	State Trails	_____	_____	_____
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<i>Partnership Review & Approvals</i>	Submitted By:	_____	Date	_____	Reviewed	_____	Date	_____
		_____			TNC	_____		
	Reviewed	_____	Date	_____	Approved	_____	Date	_____
		State DNR	_____			Refuge Manager	_____	

Cost Estimate:

<i>Direct Cost</i> (1996 Dollars)	No.	Description	Unit Cost	Quantity	Total Cost
		Maintenance Building			\$ 500,000
		Maintenance Site			\$ 979,000
		Contingency		10%	\$ 148,000
		Subtotal (Direct Cost)			\$1,627,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 162,700
	Construction Management	10%	\$ 162,700
	Project Management	10%	\$ 162,700
	Subtotal (Indirect Cost)		\$ 488,000
	TOTAL COST		\$ 2,115,000

Annual Maintenance Cost

	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
Maintenance Staff (1 full-time average)	x	1	\$25,000	\$25,000
Materials			\$50,000	\$50,000
TOTAL				\$75,000

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[x]	[]	_____
NPDES Permit	[x]	[]	_____
E.S. Section 7 Consultation	[x]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[x]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[x]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project involves upgrading a road to the interpretive cabin feature. Minor improvements will also be necessary for parking and accessibility.

Project Justification Build new oil and chip roadway to Rolwing cabin in accordance with the goal to reduce erosion from gravel roads and to provide enhanced educational opportunities at the Refuge.

Community/Partner Interest

Project Design Criteria Oil and chip roadway

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$ 86,300
	Indirect Cost	\$ 17,850
	Total Project Cost	\$104,150
	Maintenance Cost	\$ 760
	Date of Estimate:	09/96

Funding Opportunities _____ ISTEA _____ State Trails _____ IHPA

<i>Partnership Review & Approvals</i>	Submitted By: _____	Date _____	Reviewed _____	Date _____
			TNC	
	Reviewed _____	Date _____	Approved _____	Date _____
	State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Oil and Chip Road	\$8/SY	8,800	\$ 70,400
		Interpretive Sign	\$1,500/EA	1	\$ 1,500
		Contingency/Unscheduled Items		20%	\$ 14,400
		Subtotal (Direct Cost)			\$ 86,300

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 8,600
	Construction Management	5%	\$ 4,300
	Project Management	5% (overall)	\$ 4,950
	Subtotal (Indirect Cost)		\$ 17,850
	TOTAL COST		\$104,150

Annual Maintenance Cost

	Labor Source	Quantity	Unit Cost	Annual Cost
	Contract / In-House			
Trash Pick-Up	x	Monthly	\$ 10	\$ 120
Litter Clean-Up *	x	Quarterly	\$ 60	\$ 240
Mowing/Brush Hogging	x	3 Times/Year	\$100	\$ 300
Administration	x	15%		\$ 100
Total				\$ 760

* Indicates potential volunteer or other labor source

Regulatory Clearances

	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project contains three overlooks that are in the northernmost portion of the Refuge. The project includes overlooks for the Harris Tract, Rose Tract, and Goins Tract. Facilities for these overlooks include the following:

- Willingham: Overlook, Parking and Sign
- Harris Tract: Overlook, Parking Lot, Sign
- Rose Tract: Overlook, Parking Lot, Sign
- Goins Tract: Overlook, Parking Lot, Sign, Interpretive Trail (100 Acres)

Project Justification This project will provide a unique opportunity for visitors to see a large portion of the Refuge from one location, as well as interpretive and hiking opportunities.

Community/Partner Interest Citizens Committee to Save the Cache River

Project Design Criteria This project shall conform to the typical standards of a multi-use access site for signage, trail head, and parking.

<i>Funds Summary</i>	Direct Cost	\$29,250
<i>Detail on Page 2</i>	Indirect Cost	\$ 6,075
	Total Project Cost	\$35,325
	Maintenance Cost	\$ 3,840
	Date of Estimate:	09/96

Funding Opportunities ISTEA State Trails OSLAD

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
	_____		TNC	_____
	Reviewed	Date	Approved	Date
	_____		Refuge Manager	_____
	State DNR			

Cost Estimate:

Direct Cost	No.	Description	Unit Cost	Quantity	Total Cost
		Parking Lot (Willingham)	\$4.50/SY	500	\$ 2,250
		Sign (Willingham)	\$1,200/EA	1	\$ 1,200
		Parking Lot (Harris)	\$4.50/SY	500	\$ 2,250
		Sign (Harris)	\$1,200/EA	1	\$ 1,200
		Parking Lot (Rose)	\$4.50 SY	500	\$ 2,250
		Sign (Rose)	\$1,200/EA	1	\$ 1,200
		Parking Lot (Goins)	\$4.50/SY	500	\$ 2,250
		Interpretive Sign (Goins)	\$200/EA	20	\$ 4,000
		Trail (Goins)	\$1/LF	10,000	\$10,000
		Contingency		10%	
		Subtotal (Direct Cost)			\$29,250

Indirect Cost	Description	Rate	Total Cost
	Design	10%	\$ 2,925
	Construction Management	5%	\$ 1,450
	Project Management	5% (overall)	\$ 1,700
	Subtotal (Indirect Cost)		\$ 6,075
	TOTAL COST		\$ 35,325

Annual Maintenance Cost	Labor Source		Quantity	Unit Cost	Annual Cost
	Contract	In-House			
		x	Bi-Weekly	\$ 40	\$ 1,040
		x	Quarterly	\$200	\$ 800
		x	Bi-Monthly	\$100	\$ 600
		x	3 Times/Year	\$300	\$ 900
		x	15%	\$500	
			Total		\$ 3,840

* Indicates potential volunteer or other labor source

Regulatory Clearances	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[]	[]	_____
Corps Section 404	[x]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

Project Description This project includes the designation of an auto tour route for the Refuge and other public lands. The tour route will include signage, pull-offs, improvements, and a message repeater system which informs motorists of Refuge points of interest.

Project Justification The project will provide a unique way to visit the Refuge that minimally impacts the resource.

Community/Partner Interest County Roads Commission
IDOT

Project Design Criteria The project will conform to standard signage program and requirements by road authorities.

<i>Funds Summary Detail on Page 2</i>	Direct Cost	\$103,000
	Indirect Cost	\$ 20,000
	Total Project Cost	\$123,000
	Maintenance Cost	\$ 1,945
	Date of Estimate:	5/96

Funding Opportunities ISTEA State Trails

<i>Partnership Review & Approvals</i>	Submitted By:	Date	Reviewed	Date
			TNC	
	Reviewed	Date	Approved	Date
	State DNR		Refuge Manager	

Cost Estimate:

<i>Direct Cost</i>	No.	Description	Unit Cost	Quantity	Total Cost
		Signs	\$500/EA	20	\$ 10,000
		Gravel Pull-Offs (additional to other projects)	\$2800/EA	5	\$ 14,000
		Highway Gateway Sign	\$25,000/EA	2	\$ 50,000
		Message Repeater System	\$20,000/EA	1	\$ 20,000
		Contingency		10%	\$ 9,000
		Subtotal (Direct Cost)			\$103,000

<i>Indirect Cost</i>	Description	Rate	Total Cost
	Design	10%	\$ 10,000
	Construction Management	5%	\$ 5,000
	Project Management	5%	\$ 5,000
	Subtotal (Indirect Cost)		\$ 20,000
	TOTAL COST		\$123,000

<i>Annual Maintenance Cost</i>	Labor Source Contract / In-House	Quantity	Unit Cost	Annual Cost
	Trash Pick-Up (not associated with other projects)	x	Monthly	\$ 60 \$ 720
	Mowing	x	3 Times/Yr	\$300 \$ 900
	Administration	x	20%	\$ 395
	Total			\$ 1,945

<i>Regulatory Clearances</i>	Req'd	Accompl.	Initial
NEPA/ROD Clearance	[]	[]	_____
NPDES Permit	[]	[]	_____
E.S. Section 7 Consultation	[]	[]	_____
Cultural Resources	[x]	[]	_____
Corps Section 404	[]	[]	_____
Waste Water Disposal	[]	[]	_____
Dam Permit	[]	[]	_____
Water Quality Section 401	[]	[]	_____
Road Closure Approval	[]	[]	_____

ENVIRONMENTAL ASSESSMENT

Cypress Creek NWR
Comprehensive Management Plan



Finding of No Significant Impact

Cypress Creek National Wildlife Refuge Comprehensive Management Plan

An Environmental Assessment has been prepared to publicly disclose the possible environmental consequences that implementation of the Cypress Creek Comprehensive Management Plan (CMP) could have on the quality of the environment, as required by the National Environmental Policy Act of 1969 (NEPA). The EA presented and evaluated two alternatives, a "No Action" alternative 1 (maintain the status quo) and an "Action" alternative 2 (implement the Cypress Creek CMP).

The alternative selected for implementation is Alternative 2, implement the Cypress Creek CMP and establish Refuge management direction pursuant to the goals, objectives and strategies contained in the CMP.

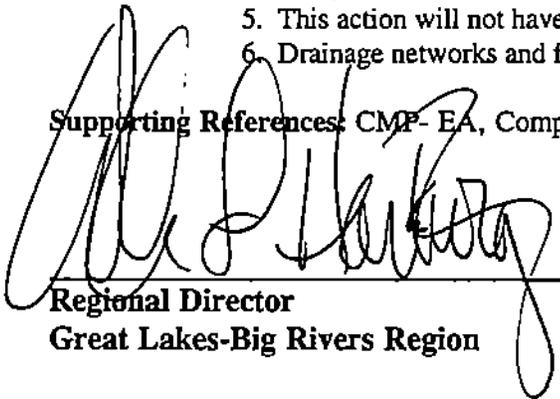
Background: In 1991 the U. S. Fish and Wildlife Service (Service), Illinois Department of Natural Resources, The Nature Conservancy and Ducks Unlimited joined forces to create a unique 60,000 acre federal/state/private conservation partnership for watershed protection and ecosystem restoration. The Cypress Creek National Wildlife Refuge, a major component within this partnership, has acquired and now manages over 13,000 acres of its proposed 35,320 acres. The purpose of the Cypress Creek Comprehensive Management Plan is to guide management activities of the staff and the physical development of the Refuge by identifying appropriate habitats, programs and facilities which fulfill the purposes for which the Refuge was established. The CMP also communicates the Service's contribution to the joint venture partnership and to the Southernmost Illinois region.

This Finding of No Significant Impact (FONSI) and supporting EA will be made available to the public for 30 days from the date below. During this 30-day period the FONSI will not be final, nor will the Service implement the selected alternative. a final decision will be made on whether to carry out the alternative selected at the conclusion of the 30-day period.

For the following reasons and based on the information contained in the Environmental Assessment, we have determined that **Alternative 2** is not a major federal action which would significantly affect the quality of the human environment, within the meaning of Section 102(2)(c) of NEPA.

- Reasons:**
1. The Refuge will add economic diversity and stability to the local area as visitor use increases.
 2. Acquisition of lands has been and will continue to be from willing sellers only.
 3. Annual Revenue sharing payments are made to the counties to help off-set potential impacts to the tax base.
 4. Cultural resource surveys are planned based on the CMP cultural resource Overview Study and recommendations in the CMP.
 5. This action will not have an adverse impact on threatened and endangered species.
 6. Drainage networks and floodplains will not be affected.

Supporting References: CMP- EA, Comprehensive Management Plan, Establishing EA, 1990



Regional Director
Great Lakes-Big Rivers Region

Date

4-14-97

Comprehensive Management Planning
Statement of Environmental Compliance

Project: **Cypress Creek National Wildlife Refuge**
Location: Alexander, Johnson, Polaski, and Union Counties, Illinois

NEPA (Circle One)

Categorical Exclusion

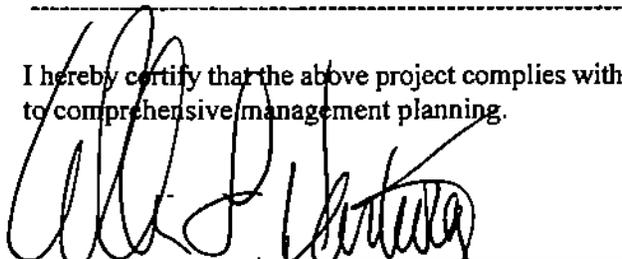
EA - FONSI (Final Environmental Assessment)

EIS - ROD

The U.S. Fish and Wildlife Service is determined to be in compliance with the following, as determined by the signifying official.

	Signature	Date
E.O. 12372 -Intergovernmental Review of Federal Programs	<u>M. W. Waples</u>	<u>4.1.97</u>
E.O. 11988 -Floodplain Management	<u>M. W. Waples</u>	<u>4.1.97</u>
E.O. 11990 -Wetland Protection	<u>M. W. Waples</u>	<u>4.1.97</u>
Endangered Species Act, Section 7	<u>M. W. Waples</u>	<u>3.4.97</u>
The National Historic Preservation Act of 1966, as amended; Executive Order 11593 (Protection and Enhancement of the Cultural Environment); and 36 Code of Federal Regulations, Part 800 (Protection of Historic Properties.)	<u>J. E. L.</u>	<u>4-8-97</u>

I hereby certify that the above project complies with all requirements of law, rules or regulations applicable to comprehensive management planning.


Regional Director

4-14-97
Date

UNITED STATES FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ACTION STATEMENT
(REGION 3)

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that the action of (describe): Implementation of the Comprehensive Management Plan for Cypress Creek National Wildlife Refuge in Alexander, Johnson, Pulaski, and Union Counties, Illinois:

- is a categorical exclusion as provided by 516 DM 2 Appendix 1 and 516 DM 6, Appendix 1. No further NEPA documentation will therefore be made. Reference _____

-XX- is found not to have significant environmental effects as determined by the attached environmental assessment and finding of no significant impact.

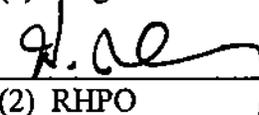
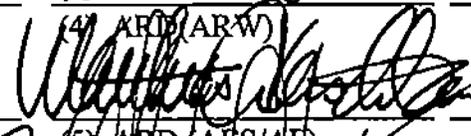
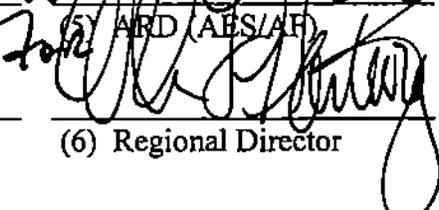
- is found to have significant effects and, therefore, further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an EIS.

- is not approved because of unacceptable environmental damage, or violation of Fish and Wildlife Service mandates, policy, regulations, or procedures.

- is an emergency action within the context of 40 CFR 1506.11. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other supporting documents (list):

Signature Approval

	4.1.97		4/8/97
(1) Originator	Date	(4) ARD (ARW)	Date
	4-8-97		4.10.97
(2) RHPO	Date	(5) ARD (ABS/AF)	Date
	4/9/97		4-14-97
(3) REC	Date	(6) Regional Director	Date

**Environmental Assessment
for the
Cypress Creek National Wildlife Refuge**

Comprehensive Management Plan

January 1997

Abstract

The U.S. Fish and Wildlife Service is proposing implementation of the Comprehensive Management Plan for the Cypress Creek National Wildlife Refuge in Alexander, Johnson, Pulaski and Union counties in Illinois. This Environmental Assessment considers the biological, environmental and socioeconomic effects implementing the CMP will have on the most significant issues and concerns identified during the planning process.

The purpose of the Plan is to:

- Provide partners and local communities with a clear vision and statement of the desired Refuge in 15 years.
- Ensure that management of the Refuge reflects the policies and goals of the National Wildlife Refuge System
- Ensure that Refuge management is consistent with federal, state, county and partner plans and studies.
- Provide Refuge staff with guidance and priorities for budget requests and for the consistent development, operation and management of the Refuge over the next 15 years.

Responsible Agency and Official: William Hartwig, Regional Director
U. S. Fish and Wildlife Service
Henry Whipple Federal Building
1 Federal Drive
Fort Snelling, Minnesota 55111-4056

Contacts for additional information about this project:

Gerald H. Updike, Refuge Manager
Cypress Creek National Wildlife Refuge
Route 1, Box 53D
Ullin, IL 62992
618-634-2231

Mike Marxen, Project Manager
U.S. Fish and Wildlife Service
1 Federal Drive
Fort Snelling, MN 55111-4056
612-725-3306

I. Purpose and Need for the Proposed Action

Located within the Cache River Wetlands, the Cypress Creek National Wildlife Refuge (Refuge) is part of the New Madrid Wetlands Project of the Lower Mississippi Valley Joint Venture of the North American Waterfowl Management Plan. In 1990, an Environmental Assessment (1990 EA) was completed for the establishment of the Refuge; this document addressed biological, environmental and socioeconomic effects related to creating a National Wildlife Refuge in southern Illinois. It defined the purpose of the Refuge (reference CMP - Chapter 1) and authorized land management practices, hunting and other public use opportunities, land acquisition, and the biological program. The impacts of nine alternatives were examined and evaluated and are referenced in Chapter 2 of the establishing 1990 EA. As a result, it was determined that the establishment of the Refuge would not significantly affect the quality of the human environment within the meaning of Section 102 (2) © of the National Environmental Policy Act of 1969 (NEPA).

In 1995 the Refuge began preparing a Comprehensive Management Plan (CMP) for Cypress Creek National Wildlife Refuge. The CMP is directly linked to the establishing 1990 EA but, more specifically outlines the management of wildlife and habitat and the development of public use facilities and programs at the Refuge for the next 15 years. The plan provides a comprehensive framework for future management; it identifies management strategies as well as locations and priorities for habitat and public use development. Thirty projects are described, including their purpose, the type of development or restoration, the estimated costs and approximate locations. The CMP does not have site plans and exact locations for facilities, therefore the analysis of environmental impacts associated with implementation of the CMP is addressed at the conceptual planning level. Additional compliance with NEPA will be done when site specific plans are completed for each of the major projects such as the proposed wetlands visitor center and major access sites.

Categorical Exclusions

Certain management activities contained in the CMP are "Categorically Excluded". This means that these are classes of actions which do not individually or cumulatively have a significant effect on the human environment. The following activities normally do not require the completion of an Environmental Assessment: environmental education and interpretation programs (which do not involve construction); research, inventory and information collection activities; operation, routine maintenance of existing facilities; the construction of new small structures such as fences, small water control structures, planting of vegetation, construction of small berms and dikes and the development of limited access for maintenance and management purposes; prescribed burning; fire management activities; reintroduction of native species, minor changes in amounts or types of public use on Fish and Wildlife Service owned lands; and the issuance of management plans when minor changes or effects are anticipated.

Decision Framework

The Regional Director for the Great Lakes-Big Rivers Region of the U. S. Fish and Wildlife Service will use the Environmental Assessment to select one of two alternatives and determine whether the alternative selected will have significant environmental impacts requiring preparation of an environmental impact statement. Specifically, analysis and findings described in the CMP and in this EA will help the Regional Director decide whether to continue with current management at the Refuge (status quo) or whether to adopt the actions described in the Cypress Creek National Wildlife Refuge Comprehensive Management Plan.

It is recommended that the reader refer to the Comprehensive Management Plan for Cypress Creek National Wildlife Refuge when reviewing this Environmental Assessment. The most relevant information in the CMP is contained in Chapter 4 - Goals, Objectives, Strategies/Projects; Chapter 5 - Public Use; and Appendix D - Project Worksheets.

A Comprehensive Management Plan is needed to address current management issues and propose a plan of action which the Fish and Wildlife Service and its partners can use to achieve a future vision for the Refuge. .

Description of the Proposed Action

The proposed action is to adopt and implement the Comprehensive Management Plan for Cypress Creek National Wildlife Refuge. The CMP will serve as a management tool to be used by Refuge staff and its partners in guiding the preservation and restoration and public use of the Refuge. The document will guide management decisions and activities on the Refuge over the next 15 years. U. S. Fish and Wildlife Service staff, Cache River Wetlands partners and interested citizens contributed to the development of the CMP.

Authority, Legal Compliance, and Compatibility

The National Wildlife Refuge System includes federal lands managed primarily to provide habitat for a diversity of wildlife species. National wildlife refuges are established under many different authorities and funding sources for a variety of purposes. The purpose(s) for which a particular refuge is established are specified in the authorizing document for that refuge. These purposes guide the establishment, design, and management of the Refuge. *Cypress Creek National Wildlife Refuge, 35,320 acres delineated, was authorized June 1990 under the Emergency Wetlands Resources Act of 1986 (16U.S.C. 3901 b, 100 Stat.3583, PL 99-645) for the primary purpose of wetland protection and restoration.*

Authority delegated by Congress, federal regulations/guidelines, executive orders and several management plans guide the operation and the management of the Refuge and provide the framework for the Fish and Wildlife Service's proposed action. Three broadly applicable laws include -- the Refuge Recreation Act of 1962, the National Wildlife Refuge System

Administration Act of 1966 and the Endangered Species Act of 1973. Other laws and authorities considered in approving the use of refuge lands for various activities include the Migratory Bird Treaty Act of 1918, the National Environmental Policy Act of 1969, the National Historic Preservation Act, the Archeological Resource Protection Act of 1979, Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands), and Executive Order 12996 (Public Use and Education).

Scoping of the Issues

Scoping is the process of identifying opportunities and issues related to a proposed action. The Fish and Wildlife Service publicly announced it was preparing a plan for the Cypress Creek National Wildlife Refuge in October 1995. Throughout the planning process, the Service coordinated with federal, state, local agencies and organizations that had demonstrated an interest in Refuge activities. Coordination also involved:

- Sending out News Releases
- Forming a Multi-Interest Planning Team
- Conducting Sessions with Focus Groups
- Holding Public Meetings

For additional detail on these activities see Chapter 2 of the CMP .

Issues and Concerns

From public involvement activities, the Service received several comments that identified issues and concerns people had related to management of the Refuge. These "scoping" issues have been considered in the CMP decision-making process and several have been directly integrated into the Comprehensive Management Plan.

This Environmental Assessment informs the public of the impact the proposed action (implementing the CMP) will have on each of the nine major issues. All issues are described in the CMP and many of the goals and strategies contained in the CMP relate to one or more of the issues. The nine major issues are listed below:

1. Habitat Loss and Fragmentation
2. The Challenge of large scale "Ecosystem" Restoration
3. Watershed Issues: Erosion and Sedimentation
4. Coordination of Activities and Projects with Others
5. The Need for Adequate Refuge Staffing and Funding
6. Local Citizen Support and Education
7. Compatible Public Use
8. Public Health, Safety and Accessibility
9. Economic Benefits to the Local Area

In addition, several other comments and concerns were raised by individuals during the planning process. These include animal damage to farm crops, noxious weed control, insect-borne diseases, local business impacts, on-refuge farming, hunting concerns, agricultural chemical use and NEPA compliance. All comments received during the planning process have been documented and responses have been prepared. Specific responses are found in Appendix A of the CMP.

II. Description of Alternatives

The Fish and Wildlife Service considered a range of alternatives primarily within the context of an "alternatives workshop" with the nineteen member, multi-organization planning team. Some of these alternatives were eliminated from detailed study. The alternatives eliminated are identified below with an explanation of why they were not considered. The best ideas/alternatives that came out of the workshops were incorporated into the CMP, which contains the "preferred" or "action" alternative.

1. Alternatives Eliminated from Consideration

a.) **"Care-taker" Status Alternative** - Refuge staff, funding, and management activities would be reduced to a level whereby the only Fish and Wildlife Service presence would be land ownership.

This alternative is not compatible with the purposes for which the Refuge was established; the conservation of wetlands to maintain public benefits and to help fulfill international migratory bird treaty obligations. Wetlands and forest protection and restoration activities would cease. The Fish and Wildlife Service would cease to be a Joint Venture Partner in the Cache River Wetlands. Legal responsibilities of land ownership of the Refuge, which currently includes 14,000 acres, would not be met. Public recreation and interpretation programs would be terminated and the Refuge closed to public use. Protection functions - law enforcement, fire suppression, cultural resources monitoring - would be terminated. Commitments made to the community and support groups would be broken.

b) **Extensive Outreach/ Stewardship in the Watershed Alternative** - Refuge staff and funding would be directed to extensive off-Refuge lands stewardship efforts with private landowners.

This alternative is being met by other partners, primarily Natural Resources Conservation Service, who already have existing landowner programs. Also, The Nature Conservancy has established a working relationship with the Cache Watershed Planning Committee made up of local citizens. The Illinois Department of Natural Resources has foresters and biologists to assist private landowners with habitat improvement plans. Under this

alternative, the Fish and Wildlife Service would not be available to meet legal mandates and obligations on existing Refuge- owned lands.

c) Major Hydrological Restoration Alternative - High priority would be placed on restoring creeks and rivers to their original configurations.

Although highly desirable and a concept agreed to for the future, this alternative is not practical in the short time of 15 years. A long term process to achieve this alternative is: studies to determine means to accomplish this restoration, land acquisition or easements where construction would be necessary, and determinations as to how landowners and towns will not be adversely affected. This Comprehensive Management Plan does address restorations that can take place within the existing land ownership without adversely affecting adjacent landowners.

d) Intensive Use Alternative - Refuge lands would be fully open to public use with no restrictions. Intensive farming of acquired lands would continue. Hunting would occur over the entire Refuge.

This alternative is not compatible with the purposes for which the Refuge was established. It conflicts with the conservation of wetlands to maintain public benefits and does not fulfill international migratory bird treaty obligations. This alternative would result in over use of sensitive habitat areas, thereby adversely affecting the sites that the Refuge was established to protect.

To protect duck populations during migration it is necessary to close certain "sensitive" areas to hunting. Duck hunting is prohibited at the Frank Bellrose Waterfowl Reserve and will also be restricted at other duck concentration areas as the Refuge is acquired and developed. Goose hunting, however is permitted on the Frank Bellrose Waterfowl Reserve to reduce competition for duck food. The goose hunting decision is in keeping with the Mississippi Flyway Canada Goose Management Plan objectives. These management decisions have been made based on sound waterfowl management biology with the Illinois DNR..

2. Alternatives Considered

This section describes two alternatives considered by the Fish and Wildlife Service and detailed in this EA:

Alternative 1 - No Action Alternative, and

Alternative 2 - Proposed Action Alternative to implement the Cypress Creek National Wildlife Refuge Comprehensive Management Plan.

Alternative 1: No Action

This alternative reflects the status quo, essentially allowing current conditions and trends of management, public use, and land use to continue. No substantial increases in funds or staff would be required. The Service would not carry out many of the recommendations in the CMP. Public use opportunities, facilities, and access would remain the same, at minimal development.

Alternative 2: Implement the Refuge Comprehensive Management Plan

The Fish and Wildlife Service action would be to implement the 15 year CMP and establish an overall management direction consistent with the goals, objectives and strategies contained in Chapter 4 of the CMP.

Under this alternative, the Refuge is envisioned as a major contributing member in a coalition of partners actively working together to protect and restore a 60,000 acre (the Refuge would be 35,000 acres) complex of diverse habitat types for people to enjoy.

Comparison of Alternatives

(By the Year 2011)

Issues and Concerns	Alternative #1 No Action	Alternative #2-Preferred Implement CMP
1. Habitat Loss and Fragmentation	Acquire & Protect 17,500 Acres	Acquire & Protect 22,000 Acres
2. Habitat/Ecosystem Restoration	Forest Restoration: 200 Acres per year	Forest Restoration: 350 Acres per year
3. Watershed Issues	Maintain Coordination Restore 1 basin per year	Expand Coordination Restore 3 basins per year
4. Coordination of Activities	Maintain Coordination Maintain Current Partners	Expand Coordination Increase Partnerships
5. Adequate Staffing and Funding	Maintain Existing Staff at 6	Increase staff to 14 FWS and 5 partner staff
6. Local Support & Education	Maintain 5 Access & Educ. Sites	Develop and Maintain 16 Access and Education Sites
7. Compatible Public Use	Visitor Use Concentrated on Existing Access Sites	Visitor Use Dispersed to compatible sites with sensitive areas protected.
8. Public Health, Safety and Accessibility	Basic Maintenance to maximize safety. Limited Accessibility	Increased Maintenance and all public facilities will be Accessible
9. Economic Benefits to Area	Refuge Visitation: 30,000 per year	Refuge Visitation: 125-200,000 per year.

III. Affected Environment

A description of the affected environment can be found in the establishing 1990 EA and in Chapters 1 and 3 of the Comprehensive Management Plan for Cypress Creek National Wildlife Refuge.

Cultural Resources

Concurrent with the development of the Comprehensive Management Plan, the Refuge contracted with a private consultant for the preparation of a Cultural Resource Overview Study of archeological and historic resources in and around the Refuge. The study provides information on the frequency and locations of known and undiscovered sites, as well as criteria to evaluate these resources. The findings and recommendations of this study have been integrated into the CMP to reduce potential impacts and assure compliance with the National Historic Preservation Act. Locations of some development projects were adjusted during the planning process based on the findings of this study.

IV. Environmental Consequences

This chapter evaluates the two alternatives on their impacts to the nine environmental issues/concerns. Alternative 1, "No Action", is the status quo alternative where current conditions and trends of management, public use, and land ownership and use are projected into the foreseeable future. Alternative 2, "the Action Alternative" focuses on anticipated environmental impacts or changes when the Comprehensive Management Plan is fully implemented (by the year 2011). These can be compared to conditions under Alternative 1. Reference CMP - Chapter 4 for specific strategies and projects.

For the purpose of this analysis, the nine issues or major areas of public interest are discussed for each alternative.

Alternative 1 - No Action

1. Habitat Loss and Fragmentation

A major purpose of the Refuge is to offset the loss and fragmentation of bottomland forest habitat in the Cache River Basin. Logging and major drainage projects have disrupted many of the functions of the wetland ecosystem and reduced populations or displaced much of its wildlife. Remnants of the ecosystem have been designated as a National Natural Landmark, as a National Wildlife Refuge, as a wetlands of international importance, and as state scientific and natural areas. Acquisition of approximately 60,000 acres is proposed by the Joint venture partners to

) protect and restore state and federally listed species, unique natural communities, and cultural resources.

The Refuge portion or contribution to the conservation effort will ultimately be 35,320 acres. Land is being purchased on a willing-seller basis until that goal is reached. The current Refuge acreage is 14,500 acres or 42% of its total goal. Under the No Action alternative, the Refuge would grow by about 3000 acres to an estimated 17,500 acres in the 15 year planning time-frame (200 acres/year).

The relatively slow growth of the Refuge would result in small increases in wetland and upland habitats. Less land would exist under federal ownership for the protection of threatened and endangered species, natural and cultural resources.

The carrying capacity for waterfowl would remain low due to the lack of protection of critical habitats and the myriad of hydrological changes that negatively impact the area. No Action would result in minimal change to waterfowl production since there would not be an appreciable increase in nesting, resting, or feeding habitats. The Cache River corridor within the Refuge purchase boundary currently supports 25,000 geese and ducks; historically this area supported much greater numbers of waterfowl, as well as, neotropical migrant songbirds. Neotropical bird populations would remain low reflecting extensive forest fragmentation.

) **2. Habitat/Ecosystem Restoration**

Within the purchase boundary of the Refuge, there are remnants of, and potential for, five major natural communities. These areas include upland forest, marsh or herbaceous wetlands, swamps, floodplain woods and lakes or deep water habitats.

Under the No Action alternative, forest habitat restoration would continue at 200 acres each year. Restoration of natural wetlands and unique natural areas (springs, cane breaks, etc) would generally not occur.

3. Watershed Issues: Erosion and Sedimentation

The success of the Refuge habitat restoration effort is dependent upon the soil and water conservation practices that are carried out in the surrounding watershed.

Under the No Action alternative, the Refuge staff will continue relatively passive involvement in watershed issues and activities. Staff time will be focussed on maintaining and restoring Refuge lands with limited environmental education and outreach related to watershed issues.

Existing partnerships with The Nature Conservancy, Illinois Department of Natural Resources and Ducks Unlimited would continue which would provide a Refuge connection to the larger watershed. However, no new partnerships would be formed that could increase the Refuge and

) Fish and Wildlife Service presence in the watershed. The private lands program and cooperative farming program would continue at their present "minimal" level.

4. Coordination of Activities and Projects

Coordination of Refuge activities and projects with other agencies and interest groups has been identified as an important means of leveraging funds and creating greater efficiencies in operation and maintenance of lands and programs.

Under the No Action alternative, current levels of coordination would continue primarily between the Joint Venture partners and through the established Refuge Advisory Committee. Limited Refuge projects proposed under this alternative would not require any greater coordination. Expanded coordination with communities, schools, and other agencies would be limited. The Refuge presence in the local communities would be maintained but not expanded.

5. Adequate Staffing and Funding

) Managing the Refuge means providing staff and capital resources to effectively manage and control activities. Active management programs including fire protection, cooperative farming, water management, restoration, education, recreation, cooperative wildlife surveys, and cultural resource monitoring require adequate staff and funds.

The current staff level is six. Under the No Action alternative the staff level will be maintained. As lands are added to the Refuge, most of the staff time will be dedicated to restoring and maintaining habitat. This will result in limited recreation opportunities and limited economic benefits to local communities. Access will be limited to five existing gravel parking areas and one boat access at Tamms.

Without a Comprehensive Management Plan, it would be more difficult to obtain additional funding that is commensurate with requirements of development and management programs.

6. Local Citizen Support, Education and Community Identity

Current levels of outreach are good and in keeping with an enthusiastic staff who are establishing a new National Wildlife Refuge. Over time, as the Refuge grows, the staff will have to focus its efforts on landscape restoration and management. This will prevent the Refuge from expanding its coordination and outreach efforts/opportunities in the areas of research, education and watershed stewardship. Over the long-term, this would translate into reduced funding and reduced partnerships because of reduced public support.

) Without the additional facility development proposed by the CMP, the Refuge would not be able to provide sufficient recreational access on its lands to generate long-term public support. Local

communities and tourism groups could not actively promote and identify their relationship with the Refuge. The education vision would not be fulfilled. Staff would continue to assist with ongoing training but no specific Cache River Wetlands workshops will be conducted. No site specific curriculum, minimal teacher training and no volunteer training would be conducted.

7. Compatible Public Use

There is both a strong interest to increase recreational opportunities and a desire to maintain visitor activities at locations and levels that are compatible with the natural resources of the Cache River Wetlands.

Under the No Action alternative, public access on the Refuge would be limited. Boat access sites would not be added. Other than one state owned boat access, there are no facilities on the Refuge to launch a small boat or canoe. A centralized information point is non-existent since each agency provides information at their respective administrative offices.

The natural resources may benefit from reduced public use. Disturbance to wildlife would be very minimal and habitat would not be displaced for access and education facilities. However, visitor use of the Cache River Wetlands is growing as more people become aware of the opportunities to hunt, fish and observe wildlife in a unique cypress swamp setting. This would continue to concentrate use on state access sites and lands which would have a negative impact on the natural resources those areas were established to protect. The expectation has been that the Refuge would provide access opportunities to disperse visitor use over a much larger area, thereby reducing impacts to the few and smaller State Natural Areas. This expectation and management technique would not be realized under the No Action alternative.

8. Public Health, Safety and Accessibility

Under the No Action alternative, the Refuge would maintain facilities and equipment in a manner that maximizes safety. Abandoned wells, cisterns and septic systems would be filled and all unneeded buildings and fences on newly acquired parcels would be removed. The Refuge would maintain a program of road repairs and boundary posting.

The few visitor facilities under the No Action alternative would be made accessible, however, much of the Refuge would be unimproved and not accessible to the disabled public.

9. Economic Benefits to the Local Community

Visitor use of the Refuge would increase over time as more people become aware of the Refuge. The small number of access points and no Wetlands Visitor Center would limit future visitation. Current annual visitation is approximately 6,000. Under the No Action alternative, the estimated visitation in 15 years would be around 30,000 visitors per year. Economic benefits to

the local community would remain low.

Alternative 2 - Implement the Comprehensive Management Plan (Preferred Alternative)

1. Habitat Loss and Fragmentation

If Refuge goals are completed as outlined in the CMP, native plant communities will be restored thus affording protection and enhancement of animal populations that can utilize those habitats. Much of the converted land presently being used for agriculture on a limited basis (due to seasonal flooding) will be restored to bottomland forest habitat. Reforestation of an additional 4,000 acres of this habitat type will be an important first step in restoring the Cache; fragmentation will be reduced with the creation of large unbroken tracts of timber. The contribution to wetland habitat goals of the New Madrid Wetland Project will amount to nearly 10% of the total of that plan. The Refuge projected to be 22,000 acres, which is 2/3 of the total land in the purchase boundary, will provide a suitable protection and restoration land base along the Cache River. The casual visitor to the Refuge will be able to witness the return of the areas important flora and fauna. Swamp and forested wetland habitats will increase wood duck recruitment by as much as 15%. The Refuge will become established as an important staging area for 50,000 to 100,000 waterfowl and other migratory birds due to its strategic location and abundance of specialized habitats. Cultural resources will be afforded protection due to less land disturbance.

2. Habitat/Ecosystem Restoration

The Refuge will insure protection, restoration, and management of wetlands and upland and bottomland forests to sustain resident and migratory wildlife and to provide a place for important floral species of the region. Optimum aquatic ecosystems that influence use by wintering bald eagles and waterfowl will be maintained. Nine hundred acres of wetlands and the establishment of an additional 330 acres of herbaceous wetlands (moist soil) will provide habitat critical for shorebirds, waterfowl, wading birds, as well as state and federally listed wildlife species. Transition zones from lowland to upland habitats will be created by the reforestation of an additional 5,250 acres. The Refuge will implement reforestation for stream bank stabilization and continue the cooperative farming program to maintain land before reforestation takes place. The conversion of agricultural land to reconstructed native habitats is expected to have a net positive effect on physical and biological resources by reducing soil erosion, reducing the use of chemicals and increasing biodiversity.

3. Watershed Issues: Erosion and Sedimentation

A major off-site challenge facing the Refuge is erosion and sedimentation and their effects on existing wetlands and water quality of the Cache River. Erosion, and resulting sedimentation,

originate primarily from stream and channel bank failure and down cutting, cropland, pasture, and road ditches. Sediment settles in the Cache River and existing wetlands. This off-site problem impacts Refuge management and jeopardizes habitat restoration. The Refuge staff will take a proactive role in technical committees and planning efforts as identified in the Cache River Watershed Resource Plan. The Refuge will restore wetlands on private lands (a minimum of three annually) in connection with the Service's private lands program.

4. Coordination of Activities and Projects

Restore migratory bird populations in the area to those that occurred in the 1970's. Reverse population declines of state and federally listed threatened and endangered species by erecting structures to enhance nesting activities. Coordinate and support inventory projects that will identify the presence of endangered species. Establish weekly surveys of waterfowl and raptors as a measure of success of various management programs. Continue to monitor water quality of the Cache River system to determine applicability of conditions that will result in usage by rare and endangered mussel species that now occur in the nearby Mississippi and Ohio Rivers. The Cache River supports a diverse fish community including 87 documented game and non-game species. The Refuge will enhance these communities and minimize adverse impacts caused by "off site" actions. A reduction in silt load will be the most readily apparent change in the initial recovery period. Emphasis will also be placed on restoring natural springs to improve water quality in the area.

5. Adequate Staffing and Funding

The Refuge needs adequate staff and capital resources to effectively manage activities within the boundaries and to participate in programs including fire protection, cooperative farming, water regulation, hunting, public outreach, cooperative wildlife surveys, and cultural resource monitoring. With implementation of the CMP, including land acquisition, additional development of public use facilities, reforestation and wetland restoration, and construction of a wetland education center will take place. Refuge staff and funding will increase to adequately develop and maintain these projects and to provide high quality public service. Guided public access, information, and educational opportunities will become available as demand increases. Funding and staffing will be sought to achieve Refuge goals and objectives. Needs and staff positions will be fulfilled by the Service with support from other partner agencies/organizations.

6. Local Citizen Support, Education and Community Identity

The Refuge will provide a lead role in providing information on wildlife, land stewardship, natural/cultural history, and education programs. Increased outreach efforts and education programs will provide opportunities for people to experience the Cache and develop a better understanding of their dependence on the natural environment and the management techniques employed to protect and restore natural systems. Facilities to enhance outdoor experiences

throughout the Refuge will include bicycling and hiking trails, boardwalks and observation platforms, boat access sites on the Lower Cache River (2), parking and public access sites (10), and outdoor classrooms (4). The Wetland Visitor Center will attract and orient visitors to the numerous opportunities to enjoy the Cache River Wetlands and other attractions in southern Illinois. Special annual events, guided tours and educational field trips and outings with organized groups will be offered throughout the area. A year-round educational program will emphasize the area's cultural history, natural resources, wildlife, resource issues, and management employed on the area. Programs and facilities will provide a diversity of opportunities to access the Refuge and increase awareness and appreciation of the Cache River Wetlands regionally and nationally.

7. Compatible Public Use

The Cache River Wetlands provides diverse habitats and opportunities for recreation and education. With the growing interest for quality outdoor experiences, the Refuge will meet the need through interpretive programs, wildlife-dependent recreation and education that are compatible with establishment criteria for the Refuge. Activities will include hunting, fishing, wildlife watching, hiking, nature photography, canoeing, and the use of a wetlands education center. These activities will increase visitor use, understanding and support for the natural resource. An integrated trail system will be created and functional within the 15 year vision period. Recreational use will be enhanced by constructing parking lots and boat launches at strategic points along with other facilities such as, outdoor classrooms, signs, group shelters, and viewing platforms to accommodate additional needs of visitors. The Refuge staff will encourage public use of wetlands for outdoor recreation and enjoyment and manage them to accommodate uses during applicable seasons. Support facilities and accesses have been sited throughout the Refuge to disperse visitors and reduce visitation near ecologically-fragile sites. The facilities have also been sited so as to avoid and minimize impacts to wetlands, endangered species and other sensitive resources to the greatest extent possible.

8. Public Health, Safety, and Accessibility

Refuge staff will maintain facilities and equipment in a manner that maximizes safety, efficiency, and aesthetics. As land is acquired, wells, cisterns and septic tanks will be filled. Buildings and fences will be removed and boundaries will be posted on newly acquired parcels. Access within the Refuge will be enhanced by trails, observation platforms, orientation signage, and parking areas. These support facilities will accommodate visitors and meet requirements of the American Disability Act (ADA).

9. Economic Benefits to the Local Area

Tourism and travel is a major sector of Illinois' economy. This trend is evident in southern Illinois with popular activities of hiking, camping, fishing, and hunting. The unique natural features of the Cache River Wetlands, highlighted by a wetland education center and increased

recreational opportunities will attract travelers interested in bird watching, canoeing, hunting, fishing, hiking, education, habitat restoration, and scientific study. New economic ventures such as lodging and camping facilities, food service, and canoe/boat rentals are a few of the services that will be provided by the local community. The transition from a predominately agricultural based economy to one of community to conservation, recreation, and agriculture will provide economic diversity. The Refuge will contribute to the local economy by attracting visitors and increasing employment opportunities within the Cache River Watershed. Social and economic impacts associated with the Selected Alternative include a reduction of agricultural output and employment due to the conversion of agricultural land to reconstructed native habitats, displacement of resident and non-resident tenant farmers, a reduction in County tax revenues. Positive impacts include a long-term increase in spending in the local economy by Refuge visitors and a long-term increase in state tax revenues in Southern Illinois.

V. List of Preparers

Gerald Updike	Refuge Manager, Cypress Creek National Wildlife Refuge
Elizabeth Jones	Refuge Operations Specialist, Cypress Creek NWR
Al Novara	Wildlife Biologist, Cypress Creek NWR
Michael Marxen	Landscape Architect/Planner, U.S. Fish and Wildlife Service Great Lakes-Big Rivers Regional Office