Watershed Implementation Plan for the Upper Salt Fork of the Vermilion River

Champaign and Vermilion Counties, Illinois

Prepared by the

Salt Fork Steering Committee
of the
Champaign County Soil and Water Conservation District

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With funding provided by the

Illinois Environmental Protection Agency

with additional assistance provided by:

Salt Fork Technical Advisory Committee,
USDA-Natural Resources Conservation Service, and
Association of Illinois Soil and Water Conservation Districts

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FOREWORD

The *Watershed Implementation Plan for the Upper Salt Fork of the Vermilion River* was developed using a collaborative planning process of the USDA-Natural Resources Conservation Service (NRCS). People who live, work, recreate or otherwise have an interest in the Salt Fork watershed were brought together under the leadership of the Champaign County Soil and Water Conservation District (CCSWCD). These stakeholders comprised a Steering Committee whose charge was to develop a watershed management plan that reflects the interests, intentions and aspirations of local people for addressing natural resource needs in the Salt Fork watershed. Funding for developing the plan was provided by the Illinois Environmental Protection Agency and was used to pay costs incurred by CCSWCD and one staff member. The Association of Illinois Soil and Water Conservation Districts administered the contract. Committee members and technical advisors were not paid through the grant, but either volunteered their time or were paid by their respective employers.

This management plan is based upon the brainstorming, discussions, and decisions of the Steering Committee as they moved through the NRCS planning process. A variety of local, state, and federal agencies as well as independent experts provided technical support. Two public meetings were held to answer questions and solicit comments from area residents. Dr. Sharyl Walker, employed by CCSWCD, drafted this document on behalf of the Steering Committee over the two-year project period. As the Steering Committee completed the steps of the planning process, Dr. Walker documented the outcomes and findings, and then edited the text with input from the Steering Committee and technical advisors.

The purpose of the NRCS planning process is to help local people come to consensus about the natural resource issues that concern them, the objectives they want to achieve, and the optimal management alternatives to accomplish these objectives. The management plan reflects the current consensus of the Steering Committee and technical experts. Because it is consensus-based, this plan cannot in its every particular element represent the views of each individual who participated in the planning, their affiliated organizations, or every stakeholder in the watershed. Instead, the plan reflects general agreement about the essence of what local people want for their natural resources and the kinds of strategies that may make sense in the Salt Fork. Subsequent and ongoing efforts at collaborative problem solving, additional data collection, more public outreach, and dedicated efforts at careful project implementation will continue the progress that the Steering Committee has made.

Champaign County Soil and Water Conservation District gratefully acknowledges the efforts of their partners in developing this plan. The District is particularly appreciative of the members of the Steering Committee, Technical Advisory Committee, and staff for their time, thoughtful input, and perseverance throughout this process. Individuals and their associated organizations are listed on the following page. Sincere thanks are also expressed to the many individuals not listed who participated at some point during the 16-year history of the Steering Committee.

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John McMahon – Salt Fork River Partners
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Watershed Implementation Plan for the
Upper Salt Fork of the Vermilion River
Champaign and Vermilion Counties, Illinois

INTRODUCTION

The Salt Fork in Champaign and Vermilion Counties is both a utilitarian river and a thing of beauty. It plays an important role both in the ecosystem and the local economy and is worthy of protection. We, as its stewards, recognize the need to address current problems within the watershed as well as to be mindful of what gets passed downstream to other communities; we recognize that doing so not only protects our livelihoods, but will also help us avoid future restrictive legislation. We also recognize that while the Salt Fork is worthy of our attention and stewardship, that from a global perspective, we are very fortunate to have the luxury of addressing the relatively minor problems at hand.

It has long been a goal of the Champaign County Soil and Water Conservation District to have a comprehensive watershed plan for the Salt Fork. A steering committee was established in 1990. The planning process has had several starts over the years, but the gears of funding, staff, politics, and public interest never quite meshed until recently. In 2005, the Illinois Environmental Protection Agency (IEPA) awarded a grant to the District to develop a watershed implementation plan for the Salt Fork. This provided the opportunity to convert 16 years' worth of meetings and debate into a comprehensive plan. Thanks are due to the citizens of Illinois who funded the preparation of this document, as well as to the many persons (representing themselves and a very long list of public and private organizations) who faithfully attended meetings and shared their opinions and expertise.

This document is organized according to guidelines provided by the Association of Illinois Soil and Water Conservation Districts, the managing agency for this project. It generally follows the nine steps outlined in the USDA-Natural Resources Conservation Service's three-phase, resource planning process (http://www.nedc.nrcs.usda.gov/fotg/module4/module4a.html), shown in Figure 1.

The planning process is iterative as indicated by the double-headed arrows in Figure 1: once strategies are implemented and evaluated, the process begins again and new or refined strategies are developed. The ten components of this watershed plan document the first iteration of the first two phases of this process and provide a sketch for carrying out the third. It is understood that this document will always be subject to update as evaluation and additional inventory reveal the need. ***The numbers appearing in this document are particularly subject to revision and are presented for planning purposes ONLY, unless otherwise indicated. The Salt Fork Steering Committee makes no claims as to the scientific reliability of these numbers and strongly discourages their citation outside of their immediate planning context.***

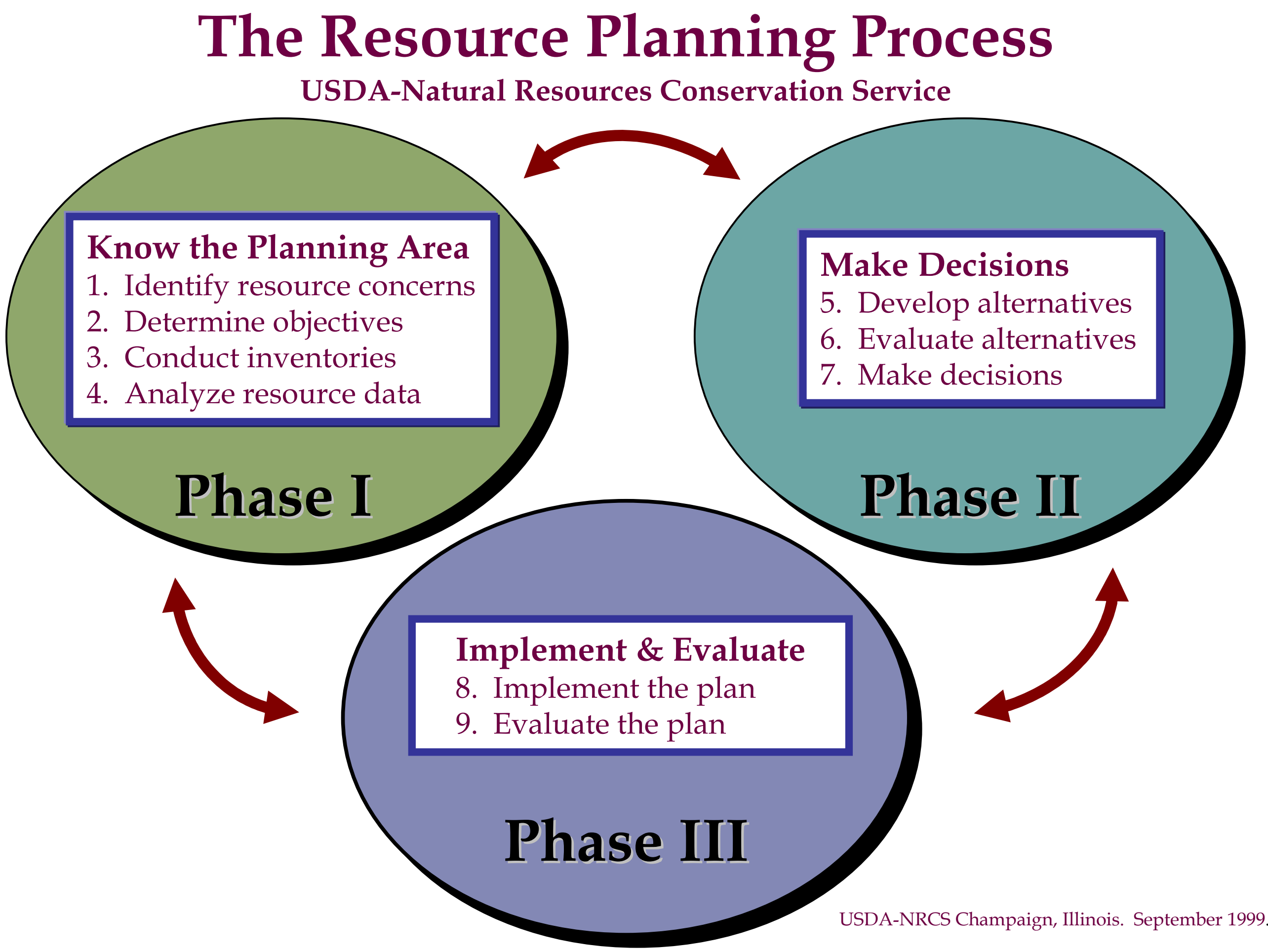
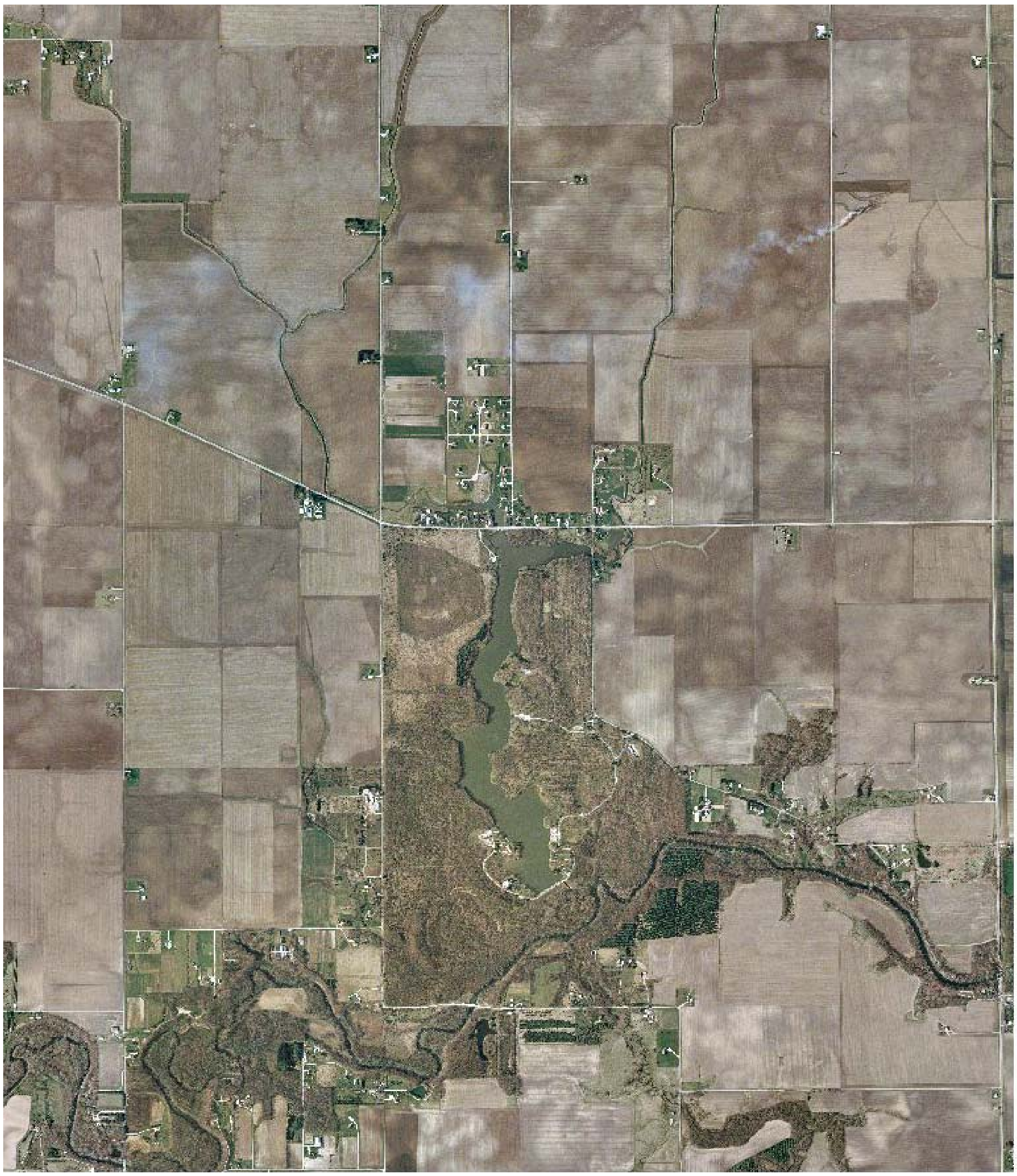


Figure 1. The Three-Phase Resource Planning Process (courtesy USDA-NRCS).

PLAN COMPONENTS

I. Mission Statement

The mission of the Salt Fork Steering Committee is to develop a scientifically-sound strategy to implement cost-effective practices and educational programs sufficient to ensure that all waters of the Salt Fork will meet the needs of future generations. In so doing, the Committee recognizes the role of the Salt Fork in the ecosystem, the economy, recreational activities, and local livelihoods and will recommend actions that protect and enhance these functions.



Aerial photography (March 28, 2005) illustrating the multiple functions of the Salt Fork. Note agricultural drainage ditches, farmland, residential areas, Homer Lake, and the Salt Fork River itself. (Photography courtesy Champaign County Regional Planning Commission.)

II. Watershed Description

This implementation plan addresses the watershed draining to the Salt Fork of the Vermilion River located within hydrologic unit 05120109 in Champaign and Vermilion counties in east-central Illinois. The watershed is shown in Figure 2. Streams identified as impaired by the Illinois Environmental Protection Agency are shown in red and labeled with their IEPA identifier. Approximately 90% of the watershed addressed in this study lies in Champaign County, with the remainder in Vermilion County. The watershed outlet for the study area is located on the Salt Fork at the downstream end of IEPA segment BPJ10 located north of Fairmount. Downstream of the outlet, the Salt Fork continues to its confluence with the Middle Fork at Kickapoo State Park. The Salt Fork, Middle Fork, and North Fork make up the headwaters of the Vermilion River.

The study area is approximately 381 square miles and is located in the Bloomington Ridged Plain with a landscape strongly influenced by the most recent glaciation (IDNR, 1997). Glacial moraines form the boundaries of the drainage area. Because of this glacial legacy, much of the land is flat and the soils fertile. Some of the most productive soils in the state are found in this region and over 80% of the drainage area is currently used for row crop agriculture. Land cover for the watershed, derived from an IDNR dataset developed from satellite imagery (IILCP, 2002) is illustrated in Figure 3. Note the predominance of corn and soybeans (light tan) on the map. Agricultural productivity is closely tied to drainage. Drainage ditches and subsurface field tile drains were installed over the last century to drain the naturally wet soils. Approximately 44 drainage districts serve the area.

Wooded areas make up about 1% of the area and are found mainly along the Salt Fork corridor downstream of St. Joseph. Approximately 8% of the watershed is urbanized (Tetra Tech, 2005). Urbana and Champaign, twin cities that are home to the University of Illinois, have a combined population of approximately 104,000 (www.census.gov). Smaller communities in the study area include Ludlow, Rantoul, Gifford, Thomasboro, Royal, St. Joseph, Ogden, Philo, Sidney, and Homer with a combined population of close to 23,000.

Homer Lake Forest Preserve, near the southeastern corner of the watershed, provides approximately 800 acres of wildlife habitat and recreational opportunities. The Spoon River (tributary to the Salt Fork) and the Salt Fork downstream of the county line are designated as "Biologically Significant." Trelease Woods and Brownfield Woods northeast of Urbana are Illinois Natural Area Inventory Sites. Trelease Woods has been named as a State Important Bird Area, based on historical data. Busey Woods, in Crystal Lake Park in Urbana, has been nominated under the statewide program for the same designation, based on its importance as a migratory bird stop-over site.

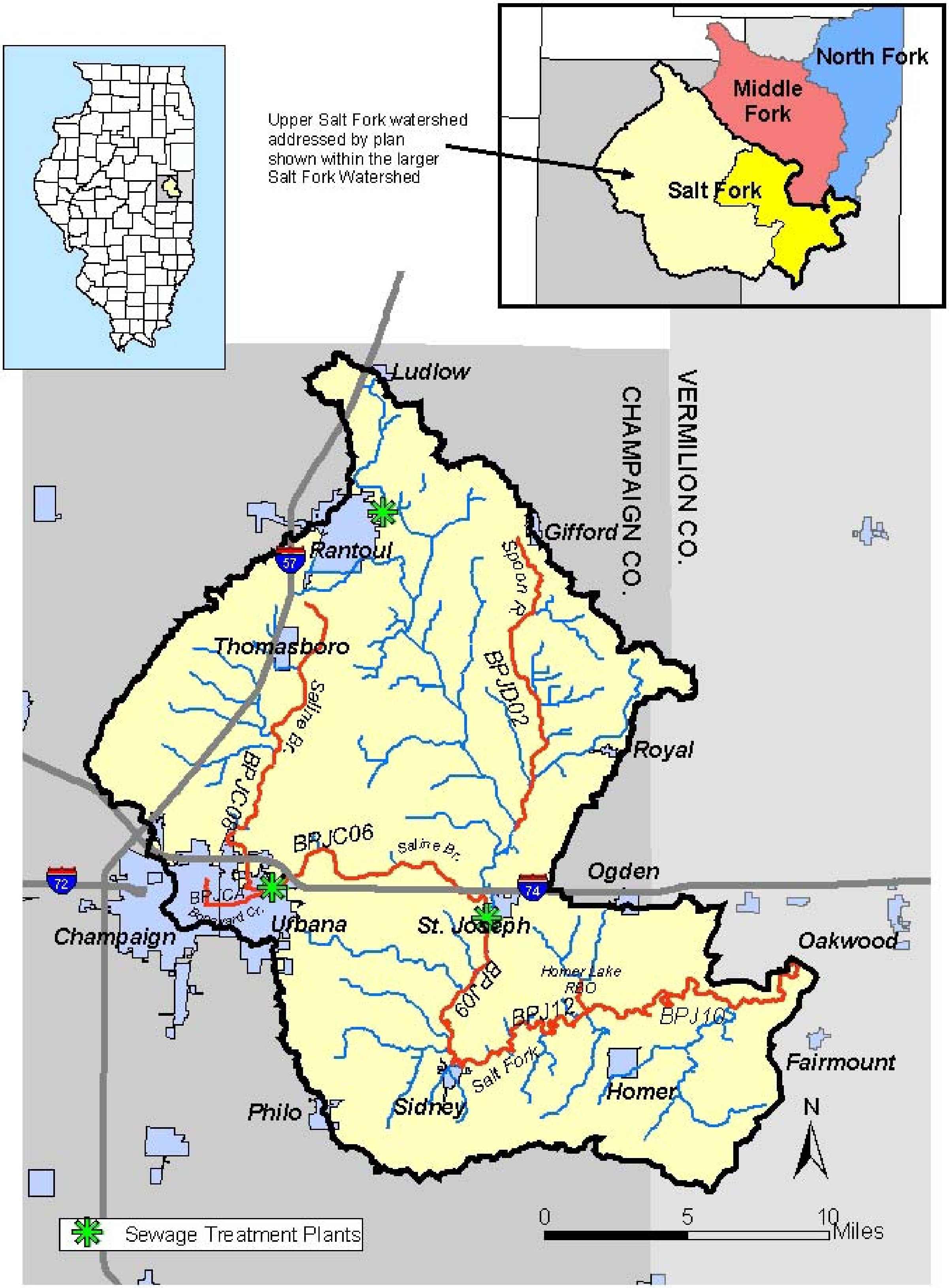


Figure 2. Upper Salt Fork Watershed addressed by the implementation plan. Stream segments shown in red are listed as impaired by IEPA.

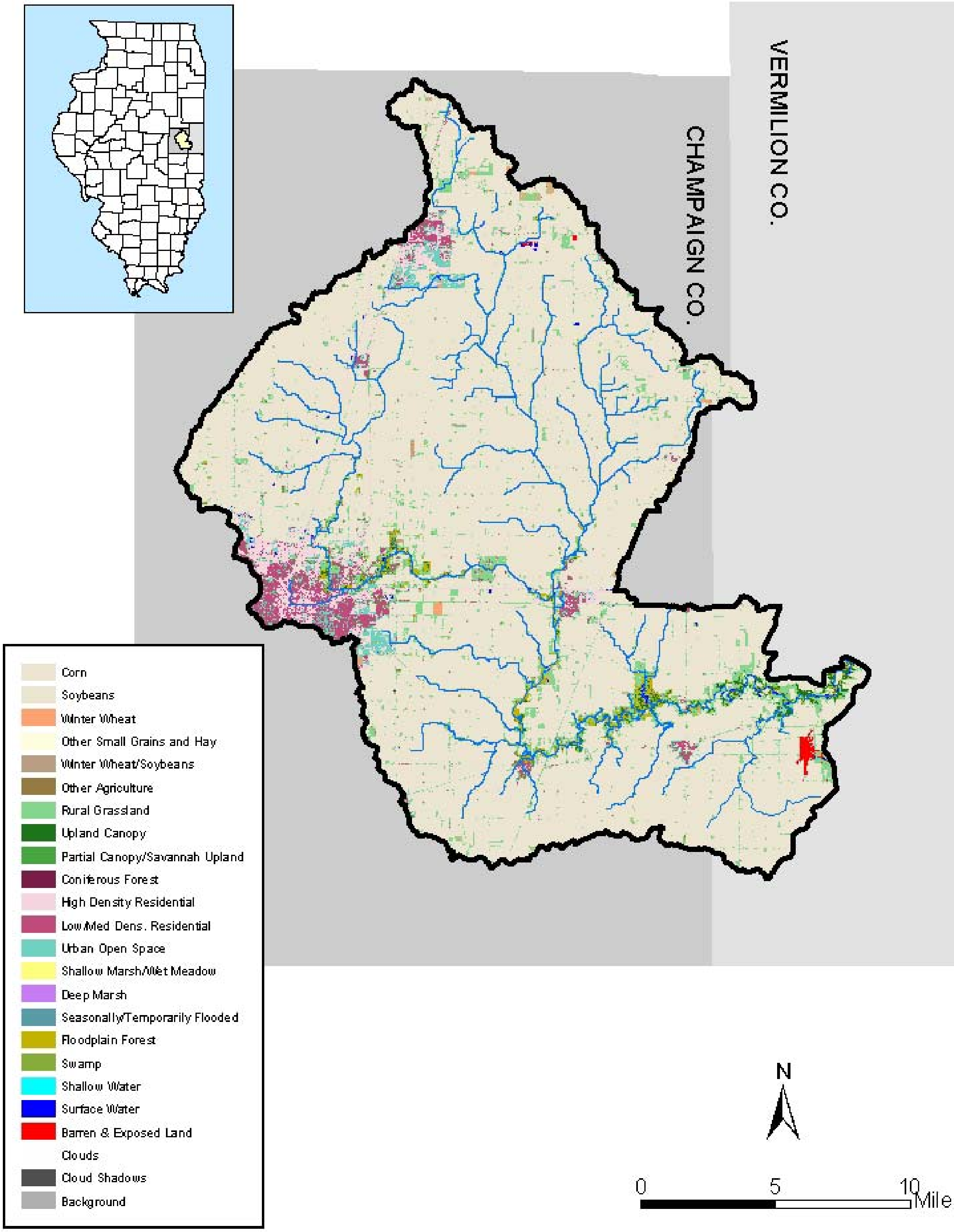


Figure 3. Watershed land cover (adapted from the Illinois Interagency Landscape Classification Project's 1999-2000 land cover layer, IILCP, 2002).

III. Watershed Activities

Glaciers, and forces of nature following their retreat, left the region flat, wet, and fertile. This section briefly describes human activities in the Salt Fork watershed since the 1800s that have either overcome or protected those characteristics. Events that led to present conditions and current activities of various organizations are outlined. Such information can help us develop solutions that build on the successes of the past and avoid its mistakes; and synergize, rather than replicate, present efforts.

Early History

Several excellent histories have been written to describe the way things were in the Salt Fork watershed before settlement by European Americans in the early 1800s. A few of these are listed in the **References** section at the end of this document. Past accounts describe both the vastness of the tall grass prairie in the marshy upland areas as well as the sheltering timbered areas along the stream corridors. They record the settlers' amazement with the fertility of the soil and diversity of plants and animals, as well as stories of hardships related to weather, insects, and sickness.

Early settlement occurred on the relatively high ground of the moraines and also along the wooded areas of the Salt Fork where shelter, firewood, and clean water were plentiful. Formerly occupied by Illinois, Iroquois, Pottawatomie, and Kickapoo Native Americans, Big Grove (Brownfield Woods) was one of the first areas in the watershed settled by European Americans. Big Grove was originally a 10-sq. mi. wooded area extending from what is now Main Street in Urbana, to the towns of Leverett to the north and Mayview to the east (Hansen, 1963). An area on the south side of Big Grove was designated as the county seat and was named Urbana when Champaign County was created in 1833 (www.city.urbana.il.us/urbana/city_resources/History.html).

Routes chosen for the construction of railroads in the mid-19th century greatly influenced development in the area. Cunningham and Shoaf (2005) describe some of the dealings that led to the location of Sidney and the re-location of Homer to its present site. The Illinois Central Railroad laid track just west of Urbana and opened passenger service in 1854 (www.cumtd.com/itc/rail_history.html). The resulting development spawned the city of Champaign. Rantoul, to the north, can trace its name to the railroad station named in 1855 after Robert Rantoul, Jr., an original stockholder of the Illinois Central railroad company (www.rootsweb.com/~ilchampa/towns-townships/rantoultwnshp.html).

The Illinois Industrial University, now the University of Illinois, was chartered in 1867 as a land-grant institution made possible through the Morrill Act of 1862. The campus was built in Urbana and Champaign and has played a major role in the region's development since opening in 1868 (www.uiuc.edu). Not only is the University of Illinois hydrologically tied to the Salt Fork by Boneyard Creek running through its campus, but it also impacts the Salt Fork through its influence on the local economy, agricultural research, and collection of scientific information.

Drainage and Agriculture

In 1879, state legislation was passed to provide for the organization of drainage districts (Hay and Stall, 1974). Such districts were given assessment authority to provide for the construction and maintenance of drainage ditches. In many areas, ditches were dug where no channel previously existed to connect with the natural stream.

Beaver Lake is the largest of the drainage districts in the watershed and was organized in 1880. Saline Branch Drainage District, downstream of Beaver Lake Drainage District, was formed in 1906 and receives flow from Boneyard Creek and from the municipalities of Urbana and Champaign. The Upper Salt Fork Drainage District was organized in 1925 and is the longest of the drainage districts, including lands along the Salt Fork from Rantoul to downstream of St. Joseph. Hay and Stall (1974) provide a good history of these and other districts. A map of drainage districts in the study area is provided in **IV. Watershed Resource Inventory** (see p. 31).

The construction of ditches, and the laying of underground tile drains with outlet to the ditches, made it possible to grow corn in the naturally poorly-drained areas of the region. The increased supply of grain and the established railroad system supported growth of the existing beef industry (Larimore and Bayley, 1996). As fertilizer and equipment manufacturing processes improved following World War II, corn production became more profitable. By the late 1950s, the local cattle industry was declining (Larimore and Bayley, 1996) and the agricultural industry was dominated by production of corn and soybeans.

While subsurface drainage is now responsible for much of the area's prosperity, it also impacts water quality by providing a pathway to the Salt Fork for dissolved nutrients and agrichemicals. Nitrogen and phosphorus are two parameters of concern in the Salt Fork. Subsurface drainage also affects the rate and timing at which flow enters receiving streams. The effect is not fully understood and is difficult to adequately address in computer models. The extensive production of corn and soybeans has also reduced diversity in wildlife habitat and has increased soil erosion which contributes to stream and lake siltation.

Photo courtesy CCSWCD.

Urban Development

Larimore and Bayley (1996) discuss some of the environmental impacts of urban development and drainage. By 1928, Boneyard Creek running through Champaign and Urbana reportedly was so polluted with municipal and industrial waste that it no longer supported a permanent fish population.

Urbanization reduces the capacity of the land surface to absorb water leading to increased flooding. Annual peak flows for the Boneyard have increased since the 1950s (personal communication with Robert Holmes, USGS, 2006). Figure 4 shows peak flows measured in Boneyard Creek plotted over time.

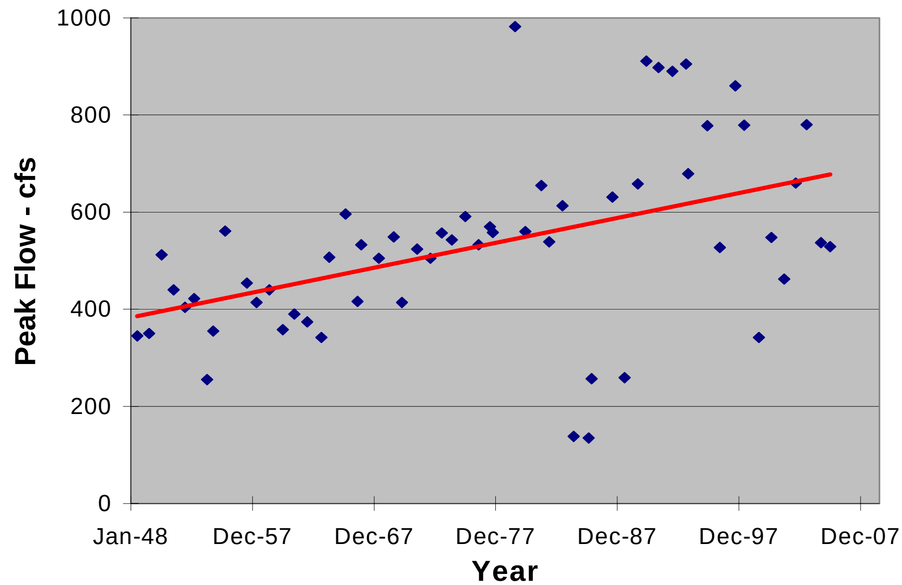


Figure 4. Boneyard peak flows (cfs) from 1948-2004. Graph courtesy Robert Holmes, USGS.

Increased peak flows in the Boneyard have not, however, resulted in a significant increase in peak flows in the Salt Fork. Municipal and county ordinances address storage and discharge of storm water from developments to minimize local downstream impacts.

To address Boneyard Creek flooding, an extensive flow control project is underway. One portion of that project is City of Champaign's construction of the Healey St. detention basin completed in 1999. The basin, shown in Figure 5, is 450 ft. x 430 ft. and is 55 ft. deep (http://dailyengineers.com/boneyard.htm). Berns, Clancy & Associates (BCA) have extensive knowledge of past and present Boneyard projects. Their bibliography on the subject is provided in the **Appendix**.

Figure 5. City of Champaign's Healey Street Detention Basin. Photos courtesy CCSWCD (2006).

Protecting Our Natural Resources

Since the 1950s, several positive actions have been taken to protect and improve our natural resources. The Soil Bank Act of 1956 provided incentives to landowners to take cropland temporarily out of production as a means to reduce soil erosion. The program evolved into the present day Conservation Reserve Program (CRP) which places emphasis on environmentally sensitive lands. Improvements in waste treatment methods and passage of the Water Pollution Control Act and Clean Water Act in the 1970s greatly reduced problems from point source pollution.

The Champaign and Vermilion County Soil and Water Conservation Districts (SWCDs) (founded in the 1950s) have worked closely with USDA and other partners to promote enrollment in CRP as well as the adoption of practices such as conservation tillage to reduce soil erosion and nutrient management to reduce inputs of agrichemicals to streams. An inventory of conservation practices adopted in the watershed is presented in **IV. Watershed Resource Inventory** of this document.

Champaign County SWCD received IDNR C-2000 funds to purchase land for restoration of a wetland near St. Joseph. This wetland, pictured in Figure 6, will provide 60 acres of wildlife habitat as well as storage for floodwaters. CCSWCD is partnering with several organizations and volunteers to develop educational opportunities for people visiting the site.

Figure 6. St. Joseph Wetland site (under development) (composite photo courtesy CCSWCD, 2005).

The Illinois State Water Survey conducted a “Phase I” study of Homer Lake from 1997-2000 through a grant provided by IEPA’s Illinois Clean Lakes Program to the Champaign County Forest Preserve District (Lin and Bogner, 2000). The study included analyses of water quality and lake sedimentation data as well as recommendations for reducing pollutants to the lake. Building on this study, Champaign County SWCD and Champaign County Forest Preserve District received a grant from IEPA in 2004 to improve water quality in Homer Lake through emphasis on nutrient management and erosion control. The project targeted both agricultural and residential landowners. Incentive payments were given to implement practices that reduce inputs of sediment, nitrogen, and phosphorus. Educational workshops were offered to inform the public about Homer Lake water quality and ways to improve it.

The cities of Champaign and Urbana and the University of Illinois have studied urban flooding and associated pollution problems. Many improvements have been made to Boneyard Creek. In addition, the municipalities of Champaign County have organized a committee to assist in implementation of the regulations associated with Phase II of the National Pollutant Discharge Elimination System (NPDES) storm water management program.

The Urbana Park District (UPD) has established several parks along the Saline Branch including Judge Webber/Perkins Road, Crystal Lake, Busey Woods, AMBUCS, and Chief Shemauger. Plans to restore 30 acres of wetland and flood storage by reconnecting the floodplain to the Saline Branch at the Perkins Road Park site are underway using funds from IDNR's C-2000 program. In addition, UPD is exploring development of a trail system to connect the parks.

Several private organizations also have been active in the protection and inventory of watershed resources. Since 1998, Prairie Rivers Network, Salt Fork River Partners, the local chapter of Izaak Walton League, the Champaign County Forest Preserve District (CCFPD), and local businesses have worked together to sponsor the annual Salt Fork River Clean-Up. One Saturday each fall, approximately 200 volunteers remove trash from the river and banks of the Salt Fork in the area near Homer Lake. Materials removed have included bottles and cans, styrofoam, auto and tractor tires, wire fencing, and appliances. This successful event has received funds from IEPA's Streambank Cleanup and Lakeshore Enhancement (SCALE) program to help keep it going.


Salt Fork River Clean-Up, October 5, 2002. Photo courtesy Paul DuMontelle.

Izaak Walton League members and the CCFPD have also participated in the Illinois Department of Natural Resources' RiverWatch program to collect stream data and identify macroinvertebrate species indicative of water quality. The program was suspended by IDNR in 2004 due to budget shortfalls; however, private funds allowed sampling to resume in 2005. Salt Fork River Partners is working with Prairie Rivers Network to coordinate "Stream Teams" to conduct water quality testing along the Salt Fork from St. Joseph to the Illinois Route 49 bridge and possibly further downstream. These organizations should be consulted regarding recommendations for continued or additional monitoring. Available data are presented in **IV. Watershed Resource Inventory** section of this plan.

The Champaign County Audubon Society (www.champaigncountyaudubon.org) conducts bird counts every spring and winter to maintain a detailed census. They also monitor breeding bird populations at all four forest preserves and Urbana's natural parks. In addition, they raise money to support conservation research and education. Bird population information is presented in **IV. Watershed Resource Inventory** section and the **Appendix**.

The local chapters of Pheasants Forever work to establish wildlife habitat and provide seed and planters to landowners who wish to establish native grasses along ditches and streams. Other private, wildlife-supporting organizations in the area are National Wild Turkey Federation, Ducks Unlimited, and White Tails Unlimited.

Recent Events

Over the past 16 years, the Salt Fork has been the object of much discussion. Flooding, debates concerning channel maintenance, an accidental ammonia spill, and the listing of the river on IEPA's impaired waters report have kept the Salt Fork in the local news.

Channel Maintenance

Lack of maintenance outside of drainage districts, and maintenance within drainage districts have fueled debate in the Salt Fork watershed for many years. Flooding in 1990, exacerbated by a blockage of woody debris upstream of Sidney, prompted the formation of the Salt Fork Steering Committee by the Champaign County SWCD. With help from USDA-SCS (now NRCS), emergency funds were obtained to clear the Sidney blockage. Additional emergency funds were obtained to remove a series of blockages in 1994. In 2002, the Salt Fork Steering Committee developed Channel Stewardship Guidelines outlining the conditions and methods for addressing woody debris in channels **outside** of drainage districts (see **Appendix**). Soon after, CCSWCD received a grant to begin implementation of those guidelines. However, the funding of the grant was delayed until late 2005, such that debris accumulations could not be addressed until the summer of 2006. The project was completed in the fall of 2006. Landowners and observers are pleased with the work and the manner in which it was conducted. Figure 7 illustrates work done at a site between St. Joseph and Sidney.


Figure 7. Before and after maintenance work on the Salt Fork between St. Joseph and Sidney (July 2006). Photos courtesy CCSWCD.

During 1994-1995, a drainage district removed trees and sediment bars from the Salt Fork downstream of St. Joseph to maintain agricultural drainage. In violation of the Clean Water Act, spoil was deposited in wetland areas without permission from the U.S. Army Corps of Engineers. Although a permit was eventually obtained, overall, the actions were unacceptable to many citizens. In recent years, other drainage ditch maintenance efforts have been met with objections from those concerned with the potential impacts on aquatic habitat and downstream flooding. Some also argue that cleaning out drainage ditches does little to restore flow capacity. Figure 8 presents a series of photographs taken before and after recent maintenance on the Spoon River.

April 2005: Small "floodplain" formed from prior bank failures.

May 2005: After ditch maintenance work.

July 2005: Benches beginning to reform.

April 2006: Bank failure following spring rain.

August 2006: New "floodplain" and meander pattern forming.

Figure 8. Spoon River near County Road 2300E. Photos courtesy Clark Bullard.

2002 Ammonia Spill

On July 11, 2002, a maintenance contractor cleaning boilers at the University of Illinois Abbott Power Plant discharged wastewater from that operation which contained elevated levels of ammonia having a high pH into the sanitary sewer system. While this wastewater had been collected and treated in separate holding tanks at Abbott Power Plant prior to discharge, the strength and rate of discharge created interference with the Urbana & Champaign Sanitary District's normal ammonia removal process at the District's Northeast Wastewater Treatment Plant. As a result, a substantial ammonia load passed through the treatment facility and into the Saline Branch.

As a result of the elevated levels of ammonia, a fish kill occurred in the Saline Branch and the Salt Fork. Illinois Department of Natural Resources estimated that more than 105,000 fish were killed and many other aquatic and riparian species were impacted. Damages have been sought to help pay for restoration.

The Urbana & Champaign Sanitary District (UCSD) and the University of Illinois have adopted a set of measures to ensure that discharges of this nature will not occur again. These measures include emphasis on written communications and an effort on the part of UI to find alternatives to using high-concentration ammonia solutions. Details regarding these measures can be obtained from UCSD.

Total Maximum Daily Load Development

In 2003, the Illinois Environmental Protection Agency (IEPA) began the process to develop Total Maximum Daily Loads (TMDLs) for the Salt Fork Watershed. The process is intended to aid in the development of measures that will restore stream segments identified as impaired by IEPA for supporting aquatic life and serving as a source of drinking water. Although the process will quantify causes and sources of pollutants, the resulting recommendations will be general in nature. To develop a specific implementation plan, IEPA awarded a grant to Champaign County SWCD in 2005. This current document is the result of the work of CCSWCD's Salt Fork Steering Committee and its technical advisors.

Tetra Tech, the consulting firm contracted by IEPA to develop TMDLs for the Salt Fork watershed, has submitted Stage 1 and Stage 2 reports. Stage 1 describes the watershed and data previously collected by IEPA. Stage 2 reports on additional monitoring data collected by Tetra Tech. The reports can be found at http://www.epa.state.il.us/water/tmdl/report/salt-vermilion/stage1-report.pdf and http://www.epa.state.il.us/water/tmdl/report/salt-vermilion/stage2-report.pdf. Tetra Tech completed a separate TMDL for the Homer lake sub-watershed in September of 2006 (see http://www.epa.state.il.us/water/tmdl/report/salt-vermilion/homer-final-tmdl.pdf).

Salt Fork Steering Committee at work, July 20, 2006. Photo courtesy CCSWCD.

IV. Watershed Resource Inventory

Over the past century, citizens in the Salt Fork watershed have been concerned with water quality, habitat for fish and other wildlife, conveyance of flow, recreation, and land use management. This section presents an incomplete inventory of data for use in addressing the current natural resource concerns of the Salt Fork.

Water Quality

Concerns about water quality in much of the Salt Fork system include excessive nutrients (nitrogen and phosphorus), excessive sediment, and lack of habitat to support aquatic wildlife. In addition, some stream segments are impacted by urban runoff and contaminants from industrial practices no longer in use. The Illinois Environmental Protection Agency (IEPA) has monitored the quality of waters in the Salt Fork system since 1966. In addition, other agencies and private organizations have started citizen volunteer programs to monitor a variety of water quality parameters. Meanwhile, several agencies and organizations have promoted the implementation of practices to reduce the quantity of pollutants entering waterbodies. This section inventories available water quality data and conservation practices in place.

Available Monitoring Data

The Illinois Environmental Protection Agency monitors the waters of the state as required by the provisions of the Clean Water Act. Some private entities also monitor water quality and its indicators. Based on IEPA's monitoring, potential causes and sources of pollutants associated with the impaired water bodies of the Salt Fork were listed in IEPA's Section 303(d) report (2006). Impairments, along with causes and sources, are summarized in Table 1. The Illinois Environmental protection Agency is responsible for reporting on waters throughout the state. Thus, the pollutant sources listed are based on generalized, rather than specific knowledge since agency resources are not available to do in-depth investigations on all water bodies. Parameters for which TMDLs are to be developed are listed in bold type, although this plan is concerned with all aspects of water quality.

Table 1. Causes and sources of pollutants for water bodies in the Upper Salt Fork Watershed listed in IEPA's 2006 303(d) report. (TMDLs to be developed for parameters in **bold**.)

Water Body (IEPA Identifier)	Uses Listed as Impaired	Causes	Sources
Homer Lake (RBO – 65 acres)	Aesthetic quality	Total suspended solids excessive algal growth **Phosphorus**	Crop production Shore area modifications Forest/grassland/park land
Boneyard Cr. (BPJCA – 3.2 miles)	Aquatic life	Habitat alteration DDT Hexachlorobenzene PCBs	Urban runoff Hydrologic/habitat modification Contaminated sediments
Saline Branch (BPJC08 – 15.5 miles, upstream of Boneyard, and BPJC06 – 10.3 miles, downstream of Boneyard)	Aquatic life	Habitat alteration Total Nitrogen **Dissolved oxygen** **Boron** **Ammonia** Total suspended solids DDT Dieldrin Methoxychlor Phosphorus	Channelization Crop production Municipal point sources Contaminated sediments Unknown sources
Spoon River (BPJD02 – 13.7 miles)	Aquatic life	**Dissolved oxygen** Habitat alteration	Crop production Channelization
Salt Fork River (BPJ09 – 13.8 miles, BPJ10 – 13.6 miles, and BPJ12 – 3.1 miles)	Aquatic life Public water supply	**Ammonia** Total Nitrogen **pH** **Nitrate** Total suspended solids Phosphorus	Crop production Municipal point sources Unknown sources

IEPA Monitoring Data

IEPA operates four water quality monitoring programs in the Salt Fork watershed:

- Ambient Water Quality Network (AWQMN)
- Facility Related Stream Surveys (FRSS)
- Intensive Basin Surveys
- Ambient Lakes Monitoring Program

Station locations for the study area are shown in Figure 9. Impaired reaches are shown in red. Stations in the AWQMN are sampled every six weeks for basic physical and chemical parameters. Facility Related Stream Surveys target areas upstream and downstream of municipal treatment plants. Macroinvertebrates as well as physical and chemical parameters are monitored annually at these stations, depending on staff resources. Intensive Basin Surveys are conducted once every five years and are the main source of information for assessing the aquatic life designated use. Physical, chemical, and biological parameters are evaluated. Three stations were monitored in the 2001 Intensive Basin Survey in addition to the FRSS stations. During Intensive Basin Surveys, stream segments are characterized in terms of quality of aquatic life habitat. Homer Lake is monitored five times per year as part of the Ambient Lakes Monitoring Program. Temperature, dissolved oxygen, water clarity, and water and sediment chemistry are evaluated. In addition, the lake was sampled one to two times per month from May 1997 to April 1998 by IEPA or an IEPA-approved volunteer as part of an Illinois State Water Survey (ISWS) study funded through the IEPA Clean lakes Program (Lin and Bogner, 2000).

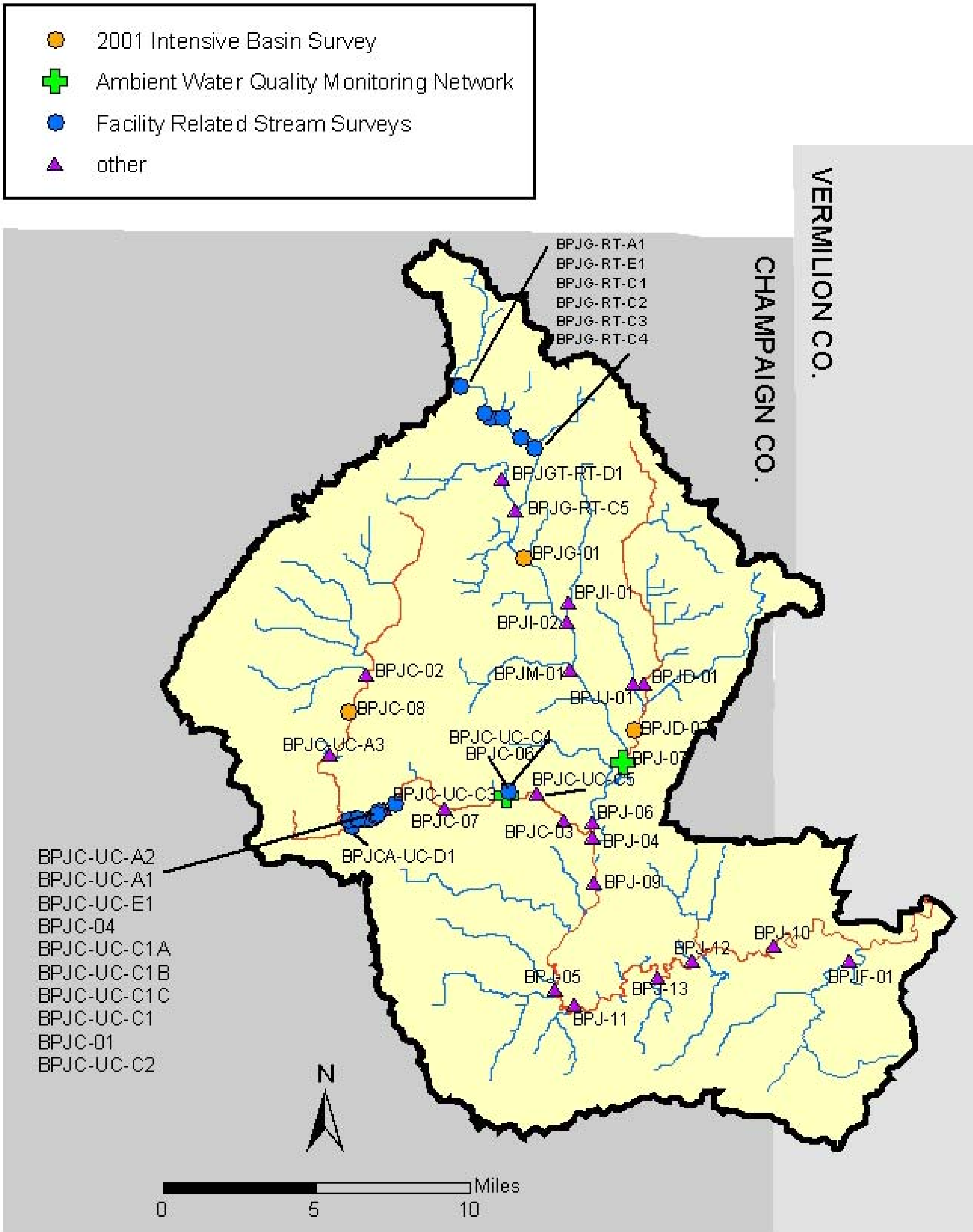


Figure 9. IEPA water quality monitoring sites in the Salt Fork Watershed.

RiverWatch Data

In addition to the IEPA monitoring sites, six stream sites in the study area were monitored by volunteers as part of IDNR's RiverWatch program over the period from 1996-2003. Data were collected on one to six occasions, depending on the site, for a total of 15 sets of observations. Volunteers recorded weather, physical characteristics of the water, stream bottom material, degree of stream cover, macroinvertebrate and other species observed, and surrounding land use. Selected parameters are presented in Table 2. Precise sampling locations are not presented to protect the privacy of cooperating landowners.

Table 2. RiverWatch sampling results for the Salt Fork.

Location	Season/Year	Turbidity	Algal Growth (%)	MBI[1] Macroinvertebrate Biotic Index (lesser scores indicate better water quality/ habitat)	Biological Score[2] (greater scores indicate better water quality/ habitat)	Habitat Score[3] (greater scores indicate better aquatic wildlife habitat)
tributary to Saline Branch	Spring/1996		0	7.79	4.7	9.3
	Spring/1999	Medium	0	9.00	4.2	7.7
	Spring/2001	Slight	0	6.29	9.0	15.7
	Spring/2002	Slight	6-25	5.98	13.4	9.3
	Spring/2003	Clear	26-50	6.14	11.6	24.3
Saline Branch (upstream of Boneyard)	Summer/1996		6-25	5.67	82.1	77.8
Boneyard Creek	Spring/1996		1-5	7.41	1.7	21.2
Salt Fork (above Saline)	Spring/2001	Clear	1-5	6.34	4.4	83.5
trib. to Salt Fork (near Sidney)	Spring/1996		26-50	6.62	10.0	90.1
Conkey Branch (downstream of Homer Lake spillway)	Spring/1996		6-25	5.56	37.8	21.2
	Summer/1999	Slight	1-5	9.74	2.5	21.2
	Spring/2000	Clear	1-5	6.25	12.3	59.6
	Spring/2001	Slight	1-5	6.29	10.4	59.6
	Spring/2002	Clear	0	6.34	30.8	86.0
	Spring/2003	Clear	1-5	7.03	29.8	55.5

[1] MBI: Measured on a scale of 1-11. 1-6 = good; 6.1-7.5 = fair; 7.6-8.9 = poor; 9-11 = very poor
[2] Biological Score: Percentile ranking from 1-100 representing a composite of biological indices.
[3] Habitat Score: Percentile ranking from 1-100 representing a composite of habitat characteristics.
See http://ctap.inhs.uiuc.edu/publications/2002CTAPannual3.pdf .

Stream Teams Data

Salt Fork River Partners have established four sampling sites in the Salt Fork watershed. Sites are monitored by collecting water samples for chemical analysis as well as by applying visual assessment protocols. Data have been collected since September 2004. As of September 2005, a total of 11 sets of observations had been made. Results for selected parameters are presented in Table 3.

Stream Team water sampling.
Photo courtesy Sue Smith.

Table 3. Stream Team sampling results for the Salt Fork.

Location	Month-Year	pH	Alkalinity (mg/L)	Dissolved oxygen (mg/L)	Total suspended solids (mg/L)	Ortho-phosphate-P (mg/L)	Nitrate-nitrogen (mg/L)
IL Rt. 49 bridge	Sept-2004	7.5	262	6.6	66.1	0.10	4.4
	Feb-2005	7.5	248	9.8	19.0	0.13	8.0
	Mar-2005	8.0	260	8.7	8.7	0.17	8.0
	Jul-2005	7.5	222	15.5	15.5	1.17	17.6
IL Rt. 14 bridge	Feb-2005	7.5	248	10.0	8.7	0.14	9.0
	Apr-2005	8.5	282	15.0	6.5	0.20	6.0
	May-2005	7.5	260	8.6	6.5	0.50	8.0
	Jun-2005	7.5	220	9.0	6.5	1.17	2.0
CR 1100N bridge	Feb-2005	7.5	291	15.0	26.8	0.07	8.0
Upstream of CR 2400 E	Feb-2005	7.5	244	9.8	8.3	0.14	8.0
	Jun-2005	7.5	236	4.6	36.2	1.07	6.0

Other Water Quality Related Data

Available data indirectly related to water quality are the T-Transect surveys conducted by Soil and Water Conservation Districts for the Illinois Department of Agriculture. Points are surveyed on a square grid approximately every 1.5 miles. The same points are visited every two years and factors related to erosion are reported. The Revised Universal Soil Loss Equation is used to estimate the rate of erosion occurring at each survey point. Estimated rates are compared against “T”, the agronomically “tolerable” rate of erosion for a given soil type. For most soils in the watershed, T is estimated to be 4-5 tons/acre/year. According to CCSWCD and VCSWCD, in 2004 the erosion rate was estimated to be greater than T for 10 points out of 129 in the study area.

The T-Transect surveys provide insight regarding erosion rates *within fields*. The quantity of eroded material that *reaches streams and lakes* is a fraction of total field erosion. Two studies conducted by the ISWS provide insight regarding the rate of sediment transport to the Salt Fork. In 1998, the ISWS measured sediment accumulation in Homer Lake since construction of its dam in 1969 and also measured sediment concentrations in water entering and leaving the lake (Lin and Bogner, 2000). The sediment survey indicated a transport rate of 0.32 tons/acre/year, averaged over the 30 years the dam had been in place. This average is 13% of the estimated average annual field erosion rate. Samples collected during the one-year water quality monitoring portion of the study (1997-1998) indicated sediment entering at a rate of 0.46 tons/acre/year for that time period.

A second ISWS study was conducted in 2000-2001 in the larger Vermilion watershed (Keefer, 2003). Flow and sediment concentrations were monitored in the North Fork, Middle Fork, and the Vermilion River near Danville (see Figure 2). While sediment from the Salt Fork was not measured directly, transport rate from that watershed was estimated to be 0.18 tons/acre/year by subtracting the contributions from the North and Middle Forks from that measured at Danville. Since the study included a period of below normal runoff, the estimate of 0.18 tons/acre/year is most likely below the average annual rate. The same study estimated a transport rate of 0.65 tons/acre/year for the adjacent Little Vermilion watershed. Based on discussion with Roger Windhorn of USDA-NRCS, a value of 0.3 tons/acre/year will be used for planning purposes.

Conservation Practices

Primary nonpoint source pollutants identified by IEPA are nutrients and sediment. Practices that can help keep these pollutants from entering streams include buffer strips of trees or grass along stream banks, wetlands, nutrient (fertilizer) management, conservation tillage techniques, and grassed waterways. These practices are primarily applicable to the dominant land use: row crop agriculture. The United States Department of Agriculture and the Illinois Department of Agriculture offer programs to implement such practices. Some of the rules, details, and funding of these programs change over time, but those that are most applicable to the Salt Fork Watershed are listed below. Additional programs are sometimes available from various sources. The Champaign County Soil and Water Conservation District can be contacted for current program availability.

Programs and practices are described in more detail below. The efficacy of such practices in reducing nutrient and sediment loads will be discussed under **VII. Implementation Strategies/ Alternatives**.

CRP: Conservation Reserve Program

Several practices under the CRP program have been successfully used to conserve natural resources and improve water quality in the watershed. These practices are available for land that has agricultural crop history.

1. Filter Strips and Riparian Buffers: These are grass or tree strips along drainage ditches and streams that filter out sediment and nutrients. The width varies depending on the site and is determined by using standards developed by the Natural Resources Conservation Service. An annual rental rate is paid to compensate for the lost crop income and 50% cost share is available along with some incentive payments.
2. Shallow Water Areas for Wildlife: These are areas that are naturally wet as determined by the Natural Resources Conservation Service. The practice generally involves closing off the natural outflow of water with a 1 to 3-foot berm of soil and placing a water control valve in this berm. The water is held in the area for a portion of the year to improve habitat for wildlife such as ducks. The ponded area is surrounded by a grass filter to improve water quality. An annual rental rate is paid to compensate for the lost crop income and 50% cost share is available along with some incentive payments.
3. Waterways: These are grass strips in farm fields that convey storm water from a field while protecting the field from gulley erosion. Gulley erosion is prevented which keeps soil out of the streams. An annual rental rate is paid to compensate for the lost crop income and 50% cost share is available along with some incentive payments.

WRP: Wetland Reserve Program

Private wetlands converted to agricultural production prior to 1985 are eligible for up to 90% cost share for restoration. The plan also provides one time payments for 10-year, 30-year, or permanent easements.

WHIP: Wildlife Habitat Incentive Program

All private land is eligible for this program -- no crop history is necessary. A wildlife biologist from the Natural Resources Conservation Service works with the landowner to develop a plan and cost share up to 75% is available for the plantings recommended. There are no land rental payments with this program.

EQIP: Environmental Quality Incentive Program

This program is divided into livestock and non-livestock segments. The livestock feature offers up to 75% cost share for fencing and improvements (such as watering systems) in livestock facilities. This program could be used by someone with a pasture along a stream to fence the livestock out of the stream and provide an alternate watering facility. There are a few small holdings of cattle and other livestock in the watershed.

The non-livestock segment provides up to 75% cost share for soil conservation practices such as terraces that can be used to reduce soil erosion on sloping fields. These are parallel berms at specified intervals on the contour of a slope that catch water before gullies can form. Tile carries the water from these berms into the existing tile system in the area or delivers it into a drainage ditch or stream. Crops are planted on the contour and soil erosion is controlled on the site.

CPP: Conservation Practices Program

This program provides up to 60% cost share for a variety of projects that reduce soil erosion. There is no annual rental payment. The program can also be used for nutrient management plans (crop fertilizer plans that follow the University of Illinois guidelines for fertilization). An incentive of $7 to $10 per acre is paid on a one time basis to farmers for adopting these plans on their fields.

Farmers willing to try no-till or strip-till can receive an incentive payment of up to $800. These farming practices leave crop residue on the soil surface to protect it from erosion. The implementation of these practices reduces the soil being deposited into streams and ditches.

Practices in Place in the Watershed

Acres currently enrolled in various conservation programs are summarized in Table 4. Figure 10 provides a visual inventory of vegetative buffers. There are a total of 279 miles of streams or 558 miles of stream banks in the watershed addressed by this watershed plan. Approximately 71% of the stream banks have some kind of vegetative buffer (including non-CRP trees or grass). The average width of CRP-enrolled buffers is 74 feet. Stream segments coded as red in Figure 10 are in need of vegetative buffers on either or both banks.

Application of anhydrous ammonia. Photo courtesy CCSWCD.

Table 4. Summary of Current Conservation Practices Related to Water Quality.

Program	Practice	Pollutants addressed	Acres enrolled in Homer Lake Watershed	Acres enrolled in remainder of Salt Fork watershed area	Total Acres Enrolled
CRP (USDA)	Grass buffers along channels	Filters sediment and pollutants bound to sediment such as P and some pesticides; roots also uptake dissolved forms of N and P	51	1,900	1,951
CRP (USDA)	Tree buffers along channels	Filters sediment and pollutants bound to sediment such as P and some pesticides; roots also uptake dissolved forms of N and P. Trees also provide shading which increases dissolved oxygen levels in streams.	0	145	145
CRP (USDA)	Grassed waterways	Prevents transport of sediment by healing or preventing formation of gullies in cropped fields	0	304	304
CRP (USDA)	Shallow water areas and wetland buffer	Traps sediment; aquatic plants take up nutrients.	0	22	22
CRP (USDA)	Other grass/tree/shrub planting practices	Such practices include windbreaks and wildlife food plots. While these are not implemented for the benefit of water quality, land used for these practices are taken out of crop production thus reducing erosion and fertilizer losses.	0	596	596
EQIP (USDA) and 319 (IEPA)	Nutrient management	Prevents over-application of N and P on cropped fields by prescribing appropriate application rates based on soil testing, yield history, and UI recommendations	3,500	3,800	7,300
EQIP (USDA) and 319 (IEPA)	Conservation tillage	Reduces soil erosion by limiting the degree to which soil and crop residues are disturbed in preparing fields for planting.	315	0	315

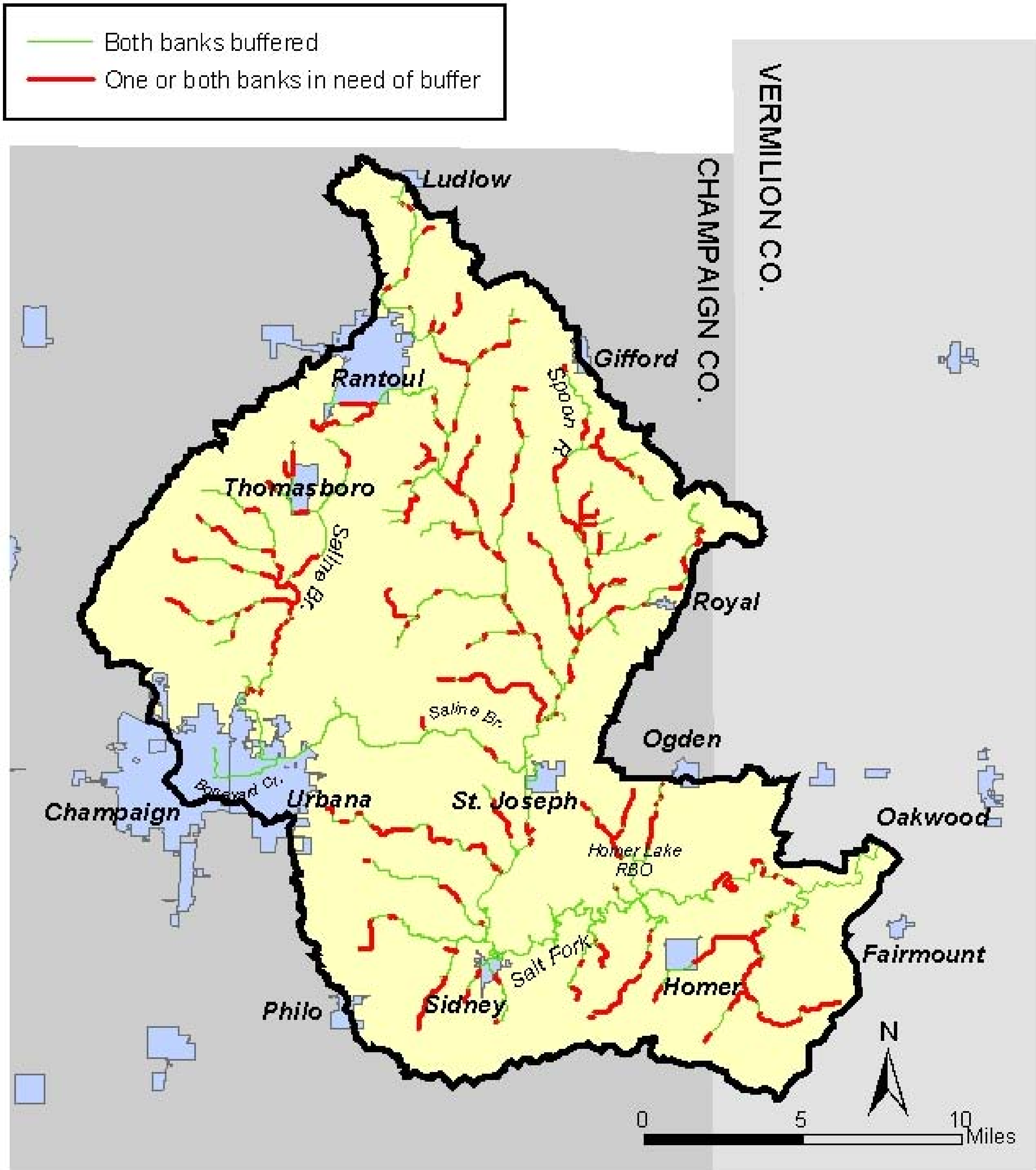


Figure 10. Stream bank buffer status in the Salt Fork Watershed.

Conveyance of Flow

Both historical and current data related to the river's ability to transport water are available from a variety of sources including IDNR, USGS, USDA-NRCS, and SWCD records. This section outlines available sources of information related to maps of channels and drainage districts, flow data, bank condition and impedances to flow, and computer models.

Maps

Maps from the original United States Public Land Surveys were recently preserved in digital format and are available on CD from the Illinois State Archives. USGS has published topographic maps showing stream channels in the area since 1895. The most recent 1:24,000 USGS topographic maps of the area are available in digital format. Champaign County SWCD used 1993 USGS digital black and white aerial photography to map channels at the 1:12,000 scale for use in their Geographic Information Systems database. Other digital aerial photography sets available include:

- 1940 black and white photography flown for USDA and archived by IDNR
- 1984-1996 color infra-red photography flown by a private vendor
- 1993 USGS black and white photography
- 1998-1999 USGS black and white photography
- 2002 black and white photography flown for Champaign County only
- 2004, 2005, 2006 color infra-red photography flown for USDA
- 2005 color photography flown for Champaign County only

Available hardcopy aerial photography sets flown for USDA include:

- 1940 (Champaign and Vermilion Counties)
- 1960, 1983 (Vermilion County only)
- 1975, 1982, 1990, 1993 (Champaign County only)
- USDA-FSA crop compliance slides for 1980-2003 (a few years missing for Champaign County; availability for Vermilion County unknown).

Drainage districts are responsible for maintenance of free flow within their boundaries. Approximately 44 drainage districts serve the study area, although some may no longer be active. Drainage districts listed in Table 5 and outlined in Figure 11 were digitized by CCSWCD based on best available information from district commissioners and from the 1971 Inventory of Illinois Drainage and Levee Districts (Illinois Department of Business and Economic Development, 1971).

Table 5. Drainage Districts in the Upper Salt Fork Watershed (see Figure 11). Acres listed are approximate, not legal measurements.

District	Acres
1. Bailey Branch	1693
2. Beaver Lake	36888
8. Conkey Branch	4314
11. Dillsburg Special	3429
14. #10 Ogden Township	1291
15. #11 Ogden Township	605
19. #1 Town of Sidney	2425
20. #2 Sidney Township	3910
21. #1 Town of South Homer	4250
22. St. Joseph Township #3	5917
23. St. Joseph Twp. #4	4769
24. St. Joseph Twp #5	424
25. St. Joseph Twp #8	891
26. #1 Town of Stanton	2068
30. Ehmen-Schmidt Mutual	1309
33. Flatville Special	7703
36. Hickory Grove	399
42. Killbury Mutual	62
56. Raup	2873
57. Salt Fork	7177
58. Saline Branch	12757
60. Schindler	867
63. Silver Creek	5077
64. Spoon River	24336
65. South Fork	4582
66. #6 St. Joseph Twp	1194
67. Stanton Special	4224
69. Triple Fork	4211
71. Union Stanton-Ogden Twp	2236
75. Union #1 Philo & Sidney	2386
76. #1 Philo & Urbana	2480
79. #2 Somer & Stanton	6649
80. Union #1 Homer & Sidell	1021
81. Union #2 South Homer & Sidney	4158
82. Union #3 South Homer & Sidney	1181
83. #2 St. Joseph & Ogden	4119
84. Union DD #7 St. Joe & Ogden	912
86. Upper Salt Fork	14484
87. Urbana & Champaign Sanitary District *(technically not a drainage district)*	5828
90. Willow Branch	973
91. Wrisk	2068
92. Youman's Branch Mutual	1803
96. #1 Town of Somer	2531
9991. Vermilion County #48	211

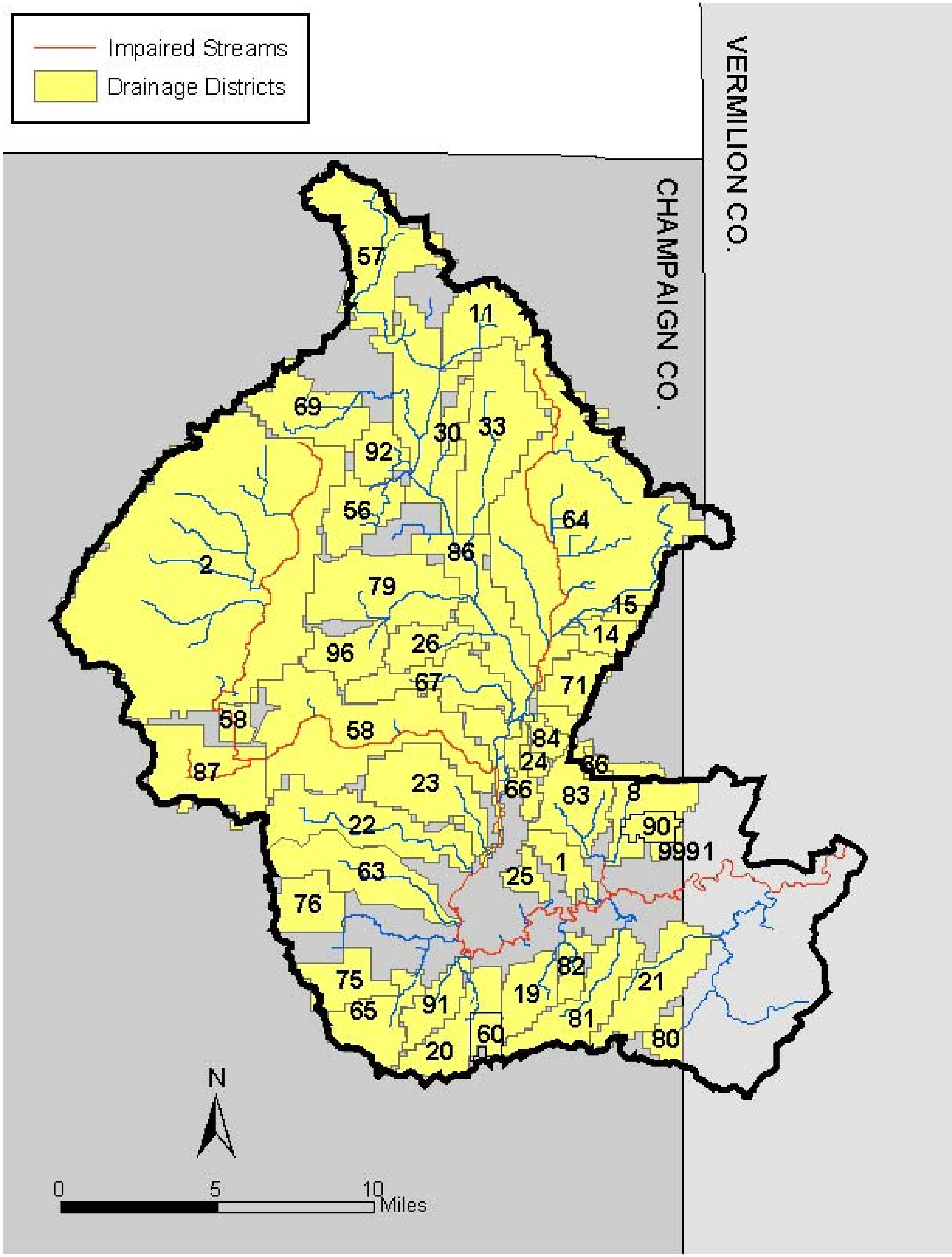


Figure 11. Drainage districts in the study area. (See Table 5 for district names; Vermilion County district boundaries have not yet been digitized.)

Flow Data

Stream flow records are maintained by USGS for five gauging stations in the study area. Periods of record are listed below in Table 6.

Table 6. USGS gauging stations in the study area (http://nwis.waterdata.usgs.gov).

Site ID	Site Name	Period of Record
03336900	Salt Fork near St. Joseph	1958-1991 and 2004-present
03337000	Boneyard Creek at Urbana	1948-present
03337100	Boneyard Creek at Lincoln Ave.	2001-present
03337500	Saline Branch at Urbana	1936-1958
03338000	Salt Fork near Homer	1944-1958

Stream Bank Condition and Impedances to Flow

Geo-referenced aerial video of the Salt Fork from Batesville in Vermilion County to St. Joseph in Champaign County was flown in March of 2004 in a cooperative venture of the U.S. Geological Survey Illinois Water Science Center and the Illinois Department of Agriculture. The upper reaches above County Road 1850 N in Champaign County were not flown due to lack of funding (personal communication with Robert Holmes, USGS, 2006). Wayne Kinney of Midwest Streams, Inc. analyzed the videography and identified log jams and areas of bank erosion. Results from his analysis are discussed under **VI. Goals and Objectives.**

A woody debris inventory of the Salt Fork was conducted near the end of 2005 by Applied Ecological Services (AES) as part of CCSWCD's channel maintenance grant. They collected photos and GPS coordinates for 189 sites. Those sites were prioritized to guide maintenance work conducted during the summer and fall of 2006.

Computer Modeling

Some of the gauging data collected by USGS was used in a detailed hydrologic and hydraulic modeling study conducted by USDA-NRCS for the Salt Fork Steering Committee (Visser, 2002 and 2003). The study included the surveying of numerous cross-sections between Rantoul and the county line and the resulting calibrated model is available for investigating a variety of hydraulic scenarios, including the effects of debris blockages. One digital product available for use is a GIS layer of bridge crossings with attributes that include the modeled 100-year flood elevation and flow rate. The bridge crossings can also be linked to digital photographs of each location.

Land Use Management

Rapid development of commercial areas and residential subdivisions has spawned land use management concerns such as loss of prime farmland, use of riparian corridors, erosion control, and environmental impacts of new industries. To help address these issues, information is available from USDA-NRCS/SWCDs as well as from the municipalities and planning agencies of the two counties.

Digital soils maps developed by USDA-NRCS are one planning tool. This digital data layer is available for Champaign County and is under development for Vermilion County. The maps are accompanied by tables listing properties related to suitability for construction, crop production, growing of trees, and other land uses. For Champaign County, these properties were used to assign a "relative value" for use in scoring areas under the Land Evaluation and Site Assessment (LESA) system. Prime farmland areas have a relative value greater than 85 out of 100. Figure 12 shows soils classified by relative value as an example to demonstrate how soils information can be displayed for land use planning.

The municipalities and county governments are active in addressing land management concerns and are a valuable source of information regarding existing efforts and resources. The City of Urbana highlights NPDES Phase II efforts related to erosion and storm water control:

- A new erosion and sediment control ordinance and permit program for Urbana, Champaign, and Savoy to reduce construction site erosion runoff.
- Municipal enforcement of erosion control measures in Urbana, Champaign, and Savoy.
- Biannual Storm Water Forum to educate contractors, developers, and home builders on proper erosion control device installation and maintenance.

Additional information can be obtained from the other municipalities and county governments.

Example of urban sprawl occurring southwest of Homer Lake. Aerial photography (March 28, 2005) courtesy Champaign County Regional Planning Commission.

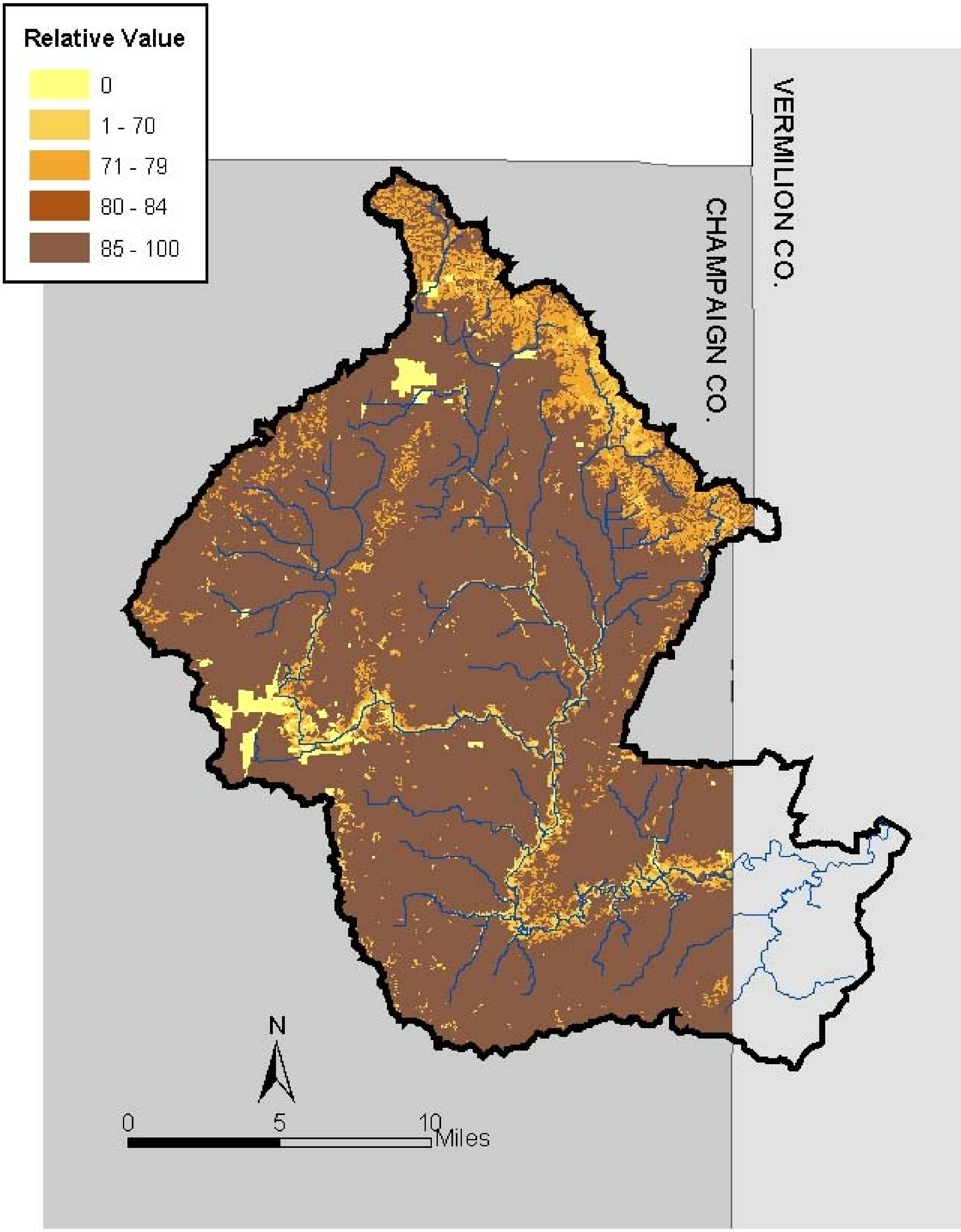


Figure 12. Relative Value of soils in the Champaign County portion of the watershed.
(Analysis for Vermilion County not yet available.)

Recreation

Water quality affects quality of human recreational opportunities, both those involving water activities as well as land-based activities which are enhanced by plants and wildlife dependent in some way on the Salt Fork. Existing and planned recreational opportunities available in the Salt Fork watershed are summarized in this section.

Urbana Park District

The City of Urbana has several excellent parks bordering a total of approximately 1.5 miles of Saline Branch. Urbana Park District (UPD) master plans include future development of a trail to connect the parks, intensive water quality and biological inventorying, bank stabilization and riparian habitat improvements, and environmental education programs.

Crystal Lake Park provides opportunities for fishing, canoeing, paddle-boating, walking, and picnicking. The lake is annually stocked with channel catfish and hybrid sunfish. Busey Woods is a 59-acre remnant of the Big Grove woodland and is adjacent to the Anita Purves Nature Center. The Saline Branch was relocated to run along the eastern edge of the woods, leaving numerous ephemeral oxbow ponds within the woods that benefit a variety of species. The area serves as an urban wetland buffering the Saline Branch and also provides many opportunities for environmental education.

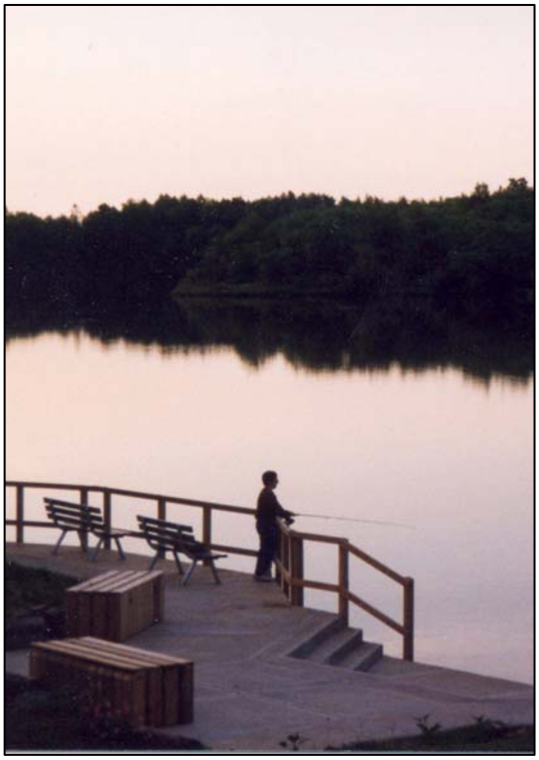
Chief Shemauger Park on the north bank of the Saline Branch features ball fields and picnic areas. Like many other stretches of the Saline Branch, bank stabilization, control of bush honeysuckle, and trash clean-up are needed here. The Hickory Street Park site provides storage for UPD and also has a small prairie propagation plot. The Perkins Road Park site features a park for dog-walking. Future plans include restoring prairie and wetland areas and developing overlooks and trails. The plans include reconnection of the Saline Branch to a former meander which should provide flood control, water quality, and fish habitat benefits. Judge Webber Park is further downstream on the eastern edge of Urbana. The area is designated as an outdoor archery range through agreement with the East Illinois Archers Association. Urbana Park District's most recent acquisition is Weaver Park, a 60-acre area which drains to a tributary of the Salt Fork in St. Joseph Drainage District #3.

Recreation Trail

Plans are underway to develop a 24.5 mile recreation trail from Weaver Park in Urbana to Kickapoo State Park near Danville along the abandoned rail line paralleling US Route 150 (Bloomer, 2005). Trail nodes will feature parking, water fountains, and other amenities. Lease for the right-of-way was obtained in February of 2005 by the Champaign County Conservation and Design Foundation. Many other entities are also involved in the project including IDNR, UI, and several municipalities.

Homer Lake Forest Preserve

Homer Lake Forest Preserve (Formally the Salt Fork River Forest Preserve) is an 800+ acre recreational area owned and operated by the Champaign County Forest Preserve District. The Preserve offers a variety of habitat including upland grasslands and forest, river riparian floodplain forest, and a 65-acre lake. In addition, the Preserve offers a wide variety of recreational opportunities including hiking, river, pond, and lake fishing, canoeing, picnicking, boating, and several other outdoor activities. The historic 28-acre Old Homer Park is approximately one mile downstream. Combined, these landholdings help buffer approximately one mile of the Salt Fork.



Homer Lake in Champaign County. Photos courtesy CCFPD, CCSWCD.

Fish and Other Wildlife

The Salt Fork watershed is home to a variety of fish, birds, mammals, and plants. Some species are highly valued by humans, while others are considered a threat to property or indigenous species. This section summarizes available data, focusing on measures that serve as indicators of environmental health. Information regarding the state of animal and plant populations is collected by the Illinois Department of Natural Resources as well as private organizations and citizens. Species inventories are provided in the Appendix.

Fish

Fish populations in the area were studied as early as 1885, as noted by Larimore and Bayley in *The Fishes of Champaign County, Illinois* (1996), an Illinois Natural History Survey bulletin which details the findings of four major surveys conducted at roughly 30-year intervals. Larimore and Bayley tabulated and mapped the species found in each survey, examined trends, and discussed factors contributing to those trends. They concluded that:

- Channelization greatly reduced habitat diversity for fish.
- Habitat can be improved by limiting channel maintenance; allowing development of channel features that provide variation in water depth and velocity; allowing growth of bank vegetation; and restoring floodplain water storage areas.
- Silt is a major factor negatively impacting fish and other aquatic organisms.
- Water quality has greatly improved since the 1950s due to changes in handling municipal and industrial wastes, reduction of cattle grazing, and use of conservation tillage. Accidental spills are still a primary threat to aquatic wildlife.

The Illinois Department of Natural Resources works closely with IEPA in sampling fish for the Intensive Basin Surveys conducted every five years. Fish species collected in recent years for the Salt Fork, Saline Branch, Spoon River, and Upper Salt Fork are listed in the Appendix. With the exception of the Upper Salt Fork, the segments sampled are listed as impaired for aquatic life by IEPA in the 2006 303(d) report (IEPA, 2006). Data were not available for the Boneyard for 2001, but are available for the 2006 survey and are presented in the Appendix.

Birds

The Salt Fork River provides an important corridor of food and shelter for migrating, resident, and nesting birds. Habitat quality varies widely in the Salt Fork watershed. Especially rich areas are the Homer Lake Forest Preserve, the Urbana Park District properties of Busey Woods, the new Perkins Road Park site, and the University of Illinois research properties of Brownfield and Trelease Woods.

The Illinois Department of Natural Resources recently published the results of its Illinois Breeding Bird Atlas Project (www.inhs.uiuc.edu/chf/pub/ifwis/maps/). This statewide effort established a regular grid of 6,148 census blocks with approximate area of 9 square miles each. Local Audubon observers, under contract with IDNR, systematically surveyed the census blocks within Champaign County during the breeding seasons from 1985-1991. Numbers of breeding species found in blocks within the Salt Fork watershed are shown in Figure 13 and range from 45 in the Flatville area to 88 in the Homer Lake area. The census results show evidence of greater diversity in bird life in areas with wooded streams and wetlands than in the more open drainage channel corridors and agricultural fields.

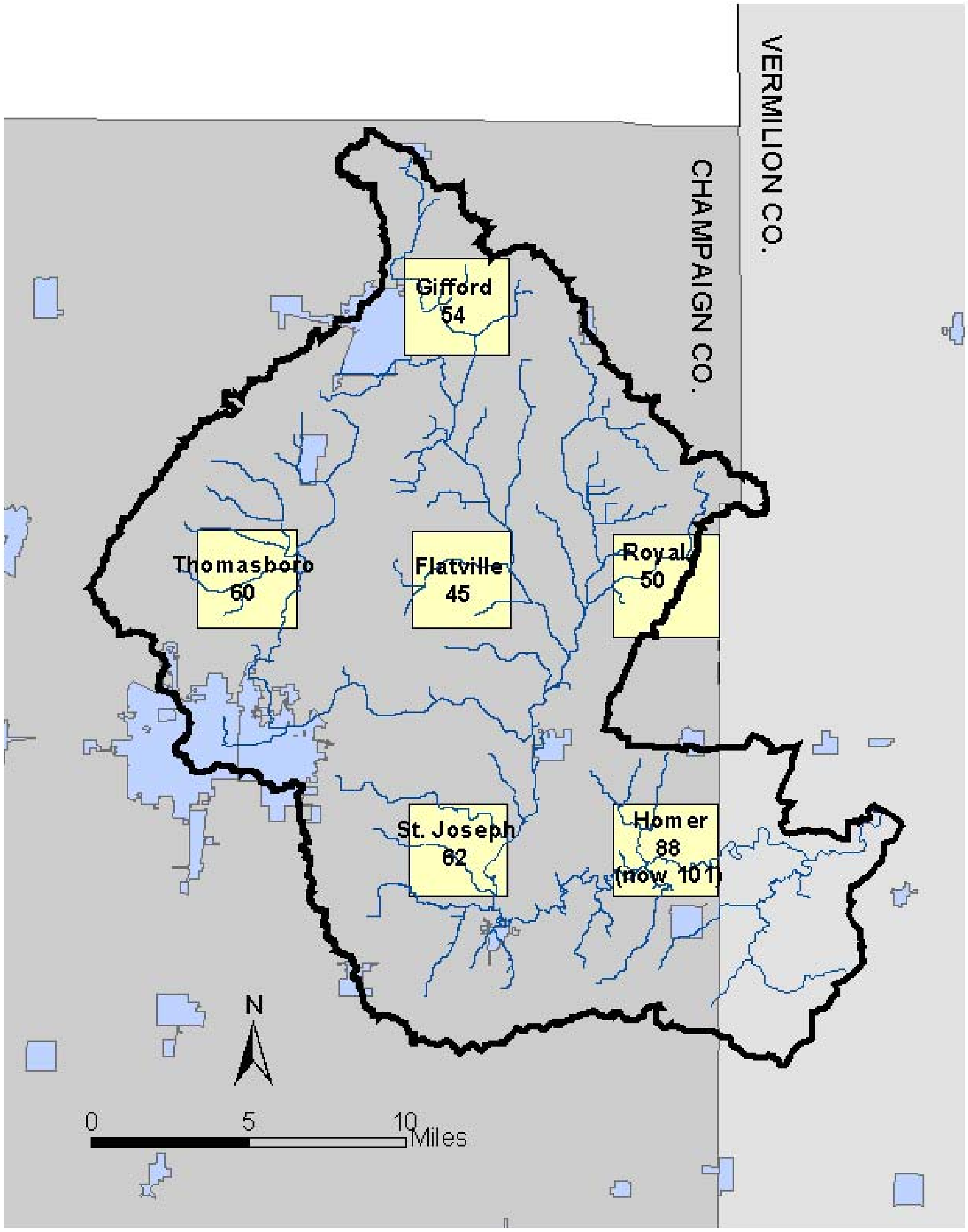


Figure 13. Numbers of breeding bird species by Illinois Breeding Bird Atlas census block (1985-1991).

Since the 1991 survey, the total number of bird species with some evidence of breeding observed in the Homer Lake area has increased to 101 and includes three State Threatened species. Numbers have not increased significantly in the other Salt Fork census blocks and no breeding Threatened or Endangered species have been observed in those areas. The Appendix provides a historical inventory of species observed at Busey Woods, Perkins Road Park, and Homer Lake in Champaign County. The local chapter of the Audubon Society is to be commended for maintaining such a detailed database.

Other Animals

The Salt Fork is home to variety of mammals including coyote, fox, and deer. Deer are considered to be a nuisance in some residential areas of the watershed. Mammals identified by Steering Committee members are listed in the Appendix. Franklin's ground squirrel is the only mammal in the watershed listed on the Threatened and Endangered species list (personal communication with Eric Smith, IDNR, 2006).

Mussels collected from the Salt Fork placed on a kayak. Photo courtesy Sue Smith.

The Illinois Natural History Survey has inventoried mussels in the Salt Fork (see **Appendix**). Mussels are indicators of stream health because they are susceptible to the effects of siltation and pollution. While the number of mussel species has generally been on the decline in Illinois, species still found in the Salt Fork include the plain pocketbook, wavyrayed lampmussel, and elktoe (Cummings, 2000).

Trees and Plants

Two concerns in the Salt Fork River watershed are a lack of native plant diversity and the encroachment of exotic and invasive plants into remaining natural areas. Silver maple and multiflora rose have become particularly noticeable in the watershed. Landowner cooperation is essential to control the spread of detrimental species. Native plantings in conservation programs and home landscapes can increase plant diversity. An incomplete inventory of trees found along the Salt Fork is provided in the Appendix.

Terrestrial Habitat Areas

Historically, the Salt Fork River watershed contained areas of tallgrass prairie, wet meadows, savanna, and river corridor. These areas provided a diverse habitat for many species of plants and animals. Today, small remnants of each of these habitats remain but have been severely fragmented and reduced to areas along railways and river corridors. Efforts made by public and private landholders could reduce the negative impacts, and enhance the quality of life in the watershed.

According to IDNR's most recent land cover study (based on 1999-2000 satellite imagery) (IILCP, 2002), approximately 9% of the study area has land cover potentially suitable for support of wildlife habitat. These areas (highlighted in red in Figure 14) are not necessarily maintained for the purpose of wildlife support. In addition, much of the area is fragmented. "Islands" are less beneficial than contiguous habitat. Where appropriate, many of the practices listed in Table 4 are maintained for wildlife as well as for achieving maximum water quality benefit.

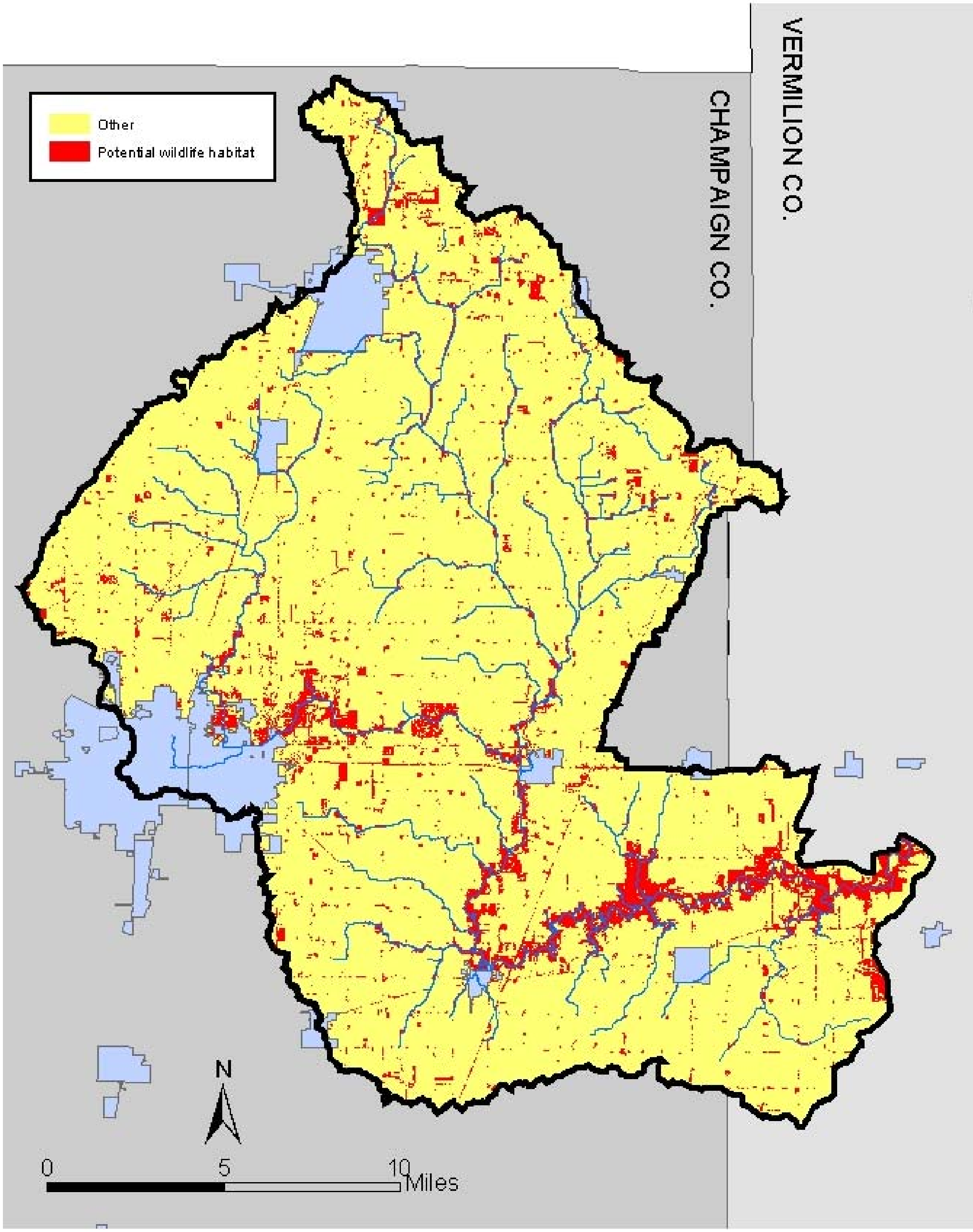


Figure 14. Potential wildlife habitat areas. (Adapted from the Illinois Interagency Landscape Classification Project's 1999-2000 land cover layer, IILCP, 2002.)

Landowner Education

Private and public landowner education is a critical component of any watershed plan. The most successful programs pair educational components with applied, in-the-field, technical assistance. Educational programs that target a select audience can help increase public awareness and appreciation of local water resources, which in turn will increase support for watershed groups and projects. There are many pressing issues concerning the Salt Fork for both private landowners and public land managers. Invasive and exotic species control, water quality, environmentally friendly homeowner practices, Federal Farm Bill programs that enhance water quality and wildlife habitat, and wildlife management are just a few of the topics that need to be addressed in the watershed. This section inventories some of the available resources for providing technical assistance and environmental education to the public.

Several federal, state, county, and private agencies help distribute educational information and provide technical assistance in the Salt Fork watershed. USDA offices provide technical assistance on a variety of watershed topics including federal Farm Bill Programs that are crucial to water quality and wildlife conservation. The USGS Illinois Water Science Center provides technical assistance and resources regarding a variety of issues such as flooding, surface water quality, and ground water supply. The Illinois Department of Natural Resources (IDNR) offices provide assistance in areas related to wildlife, ecology, forestry, and fisheries management. IDNR District Wildlife Biologists meet with landowners on their sites and offer suggestions for improvements or enrollment of their land in conservation programs. In some situations, assistance from other departments of the IDNR such as the Illinois Natural History Survey (based on campus in Champaign/Urbana) or the Illinois Nature Preserves Commission may be applicable.

Forest Preserve and Conservation Districts in Champaign and Vermilion counties offer educational programs, public meeting locations, and technical advice to interested landowners, and often provide a location for outdoor classrooms. Local University of Illinois Extension offices have individuals trained in both education and technical areas for assisting with such programs. Special interest groups such as Prairie Rivers Network, Salt Fork River Partners, and the Illinois Association of Drainage Districts focus on educating the public about water quality and other watershed concerns. Additionally, county and municipal health departments can be instrumental in developing materials for homeowners. Contact information for many of these organizations and agencies is provided in Table 7. Even though there are many avenues for educational and technical assistance, there are very few individuals available to provide applied, in-the-field assistance to landowners. This need will be addressed in later sections of this watershed plan.

Table 7. Summary of Agencies and Organizations Providing Conservation Assistance to Residents of the Salt Fork River Watershed.

Organization	Contact Number	Assistance
Champaign County Audubon Society	(217) 367-6766 www.champaigncountyaudubon.org	E
Champaign County Farm Bureau Vermilion County Farm Bureau	(217) 352-5235 (217 442-8713	E
Champaign County SWCD Vermilion County SWCD	(217) 352-3536, ext. 3; www.ccswcd.com (217) 442-1691, ext. 3	T, E, F T, E, F
Champaign County Forest Preserve District	(217) 586-4389	T, E
Ducks Unlimited	(907) 232-7612	E
Earth Partners (part of Champaign County Farm Bureau)	(217) 352-5235	E
*East Central Illinois Master Naturalists	(217) 333-7672	E, A
Grand Prairie Friends/Prairie Grove Volunteers	Not Available	E
Homer Lake Homeowner Association	Not Available	E
Illinois Association of Drainage Districts	(217) 763-6300; iadd@iadd.info	T, E
Illinois Department of Natural Resources (Region 3)	(217) 935-6860	T, E, F, A
Illinois Department of Natural Resources (Gibson City)	(217) 784-4730	T, E, F,A
Illinois Environmental Protection Agency	(217) 782-5562	T, E, F
Illinois Natural History Survey (various offices)	(217) 333-6880	T, E, A
Illinois Smallmouth Alliance	www.illinoissmallmouthalliance.com	E
Illinois State Geological Survey	(217) 333-ISGS	T, E, A
Izaak Walton League	(217) 367-9857	E
National Wild Turkey Federation	(217) 536-6978	E
Pheasants Forever	(877) 773-2070	E
Prairie Rivers Network	(217) 344-2371	T, E
Public Health Departments (county and city offices)	Champaign-Urbana: (217) 352-7961	T, E, F
Salt Fork River Partners	Not Available	E
University of Illinois Extension (county offices)	(217) 333-7672	T, E
USDA - NRCS (Champaign Field Office) USDA - NRCS (Danville Field Office)	(217) 352-3536, ext. 3 (217) 442-1691, ext. 3	T, F
USGS - Illinois Water Science Center	(217) 344-0037	T, E
Urbana Park District	(217) 384-4062	E
White Tails Unlimited	(877) 649-1624	E

T = Technical Assistance
E = Educational Opportunities
F = Financial Assistance for Programs
A = Applied Field Assistance

* New program in 2006. First graduating volunteers projected for Dec. 2006.

V. Problem Statements

As indicated in the Mission Statement, the Steering Committee recognizes the multiple functions of the Salt Fork and the inter-relatedness of the resource concerns held by the watershed's stewards. While the water quality impairments listed in Table 1 provide the catalyst for developing this plan, to be useful, the plan must also be mindful of concerns related to flooding and channel stewardship, recreation, wildlife, and land use management. In 2005, the Steering Committee developed a list of 27 concerns which are tabulated in the Appendix. Concerns from all categories are discussed and priorities identified below.

Water Quality

The Illinois Environmental Protection Agency has identified one lake and seven stream segments in the study area as having impaired designated uses. Available resources limit water quality monitoring both in terms of number of sites and frequency of sampling. In addition, it takes time to process and report data which creates a lag between measured and current conditions. Thus, the water bodies identified by IEPA in the 2006 303(d) report do not necessarily represent all segments with impairments or all current causes. Some observers have noted problems such as algal blooms on reaches not listed as impaired.

Algae observed in the Upper Salt Fork, 09/30/04. Photo courtesy Clark Bullard.

The impairments identified by IEPA represent best available information and provide a place to start in determining what needs to be improved. Problems identified are described below:

- Homer Lake's Aesthetic Quality designated use is impaired due to excessive suspended solids and phosphorus. Water clarity has declined as indicated by average Secchi depth and phosphorus concentrations have been variable over the past decade (see Figure 15). Potential sources of pollutants include row crop and other agriculture, recent residential construction, runoff from surrounding residential areas, and on-site sewage disposal systems of surrounding residences.

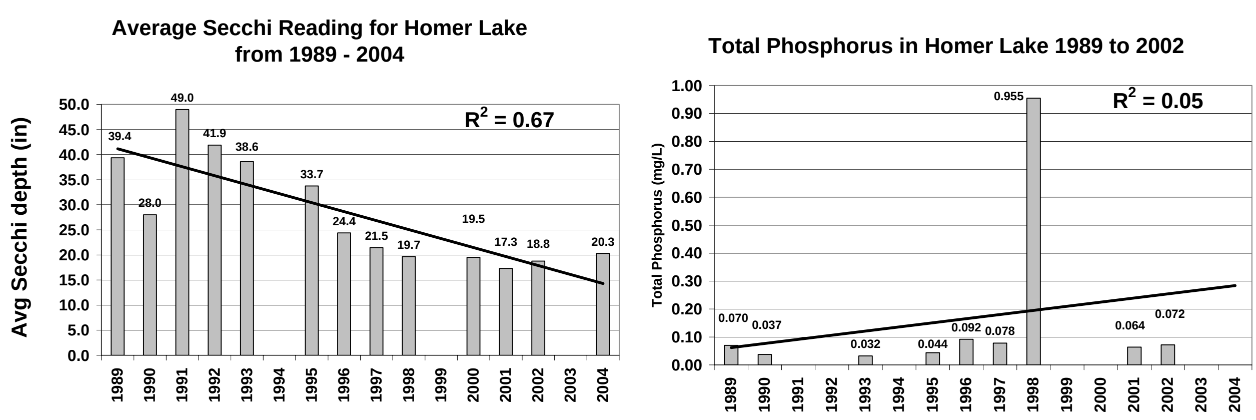


Figure 15. Average Secchi disk readings and total phosphorus concentrations for Homer Lake. Graphs courtesy CCFPD.

- Boneyard Creek does not adequately support aquatic life as determined by IEPA. Assessment of aquatic life use is complex and is described in IEPA's 2006 305(b)/303(d) report which can be found at http://www.epa.state.il.us/water/water-quality/report-2006/2006-report.pdf . Insufficient water quality monitoring data on Boneyard Creek exist to confirm specific causes of impairment. The 1997 IEPA survey indicated dead fish just downstream from the Boneyard Creek confluence with Saline Branch and above the Urbana and Champaign Sanitary District Northeast outfall (see Figure 2 for approximate location). While Boneyard Creek was considered the primary source of impairment to the downstream Saline Branch monitoring site, there has been little additional data collected on Boneyard Creek since 1997 to confirm or identify the source(s). In addition, the effects of subsequent (post 1997) watershed activities on the aquatic life of Boneyard Creek are not known. However, impairment is attributed generally to:
    1) Inadequate water quality in Boneyard Creek. The impairment identified in the 1997 IEPA survey may be attributed to low dissolved oxygen from urban runoff and other unidentified sources. Data collected during the summer of 2006 supports this finding (Tim Kelly, IEPA, personal communication, 2006).
    2) Lack of riparian and in-stream habitat.
    3) Contaminants in stream sediments including: DDT, hexachlorobenzene, and PCBs. These are "legacy" contaminants. These chemicals are now outlawed from use. It is unknown to what extent the existing contaminants are trapped or are released from the sediment. Sediments have been removed in stretches through UI and Urbana.
    4) Motor oil and other wastes.

The 2006 fish survey conducted by IDNR (Lutterbie, 2006 – see Appendix) provides more detail regarding the status of the Boneyard. Fish populations greatly improve as one moves downstream along the creek. Two fish species (both pollution-tolerant) were noted at Scott Park on the upstream end of the creek; 9 species (3 of which are pollution-intolerant) were noted further downstream near Gregory Street; 13 species (3 of which are pollution-intolerant) were noted near the intersection of US 150 and Cunningham Avenue. Based on the survey results, the Boneyard is classified as a Restricted Aquatic Resource at the upstream end improving to a Moderate Aquatic Resource at the downstream end.

Boneyard Creek - University of Illinois campus. Photo courtesy CCSWCD (2006).

The City of Urbana Engineering Division annually inspects the Boneyard and provides additional insight as to conditions for aquatic wildlife: In July of 2006, fish, frogs, water bugs, and other aquatic life in the naturalized area of the creek between Race Street and the Saline Branch were observed. City of Urbana also notes that from Lincoln Avenue to Race Street, the Boneyard cannot support aquatic life due to very shallow water levels, sheet-piling, and concrete floors.

- Saline Branch above the Boneyard does not adequately support aquatic life due to:
  1) lack of habitat
  2) low dissolved oxygen
  3) nitrogen

  Potential sources of nitrogen include row crop agriculture and urban runoff. After additional sampling, Tetra Tech (2007) concluded that dissolved oxygen is adequate and recommended that this segment be de-listed for dissolved oxygen impairment.

- Saline Branch below the Boneyard does not adequately support aquatic life due to lack of habitat and the following:
  1) nitrogen
  2) phosphorus
  3) boron
  4) suspended solids
  5) DDT (sediment)
  6) dieldrin (sediment)
  7) methoxychlor (sediment)

  Potential sources of nutrients and suspended solids include row crop agriculture, urban and residential runoff, and municipal point sources. Sources of boron need to be identified, but typically include wastewater (Dan Hippe, USGS NE Region Water Quality Specialist). Contaminated sediment may be due to previous industrial practices no longer in use or from a decommissioned landfill in Urbana.

- Spoon River does not adequately support aquatic life due to:
  1) lack of habitat
  2) low dissolved oxygen

  Agricultural activities in the watershed may be contributing nutrients that encourage algal growth which eventually leads to increased oxygen demand. Lack of shading along streams may decrease dissolved oxygen concentrations. Committee members also expressed a need to obtain more information to assess the impact of channel maintenance in 2005 on sediment load.

- Salt Fork River (St. Joseph to Homer Lake) does not adequately support aquatic life due to:
  1) nitrogen
  2) phosphorus
  3) suspended solids

  Potential sources of nutrients and suspended solids include row crop agriculture, urban and residential runoff, and municipal point sources.

- Salt Fork River (Homer Lake to past county line) does not adequately support aquatic life due to:
  1) nitrogen
  2) phosphorus
  3) suspended solids

  The Salt Fork does not support its use as a water supply for the town of Oakwood due to excessive nitrate. Potential sources of pollutants include row crop and other agriculture, urban and residential runoff, and municipal point sources.

Based on available information, the Steering Committee identified the following water quality priorities:

- Reduction of inputs of nutrients and sediment (from all known and controllable sources) throughout the watershed.

- Increasing and improving aquatic wildlife habitat in Boneyard Creek, Saline Branch, and Spoon River. Increasing dissolved oxygen is recognized as a component of this issue.

While boron and contaminated sediments are of concern, there are insufficient data regarding sources and extents of the problems. The Steering Committee urges IEPA to obtain more information on these problems.

Salt Fork stream bed downstream of Homer Lake. Photo courtesy CCSWCD.

Flooding and Channel Stewardship

Maintenance of free flow, bank integrity, flooding, and debris blockages have been of concern to the Steering Committee since its formation in 1990. These issues are inter-related with water quality in several ways, including:

- stream bank erosion degrades water quality

- bank vegetation impacts channel hydraulics, bank stability, and water temperature

- means for addressing aquatic life impairments may include structures that affect channel hydraulics

- woody material in channels plays a role in nutrient cycling and in providing habitat for aquatic wildlife.

Specific concerns identified by the Steering Committee include:

- ❖ There is no systematic means to maintain free flow in the Salt Fork downstream of the Upper Salt Fork Drainage District. The Steering Committee has not yet reached consensus as to the degree to which this is desirable.

- ❖ Debris accumulations may contribute to localized flooding and bank erosion. Past emergency blockage removal projects, Steering Committee woody debris inventories, a 2004 aerial inventory conducted by USGS and the Illinois Department of Agriculture, and a woody debris inventory conducted by Applied Ecological Services in 2005 may provide information useful for quantifying the nature and extent of problems associated with woody debris.

Woody debris blockage and associated bank erosion along a committee member's property (2002). Photos courtesy CCSWCD.

- Bridge piers and other structures contribute to the problem of debris accumulation.
- Trash dumping and litter degrade aesthetics, water quality, and habitat and increase costs to the public. In addition, visible trash tends to attract more dumping.
- Private property and infrastructure are threatened by channel erosion. Causes, rather than symptoms, need to be identified and addressed.
- Sediment deposition has the potential to cause aggradation severe enough to block tile outlets and impact aquatic wildlife. This problem has not been documented in this watershed.
- Detailed flood studies of the Salt Fork are lacking outside of municipalities. These studies are needed to identify vulnerable areas for flooding in order to guide development and protect existing buildings as changes occur upstream.
- Channel maintenance activities inadequately consider impacts on downstream flooding or impacts on water quality and aquatic wildlife.
- Areas of overland and floodplain water storage have decreased in the watershed. Many oxbow lakes, sloughs, and wetlands have been drained or destroyed. Such areas are of value for improving water quality, increasing wildlife and habitat diversity, and decreasing flooding and sedimentation.
- There is no stable source of funding to finance activities such as blockage removal and computer modeling of watershed hydrology and hydraulics.

Examples of Flooding and Channel Stewardship concerns. Photos courtesy CCSWCD and Robert Holmes.

Concerns in this category are marked by strong political differences as well as insufficient knowledge of underlying processes. For now, issues of high priority are:

- Funding preventative channel maintenance and solving committee controversy regarding the implementation of the Channel Stewardship Guidelines.

- Localized channel erosion and lack of information to identify the underlying causes. In particular, information is needed to determine how land use changes and channel alterations impact natural flow hydraulics and channel geomorphology.

- Increase and enhancement of watershed storage for nutrient processing and improved wildlife habitat.

- Adequacy of computer models already constructed for the Salt Fork to ensure they have the necessary capabilities to address future questions regarding development and channel maintenance.

Land Use Management

How we use the land directly impacts the quality of water draining from the land. Concerns related to urbanization initially identified by the Steering Committee include:

- Poor urban and residential land uses adjacent to streams may be at risk to flooding or may cause water pollution.

- Poorly controlled urbanization may overload agricultural drainage systems.

- Prime farmland is threatened by urbanization.

- Industrial development may degrade water quality and habitat. We need to be mindful of what we send downstream in terms of quantity and quality.

These issues are of high importance to the Steering Committee. However, for the most part, they are more appropriately addressed by the Champaign County Board and other entities. The Steering Committee would like to serve as a resource to the County Board as these issues are discussed, but will not address implementation details in this plan.

Recreation

The Salt Fork plays an important role in serving human recreational needs. Improving water quality enhances recreational opportunities and citizens can directly improve or degrade the resource through their activities.

- There is a need for additional opportunities for fishing in the watershed, in water safe for human contact, and supportive of healthy aquatic wildlife.

- There are insufficient opportunities for public boating and canoeing on waters safe for canoeing.

Both of these concerns are of high priority. Some aspects of these issues are being addressed under **Water Quality** and **Flooding and Channel Stewardship**. The recommendation of the Technical Advisory Committee was that another entity should take the lead in developing additional objectives and strategies for this category. Thus, recreational concerns will not be addressed directly in the remainder of this document.

Terrestrial Wildlife

From pre-settlement days to the present, the Salt Fork has been valued for the variety of plant and animal wildlife it supports. Current residents may not depend directly on wildlife for survival, but many recognize an interconnectedness between the environment which supports wildlife and that which supports humans. Concerns identified include:

- The need to protect, enhance, diversify, and increase wildlife and wildlife habitat in the watershed.
- The need to reduce the potential for wildlife damage to human and other wildlife habitat. Over-abundance of deer in particular is an apparent problem.
- The watershed needs greater native plant diversity and fewer exotic and invasive species of plants.
- More one-on-one technical assistance is needed to help landowners establish habitat.

In addition to the Water Quality concern of improving aquatic wildlife habitat, technical assistance for wildlife habitat establishment on land is of high priority to the Steering Committee.
An implementation strategy will be outlined in this plan for providing such assistance.

VI. Goals and Objectives

Goals and objectives for solving problems of high priority to the Steering Committee are presented for the categories of **Water Quality**, **Flooding and Channel Stewardship**, and **Wildlife**. **Land Use Management** and **Recreation** concerns will not be further addressed in a direct manner in this watershed implementation plan until additional coordination with other entities can be achieved. A fourth section lists goals and objectives for **Public Information and Education** necessary for implementing the Steering Committee's plan.

Water Quality

The ultimate goal is for all water bodies in the Salt Fork watershed to fully support their designated uses. Available information is insufficient to determine what it will take to reach that goal, although Tetra Tech, in their role in developing TMDLs, is in the process of performing analyses for parameters for which there are numerical standards. As a first step in trying to direct water quality trends in the right direction, three water quality goals are presented with the intention of revising them as additional information becomes available. The numeric goals listed represent what is currently believed to be reasonably achievable. They are not based on scientific analysis. It is intended that such goals will be revisited as more data become available. Current loads for nutrients and sediment are estimated based on limited available information. Data needs are identified for aquatic wildlife habitat studies. This information is then used to form objectives in support of the goals.

<u>Goals</u>

1) For the entire Salt Fork study area:
   - Reduce nitrate-nitrogen, phosphorus, and sediment loads by 15% each by the year 2017.

2) For the Homer Lake watershed, in addition to the above:
   - Improve water clarity such that Secchi depths are greater than or equal to 24 inches and phosphorus concentrations are 0.05 mg/L or less by 2017.
   - Eliminate faulty on-site sewage disposal system discharges to the lake by 2010.
   - Replace individual on-site sewage disposal systems with a community waste water treatment system by 2020.

3) For Boneyard Creek, Saline Branch, and Spoon River:
   - Develop objectives and implementation strategies for increasing aquatic wildlife habitat in these reaches by 2010.

Current Loads

The nature of the pollutants and their sources makes it difficult to pinpoint how much comes from where. It is also difficult to know what combination of factors (besides pollutant quantity) causes maximum pollutant concentrations to exceed water quality limits. It is, therefore, difficult to develop quantitative objectives for reducing loads. Tetra Tech's analyses are anticipated to assist with this problem. For now, the estimates tabulated in Tables 8 and 9 are offered as a starting point.

Table 8. Estimated Contributions of Nitrate-Nitrogen from Various Sources*

Land Use/Pollutant Source	**Acres** (rounded values based on Tetra Tech, 2005)	**Nitrate-nitrogen export coefficient** lb/ac/yr	**Nitrate-nitrogen Load** lb/yr (Acres x export coeff.)	**% of total load**	**Reference**
Agricultural areas dominated by corn and soybean production	218,000	18*	3.9 million*	94*	Based on data for the Little Vermilion watershed from Mitchell, 2005
Urban nonpoint sources	19,000	10*	190,000*	5*	www.water.ncsu.edu/watershedss
Other nonpoint sources	7,000	2*	14,000*	0*	www.water.ncsu.edu/watershedss
Point sources	NA	NA	38,000*	1*	UCSD*2 (value supplied for USCD by Bachman, 2005 was multiplied by 2 to account for other municipal point sources)
TOTAL	244,000		4.2 million lb/yr* or 7 mg/L*	100	
15% load reduction	244,000		3.5 million lb/yr* or 6 mg/L*	85	

*** The numbers appearing in this table are subject to revision and are presented for planning purposes ONLY. The Salt Fork Steering Committee makes no claims as to the scientific reliability of these numbers and strongly discourages their citation outside of their immediate planning context.**

Table 9. Estimated Contributions of Phosphorus from Various Sources*

Land Use/Pollutant Source	**Acres** (rounded values based on Tetra Tech, 2005)	**Phosphorus export coefficient** lb/ac/yr	**Phosphorus Load** lb/yr (Acres x export coeff.)	**% of total load**	**Reference**
Agricultural areas dominated by corn and soybean production	218,000	0.04*	8720*	16*	Based on data for the Little Vermilion watershed from Mitchell, 2005
Urban nonpoint sources	19,000	2.0*	38,000*	68*	www.water.ncsu.edu/watershedss
Other nonpoint sources	7,000	0.1*	700*	1*	www.water.ncsu.edu/watershedss
Point sources	NA	NA	8264*	15*	UCSD*2 (value supplied for USCD by Bachman was multiplied by 2 to account for other municipal point sources)
TOTAL	244,000		55,700 lb/yr* or 0.09 mg/L*	100	
15% load reduction	244,000		47,300 lb/yr* or 0.08 mg/L*	85	

*** The numbers appearing in this table are subject to revision and are presented for planning purposes ONLY. The Salt Fork Steering Committee makes no claims as to the scientific reliability of these numbers and strongly discourages their citation outside of their immediate planning context.**

Table 8 presents estimated loads from various sources for nitrate-nitrogen. Although nitrate-nitrogen is subject to denitrification, for this analysis, it is appropriate to treat it as a conservative substance. A study by Schaller *et al*. (2004) on the nearby Sangamon River indicated that denitrification losses were small in the overall mass balance. Very little nitrate-nitrogen data exist for the study area. Tetra Tech (2005) reports four measured nitrate-nitrogen concentrations for the outlet of the watershed addressed in this plan. However, 304 samples were collected by IEPA between 1967 and 2004 downstream of the study area near Oakwood in Vermilion County. The average of these measurements is 6.9 mg/L (Tetra Tech, 2005). This value (rounded to 7 mg/L) was used to estimate current conditions in the upstream study area.

Land use acreages in Table 8 were estimated from values reported by Tetra Tech (2005) for the watershed draining to BPJ10 (see Figures 2 and 3) based on satellite imagery collected in 1999-2000 and processed by the Illinois Natural History Survey. The largest land use in the watershed is agriculture, dominated by corn and soybean production (but also including small grains, other agriculture, and rural grasslands). The University of Illinois has studied nutrient yields from tile-drained fields in the Little Vermilion River watershed (adjacent to the Salt Fork) for over a decade (Mitchell, 2005). Those data indicate nitrate-nitrogen export rates ranging from 11-27 lb/acre/year for cropped areas. Urban areas comprise about 8% of the watershed area. No local export values are available, but a North Carolina State University (NCSU) website indicates urban export coefficients ranging from 4-12 lb/acre/year based on national data reported by the US Environmental Protection Agency (www.water.ncsu.edu/watershedss). Forest, wetlands, idle land and all remaining areas were grouped together and are assumed to export nitrate-nitrogen at a rate of 2 lb/acre/year based on the NCSU website and the Little Vermilion data.

Export coefficients were multiplied by their respective land use acreage to estimate nitrate-nitrogen loads exported from each land use. These values were added to the estimated point source load. Point sources in the watershed include municipal waste treatment plants in Urbana, Rantoul, and St. Joseph. Based on data provided by Urbana and Champaign Sanitary District, total point source load is conservatively estimated to be twice that for Urbana or 38,000 lbs/year.
Thus, as listed in Table 8, total annual load (from nonpoint and point sources) for the watershed is estimated to be 4.2 million lbs/year for the watershed. An average water yield of 1.1 million liters/acre/year was assumed based on data from USGS in order to estimate a flow-weighted average concentration (load/water yield). The export coefficient for agricultural land was adjusted within the range of 11-27 lb/acre to achieve the estimated concentration of 7 mg/L indicated by the downstream measurements noted above.

The next question is: what average nitrate-nitrogen concentration is desirable as a goal in order for the Salt Fork to fully support its designated uses? Without better data and methods, the answer is unknown. A 15% reduction is suggested as an initial, reasonably achievable goal, subject to revision as more is learned. A 15% reduction in current loads is projected to result in an estimated annual load of 3.5 million lbs/year or an average concentration of 6 mg/L.

Uncertainties embodied in Table 8 (and following tables) are likely perplexing to those faced with implementing or funding practices to reduce nonpoint source loads. It must be remembered that we are dealing with a system affected by a large number of unknowns and have limited resources for quantifying those unknowns. While the numbers presented are closer to guesses than "estimates," they probably do reflect reality at the order of magnitude level and provide a starting point for choosing actions that do some good.

A similar method was used in choosing values for phosphorus in Table 9. Phosphorus measurements in the Little Vermilion Watershed suggest an agricultural export coefficient ranging from 0.02 – 0.06 lb/ac/yr (Mitchell, 2005). The North Carolina State University (NCSU) website (www.water.ncsu.edu/watershedss) indicates urban nonpoint sources exporting phosphorus at rates ranging from 1.1-3.4 lb/acre/year, with forest and idle land contributing about 0.1 lb/ac/yr. There is no phosphorus standard for streams and measured data are not available for the outlet of the watershed. The standard for lakes is 0.05 mg/L and this should be the goal for Homer Lake.

Information concerning sediment yields from various land uses in the watershed is not readily available. Based on the information presented in the inventory and discussion with soil scientist Roger Windhorn of USDA-NRCS, this plan will assume an annual suspended sediment load of 0.3 tons/acre/year averaged over all sources. Channel erosion is estimated to contribute 56 tons/mile or roughly 20% of the total suspended sediment load. A rate of 0.3 tons/acre/year translates into a total load of about 73,200 tons/year. If a 15% reduction is desired, controls are needed to reduce the total load by about 11,000 tons/year.

Data Needs for Aquatic Wildlife Habitat Studies

As care is needed in selecting strategies for improving aquatic wildlife habitat and areas where they will be effective, it would be beneficial to have the Saline Branch and Spoon River (two reaches listed as impaired due to habitat alteration) surveyed by a stream geomorphologist using procedures such as those developed by USDA-NRCS:

- Stream Stabilization Inventory and Evaluation Procedure
- Rapid Assessment Method of Erosion and Sediment Inventory Procedures

The Boneyard may also require study in specific areas, although much of it has already been engineered for flood control.

Stream cross section measurements are needed in order to assess the current channel stability and Channel Evolution Model (CEM) stages. Extensive surveys have been conducted on Boneyard Creek and some information may also exist for the Spoon River and Saline Branch which may help in reducing the amount of additional data that needs to be collected to perform these assessments. Some of the information needed for these procedures include (from Kinney, 2005):

- Bank-full heights and flow data to determine bank-full discharges.
- Development of a CEM model to generalize current channel status, stability, and trends. This requires judgment on the observer's part and thus requires a trained hydraulic engineer and geomorphologist.
- Valley slope, channel slope, cross section data

From this information we hope to learn:

- Bank-full discharges for each of the streams (Spoon River and Saline Branch)
- Where the sediment is coming from, i.e., bank erosion or uplands
- How much sediment each stream channel is delivering downstream
- Where channel incision may be occurring and if it is affecting stream bank erosion
- Which stream segments are unstable and to what degree
- CEM stage for the different stream segments
- Connectivity to the flood plain and what would be required to restore it.
- Sediment-carrying capacity (requiring slope data, flow data, and computer modeling).

Water Quality Objectives

Based on the above current estimated loads and data needs, water quality objectives for achieving the listed goals include:

1) Achieve 70% (or better) adoption rate of nutrient and erosion control best management practices for agricultural, residential, and urban land throughout the watershed. It is unknown what degree of participation is needed to improve water quality. According to CCSWCD staff, the maximum level of participation that can reasonably be achieved is expected to be 70% of applicable acres.
2) Inform all homeowners surrounding Homer Lake regarding on-site sewage disposal system maintenance.
3) Sponsor hydraulic surveys and analyses to assess specific needs for improving aquatic wildlife habitat in Boneyard Creek, Saline Branch, and Spoon River. These activities will require the expertise of hydraulic engineers, geomorphologists, and aquatic biologists.

Flooding and Channel Stewardship

Part of the mission of the Steering Committee is to ensure a river course which provides free flow, recreational opportunities, flood protection, and wildlife habitat. Much work remains to be done in terms of coming to agreement on what is desired and obtaining the data to choose wise actions. Current needs and complexities for the priority issues are outlined. The discussion is then followed by goals and objectives identified to provide a starting point.

Channel Maintenance

The Salt Fork downstream of St. Joseph is less-channelized than the upper reaches of the river, the gradient is less steep until close to the county line, and the banks are generally lined with trees (Kinney, 2005). The process of banks eroding and trees falling in the river is natural, is perhaps exacerbated by human activities, and is poorly understood. Resulting accumulations of trees and debris can lead to localized flooding and increased bank erosion. Past computer modeling conducted by a member of the Salt Fork Technical Advisory Committee indicated that blockages have negligible effect on upstream water levels and subsequent flooding. However, public and private funds have been used in the past to address blockages that were posing threats to roads and private property. As the area is not in a drainage district, there is no special-purpose unit of government responsible for regular maintenance, although such authority does exist at the County level and Champaign County has done some maintenance on an as-needed basis in the past. Some who rely on a free-flowing Salt Fork to provide drainage outlet essential to their agricultural operations would like to establish a means for providing regular maintenance to address existing accumulations and prevent future ones. Some who emphasize other functions of the river, such as wildlife habitat, water quality, recreation, and control of downstream flows, feel those functions are threatened by maintenance activities. Others would like to better understand channel hydrodynamics in this reach before spending money on "solutions" that may turn out to be only "band aids." The various factions do overlap -- however, over the past 15 years, the issue has become dominated by emotion and politics. Channel Stewardship Guidelines were developed by the Steering Committee in 2002 for performing maintenance in such a way that considers all functions. However, guideline implementation as part of the 2005-2006 maintenance project raised old debates. While win-win solutions are available, the Technical Advisory Committee is unwilling to propose technical strategies until the Steering Committee reaches consensus as to what problems exist and what technical questions they want answered.

Stream Bank Erosion

Wayne Kinney of Midwest Streams, Inc. analyzed the aerial videography collected by USGS and IDOA in March of 2004. For the lower 16 miles of the Salt Fork addressed by this watershed implementation plan (between points A and B in Figure 16), Kinney identified 6 logjams and 81 erosion sites (Kinney, 2005). He noted that the channel may be aggrading in this area in response to past upstream channelization. The aggradation process (that is, the process in which the bottom slope decreases due to material being deposited) includes the formation of "cutoffs" which should be allowed to continue to develop. He suggested that the sediment accumulations should be studied in more detail to determine if aggradation is indeed occurring. If so, he recommended reducing the supply of sediment available for transport through bank stabilization.

For the next 12 miles upstream (between points B and C in Figure 16), which are channelized, Kinney (2005) noted 43 erosion sites. His preliminary analysis indicated that this reach would be suitable for treatment with a series of riffles and pools to reduce sediment, increase sediment transport capacity, and improve aquatic wildlife habitat. He recommended a survey of the complete channel profile and evaluation of the impact on drainage structures and out of bank flow before making specific design recommendations.

The main channel upstream of point C in Figure 16 and tributaries to the Salt Fork were not inventoried due to lack of funding. Nevertheless, erosion in the upper reaches is of concern to the Steering Committee. It is recommended that discussions be held with drainage district commissioners to discuss the value of inventory in this area and mutually agreeable goals and objectives.

Examples of bank erosion. Photos courtesy Robert Holmes.

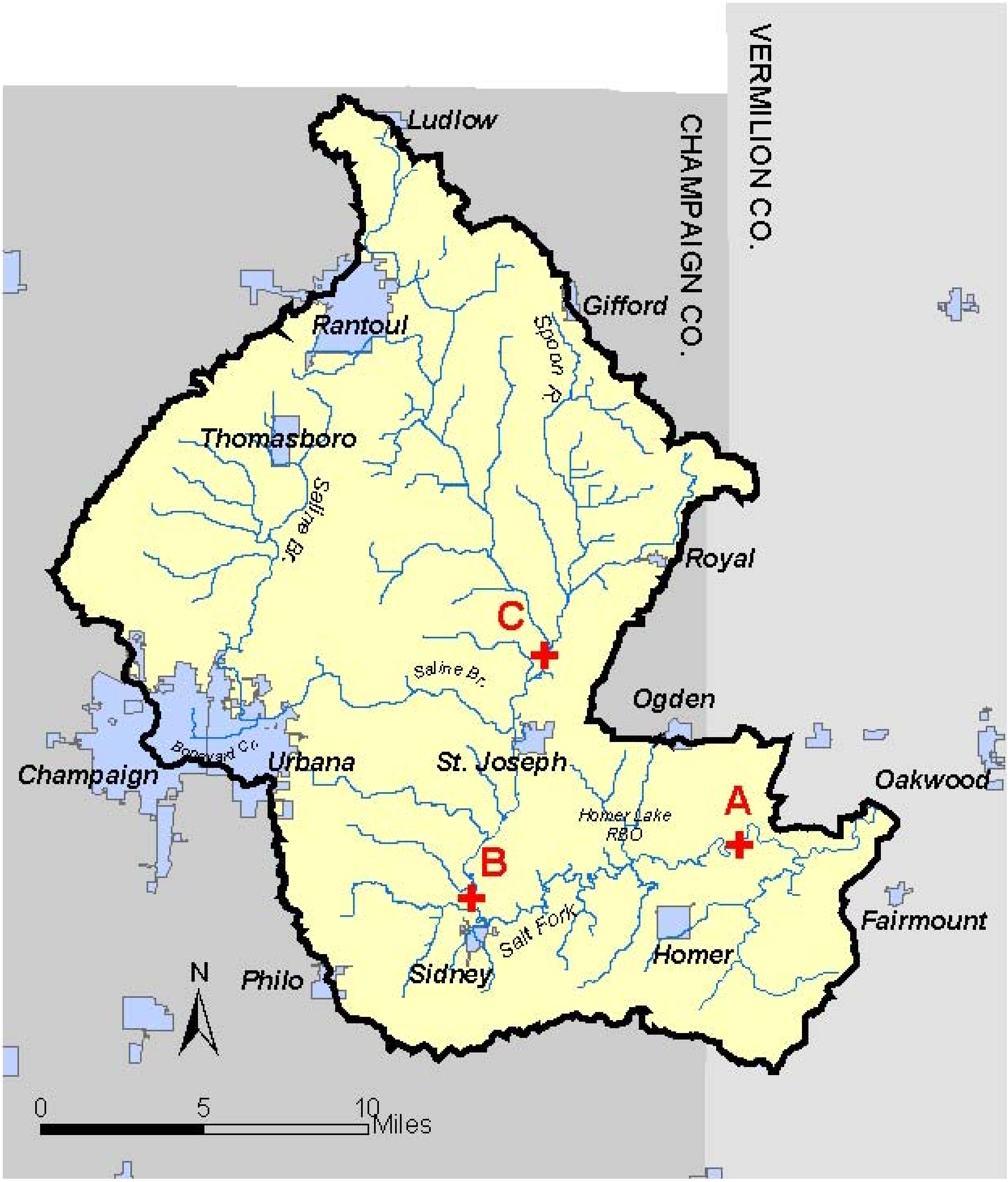


Figure 16. Segment identifiers for proposed stream bank erosion investigations.

Watershed Storage

The general opinion is that increasing areas of overland and floodplain storage is desirable for the sake of water quality, wildlife habitat, recreation, as well as controlling flooding and sedimentation. Partnering organizations have successfully planned three such projects currently being implemented with public funds. The Champaign County SWCD, with funding from IDNR and assistance from a variety of organizations, are in the implementation phase of re-establishing a wetland near St. Joseph. The Urbana Park District is in the process of restoring wetlands in the former floodplain of the Saline Branch. Future plans target restoring a portion of the site for floodplain storage. The Champaign County Forest Preserve District is constructing a small wetland complex that will retain some floodwater and provide unique wildlife habitat in the Homer Lake Forest Preserve. That project is funded by the National Association of County Organizations.

The many variables make it difficult to quantify how much benefit is gained from a particular project which makes it difficult to set measurable goals and objectives. The initial need is for identification of potential sites that meet basic topographic and land use criteria.

Computer Modeling Needs

In 2002-2003, a hydrologic computer model was developed for the Champaign County portion of the Salt Fork watershed (Visser, 2002 and 2003). This modeling effort used the unsteady-state rainfall-runoff model TR-20, which estimates overland flow rates for each sub-basin in the watershed for selected design storms. A preliminary effort at modeling flood elevations at selected locations along the Salt Fork was then made with the steady-state hydraulics model HEC-RAS, using the estimated flow rates provided by TR-20.

Modeling of the Salt Fork River system was undertaken with limited funding and was intended to be a planning-level effort. Due to these funding limitations, the HEC-RAS hydraulics model was created from cross-section data near bridges only. In some places the cross-sections are farther apart than is standard practice for model applications that are intended to be used to definitively determine flood elevations or the impacts of various management alternatives. The existing model has distances between cross sections that are larger than 2,000 feet. Additional cross-sections are necessary to provide the accuracy and confidence in the predicted flood elevations from the hydraulic model. As the HEC-RAS model becomes better refined with more carefully discretized cross-section data, a concurrent improvement will also be realized in the TR-20 hydrologic model during recalibration with field data from USGS stream flow gauging station 03336900 on the Salt Fork near St. Joseph. These improved modeling results can be used by CCSWCD, drainage districts, and other agencies to assure protection of life and property along the various stream segments within the Salt Fork basin, in addition to the assurance of accuracy when evaluating various management options.

Cross-sections should be added to critical modeling areas, such as the main stem from St. Joseph to the Champaign-Vermilion County line. This area is not currently in a drainage district and has been the location of several large logjams over the years. Additional cross-sections would improve modeling of potential impacts of logjams and alternative management measures on upstream drainage.

The existing hydraulic model is a steady-state model which has limitations when one desires to fully examine the unique behavior (such as in-channel and floodplain storages and effects of channel friction) of the Salt Fork system. With the dynamic nature of the flooding process, an unsteady-state hydraulic model, such as UNET, FEQ, or XP-SWMM needs to be implemented for the Salt Fork stream system in order to fully understand the various management alternatives. For example, as one examines the impacts of dredging the channel and eliminating boundary roughness (through removal of woody vegetation along the banks), the timing of flooding through the system needs to be evaluated. Using an unsteady flow model for the Salt Fork system also permits a better use of the unsteady inflow generated from TR-20 along different nodes of the steam. The current system of models assumes linearity in combining the flow rates at subsequent channel nodes provided from the rainfall-runoff model, TR-20. However, flood flow conveyed through a river system is a non-linear process. Thus, assuming a linear process hinders the ability to fully assess the downstream impacts of channel modifications. To capture this non-linearity, a fully dynamic unsteady-state model, such as UNET or FEQ, needs to be implemented. Furthermore, as the issue of floodwave timing and length of flooding was a driving force in the decision to pursue expensive maintenance by the drainage districts, the implementation of an unsteady-state flow model allows for full examination of the flood duration on tile outlet conditions.

Flooding and Channel Stewardship Goals and Objectives

1) Reach consensus by the end of 2007 as to what is desirable regarding funding the implementation of the Channel Stewardship Guidelines.

2) Complete detailed studies by 2010 to determine if stream bank erosion controls should be implemented as indicated by Kinney (2005) for the two lower reaches of the Salt Fork. Hold discussions regarding inventory of bank erosion in the upper reaches.

3) Increase or enhance watershed storage areas in the watershed.
    - Identify potential areas of watershed storage.
    - Pursue incentive and grant opportunities to design and construct three new sites.
    - Track all watershed storage areas in 5-year increments to assess progress.

4) Improve computer modeling capabilities to address future questions as to the effects of development and channel maintenance.
    - Collect additional cross-sections between St. Joseph and the watershed outlet with sufficient density to meet currently accepted standards for hydraulic models.
    - Inventory tile outlets (elevation and horizontal position) in the major tributaries and the main stem.
    - Decide on what is needed in computational ability.

Terrestrial Wildlife

In addition to the aquatic wildlife habitat goal listed under Water Quality, the Steering Committee desires to increase and improve habitat for terrestrial species. The goals are to:

- Increase terrestrial wildlife habitat by 20% (550 acres) by the year 2020.
- Make technical expertise easily available to landowners for creating and maintaining wildlife habitat.

Objectives for accomplishing the second goal are addressed in the following section.

Public Information and Education

In order to accomplish the stated Water Quality and Wildlife goals, individual citizens will need to do what is right for the property they oversee. Thus, public information and education are essential to the success of this plan. An important goal of this plan will be to establish a staff position to serve as a resource to citizens in the Salt Fork and surrounding areas.

Position objectives will be to:

- Provide advice and information to homeowners (particularly in the Homer Lake watershed) regarding water quality and wildlife.
- Provide wildlife habitat technical assistance and planting coordination
- Provide public education by serving as a resource to schools and community organizations
- Coordinate a service project clearinghouse to help match volunteers with local environmental projects such as storm drain stenciling, stream clean up, and citizen stream monitoring.

Providing technical assistance regarding a recent tree planting. Photo courtesy CCSWCD.

VII. Implementation Strategies/Alternatives

The Technical Advisory Committee recommended several strategies for addressing the goals outlined above for the four main categories of focus.

Water Quality

Strategies are outlined below for reducing nutrient and sediment pollutant loads and for improving aquatic wildlife habitat.

Nutrient and Sediment Load Reduction

The goal is to reduce annual N, P, and sediment loads by 15% by the year 2017 by encouraging maximum participation (70% of applicable acres) in implementation of best management practices. Specific practices recommended by the Technical Advisory Committee are described below for both agricultural and residential lands. Estimated load reductions are computed in Table 10.

- *Nutrient management for corn/soybean cropped acres*: the practice is aimed at reducing field losses of nitrate-nitrogen and phosphorus, as well as expenditures on fertilizer. It involves soil testing, developing a nutrient management plan, and applying fertilizer at a rate recommended by the University of Illinois after taking into account yield history and nutrients from other sources. For agricultural lands in this area, tile drainage is the primary means of transport for nitrate-nitrogen which is a water soluble nutrient -- there is very little surface runoff (Mitchell, 2005). Phosphorus associated with soil is transported by what little surface runoff there is. Some dissolved phosphorus may also be transported in tile flow. Based on current typical application rates of nitrogen in the area, nutrient management can reduce N application rates by up to 30 lbs/ac. This translates into an estimated tile flow load reduction of 3 lbs/ac/year of nitrate-nitrogen based on data collected in the adjacent Little Vermilion River watershed by the University of Illinois (CCSWCD estimate based on Mitchell, 2005). Fertilizer cost savings are estimated by CCSWCD to be $10/acre.

- *Conservation tillage*: the practice reduces field runoff from fields and thus transport of soil and associated nutrients (particularly phosphorus). Conservation tillage encompasses a range of practices that reduce the amount of soil disturbed for seed bed preparation. Previous crop residues are typically left on the field which reduces erosion and provides some winter shelter for pheasants and other wildlife. Conservation tillage requires fewer equipment passes over the field which saves on fuel costs and reduces soil compaction leading to increased earthworm activity and water infiltration. Conservation tillage is estimated by CCSWCD to reduce soil losses to the river by 0.2 tons/acre and river P loads by 0.02 lbs/acre (phosphorus estimates based on committee member discussions with Illinois State Water Survey staff).

- *Filter strips and riparian buffers*: replacing fertilized crops along a channel bank with trees or native grasses reduces nitrogen, phosphorus, and soil inputs to the river by trapping overland flow and by root uptake of nutrients in water moving through the soil. In addition, the area taken out of crop production receives no fertilizer to add to the stream nutrient load. In the case of dug channels with spoil berms, vegetative filters are designed with 36' of their width on the upstream side of the berm so that runoff blocked by the berm is still filtered. In addition, trees or grass provide wildlife habitat. Filter strips trap approximately 90% of the soil from the fields they protect. Each mile of filter strip (with approximately 100 acres of cropland draining into it) is projected to save 47 tons of soil (CCSWCD estimate) and 5 lbs of associated P (estimate based on committee member discussions with Illinois State Water Survey staff). By not applying fertilizer, each acre planted as buffer likely reduces the N load by 15 lbs/yr (CCSWCD estimate). In addition to planting filter strips along streams, buffers are also recommended for surface inlets and are expected to perform in a similar manner.

- *Wetlands:* Wetlands fed by subsurface tile can remove nitrogen from drainage water. In a study conducted by Kovacic, *et al.* (2000), constructed wetlands in Champaign County were shown to remove 37% or more of total nitrogen inputs. Local experience can guide design of this practice.

- *Lawn care education:* Homeowners and lawn care companies in the watershed will be encouraged to use sound practices in fertilizing lawns. An educator will promote the use of native plantings as well as recommendations outlined by the University of Illinois to reduce N and P pollutant loads from residential sources (see later section on ***Public Information and Education*** for details regarding the educator). Recommendations will include (based on personal communications with Bruce Branham, UI Extension, 2006):
    - Applying N at a rate of 2-3.5 lbs/1000 ft^2/yr (87-152 lbs/ac/yr)
    - Using a fertilizer formulation with 0% P since soils in the area generally contain sufficient P for residential lawns.
    - Applying liquid formulations of fertilizers and pesticides by trained professionals for more accurate chemical placement. With centrifugal spreaders, granules are more likely to be deposited on sidewalks or driveways where they can be washed into the storm sewer system.

  Pollutant load savings are estimated to be about 4.4 lb N/ac/yr and 0.2 lb P/ac/yr) (based on personal communications with Bruce Branham, UI Extension, 2006 and CCSWCD-estimated fractions reaching the stream).

- *Construction erosion control education:* The proposed educator will be expected to work in partnership with municipal and county erosion control enforcement agencies and to participate in Champaign and Urbana's Biannual Storm Water Forum. The proposed educator will regularly tour the watershed to make sure that required erosion controls are being used effectively. The educator will not play the role of enforcement, but where improvements can be made, the educator will work with the offending party and applicable local agencies. In addition, construction companies will be encouraged to display a sign with a telephone number inviting public opinion for the question, "How's my erosion control?" It is unknown to what extent these proposed actions will reduce sediment loads.

Widespread adoption of the practices listed above should at least help reduce nonpoint source pollution in the Salt Fork. Table 10 provides estimates of the expected reductions and compares them with the load reduction goals from Tables 8 and 9. The nutrient goals may not be achievable with the practices listed; however, it is acknowledged that there is much uncertainty regarding the inputs and the expected effectiveness of proposed practices. The Committee also notes that even if these arbitrary goals are met, no guarantee is made that the end result will be full support of designated uses. Nevertheless, we are reasonably certain that implementation of the proposed practices can only help in reducing pollutant loads.

One way to encourage widespread adoption of suggested practices might be through a water quality credit trading system. Such an arrangement provides a means for industries and municipalities to pay landowners to adopt conservation practices. Thus, a given pollutant is reduced from nonpoint sources rather than point sources. Point sources that might be willing to participate in such a program could be located outside of the local watershed for pollutants of concern at river basin scales. The Environmental Protection Agency and USDA recently (October 13, 2006) signed an agreement supporting this type of strategy (www.epa.gov/OWOW/watershed/trading.htm). A pilot project could be established in the Salt Fork watershed to test this approach for funding conservation practices.

Table 10. Summary of Estimated Annual Load Reductions*

Practice	Desired Participating Acres (after plan implementation)	Estimated N-load reduction (lbs)	Estimated P-load reduction (lbs)	Estimated sediment load reduction (tons)
Nutrient management	140,000 (70% of corn/soy acres)	@3 lb/ac reduction = 420,000 lbs*	?	none
Conservation tillage	140,000 (70% of corn/soy acres) (current participation: 5% corn acres and 35% soy acres)	?	@0.02 lb/ac reduction = 2800 lbs*	@0.2 tons/ac = 28,000 tons*
Vegetative buffers	1000 new acres (10 miles)	@15 lb/ac = 15,000 lbs*	10 miles x 5 lbs/mile = 50 lbs*	10 miles x 47 tons/mile = 470 tons*
Constructed wetlands (see Kovacic *et al*., 2000)	100 new acres of wetlands fed by 1700 acres of tile-drained cropland	@7lbs/ac cropland = 12,000 lbs*	0*	?
Lawn care education	13,000	@4.4 lb/ac =57,000 lbs*	@0.2 lb/ac = 2600 lbs*	0*
TOTAL REDUCTION FROM PRACTICES		504,000 lbs*	5450 lbs*	28,470 tons*
GOAL (15% of totals given in Table 8 for nitrate-N and Table 9 for P)		625,000 lbs*	8400 lbs*	11,000 tons*
DIFFERENCE		-121,000 lbs* (shortfall)	-2950 lbs* (shortfall)	17,470 tons* (overshoot)

*** The numbers appearing in this table are subject to revision and are presented for planning purposes ONLY. The Salt Fork Steering Committee makes no claims as to the scientific reliability of these numbers and strongly discourages their citation outside of their immediate planning context.**

Homer Lake

In addition to the above measures applicable to the entire study area, the Technical Advisory Committee and Steering Committee propose the following actions for Homer Lake:

- *On-site sewage disposal system maintenance*: The proposed educator will work with residents surrounding Homer Lake to provide advice in on-site sewage disposal system selection and encourage regular maintenance. The educator will be in charge of mailings and workshops. A system will be devised to remind homeowners periodically of maintenance schedules. In addition, the educator will work with residents to research a cooperative alternative in which a contractor is hired to maintain all systems on a periodic basis. A community maintenance contract would help ensure regular, professional maintenance and would likely result in a cost savings to the homeowner. It is unknown to what extent nutrient, pathogen, and solids loads to the lake will be reduced by this action.

- *Community waste treatment:* It is desirable that individual on-site sewage disposal systems be replaced with a community waste treatment system by 2020. Advantages of such a system include:
    - increased protection of Homer Lake water quality
    - increased protection of home water supplies (bored wells in the area are susceptible to contamination from individual on-site sewage disposal systems
    - elimination of on-site sewage disposal systems which will become subject to new discharge permit regulations.

  Additional research is needed to investigate costs and community treatment options. The proposed educator could assist with this research. In addition to material form IEPA, information from the National Environmental Services Center of West Virginia University (publishers of *Small Flows Quarterly*) may be useful in developing alternatives.

Aquatic Wildlife Habitat

The goal is to complete the survey and evaluation work necessary to develop a plan by 2010 for improving aquatic wildlife habitat in the Boneyard, Saline Branch, and Spoon River. The first priority is to obtain the data needed to select appropriate strategies. The recommended treatments will depend upon stream widths and other factors unique to the individual stream segments. Examples of practices that might be considered include:

- Stone Toe Protection - where eroding banks are protected with non-erodible materials

- Rock Riffle Grade Control - the use of loose rock grade control structures will create or enhance the riffle-pool flow sequence found in natural channels. In stable systems this alternating riffle-pool sequence dissipates the energy in the stream and allows the stream banks to remain stable with little or no lateral movement. This method is also used to prevent down-cutting and further incision of the channel.

- Floodplain Excavation - this is an alternative to raising the water surface and reconnecting the channel to the historic floodplain to dissipate energy. By excavating to develop a new floodplain within the existing stream corridor the channel can be returned to its natural stable condition.

- Stream Barbs and Bendway Weirs - hard structure devices used to deflect the flow away from the stream bank and into the center of the channel.

- J-Vanes – These structures use the same principle as stream barbs and bendway weirs except they are simpler and less expensive. These structures are constructed from boulders or rip-rap and could be placed in portions of the streams along the outside bends to help protect the stream bank and provide habitat for aquatic life. The water is deflected from the bank and directed to the center of the stream, depositing sediment along the bank upstream of the j-vane and at the same time creating a pool at the end and downstream of the j-vane. The rock structures provide habitat for aquatic invertebrates, aerate the water as the water flows over the boulders, and the pool created provides deeper water for fish.

There are several practices which are less expensive and may provide some stream bank stabilization and provide habitat for wildlife. It would be beneficial to have the stream stabilization assessments done prior to the implementation of these practices although it would not be completely necessary. For these practices to be successful, cooperation from the drainage districts and riparian landowners would be necessary.

One such practice is the j-vane, described above. Another practice is the use of fallen trees. Trees that have fallen into the stream could be cabled to the shoreline where they fall in, before they have a chance to move downstream and create an obstruction. Based upon how the trees are placed against the shoreline, they can provide stream bank protection by deflecting the flow away from the stream bank, and at the same time provide habitat for fish, invertebrates, reptiles, amphibians, birds and mammals. This could be accomplished by purchasing a boat, hydraulic winch, generator, anchors and cable. Volunteers or a hired contractor could perform the work.

In addition, trees could be planted along the west and south banks of the stream corridors. This would leave the north and east banks open for conducting maintenance of the streams. The riparian corridors should be 30-100 feet wide. This would make them not only a valuable component to streams, but provide valuable terrestrial habitat as well. Trees provide at least three major functions:

- Shade to the stream: cooler water temperatures increase the capacity of the water to hold oxygen and make the stream more hospitable for additional species of fish.
- Bank stabilization: tree roots help stabilize the stream bank by holding the soil in place.
- Food source: leaves of trees, after falling into the stream become a major food source for stream dwelling bacteria, which feed the insects and macro-invertebrates and eventually provide food for fish.

Additional Monitoring

In addition to IEPA's network of monitoring sites, it is proposed that three continuous stream sampling stations be established in order to provide a basis for evaluation of water quality improvement strategies. The recommended locations are:

- Outlet of the watershed
- Outlet of Saline Branch
- Existing location on the Upper Salt Fork (County Road 1850 N) currently operated by USGS (funding to expire in 2006)

Parameters of interest include:

- Flow
- Nitrate-N
- Phosphorus
- Suspended solids
- Dissolved oxygen
- Temperature
- pH
- Bacteria

Flooding and Channel Stewardship

Strategies for addressing the Flooding and Channel Stewardship priorities emphasize additional study and inventory so that we can move closer to development of detailed solutions.

Channel Maintenance

A Channel Stewardship sub-committee of the Steering Committee has been formed to organize the various opinions regarding the funding of the implementation of the Channel Stewardship Guidelines (applicable to areas outside of drainage districts). The subcommittee represents a variety of interests including agricultural drainage, recreation, private property protection, and wildlife protection. The group is charged with:

- Honoring the consensus reached in development of the Channel Stewardship Guidelines,
- Identifying specific questions to be addressed by the Technical Advisory Committee, and
- Reaching consensus among themselves regarding funding issues in order to bring their recommendations to the full committee for discussion.

Stream Bank Erosion

The goal is to complete the studies necessary to make detailed recommendations for erosion prevention or controls in the Salt Fork channel. The segment between points A and B in Figure 16 requires a study to determine if channel aggradation is occurring. If so, Wayne Kinney (2005) recommends use of stone toe protection (and possibly bendway weirs or stream barbs in selected locations) to treat 81 sites or 40,500 feet. The aggradation study would require a two-person crew and one month to measure sediment depths and collect samples for particle size distribution analysis along the 16-mile stretch.

The upper 12 miles of the study area (between B and C in Figure 16) requires a profile survey as well as an impact study of proposed riffles on drainage structures. The same two-person crew could survey the profile of the upper 12 miles over another one-month period. If additional cross-sections were measured and tile outlets inventoried, the Salt Fork model could be used to determine if tile outlets would be submerged. Results of that study would be used to refine Wayne Kinney's initial recommendation of installing rock riffles approximately every 500 feet at an average height of 3 feet. An alternative option would be to treat the 43 eroding sites (or 34,400 feet) with stone toe protection or stream barbs. This option is less expensive but would not have the benefits of improving habitat or sediment transport capacity.

Studies described above pertain to the portion of the main channel inventoried from the air by USGS and the Illinois Department of Agriculture in 2004. Studies in the upper reaches (predominantly within drainage districts) are also desirable and may aid in designing maintenance practices which are more cost-effective than those traditionally employed. Discussions are needed with drainage district commissioners and others to gather inventory data related to channel erosion in these reaches and then to develop a plan for solving problems revealed by the inventory.

Watershed Storage

The goal is to increase or enhance watershed storage areas. Topography and current land use may restrict the number of candidate sites. General initial steps would include:

- Discussions with UPD, CCFPD, and others to determine overall interest, perceived value, and desired functions of the projects.
- Developing rough cost estimates based on land value and experiences with past projects.
- Hiring a consultant to investigate the suitability of the sites for the proposed purposes and to develop preliminary designs with more refined cost estimates.

After discussions and approvals, funds would need to be sought for purchase and construction.

Computer Modeling Needs

The goal is to improve computer modeling capabilities to address future questions as to the effects of development and channel maintenance. The strategy for accomplishing this is to seek funds for collecting additional cross-sections between St. Joseph and the watershed outlet with sufficient density to meet currently acceptable hydraulic modeling standards. In addition, funding will be sought to inventory tile outlets (elevation and horizontal position) along the major tributaries and main stem. These data could be collected in conjunction with the studies needed for channel erosion control. The Technical Advisory Committee will need to determine model computational needs.

Terrestrial Wildlife

The goal is to increase and improve terrestrial wildlife habitat acreage by 20% (550 acres) by the year 2020. The strategy consists of two parts:

- Promote existing landowner incentive programs for establishing wildlife habitat.
- Provide the technical assistance necessary to help landowners with the sign-up, establishment, and maintenance processes.

Table 11 lists conservation practices suitable to the area which support wildlife. Currently USDA-NRCS and SWCD field office staff promote these practices by working with landowners as they come into the office. Funding has not been available in recent years to provide staff for one-on-on contacts of eligible landowners and intensive technical assistance after enrollment. The Educator/Habitat Coordinator described in more detail in the next section could help fill this gap.

Table 11. Terrestrial Wildlife Habitat Improvement Programs and Practices

PROGRAM	INCENTIVES	CONTRACT LENGTH
EQIP	Annual payments up to 75% cost share	1-10 years
WHIP	up to 75% cost share	5-15 years
WRP	up front payments up to 100% cost share	10, 30 or Permanent (Easements only)
CRP	Annual payments 50% cost share up to additional 40%	10-15 years
* CREP	Piggy back on CRP Large incentives	15, 35 years or Permanent (Easements)
	(In approved watersheds on competitive basis)	
CSP	Annual Payments	5-10 years
	(In approved watersheds on competitive basis)	
* CPP	60% cost share	1 year cost share

KEY:

EQIP = Environmental Quality Incentives Program
WHIP = Wildlife Habitat Incentives Program
WRP = Wetland Reserve Program
CRP = Conservation Reserve Program
*CREP = Conservation Reserve Enhancement Program
CSP = Conservation Security Program
*CPP = Conservation Practice Program

* Denotes state funded programs.

PRACTICE LIST	EQIP	WHIP	WRP	CRP	CREP	CSP	CPP	GRP
Constructed Wetlands	X	X	X	X	X			
Contour Buffer strips	X			X		X	X	
Wildlife wetland habitat management	X	X	X	X	X			
Field Borders	X	X		X		X		
Tree Planting	X	X	X	X	X			
Windbreaks (field & farmstead)	X	X		X		X		
Prescribed Burning	X	X		X				X
Riparian Forest Buffers	X	X	X	X	X	X		
Grassed Waterways	X			X		X	X	
Streambank Stabilization	X	X		X		X		
Shallow water areas for wildlife	X	X		X				
Wildlife Food Plots		X	X	X	X			
Upland wildlife habitat management	X	X		X				
Conservation Cover	X	X	X	X	X	X	X	
Forest Stand Improvement	X	X		X				
Conservation Crop Rotation	X					X		
Residue Management	X			X		X	X	
Cover & green manure crops	X			X		X	X	
Critical Area Planting	X	X		X			X	
Ponds	X	X						
Livestock Exclusion	X	X	X	X	X	X		
Woodland Direct Seeding	X		X		X			
Wetland Restoration	X	X	X	X	X	X		X
Filter strips	X	X		X	X	X	X	
Rotational Grazing	X	X	X	X		X		X
Stream Habitat Improvement	X	X	X	X		X		X
Firebreaks	X							
Wildlife Watering Facility	X	X						
Pasture and Hayland Planting							X	

Public Information and Education

It is proposed that one person be employed to carry out the educational outreach and landowner technical assistance aspects of the watershed implementation plan. In particular, the Educator/Habitat Coordinator will deliver information and assistance addressing the Steering Committee's concerns related to:

- Homer Lake
- Legacy contaminants in Boneyard Creek and Saline Branch
- Trash dumping and stream corridors throughout the watershed
- Wildlife

The Educator/Habitat Coordinator might be employed by CCSWCD, CCFPD, or a county entity and could serve both Champaign and Vermilion Counties. Duties include:

1) Homeowner education concerning:
    - On-site sewage disposal system selection and maintenance
    - "Green" household cleaners and other products
    - Lawn care and landscaping with respect to water quality, wildlife, and energy savings
    - Undesirable wildlife and invasive plant species.

2) Wildlife habitat coordination:
    - Work one-on-one with landowners from planning to planting and maintenance of wildlife habitat
    - Assist landowners with enrollment in applicable incentive programs
    - Work with Pheasants Forever to assist landowners with borrowing needed equipment

3) Public education:
    - Maintain website on issues related to the Salt Fork such as updates on water quality monitoring results, information on contaminated sediments, hazardous waste collection days, and topics listed above
    - Serve as a guest speaker and resource for community organizations and local schools
    - Provide information to golf courses, fertilizer dealers, lawn care companies
    - Develop adult-based technical education programs

4) Volunteer/service project clearinghouse coordination:
    - Work with area organizations to help match volunteers with local environmental service projects such as:
        - Storm drain stenciling
        - River and roadside clean-up days
        - Water quality monitoring
        - Tree-planting
        - Trash can installation or painting at popular fishing sites
    - Maintain website listing opportunities and contact information

5) Erosion control:
    - Visit construction sites and make note of erosion control practices
    - Work with appropriate parties to address problems if erosion control is inadequate.

6) Partnerships:

    The Educator/Habitat Coordinator is expected to maintain working relationships with public agencies and private organizations such as those listed in Table 7.

VIII. Cost Summary

Estimated costs and technical assistance needs for the proposed strategies are outlined in Table 12. This table serves as an aid for summarizing the proposed options. For each strategy, landowner costs, external funding needs, and agency assistance costs are estimated. Costs are based on best available information; however, more detailed discussion of selected strategies will be required to refine these estimates before applying for funding. Representatives from the potential funding sources and implementation parties listed will be essential consultants in preparing detailed funding proposals.

Some of the listed costs may seem beyond affordability and we may not succeed in finding a program to fund a full solution. Nevertheless, as we begin to work on problems and increase our data inventories, we may be able to break problems down into fundable portions. It is also hoped that as solutions are tried and are successful, that landowners will adopt practices on their own without external incentives.

Sources of funding will likely reveal themselves as partners are identified for implementing various parts of the plan. For example, EPA and USDA’s promotion of water quality credit trading may lead to identifying urban partners outside of the immediate watershed for funding conservation practice incentives. Several of the Flooding and Channel Stewardship strategies are in line with the mission of USGS which may help to secure additional funding sources for conducting the studies needed to take the next steps towards developing solutions.

Table 12. Summary of Estimated Implementation Costs*

Category	Strategy	Landowner/ Resident Costs	External Funding Needs (not including government agency technical assistance)	Agency Technical and Administrative Assistance ($ or hours)	Potential Funding Sources	Implementers
Water Quality	Nutrient management on 70% of corn/soybean acres (140,000 acres)	Nutrient management plan development: $3/acre = $420,000	Incentive payments: $10/acre = 1,400,000	2 hrs/client @ $20/hr x 1400 clients = $56,000	IEPA (319) IDOA (CPP)	Landowners, USDA-NRCS, IEPA, IDOA, SWCDs
	Conservation tillage on 70% of corn/soybean acres (140,000 acres)	none	Incentive payments: $5/acre = $700,000 (assuming no limit on acreage enrolled)	2 hrs/client @ $20/hr x 1400 clients = $56,000	IEPA (319) IDOA (CPP)	Landowners, USDA-NRCS, IEPA, IDOA, SWCDs
	Filter strips, riparian buffers: 1000 acres	none (seeding costs reimbursed by FSA; equipment can be borrowed)	Incentive payments: ~$200/acre/yr x 1000 acres x 10 years = $2M Seeding costs: $54-188/acre x 1000 acres = $54,000-$188,000	2 hrs/client @ $20/hr x 1000 clients = $40,000	USDA-FSA	Landowners, USDA-NRCS, USDA-FSA, SWCDs
	Surface inlet buffers	none (seeding costs reimbursed by FSA; equipment can be borrowed from SWCDs/Pheasants Forever)	Incentive payments: ~$50/year/inlet buffer x 40 inlets x 10 years = $20,000 Seeding costs: $54-188/acre x 10 acres = $540 -$1880	2 hrs/client @ $20/hr x 40 clients = $1600	USDA-FSA	Landowners, USDA-NRCS, USDA-FSA, SWCDs
	Lawn care education, construction erosion control, and Homer Lake on-site sewage disposal system education	*See Public Information and Education*				
	Homer Lake community waste treatment system	?	?	?	IEPA (State Revolving Loan Fund)	Homer Lake area residents, Homeowners' association
	Hydraulic/ geomorphologic survey of Boneyard, Saline, Spoon (36 mi)	none	Consultant fees = $25,000	40 hours @ $20/hour = $800	IEPA, IDOA, USGS, IDNR, Drainage Districts	Private consultant assisted by CCSWCD, USGS, drainage district commissioners
	Bank stabilization/ fish habitat improvement practices for Boneyard, Saline, and Spoon (quantities unknown)	Landowners pay 25% of installation costs	Won't know practices or quantities until survey above is complete.	40 hours @ $20/hour = $800	IEPA, IDOA, USGS, IDNR, Drainage Districts	Landowners, drainage districts, private contractors with assistance from CCSWCD, USDA-NRCS, and sponsors
	Continuous stream sampling: 3 stations	none	Station establishment: $22,000 Sampling, maintenance, and data processing costs: $25,000/yr	40 hours @ $20/hour = $800	IEPA USGS	IEPA, USGS, IDNR, SWCDs, UI, UCSD
	Water quality trading program	?	?	?	IEPA USDA Industries and Municipalities	IEPA, USDA, and partners
Flooding & Channel Stewardship	Channel Stewardship subcommittee	none	Possible legal or engineering consultant fees: $10,000	20 hours @ $20/hour = $400	?	Steering Committee with assistance from CCSWCD
	Hydraulic/ geomorphologic studies of reaches AB, BC in Figure 16		Channel geomorphology studies: $22,000 *(See Kinney, 2005)*	80 hours @ $20/hour = $1600	IEPA, IDOA, USGS, IDNR, Drainage Districts	Private contractor with assistance from SWCDs, USGS, and sponsors
	Hydraulic/ geomorphologic studies of upper reaches in drainage districts	?	?	?	IEPA, IDOA, USGS, IDNR, Drainage Districts	Private contractor with assistance from SWCDs, USGS, and drainage district commisioners
	Computer modeling data collection	none	Cross-sections, profile, tile outlet surveys: $25,000	40 hours @ $20/hour = $800	IEPA, IDOA, USGS, IDNR, Drainage Districts	Private contractor with assistance from SWCDs, USGS, and sponsors
	Computer modeling	none	Costs dependent on modeling questions to be answered to be determined at a later date.		IEPA, IDOA, USGS, IDNR, Drainage Districts	USGS, USDA-NRCS, or private engineering consultant
	Preliminary watershed storage investigations	none	Consulting fees: $5,000/site x 3 sites = $15,000	120 hours @ $20/hour = $2400	IDNR	Private consultant with assistance from SWCDs, USGS, municipalities or Counties, and sponsors
Wildlife	Wildlife conservation practices	Landowners pay 40% up to $1000 For 100 participants = $100,000	Incentive payments: up to $1500/participant x 100 participants = $150,000	2 hrs/client @ $20/hr x 100 clients = $4000	USDA-FSA USDA-NRCS: Pheasants Forever	Landowners, USDA-NRCS, SWCDs, IDNR
	One-on-one field and planning assistance	*See Public Information and Education*				
Public Information & Education	Hire Educator/Habitat Coordinator	eventual user fees?	Salary: $36,000/year Overhead: 15% Total = $41,400/year	Included in overhead	Champaign & Vermilion Counties, IEPA, IDNR, Private corps.	CCSWCD, CCFPD, VCSWCD, other county entities

*** The numbers appearing in this table are subject to revision and are presented for planning purposes ONLY. The Salt Fork Steering Committee strongly discourages their citation outside of their immediate planning context.**

IX. Selection of Implementation Strategies

Table 13 outlines the strategies the Steering Committee would like to see implemented as soon as funding is available. Activities associated with each strategy are listed for each project year. Note that project years do not necessarily correspond across strategies; for example, nutrient management may not begin in the same year as bank stabilization efforts. The strategies listed are those that have developed over the course of discussions by the Steering Committee and its Technical Advisory Committee. Activities listed in the table provide only a broad-stroke sketch. The CCSWCD Board and its subcommittees will need to identify partners to assist in preparing detailed work plans.

Table 13. Schedule of Implementation*

Category	Strategy	**Activities and Responsible Agent by Project Year (after funding is received) (Note: projects do not necessarily start in the same calendar year.)** 1	2	3	5
Water Quality	Nutrient management on 70% of corn/soybean acres (140,000 acres) Conservation tillage on 70% of corn/soybean acres (140,000 acres)	• Develop operator mailing list and letter for targeted mailing to eligible producers (SWCDs with help from USDA-NRCS and FSA) • Begin enrolling producers (SWCDs)	• Continue enrolling producers (SWCDs) • Landowners begin implementation on applicable acres • Landowners report fertilizer rates and yields to SWCDs	• Landowners continue implementation on applicable acres • Landowners report fertilizer rates and yields to SWCDs	• Landowners continue implementation and reporting • Compile data and send composite results to participants.
	Filter strips, riparian buffers, surface inlet buffers: 1000+ acres	• Update vegetated buffer GIS layer (SWCDs with help from FSA) • Develop operator mailing list and letter for targeted mailing to eligible producers (SWCDs with help from NRCS and FSA) • Begin enrolling producers (FSA with help from NRCS and SWCDs)	• Landowners establish or maintain buffers with assistance from NRCS, SWCDs, Pheasants Forever. • GIS layer update and enrollment continues (SWCDs and FSA). • NRCS and SWCDs provide assistance for buffer maintenance.		
	Lawn care education, and Homer Lake on-site sewage disposal system education	• Hire Educator/Wildlife Coordinator (CCFPD, CCSWCD, or county entity) • Develop mailing list, knowledge base of pertinent information, instructional materials, website, and incentives program (Educator with assistance from UI Extension, CCFPD, and CCSWCD)	• Sponsor annual workshops (Educator with assistance from CCFPD, CCSWCD, and others) • Implement incentive programs (Educator with assistance from CCFPD, CCSWCD, and others) • Update databases and website (Educator with assistance from CCFPD, CCSWCD, and others)		
	Construction erosion control	• Develop knowledge base of pertinent information, instructional materials, and relationships with developers, contractors, and county entities (Educator with assistance County Zoning, municipalities, CCFPD, CCSWCD, NRCS)	• Tour the watershed every 3-6 months to see if contractors are using appropriate erosion controls. Communicate with residents, contractors, and appropriate entities if change is needed.		
	Homer Lake community waste treatment system	• ?	• ?	• ?	• ?
	Hydraulic/ Geomorphologic survey of Boneyard, Saline, Spoon (36 miles)	• Obtain consent & input from drainage district commissioners • Hire consultant or work with USGS to conduct survey • Obtain landowner permissions (CCSWCD, USGS)	• Perform survey, analyze results, make recommendations for habitat enhancement (consultant, USGS, IDNR)	• Review results with drainage district commissioners and landowners, develop detailed plan, and pursue funding for implementation. (consultant, CCSWCD, USDA-NRCS, USGS, IDNR, commissioners, landowners, UI)	
	Water quality sampling	• Confirm specific sites, parameters to be measured, and responsibilities with USGS, IEPA, UI, ISWS, drainage districts, others. • Establish flow gages at watershed outlet and Saline (USGS, IEPA,UI, ISWS, others)	• Collect, process, and analyze data (USGS, IEPA, UI, ISWS, or others) • Make data publicly available (USGS, IEPA, UI, ISWS, or others)		
	Water quality trading program	• Details worked out and system in place for Salt Fork landowners (IEPA, USDA)	• Advertize to potential traders (IEPA, USDA, SWCDs)	Manage and maintain program (IEPA, USDA, SWCDs)	
Flooding & Channel Stwdshp.	Channel Stewardship subcommittee	Reach consensus as to what is desirable regarding funding of implementation of the Channel Stewardship Guidelines (subcommittee with assistance from CCSWCD and NRCS).	• Future activities depend on conclusions reached by subcommittee and could include: - employing legal counsel to assist in establishing a maintenance entity - sponsoring meetings with various organizations to establish a voluntary system of channel maintenance - employing an engineering consultant to conduct additional hydrologic investigations		
	Hydraulic/ geomorphologic studies of reaches AB, BC in Figure 16 Hydraulic/ geomorphologic studies of upper reaches	• Hire consultant or work with USGS to conduct survey • Obtain landowner permissions (CCSWCD, USGS, drainage districts)	• Perform survey, analyze results, make recommendations (consultant, USGS)	• Review results, develop detailed plan if controls are recommended, and pursue funding for implementation. (consultant, CCSWCD, NRCS, IDNR, landowners, drainage districts)	
	Computer modeling data collection		• Collect data in conjunction with surveys (consultant)	• Organize data for future modeling efforts (CCSWCD, consultant, USGS).	
	Computer modeling	To be determined			
	Preliminary watershed storage investigations	• Preliminary meetings with SWCDs, CCFPD, UPD, municipalities to determine level of commitment to watershed storage and to discuss candidate sites • Work with USGS or hire consultant to do preliminary site investigations (CCSWCD, USGS, and others)	• Conduct site investigations • Prepare cost estimate for technically feasible sites (consultant or USGS)	Hold discussions with applicable entities and develop site proposals (CCSWCD, USGS, and others)	• Pursue funding for construction. (CCSWCD and others)
Wildlife	Wildlife conservation practices	• Develop mailing list and letter for targeted mailing (Habitat Coordinator with help from SWCDs and NRCS) • Begin enrolling producers (Habitat Coordinator, FSA)	Landowners implement practices and maintain habitat with assistance from Habitat Coordinator.		
Public Info & Education	Hire Educator/ Habitat Coordinator	• Establish partnerships, and develop databases, mailing lists, training materials.	• Assist landowners as indicated above. • Maintain and improve knowledge base and training materials.		

*** The activities and timelines appearing in this table are subject to revision and are presented for planning purposes ONLY. The Salt Fork Steering Committee strongly discourages their citation outside of their immediate planning context.**

X. Measuring Progress/Success

The ultimate water quality goal is for the Salt Fork to fully support all of its designated uses and thus be removed from the 303(d) list. Establishment of three continuous sampling sites are proposed for measuring progress towards this goal. It is recognized, however, that it may take several years for improvement to be noted in terms of measured parameters such as nitrate concentration, dissolved oxygen, and biotic indices. Intermediate measures of progress include participation rates in conservation and educational programs. Specific criteria for evaluating the success of individual goals are outlined in Table 14. Milestones to be achieved 1, 2, 5, and 10 years after project initiation are also listed.

USGS gaging station on Upper Salt Fork for which funding is sought. Photos courtesy Robert Holmes.

Table 14. Measuring Success*

Category	Goal/Objective	Criteria for Evaluating Success	Measurable Milestones (years after project initiation)			
			1	2	5	10
Water Quality	Reduce nitrate-nitrogen load at the watershed outlet by 15% by the year 2017.	• Acres enrolled in nutrient management, conservation tillage, vegetative buffers. • Desirable trends in measured water quality parameters at the watershed outlet and other sampling sites.	10% of cropped acres enrolled in nutrient management	20% of cropped acres enrolled in nutrient management	50% of cropped acres enrolled in nutr. management	70% of cropped acres enrolled in nutr. management
	Reduce phosphorus load at the outlet by 15% by the year 2017.		20% of cropped acres enrolled in conservation tillage	30% of cropped acres enrolled in conservation tillage	50% of cropped acres enrolled in conservation tillage	70% of cropped acres enrolled in conservation tillage
	Reduce sediment load at the outlet by 15% by the year 2017.					
	Improve Homer Lake water clarity such that Secchi depths are >=24” and average P concentration is 0.05 mg/L or less by 2017.		Secchi depth >=15” P = 0.07 mg/L	Secchi depth >=15” P = 0.07 mg/L	Secchi depth >=18” P= 0.06 mg/L	Secchi depth >=24” P = 0.05 mg/L
	Eliminate on-site sewage disposal system discharges to Homer Lake by 2010.	• Number of systems checked within past 2 years. • Number of households participating in at least one educational program over 10 years	40% of systems checked 10% participation	60% of systems checked 20% participation	100% of systems checked 50% participation	100% of systems checked 100% participation
	Homer Lake community waste treatment system	•				
	Develop objectives and implementation strategies for increasing aquatic wildlife habitat in Boneyard Creek, Saline Branch, and Spoon River by 2010.	• Existence of written implementation plan and cost proposal for Boneyard, Saline, and Spoon.	Completed field work.		Written plan.	Funded project.
	Establish data record for water quality at outlet, Upper Salt Fork, and Saline.	• Length of reliable data record. • $ secured for maintaining stations and data reduction.	At least one of three stations up and running	Three stations up and running	• Long term source of funding secured. • Data set continuously updated and made available to the public.	
	Fund 50% of conservation acres through water quality trading	• # acres funded	5% acres funded	10% acres funded	25% acres funded	50% acres funded
Flooding & Channel Stwdshp.	Reach consensus by the end of 2007 as to what is desirable in funding implementation of the Channel Stewardship Guidelines.	Concrete decisions made regarding funding of future channel stewardship activities.	Written addendum to Channel Stewardship Guidelines acceptable to the CCSWCD Board and Steering Committee.	To be determined by the Channel Stewardship Subcommittee.		
	Complete detailed studies by 2010 to determine if stream bank erosion controls should be implemented on the Salt Fork below St. Joseph.	Development of written recommendations for reducing channel erosion in the lower Salt Fork.	Completed field work.	Written plan.	To be determined.	
	Complete inventories for upper reaches in drainage districts	Development of written recommendation for reducing channel erosion in drainage districts	Completed field work.	Written plan.	To be determined.	
	Increase or enhance watershed storage areas.	Number of flood storage areas established.	Partners committed in writing to pursuing projects.	One site successfully negotiated.	• Two additional sites successfully negotiated. • Funding secured for 3 sites.	
	Improve computer modeling capabilities to address future questions regarding development and channel maintenance.	Availability of calibrated models ready for addressing questions of interest.	Tile outlet and cross-section data secured.	Models identified.	Models calibrated for Salt Fork.	
Wildlife	Increase terrestrial wildlife habitat by 20% (550 acres) by the year 2020.	Number of acres established.	50 acres established.	150 acres (cumulative) established.	275 acres (cumulative) established	550 acres (cumulative) established.
Public Info & Ed.	Provide advice and information to homeowners and the general public regarding water quality and wildlife as well as environmental volunteer opportunities.	• Number of participants in school/community presentations. • Number of web site hits. • Number of citizens assisted one-on-one.	Upward trend in numeric indicators.			
	Provide wildlife habitat technical assistance and planting coordination.	• Number of web site hits. • Number of requests for assistance in response to flier. • Number of acres established with assistance. • Number of new Master Naturalist volunteers.				

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CHALLENGES

Looking back at the Mission Statement, we could start to pick apart this first comprehensive watershed implementation plan of the Salt Fork. We do not have enough numbers to evaluate the scientific-soundness or cost-effectiveness of our strategies. And we really do not know if what we propose will lead to getting off the impaired list. But, based on best available information, we do believe that the strategies listed in this plan are a good place to start for helping trends move in the right direction. The subcommittees involved in implementation will be identifying priorities for obtaining additional information necessary for moving forward.

This is a "living" document. That means the planning process is iterative and is never fully complete. That means we start HERE and change what we need to when we know better. The first challenge is to not let lack of data be an excuse for doing nothing. The second challenge is for the residents of the watershed to take ownership of the plan and give it a "life" beyond fulfillment of our contract obligations to IEPA -- to take hold of some of the strategies and start doing them. The third challenge is to make note of the details of the past and present so that in the future we can see that, indeed, progress is being made.

Salt Fork near Homer Lake Forest Preserve, fall 2006. Photo courtesy CCSWCD.

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APPENDIX

- Problems & Objectives Identified by Salt Fork &Technical Advisory Committees
- Channel Stewardship Guidelines
- Fish Inventory from IEPA Intensive Basin Surveys
- Fish Survey of Boneyard Creek in 2006
- Mammal and Tree Inventory
- Mussel Inventory
- Bird Inventory
- Boneyard Creek Bibliography

Problems & Objectives Identified by Salt Fork Steering & Technical Advisory Committees

Water Quality

The Illinois Environmental Protection Agency has identified one lake and seven stream segments in the study area that have impaired designated uses. Concern regarding the impaired segments was imposed upon the Steering Committee by the CCSWCD Board. The Water Quality subcommittee, after studying available data, suggests the following problems and objectives:

Priority (H/M/L)	ID	Suggested Problems	Suggested Objectives
	1. Homer Lake	Recreational activities are impaired due to poor water clarity.	1. Slow eutrophication such that Secchi depths increase to >= 24 inches during all non-frozen months by 2015. 2. Ensure that 99% of all surrounding on-site sewage disposal systems are functioning as designed on a biennial basis. 3. Ensure that all contractors working in the watershed are using best available methods to control erosion on their work sites. 4. Minimize inputs of P from agriculture by striving for 70% of cropped acres to be under nutrient management plans and for 100% of acres to be eroding at T or less by 2015.
	2. Boneyard	Aquatic life impaired. 1. Insufficient data to confirm causes of impairments. 2. Inadequate water quality. 3. Lack of riparian and in-stream habitat 4. Contaminants in stream sediments including: DDT, hexachlorobenzene, PCBs.	1. Determine the current status of aquatic life in Boneyard Creek. 2. Implement sanitary and storm sewer system practices through existing mandates and programs. 3. To implement BMPs which improve aquatic life habitat in Boneyard Creek where technically and economically feasible. 4. Where legacy contaminants exist, limit possible human exposure or consumption.
	3. Saline above Boneyard	Aquatic life impaired due to: 1. Lack of habitat. 2. Low dissolved oxygen. 3. Excessive N.	1. To improve aquatic habitat such that the Macroinvertebrate Biotic Index is 5.9 or lower and the Index of Biotic Integrity is 41 or higher by 2015. 2. To minimize inputs of N from agriculture by striving for 70% of cropped acres to be following an approved nutrient management plan by 2015. 3. To minimize inputs of N and other deoxygenating substances from urban sources by minimizing impact of storm and sanitary sewers, and encouraging BMP's in urbanized areas.
	4. Saline below Boneyard	Aquatic life impaired due to: 1. Lack of habitat 2. Excessive N and P. 3. Excessive boron. 4. Suspended solids 5. DDT, dieldrin, methoxychlor in sediment.	1. To improve aquatic habitat such that the Macroinvertebrate Biotic Index is 5.9 or lower and the Index of Biotic Integrity is 41 or higher by 2015. 2. To minimize inputs of N, P, and sediment from agriculture by striving for 70% of cropped acres to be following an approved nutrient management plan and for 100% of acres to be eroding at T or less by 2015. 3. To minimize inputs of N, P, and sediment from urban sources by encouraging installation of BMPs. 4. To reduce boron levels such that no water samples exceed 1000 ug/L (additional info needed to identify sources). 5. Where legacy contaminants exist in sediment, limit possible human exposure or consumption.
	5. Spoon River	Aquatic life impaired due to: 1. Lack of habitat 2. Low dissolved oxygen	1. To improve aquatic habitat such that the Macroinvertebrate Biotic Index is 5.9 or lower and the Index of Biotic Integrity is 41 or higher by 2015. 2. To reduce inputs of N, P and other deoxygenating substances from agriculture by striving for 70% of cropped acres to be following an approved nutrient management plan by the year 2015.
	6. Salt Fork below St. Joseph (3 segments)	Aquatic life impaired due to: 1. Excessive N (nitrate) and P 2. Excessive suspended solids.	1. To improve aquatic habitat such that the Macroinvertebrate Biotic Index is 5.9 or lower and the Index of Biotic Integrity is 41 or higher by 2015. 2. To minimize inputs of N, P, and sediment from agriculture by striving for 70% of cropped acres to be under nutrient management plans and for 100% of acres to be eroding at T or less by 2015. 3. To minimize inputs of N, P, and sediment from urban sources through the implementation of BMPs.

Flooding and Channel Stewardship

The Flooding and Channel Stewardship subcommittee studied concerns related to maintaining free flow, bank integrity, flooding, and debris blockages. The concerns are inter-related with water quality in several ways, including:

- stream bank erosion degrades water quality
- bank vegetation impacts channel hydraulics, bank stability, and water temperature
- means for addressing aquatic life impairments may include structures that affect channel hydraulics

Lack of a legal entity for performing channel maintenance outside of drainage districts has been the focus of much past discussion and a former subcommittee investigated legal entity options. Since no option was found to be ideal, the current approach of the Flooding & Channel Stewardship subcommittee is to investigate voluntary methods (possibly tied with the annual Salt Fork River Clean-Up) that will accomplish the desired results. The subcommittee seeks Steering Committee feedback as to whether or not a legal entity is truly desired.

Priority (High, Med., or Low)	ID	Suggested Problems	Suggested Objectives
	7. Free flow	There is no systematic means for ensuring that free flow is maintained in the Salt Fork downstream of Upper Salt Fork drainage district.	Maintain adequate flow in the main channel of the Salt Fork such that fields with well-maintained tile drain within 2 days after a bank full flood event.
	8. Woody debris	Woody debris accumulations contribute to localized flooding and bank erosion.	Debris accumulations spanning more than 50% of the channel's bank full width will remain in place for no more than 2 years.
	9. Bridge piers	Bridge piers and other structures catch debris.	Minimize obstructions in the 100-year floodway (e.g., piers and pipe crossings). Strive to prevent additions of such obstructions and to remove those that are abandoned or unnecessary where practical.
	10. Trash dumping	Trash dumping & litter degrade aesthetics, water quality, habitat and increase costs to public.	Reduce trash between Shakerag bridge (2125E) and the Homer Lake bridge (1200N). 1. Large items such as appliances and tires will not be present in the channel for longer than one year. 2. The quantity of "small" litter collected annually along the banks will decrease by 50% over a 10 year period. 3. Number of illegal trash dump sites will be reduced by 50% over a 10 year period.
	11. Channel erosion	Private property and infrastructure are threatened by channel erosion.	Protect infrastructure and excessive land loss threatened by channel erosion as measured by landowner-installed erosion pins.
	12. Sediment deposition	Sediment deposition blocks tile outlets and impacts aquatic wildlife.	Limit amount of sediment impacting tile flow and aquatic wildlife. Further investigate sources of sediment.
	13. Flood studies	Detailed flood studies of the Salt Fork are lacking outside of municipalities.	Maintain unobstructed floodway and floodplain through time and make sure base flood elevation does not increase.
	14. Stream maintenance	Stream maintenance activities inadequately consider downstream impacts	Further develop existing hydraulic models of the Salt Fork and make available for future channel evaluations.
	15. Invasive species	Invasive tree and plant species can retard flow.	Additional information needed to define desired state of diverse tree and plant population.

Land Use Management

The Land Use Management sub-committee was charged with addressing concerns related to urbanization and agricultural practices. Land use and watershed activities directly influence water quality. However, many of the concerns raised by the Steering Committee are already addressed by regulations at the County, state, or federal level. Feedback from the Steering Committee is needed to better define concerns inadequately addressed by these regulations.

Priority (High, Med., or Low)	ID	Suggested Problems	Suggested Objectives
	16. Stream corridors	Poor land uses adjacent to streams may be at risk to flooding or may cause water pollution.	Buffer 100% of stream corridor.
	17. Urban storm flow	Urbanization outletting to agricultural tile strains agricultural drainage.	(Problem needs better definition. Joe Irle, please advise.)
	18. Prime farmland	Prime farmland is threatened by urbanization.	(County zoning ordinances already exist.) 1. Increase educational programs stressing value of protecting prime farmland. 2. Promote urban renewal programs.
	19. New industry	Intensifying land use may degrade water quality and/or habitat.	(Regulations already address industrial discharges and storm water handling.)
	20. Trash dumping	Trash dumping & litter degrade aesthetics, water quality, habitat and increase costs to public.	Reduce instances of dumping and litter. (See Item #10.)

Recreation

The Recreation sub-committee addressed concerns related to increasing public access to, and knowledge of, recreational opportunities. Water quality greatly impacts recreational opportunities and access for recreation also provides access for clean up and monitoring efforts. Feedback from the Steering Committee is requested regarding the extent to which problems are a lack of opportunities vs. a lack of knowledge of existing opportunities.

Priority (High, Med., or Low)	ID	Suggested Problems	Suggested Objectives
	21. Hunting	There are insufficient opportunities for firearm and archery hunting in the watershed.	Increase opportunities for hunting in the watershed in conjunction with deer culling and wildlife habitat objectives.
	22. Hiking/ biking	There are insufficient opportunities for hiking, biking, and wildlife viewing in the watershed.	1. Create additional sites for hiking, biking, and wildlife viewing. 2. Make the existence of all sites known to the public.
	23. Fishing	There is a need for additional opportunities for fishing in the watershed, in water safe for human contact and supportive of healthy fish, amphibians and reptiles.	1. Increase public access for the purpose of fishing. 2. Reduce occurrences of trash near bank fishing sites.
	24. Boating and canoeing	There are insufficient opportunities for public boating and canoeing on waters safe for recreation.	1. Increase public access points for boating and canoeing. 2. Reduce obstructions to safe boating and canoeing.

Wildlife

The Wildlife sub-committee addressed concerns related to increasing diversity in wildlife and wildlife habitat. More inventory is needed to define the desired state of diversity in plant and animal populations.

Priority (High, Med., or Low)	ID	Suggested Problems	Suggested Objectives **(more inventory needed to refine objectives)**
	25. Wildlife diversity	There is a need to diversify all wildlife in the watershed while reducing the potential for wildlife damage to human and wildlife habitat.	Diversify the populations of all animal species in each habitat type in the watershed. (As suitable habitat is restored and expanded, wildlife diversity will follow.)
	26. Plant diversity	The watershed needs greater native plant diversity and a fewer exotic and invasive species of plants.	1. Public and Private landholders should restore and diversify the plant populations in the watershed where possible. 2. Public and Private landholders should be educated about, and control exotic and invasive plants on their lands.
	27. Habitat protection	There is a need to protect, enhance, diversify, and increase the amount of wildlife habitat.	Protect remaining biologically significant habitat through conservation easements and other programs, as well as increase suitable wildlife habitat in the watershed by 20% by 2020 through conservation easements, best management practices, and incentive programs.

Salt Fork River Watershed Steering Committee
Channel Stewardship Guidelines
Working Paper

Introduction

The Salt Fork River Watershed Steering Committee views the Salt Fork River as a beautiful and valued resource and recognizes the important role it plays in the ecosystem, the economy, recreation, and local livelihoods. The Steering Committee seeks to be a good steward of the river and its watershed within the boundary of Champaign County.

This paper comes about as a result of local stakeholders wishing to address problems related to flooding in a responsible manner that complements the many functions of the river. Over the past 12 years, more than $30,000 of Federal emergency flood funds and many more dollars in technical assistance have been spent to respond to crises related to two blockage events on the Salt Fork. The worst of the events occurred in 1990 when collections of woody debris upstream of Sidney caused County Road 1100N to be impassable with standing water for a number of days. At least 250 acres of agricultural land could not be cropped until the blockage was removed. In 1994, Federal funds were again obtained to remove a series of blockages that were causing localized flooding and bank scour.

In late 1994 and early 1995, drainage district commissioners removed trees from the banks and sediment bars from a portion of the Salt Fork downstream of St. Joseph in the interest of maintaining free outlet for agricultural drainage. The actions taken were without approval from the US Army Corps of Engineers and were unacceptable to many citizens. The drainage district has since applied for an “after the fact” permit for the work done.

Learning from past events, the Committee believes it is irresponsible to rely on emergency funding to respond to flooding crises and that it is also irresponsible to maintain free flow in a manner that degrades other functions of the river. This paper states the manner in which the Committee believes the channel itself should be cared for to the benefit of all.

In particular, the paper addresses channels and tributaries downstream of St. Joseph -- both natural and altered by humans -- that are not under the direct jurisdiction of a government entity, as shown in the attached map. It provides guidelines regarding activities performed in and around the stream channel to maintain the free flow of water while preserving natural ecological functions of the stream.

Stakeholders

These guidelines address the interests of each member of the Steering Committee who in turn represent a wide range of stakeholders, including (in alphabetical order):

- Agricultural producers
- Ecologists
- Future generations
- Historians
- Municipalities
- Recreationists
- Streamside residents

Problems Addressed

Particular problems addressed by these guidelines include (not listed in order of importance):

- Flooding due to dam-like blockages, such as those occurring in 1990 and 1994.
- Streambank erosion.
- Canoeists having to port on private property to go around blockages.
- Decline in aquatic wildlife habitat areas.
- Trash in the channel and on streambanks.

Objectives

The Committee recognizes that human acts of stewardship, performed with careful forethought, can enhance the river's functions and correct localized problems. The Committee will implement strategies that help attain the following objectives (not listed in order of importance):

- Provide free flow of water in order to minimize property damage, provide agricultural drainage, and enhance canoeing opportunities.
- Maintain existing streambank vegetation.
- Remove all human-generated garbage.
- Recognize the important role woody debris plays in the ecosystem and strive to maintain it.
- Improve aquatic wildlife habitat when possible to do so.
- Provide means for annual channel inspection and as-needed maintenance to minimize environmental impact and maximize long-term cost effectiveness.

General Guidelines for Channel Stewardship

The following guidelines apply to the development and implementation of any channel stewardship activity:

- Appropriate agencies will be consulted for technical and legal advice to ensure that environmentally, historically, or culturally sensitive areas are protected and that state and federal regulations are met.
- Heavy equipment will not be used except as a last resort.
- Project implementation will be accomplished with minimal undesirable impacts.
- Any damages resulting from a project will be repaired in a timely manner.
- Affected landowners will be consulted early in the planning process to provide information and secure any needed permissions.
- Efforts will be made to promote good public relations.

Guidelines for Removal or Repositioning of Woody Debris

The following guidelines related to woody debris are derived from those developed by the Champaign County Forest Preserve District as modified by the Salt Fork River Watershed Steering Committee. These guidelines recognize the importance of woody debris in the ecosystem as well as the potential for woody debris to interfere with other functions of the river. It is believed that with careful planning, all functions can be protected and enhanced.

1. Woody debris should be left as is in or along the channel unless it has the potential to interfere with agricultural drainage or free-flow of water, impede canoeists, cause stream bank scour, or snag additional debris leading to future problems. The "Definitions of Stream Obstruction Conditions" provided in the American Fisheries Society 1983 document entitled *Stream Obstruction Removal Guidelines* will be used as an aid for determining which situations require attention. A copy of the description of the five "Conditions" outlined in the document is attached. In addition, the NRCS hydrologic computer model of the Salt Fork may be useful to help guide determinations.

2. Annual inspection and attention to woody material in or alongside the channel is preferable to initiating activities in response to crises. Regular maintenance will help prevent the occurrence of crises, be more cost-effective, and will be of less impact to the environment.

3. Timber on the riverbank, standing or fallen that is not likely to be dislodged by flooding, will be left.

4. Trees projecting over the river provide important shading. Such trees will be left intact. However, limbs may be removed if they project down to bank-full level and may catch debris or injure a canoeist. Limbs may also be removed as necessary to keep a root mass from dislodging from the streambank.

5. In cases that fit the attached descriptions of Condition Two (where the subcommittee determines the condition will cause a problem in the near future) or Condition Three, logs will be repositioned parallel to flow to correct the problem and protect the stream bank or enhance wildlife habitat. Alternatively, logs may be cut into sections short enough so as to not cause problems downstream. If a log is attached to the streambank, care should be taken to preserve the severed rootmass as well as its attachment to the bank.

6. In cases that fit the description of Condition Four (see attached), key logs will be repositioned or cut where appropriate to restore free-flow of water. Material from these specific locations should be left in-stream as cut sections short enough so as to not cause problems downstream. However, if the quantity is such that cutting is not practical, the material may be removed or burned.

7. Areas of the river channel that have riffles (shallow water areas of gravel/rock), or that fit the description of Condition Five (see attached), are extremely rich in aquatic life forms, and thus highly valued. Avoid impacting these areas by working around them, preferably on the downstream side.

8. The integrity of the streambank shall be maintained. Avoid unnecessary impacts to the banks or channel that may result in erosion.

Guidelines for Streambank Protection and Restoration

9. In cases where outside curve bank erosion is occurring and fallen logs are available, reposition logs to the toe of the bank for the purposes of lessening bank erosion.

10. In addition to the applicable guidelines above, information provided in the following technical documents shall be used to the extent that it is applicable to the Committee's objectives:
    - USDA-NRCS, 1996. *Engineering Field Handbook*, Chapter 16: Streambank and Shoreline Protection.
    - USDA-NRCS, 1998. *National Engineering Handbook*, Part 653, Stream Corridor Restoration: Principles, Processes, and Practices. Chapter 8F: Streambank Restoration. (see www.usda.gov/stream_restoration)

Guidelines on the Creation of Aquatic Wildlife Habitat Areas

11. In addition to the applicable guidelines listed for woody debris removal and repositioning, the guidelines provided in the reference listed below shall be used to the extent that they are applicable to the Committee's objectives:
    - USDA-NRCS, 1998. *National Engineering Handbook*, Part 653, Stream Corridor Restoration: Principles, Processes, and Practices. Chapter 8G: Instream Habitat Recovery. (See www.usda.gov/stream_restoration)

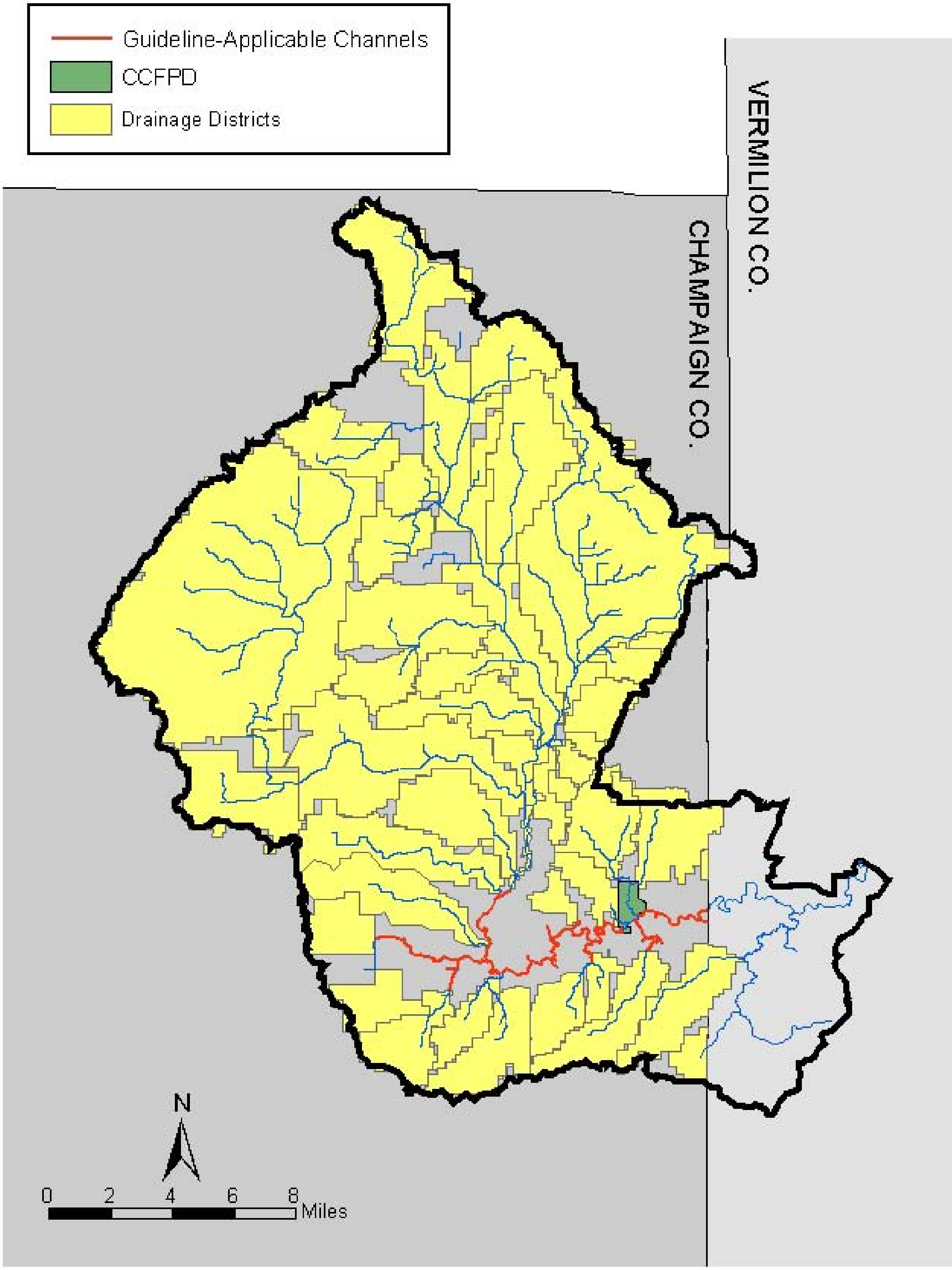
Guidelines on the Removal of Human-Generated Debris

12. Remove all human-generated garbage in and alongside the channel unless removal is likely to cause more environmental damage than leaving the material.

13. Historically significant materials shall not be disturbed. When such materials are seriously in conflict with the purpose of the environmental cleanup, request for a decision must be brought to the appropriate historical/cultural authority, e.g. the Early American Museum, Illinois Department of Natural Resources, or Illinois Historic Preservation Agency. Any decisions are to be made only after careful evaluation of the site.

Channel Stewardship Subcommittee

A subgroup of the Steering Committee will be appointed by the CCSWCD to conduct an annual inspection of the channel and advise on how to apply stewardship guidelines for specific locations where it is questionable exactly what work should be done. The subcommittee will consult outside scientific resources as needed. The subcommittee will represent all stakeholders and will strive to meet the intent of the objectives and guidelines of the Steering Committee.



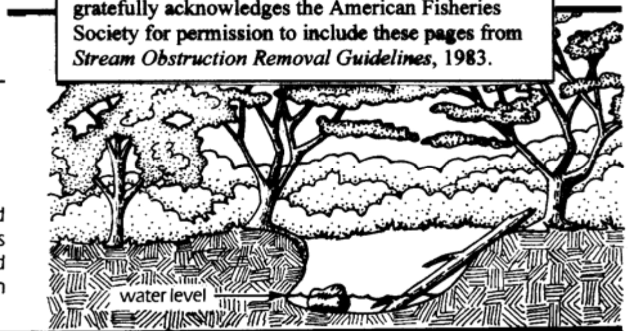
Salt Fork Channels Addressed by Channel Stewardship Guidelines

The Salt Fork River Watershed Steering Committee gratefully acknowledges the American Fisheries Society for permission to include these pages from *Stream Obstruction Removal Guidelines*, 1983.

Definition of Stream Obstruction Conditions

Condition One

These stream segments have acceptable flow and no work would be required. They may contain various amounts of instream debris and fine sediment, such as silt, sand, gravel, rubble, boulders, logs and brush. In certain situations flow may be impeded, but due to stream and land classification or adjacent land-use, this is not a problem.



Condition Two

These stream segments currently have no major flow impediments, but existing conditions are such that obstructions are likely to form in the near future, causing unacceptable problems. This condition is generally characterized by small accumulations of logs and/or other debris which occasionally span the entire stream width. Accumulations are isolated, not massive and do not presently cause upstream ponding damages.

Condition Three

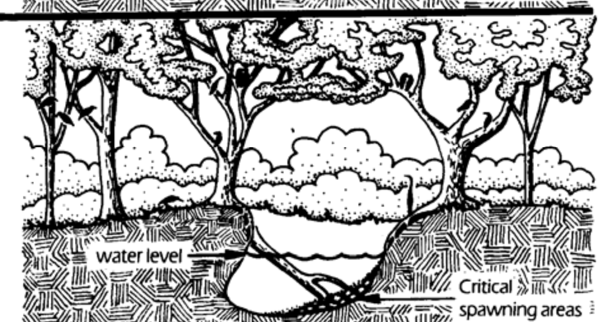
These stream segments have unacceptable flow problems. Obstructions are generally characterized by large accumulations of lodged trees, root wads, and/or other debris that frequently span the entire stream width. Although impeded, some flow moves through the obstruction. Large amounts of fine sediment have not covered or lodged in the obstruction.

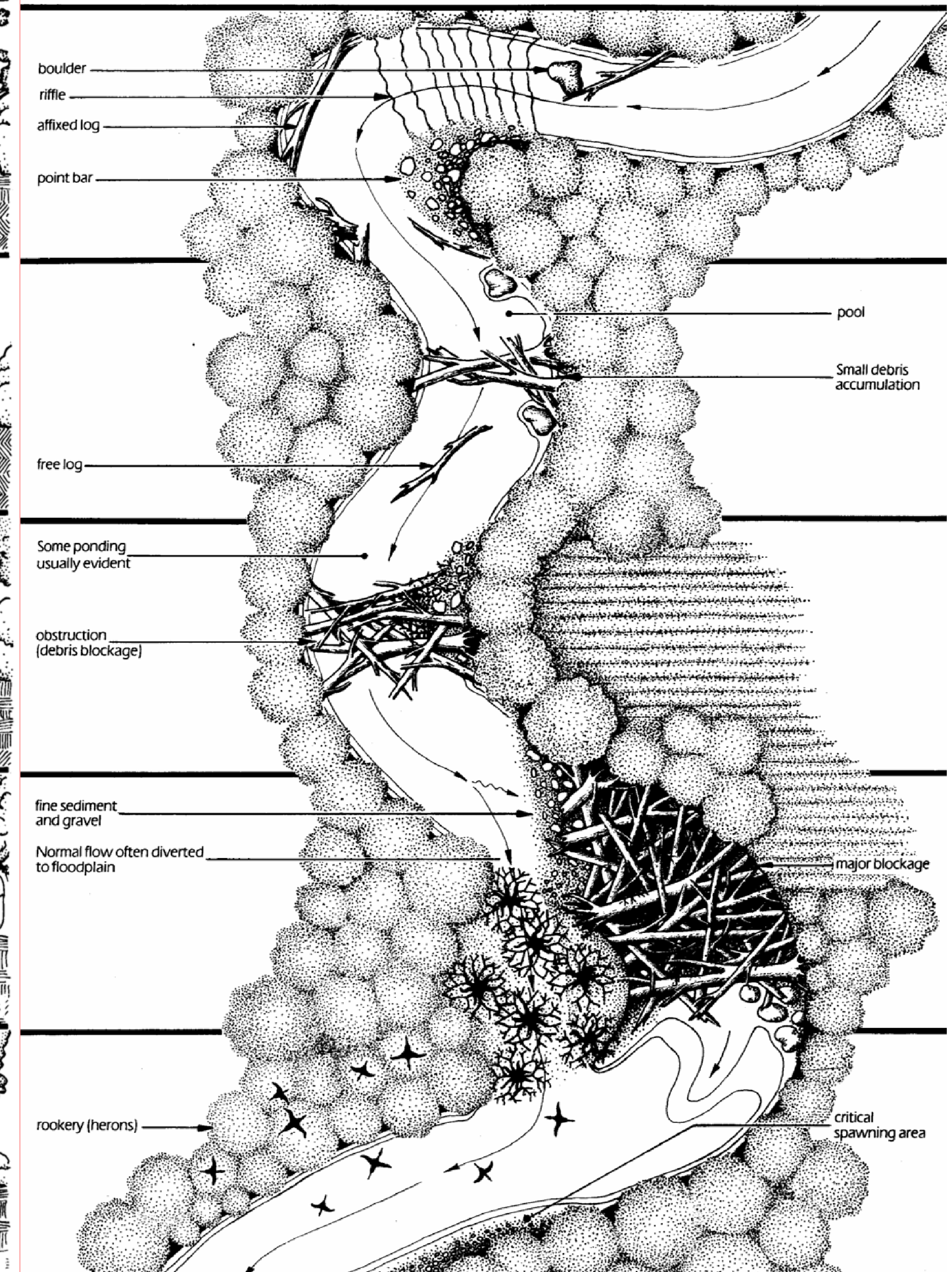
Condition Four

These stream segments are characterized by major blockages causing unacceptable flow problems. Obstructions consist of compacted debris and/or sediment that severely restricts flow.

Condition Five

These stream segments possess unique, sensitive, or especially valuable biotic resources and should be dealt with on a case-by-case basis. Examples include, but are not limited to: Areas harboring rare or endangered species, shellfish beds, fish spawning and rearing areas, and rookeries.





Fish Inventory from IEPA Intensive Basin Surveys

Fish collected during Intensive Basin Surveys from Salt Fork stations (courtesy Gary Lutterbie, IDNR). Species that indicate good water quality/habitat are highlighted in yellow.

Common Name	Salt Fork BPJ-09 07/08/97	Salt Fork BPJ-10 07/07/97	Salt Fork BPJ-12 7/20/76	Saline Br. BPJC-06 (d/s of Boneyard) 07/07/97	Saline Br. BPJC-08 (u/s of Boneyard) 08/13/01	Upper Salt Fk BPJG-01 08/13/01	Spoon River BPJD-02 8/14/01
Gizzard shad		11	6	10			
Grass pickerel		2			49		9
Northern pike			3				
Carp	3	8	40		29		
Golden shiner		1					
Creek chub			4		10	97	18
Hornyhead chub	2	3		18	14	377	34
Central stoneroller					34	2430	85
Suckermouth minnow		1				3	
Striped shiner	4	20	1	206	453	826	179
Redfin shiner		7				4	11
Spotfin shiner	1	23	17	29		4	
Bluntnose minnow	6	65	36	52	670	109	2
Rosyface shiner				1			
Sand shiner		2		122		518	13
Silverjaw minnow		1		33	13	1189	1
Quillback	1	1	22	3		1	
River carpsucker			9				
Highfin carpsucker			3				
White sucker			24	1			1
Spotted sucker		1	4		9		
Creek chubsucker					5	10	
Northern hog sucker		4	2	1		2	
Shorthead redhorse		9		2			
Black redhorse		3					
Golden redhorse	3	31	28	1			
Silver redhorse		3	8				
Channel catfish		2					
Yellow bullhead					40	6	
Black Bullhead					57		
Flathead catfish		1					
Stonecat					56		
Tadpole madtom						19	2
Brindled madtom		1					
Blackstripe topminnow	1	1		3	346	239	114
Brook silverside			6				
Black crappie			2				
White crappie			2				
Rock bass		2	1			1	
Largemouth bass			6		29	1	
Spotted bass		1		2		4	
Smallmouth bass		6		1		2	
Green sunfish	3	3	8	6	23		
Bluegill	2		33	5	26		
Longear sunfish	10	53	12	15		2	12
Walleye		1					
Dusky darter	2						
Slenderhead darter				3			
Johnny darter			2		1	5	4
Greenside darter						11	1
Orangethroat darter					7	4	
TOTAL FISH	38	267	279	514	1871	5864	486
TOTAL SPECIES	12	29	24	20	19	24	15

Fish Survey of Boneyard Creek in 2006

Illinois Department of Natural Resources
Gary Lutterbie
Region 3 Streams Biologist
13 October 2006

Fish population surveys were conducted at three locations on Boneyard Creek in 2006. One location was near the Armory near the intersection of Hwy 150 and Cunningham Avenue (the furthest downstream site), a second site just upstream of Gregory Street, and a third site in Scott Park (the furthest upstream site). The fish populations improved greatly as we moved downstream. Only two fish species were found at Scott Park, the creek chub and green sunfish. Both of these species are very tolerant of poor conditions. At the middle site near Gregory Street the number of fish species collected increased to 9, including the rosyface shiner, smallmouth bass and rainbow darter which are considered intolerant of poor conditions. The site furthest downstream near the Armory had 13 species of fish, including hornyhead chub, rosyface shiner and rainbow darter which are considered intolerant of poor conditions.

The Revised Index of Biotic Integrity is used to evaluate a stream based on the fish collected. It uses 10 metric which are listed in the attached table. The R-IBI (Revised IBI) score increased from 3 at the furthest upstream site to 30 at the middle site, to 35 at the most downstream site. Based on these results the Boneyard would be classified as a Restricted Aquatic Resource at the upstream end, improving to a Limited Aquatic Resource in the middle portion and becoming classified as a Moderate Aquatic Resource at the lowest portion of the creek.

IBI Scores as they Relate to their Integrity Class along with Their Attributes that Correspond to Each Class.

IBI Score	Integrity Class	Attributes
51-60	Unique Aquatic Resource (A)	Comparable to the best situations without human disturbance; all regionally expected species for the habitat and stream size, including the most intolerant forms, are present with a full array of age classes, balanced trophic structure.
41-50	Highly Valued Aquatic Resource (B)	Species richness somewhat below expectations, especially due to the loss of the most intolerant forms; some species are present with less than optimal abundance or size distributions; trophic structure shows some signs of stress.
31-40	Moderate Aquatic Resource (C)	Signs of additional deterioration include loss of intolerant forms, fewer species, and highly skewed trophic structure; older age classes of top predators may be rare.
21-30	Limited Aquatic Resource (D)	Dominated by omnivores, tolerant forms, and habitat generalists; few top carnivores; growth rates and condition factors commonly depressed; hybrids and diseased fish often present.
<21	Restricted Aquatic Resource (E)	Few fish present, mostly introduced or tolerant forms; hybrids common; disease, parasites, fin damage and other anomalies regular.

Fish Collected from Three Sites on Boneyard Creek, 2006.

Common name	Scientific name	Boneyard Creek Armory 06/12/06 BPJCA-UC-D1	Boneyard Creek Gregory St. 09/07/06 BPJCA-02	Boneyard Creek Scott Park 09/07/06 BPJCA-03
Creek chub	Semotilus atromaculatus	7	15	59
Hornyhead chub	Nocomis biguttatus	2		
Central stoneroller	Campostoma anomalum	2	4	
Striped shiner	Luxilus chrysocephalus	30	10	
Redfin shiner	Lythrurus umbratilus	3		
Spotfin shiner	Cyprinella spiloptera	1		
Fathead minnow	Pimephales promelas		14	
Bluntnose minnow	Pimephales notatus	20		
Rosyface shiner	Notropis rubellus	14	1	
Silverjaw minnow	Notropis buccatus		1	
White sucker	Catostomus commersoni	4		
Yellow bullhead	Ameiurus natalis	1		
Smallmouth bass	Micropterus dolomieu		1	
Green sunfish	Lepomis cyanellus	23	4	1
Greenside darter	Etheostoma blennioides	35		
Rainbow darter	Etheostoma caeruleum	11	2	
Total fish		153	52	60
Total species		13	9	2
Electrode minutes		43.81	27.7	32.25
Kilograms of fish		0.79	0.274	0.883
Native fish species		13 (2)	9 (2)	2 (0)
Native minnow species		8 (4)	6 (5)	1 (1)
Native sucker species		1 (2)	0 (0)	0 (0)
Native sunfish species		1 (2)	2 (4)	1 (2)
Benthic invertivore species		2 (2)	1 (1)	0 (0)
Intolerant species		3 (4)	3 (5)	0 (0)
Prop. specialist benthic invertivores		0.30 (6)	0.04 (2)	0.00 (0)
Prop. geneneralist feeders		0.58 (5)	0.85 (2)	1.00 (0)
Prop. mineral-substrate spawners		0.41 (4)	0.35 (4)	0.00 (0)
Prop. tolerant species		0.38 (4)	0.33 (5)	1.00 (0)
Extrapolated IBI		35	30	3

Mammal and Tree Inventory

Mammals and trees observed along the Salt Fork as identified by Steering Committee members Larry Rishel and Clark Bullard:

Mammals

Common name
opossum
Eastern mole
short-tailed shrew
raccoon
Bats
mink
striped skunk
red fox
coyote
wood chuck
Eastern chipmunk
red squirrel
grey squirrel
flying squirrel
beaver
deer mouse
vole
muskrat
rabbit
white tail deer
feral cat

Trees

Common name
Box elder
Silver maple
Sugar maple
Shad bush
Paw paw
Iron wood
Bitternut hickory
Pig nut hickory
Shag bark hickory
mockernut hickory
Catalpa
Hackberry
Red bud
Hawthorn
Persimmon
White ash
Green ash
Blue ash
Honey locust
Kentucky coffee tree
Black walnut
Red cedar
Osage orange
Crab apple
mulberry
Horn bean
sycamore
cottonwood
Wild plum
Black cherry
White oak
Swamp white oak
Shingle oak
bur oak
Yellow chestnut oak
Pin oak
Northern red oak
Black oak
Sumac
Black locust
Willow
Sassafras
Bald cypress
Bass wood
American and slippery elm
Viburnum

Mussel Inventory

(Compiled by Kevin Cummings of the Illinois Natural History Survey)

INHS Mollusk Collection Database Search Results

Catalogue #	Genus species	Common Name	Status	Stream	Drainage	County	State	Country	Year
INHS 15171	Physella gyrina	Tadpole Physa	OK	Boneyard Creek	(Saline Branch Drainage Ditch- Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1977
INHS 15167	Physella virgata	Protean Physa	OK	Boneyard Creek	(Saline Branch Drainage Ditch- Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1977
INHS 15170	Physella gyrina	Tadpole Physa	OK	Busey Woods Pond	(Saline Branch Drainage Ditch- Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1977
INHS 15169	Physella virgata	Protean Physa	OK	Busey Woods Pond	(Saline Branch Drainage Ditch- Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1977
INHS 1364	Amblema plicata	Threeridge	OK	East Branch Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1928
INHS 1365	Anodontoides ferussacianus	Cylindrical papershell	OK	East Branch Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1928
INHS 1363	Megalonaias nervosa	Washboard	OK	East Branch Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1928
INHS 1425	Pyganodon grandis	Giant floater	OK	East Branch Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1928
INHS 26378	Anodontoides ferussacianus	Cylindrical papershell	OK	Saline Branch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2001
INHS 252	Amblema plicata	Threeridge	OK	Saline Branch Drainage Ditch	(Salt Fork Vermilion River Dr.)	[Champaign]	Illinois	USA	1926
INHS 4903	Anodontoides ferussacianus	Cylindrical papershell	OK	Saline Branch Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1926
INHS 19192	Anodontoides ferussacianus	Cylindrical papershell	OK	Saline Branch Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1996
INHS 19193	Corbicula fluminea	Asian clam	Introduced	Saline Branch Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1996
INHS 5858	Potamilus alatus	Pink Heelsplitter	OK	Saline Branch Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1988
INHS 21020	Toxolasma parvus	Lilliput	OK	Saline Branch Drainage Ditch	(Salt Fork Vermilion River Dr.)	[Champaign]	Illinois	USA	1920
INHS 132	Corbicula fluminea	Asian clam	Introduced	Saline Branch Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1987
INHS 251	Amblema plicata	Threeridge	OK	Salt Fork [Vermilion River]	(Wabash River Dr.)	[Champaign]	Illinois	USA	
INHS 762	Fusconaia flava	Wabash pigtoe	OK	Salt Fork [Vermilion River]	(Wabash River Dr.)	[Champaign]	Illinois	USA	

INHS Mollusk Collection Database Search Results

INHS 984	Pleurobema sintoxia	Round Pigtoe	OK	Salt Fork [Vermilion River]	(Wabash River Dr.)	[Champaign]	Illinois	USA	
INHS 20942	Villosa lienosa	Little Spectaclecase	SE	Salt Fork [Vermilion River]	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20943	Villosa lienosa	Little Spectaclecase	SE	Salt Fork [Vermilion River]	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20944	Villosa lienosa	Little Spectaclecase	SE	Salt Fork [Vermilion River]	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20945	Villosa lienosa	Little Spectaclecase	SE	Salt Fork [Vermilion River]	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20946	Villosa lienosa	Little Spectaclecase	SE	Salt Fork [Vermilion River]	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20947	Villosa lienosa	Little Spectaclecase	SE	Salt Fork [Vermilion River]	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20948	Villosa lienosa	Little Spectaclecase	SE	Salt Fork [Vermilion River]	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1910
INHS 20950	Villosa lienosa	Little Spectaclecase	SE	Salt Fork [Vermilion River]	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1918
INHS 25745	Actinonaias ligamentina	Mucket	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 1500	Alasmidonta marginata	Elktoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1980
INHS 25746	Alasmidonta marginata	Elktoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 253	Amblema plicata	Threeridge	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	[Illinois]	USA	
INHS 254	Amblema plicata	Threeridge	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	[Illinois]	USA	1928
INHS 326	Amblema plicata	Threeridge	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1927
INHS 327	Amblema plicata	Threeridge	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	[Illinois]	USA	1920
INHS 1286	Amblema plicata	Threeridge	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1927
INHS 1289	Amblema plicata	Threeridge	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1914
INHS 4934	Amblema plicata	Threeridge	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 18850	Amblema plicata	Threeridge	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996

INHS Mollusk Collection Database Search Results

INHS 26773	Anodontoides ferussacianus	Cylindrical papershell	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 3040	Corbicula fluminea	Asian clam	Introduced	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1985
INHS 3313	Corbicula fluminea	Asian clam	Introduced	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1987
INHS 14343	Corbicula fluminea	Asian clam	Introduced	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1988
INHS 18858	Corbicula fluminea	Asian clam	Introduced	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996
INHS 24789	Corbicula fluminea	Asian clam	Introduced	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2000
INHS 5270	Cyclonaias tuberculata	Purple Wartyback	ST	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1914
INHS 5271	Cyclonaias tuberculata	Purple Wartyback	ST	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1920
INHS 4968	Cyclonaias tuberculata	Purple Wartyback	ST	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1945
INHS 26774	Cyclonaias tuberculata	Purple Wartyback	ST	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 4883	Elliptio dilatata	Spike	ST	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 5268	Fusconaia flava	Wabash pigtoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	[Illinois]	USA	1918
INHS 1284	Fusconaia flava	Wabash pigtoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1927
INHS 4935	Fusconaia flava	Wabash pigtoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 18851	Fusconaia flava	Wabash pigtoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996
INHS 1283	Lampsilis cardium	Plain pocketbook	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1927
INHS 1485	Lampsilis cardium	Plain pocketbook	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1980
INHS 18852	Lampsilis cardium	Plain pocketbook	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996

INHS Mollusk Collection Database Search Results

INHS 4884	Lampsilis fasciola	Wavyrayed Lampmussel	SE	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 26775	Lampsilis fasciola	Wavyrayed Lampmussel	SE	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 1471	Lampsilis siliquoidea	Fatmucket	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1980
INHS 1477	Lampsilis siliquoidea	Fatmucket	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1980
INHS 18853	Lampsilis siliquoidea	Fatmucket	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996
INHS 1424	Lasmigona complanata	White Heelsplitter	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1928
INHS 4936	Lasmigona complanata	White Heelsplitter	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 14342	Lasmigona complanata	White Heelsplitter	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1988
INHS 18854	Lasmigona complanata	White Heelsplitter	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996
INHS 1285	Lasmigona costata	Flutedshell	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1927
INHS 25747	Lasmigona costata	Flutedshell	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 22800	Obovaria subrotunda	Round Hickorynut	SE	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 4937	Pleurobema sintoxia	Round Pigtoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 25748	Pleurobema sintoxia	Round Pigtoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 26776	Pleurobema sintoxia	Round Pigtoe	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 340	Pyganodon grandis	Giant floater	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	
INHS 18855	Pyganodon grandis	Giant floater	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996
INHS 26777	Pyganodon grandis	Giant floater	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001

INHS Mollusk Collection Database Search Results

INHS 26778	Quadrula metanevra	Monkeyface	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 4938	Quadrula pustulosa	Pimpleback	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 25749	Quadrula pustulosa	Pimpleback	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 18856	Quadrula quadrula	Mapleleaf	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996
INHS 20620	Simpsonaias ambigua	Salamander Mussel	SE	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1919
INHS 5458	Strophitus undulatus	Creeper	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1927
INHS 21024	Toxolasma lividus	Purple Lilliput	SE	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 25750	Toxolasma lividus	Purple Lilliput	SE	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 5459	Toxolasma parvus	Lilliput	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1927
INHS 21019	Toxolasma parvus	Lilliput	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 21021	Toxolasma parvus	Lilliput	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 21022	Toxolasma parvus	Lilliput	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 21023	Toxolasma parvus	Lilliput	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 21028	Toxolasma parvus	Lilliput	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 21029	Toxolasma parvus	Lilliput	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 4939	Tritogonia verrucosa	Pistolgrip	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 25751	Tritogonia verrucosa	Pistolgrip	OK	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 5272	Utterbackia imbecillis	Paper Pondshell	OK	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 4882	Villosa fabalis	Rayed Bean	SE, X	Salt Fork Vermilion	(Wabash River Dr.)	Champaign	Illinois	USA	1956

				River					
INHS 4885	Villosa fabalis	Rayed Bean	SE, X	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 5285	Villosa fabalis	Rayed Bean	SE, X	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1956
INHS 1288	Villosa lienosa	Little Spectaclecase	SE	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1933
INHS 1733	Villosa lienosa	Little Spectaclecase	SE	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	
INHS 4886	Villosa lienosa	Little Spectaclecase	SE	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1957
INHS 18857	Villosa lienosa	Little Spectaclecase	SE	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	1996
INHS 20941	Villosa lienosa	Little Spectaclecase	SE	Salt Fork Vermilion River	(Vermilion River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20949	Villosa lienosa	Little Spectaclecase	SE	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20951	Villosa lienosa	Little Spectaclecase	SE	Salt Fork Vermilion River	(Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 25752	Villosa lienosa	Little Spectaclecase	SE	Salt Fork Vermilion River	(Wabash River Dr.)	Champaign	Illinois	USA	2001
INHS 26702	Amblema plicata	Threeridge	OK	Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2001
INHS 4220	Anodontoides ferussacianus	Cylindrical papershell	OK	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	Champaign	Illinois	USA	1987
INHS 26703	Anodontoides ferussacianus	Cylindrical papershell	OK	Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2001
INHS 4221	Fusconaia flava	Wabash pigtoe	OK	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	Champaign	Illinois	USA	1987
INHS 26704	Fusconaia flava	Wabash pigtoe	OK	Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2001
INHS 26705	Lasmigona complanata	White Heelsplitter	OK	Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2001
INHS 21027	Toxolasma lividus	Purple Lilliput	SE	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	[Champaign]	Illinois	USA	1918

INHS Mollusk Collection Database Search Results

INHS 21017	Toxolasma parvus	Lilliput	OK	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	[Champaign]	Illinois	USA	1920
INHS 21025	Toxolasma parvus	Lilliput	OK	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 21026	Toxolasma parvus	Lilliput	OK	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20939	Villosa lienosa	Little Spectaclecase	SE	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20940	Villosa lienosa	Little Spectaclecase	SE	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	[Champaign]	Illinois	USA	1918
INHS 20954	Villosa lienosa	Little Spectaclecase	SE	Spoon River	(Salt Fork Vermilion River-Wabash River Dr.)	[Champaign]	Illinois	USA	1920
INHS 26706	Villosa lienosa	Little Spectaclecase	SE	Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2001
INHS 2067	Anodontoides ferussacianus	Cylindrical papershell	OK	trib. Saline Branch Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1988
INHS 24505	Anodontoides ferussacianus	Cylindrical papershell	OK	trib. Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2000
INHS 24507	Anodontoides ferussacianus	Cylindrical papershell	OK	trib. Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2000
INHS 24506	Corbicula fluminea	Asian clam	Introduced	trib. Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2000
INHS 24508	Corbicula fluminea	Asian clam	Introduced	trib. Spoon River	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2000
INHS 19753	Anodontoides ferussacianus	Cylindrical papershell	OK	trib. Upper Salt Fork Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1976
INHS 19751	Anodontoides ferussacianus	Cylindrical papershell	OK	Upper Salt Fork Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	1976
INHS 26379	Anodontoides ferussacianus	Cylindrical papershell	OK	Upper Salt Fork Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2001
INHS 26380	Strophitus undulatus	Creeper	OK	Upper Salt Fork Drainage Ditch	(Salt Fork Vermilion River Dr.)	Champaign	Illinois	USA	2001

Bird Inventory

Historical Inventory of Bird Species in the Salt Fork Watershed (information courtesy Beth Chato, Champaign County Audubon Society).

See attached lists for:

- Busey Woods
- Perkins Road
- Homer Lake

BUSEY WOODS
HISTORICAL LIST
CUMMULATIVE THROUGH
2005

59 acres
Private to 1971 when donated to U/I
Leased to UPD 1974
Purchased by UPD 1991

These records begin with data from
John Zimmerman from '59-'63.
Included is Lois Hartel's breeding study from '62.
There is a gap until Beth Chato began keeping records in '75.
Sightings are from many observers, especially Robert Chapel.

2004
Woods were officially closed all summer for boardwalk construction, so breeding survey was limited

2005
Bioblitz conducted June 24-25. Jeff Brawn, Dave Thomas, Dave Enstrom Helen Parker, Beth Chato, Mike Ward gave intense coverage.
54 species seen during Bioblitz √*

												CLP-Crystal Lake Park		
					#Observers			1			1			6+
					# Visits			4			2			5
					# Hours			4			4			58
	Historical list 227 species	1st yr seen	highest breed evid	1st year high	Status of species in County + comments	2003 seen 128 sp	03 date 1st seen	03 breeding evidence 37	04 seen 138 sp	04 date 1st seen	2004 breeding evidence 44	05 seen 129	05 date 1st seen	05 breeding evidence 60
1	Grebe, Pied Billed	76			occasional nests in county									
2	Cormorant, Db Cr	97			migrant	√						√	5/22	
3	Heron, Great Blue	75	F	79	exploring woods last 2 years	√			√	4/4	/	√*	4/17	F
4	Little Blue	99			migrant				√	4/22				
5	Green	62	NY	62	nests observed on West Pond	√	5/10	P	√	4/23	/	√*	4/17	/
6	Egret, Great	75			migrant				√	4/19				
7	Night Heron, Bl. Cr.	75			migrant				CLP	3/31				
8	Yellow Crown.	62	NY	62	2 pair nested 62 & 63									
9	Bittern, Least	77			rare nester in County									
10	American	77			migrant									
11	Vulture, Turkey	75			flies over	√			√	4/3		√	4/3	
12	Goose, Wt. Fronted	92			flies over				CLP	12/13				
13	Snow	85			flies over									
14	Canada	74	F	04	flies over	√			√	3/7	f	√	1/10	
15	Ross'	97			flies over									
16	Duck, Wood	60	FL	62	nests regularly on West pond	√	5/2	P	√	3/2	/	√*	3/13	/

17	Mallard	85	FL	85	fledglings on West Pond in past	√	5/10	P	√	3/14	P	√*	2/26	P
18	Pintail	81			migrant									
19	Teal, Blue winged	74			migrant	√			√	4/19		√	4/10	
20	Green - winged	76			migrant									
21	Shoveller	82			migrant									
22	Duck, Ring-necked	84			migrant									
23	Wigeon, American	93			migrant									
24	Scaup, Lesser	85			migrant									
25	Merganser, Hooded	87			migrant									
26	Common	03			migrant	√			√					
27	Hawk, Sharp-shinned	75			fly over	√								
28	Cooper"s	62	NY	1	nest not found this year	√	3/16	ON	√	2/9	ON	√	1/10	T
29	Goshawk	62			winter				√	1/1				
30	Hawk, Red-tailed	79	T	94	nesting somewhere in area	√						√	3/19	T
31	Red-shoulder	75			nests at Allerton, Middlefork				√	3/2				
32	Broadwinged	85	P	85	potential for nest	√						√	4/17	
33	Rough-legged	60			winter fly over				√	4/19				
34	Eagle, Golden	77			flew over one time									
35	Harrier, Northern	97			flies over									
36	Osprey	80			flies over									
37	Falcon, Peregrine	81			flies over				√	4/17				
38	Merlin	78			migrant	√						√	4/9	
39	Kestrel	75	X	75	could nest on fill				√	10/18				
40	Bobwhite	62	X	62	now scarce in our area				√	10/10				
41	Pheasant, Ring-neck				past resident on golf course									
42	Rail, Virginia	60			migrant									
43	Sora	82			migrant									
44	King	78			migrant									
45	Moorhen, Common	80			on Saline one spring									
46	Coot	80			has nested in county									
47	Crane, Sandhill	76			migrant							√	4/24	
48	Plover, Golden	89			migrant							√	5/1	
49	Semi-	77			summer									

	palmated				resident									
50	Killdeer	76	F	76	summer resident	√	7/3	X	√	3/7		√*	2/26	F
51	Yellowlegs, Greater	59			migrant				√	10/24				
52	Lesser	85			migrant									
53	Sandpiper, Solitary	78			migrant	√			√	4/25		√	4/17	
54	Sandpiper, Least	60			migrant									
55	Spotted	89			nests in county									
56	Pectoral	77			migrant									
57	Woodcock	62	C	76	may nest in south end some yrs.	√					C	√	2/26	X
58	Snipe	59			migrant									
59	Gull, Ringbilled	75			flying over				√	3/7				
60	Gull, Bonaparte's	78			flying over									
61	Tern, Black	OO			flying over									
62	Forster's	94			fly over	√								
63	Pigeon, Rock	85	F	75	resident, flies over	√			√	4/12		√*	2/26	F
64	Mourning	62	ON	62	resident	√	5/10	P	√	1/1	C	√*	1/1	FL 5/24
65	Eurasian Collared	04	O	04	recent occasional resident	√	**9/21**	X	√	10/24				
66	Cuckoo, Black-billed	78	C	79	migrant, rarely in summer				√	9/5				
67	Cuckoo, Yellow-billed	62	NE	62	no nest last few years	√			√	5/9		√*	5/22	X
68	Owl, Screech	59	NE	05	radio tracked this year	√	1/6	X	√	1/30	T	√*	3/16	NY 6/25
69	Great Horned	76	ON	76	no nest found last two years	√	1/6	X	√	1/30	/	√	1/9	/
70	Saw Whet	74			seen twice in March in past									
71	Barred	05	T	05	resident in county, new to Busey							√*	6/19	T
72	Long-eared	75			winter									
73	Whip-poor-will	75			migrant									
74	Nighthawk	62	F	62	flying over	√			√		f	√*	5/19	F
75	Swift, Chimney	59	F	62	flying over	√	7/14	/	√	5/2	f	√*	5/19	F
76	Hummingbird, Rb.thr.	59	T	62	summer resident	√			√	5/15	/	√*	5/15	T
77	Kingfisher, Belted	59	ON	77	nests in Saline banks	√			√	3/12		√*	4/3	X
78	Woodpecker, Red-headed	59	ON	62	now scarce in our area				√	5/2		√	3/19	
79	Red-bell.	59	ON	62	resident, regular nester	√	7/3	T	√	1/1	T	√*	1/10	IM 8/10
80	Sapsucker,Yellow-bell.	59			migrant	√			√	2/9		√	3/20	

81	Woodpecker, Downy	59	ON	76	resident, regular nester	√	6/9	FL	√	1/1	T	√*	1/14	FL 5/29
82	Hairy	59	ON	80	resident, 1 pair	√			√	5/30	T	√*	4/12	NY 5/22
83	Black-backed Woodpecker				one old record, winter R Cooper									
84	Flicker, Northern	59	ON	62	summer, winters regularly	√	7/3	FL	√	3/21	T	√*	4/3	IM 7/1
85	Woodpecker, Pileated	83	/	83	resident selected spots				√	4/20				
86	Flycatcher Olive-sided	59			migrant									
87	Pewee, Eastern	59	FL	76	summer resident	√			√	5/15	T	√*	5/8	FL 6/25
88	Western	84			one record, Robert Chapel									
89	Flycatch.,Yellow-bell.	79			migrant	√			√	5/24		√	8/24	
90	Flycatcher, Acadian	76	T	85	occasional nester				√	5/30		CLP	5/7	
91	Alder	77			migrant				√	9/5				
92	Willow	75	T	75	nests at Meadowbrook									
93	Least	74	X	78	rare breeder in our area	√			√	5/15		√	5/8	
94	Phoebe, Eastern	59	ON	76	nests under bridges	√			√	3/7		√*	3/20	T 6/25
95	Flycatcher, Great Cr.	60	FL	62	summer resident	√			√	5/2	T	√*	5/7	T 6/25
96	Kingbird, Eastern	77	0N	78	summer resident				CLP		fL	CLP	5/7	FLCLP
97	Vireo, White-eyed	60	FL	77	no nests in last few years	√	6/16	X	√	4/25	T	√	4/28	
98	Bell's	76	P	85	nests at Meadowbrook									
99	Solitary	59			migrant	√			√	5/2		√	4/12	
100	Yellow-throated	76	X	05	new to breeding bird list	√			√	5/9		√*	4/29	X 6/25
101	Warbling	60	FL	76	summer resident	√			√	4/25		√*	4/28	A 6/25
102	Philadelphia	59			migrant	√			√	5/2		√	5/22	
103	Red-eyed	59	FL	76	summer resident	√	7/14	T	√	5/2	fL	√*	5/9	IM 8/10
104	Jay, Blue	59	ON	62	resident	√		/	√	1/1	NB	√*	1/10	FL 6/30
105	Crow, American	59	/	62	resident	√		/	√	3/7	f	√*	1/18	X 6/25
106	Lark, Horned	77			flies over							√	2/26	
107	Martin, Purple	62	F	62	flies over							√	4/17	
108	Swallow, Tree	75			flies over				√	4/4				
109	Rough-winged	77	P	98	summer resident	√						√*	5/1	T 6/25
110	Bank	78			nests at Riverbend									

111	Barn*	60	ON	75	used to nest under bridge	√			√	5/9		√*	5/8	/6/25
112	Cliff	OO			nests at Homer Lake									
113	Chickadee, Black-cap.	62	P	00	pair in Busey appear to be mixed,	√	7/14	/	√	3/21	fL	√*	1/10	T 7/1
114	Carolina	77	FL	89	one of each species	√		T	√	3/14	/	√*	1/10	T 6/24
115	Titmouse, Tufted	59	FL	00	recently returned to Woods	√	5/11	X	√	3/12	T	√	5/9	T 6/24
116	Nuthatch, Red-breasted	59	/	95	winter	√			√	9/19		√	5/8	
117	Nuthatch, White-br.	62	FL	76	residen, at least 2 pair	√	5/14	X	√	1/1	P	√*	1/10	T 76/24
118	Creeper, Brown	59			many winter in Busey	√			√	2/18		√	1/14	
119	Wren, Carolina	59	FL	76	resident	√	7/14	FL	√	1/1	T	√*	1/14	NB 4/12
120	Bewick's	73			rare migrant									
121	House	59	ON	62	summer resident	√	6/9	FL	√	4/23	ON	√*	4/23	FL 6/30
122	Winter	59			winter regularly in Busey	√			√	1/30		√	1/14	
123	Sedge	81			nests in county									
124	Marsh	76			migrant	√			√	10/18				
125	Kinglet, Golden-crown	60			migrant	√			√	3/21		√	3/20	
126	Ruby-crowned	59			migrant	√			√	4/4		√	4/10	
127	Gnatcatcher, Blue-gray	60	FL	84	nested 03	√	6/9	FL	√	3/28	FL	√*	4/11	T 6/25
128	Bluebird, Eastern	76			nests on golf course	√			√	3/7		√	4/5	
129	Veery	59			migrant	√			√	5/2		√	5/8	
130	Thrush, Gray-cheeked	59			migrant	√			√	9/23		√	5/7	
131	Swainson's	59			migrant	√			√	5/2		√	4/12	
132	Hermit	59			migrant	√			√	4/12		√	4/3	
133	Wood	62	ON	76	declining nester	√			√	5/2		√*	5/22	X 6/25
134	Robin, American	59	ON	62	many now winter	√	6/9	ON	√	1/1	fL	√*	2/26	ON 4/23
135	Catbird, Gray	59	ON	75	summer resident	√	7/14	M	√	4/25	T	√*	4/27	FL 6/19
136	Mockingbird	59	FL	79	now scarce in our area	√								
137	Thrasher, Brown	59	FL	75	summer resident	√	7/14	'/	√	3/28	T	√*	1/3	ON 6/19
138	Starling, European	59	ON	62	resident	√	5/30	0N	√	1/1	fL	√*	1/11	ON
139	Pipit, Water	81			flying over									
140	Waxwing, Cedar	59	FL	77	resident	√	7/14	X	√	5/3	X	√*	5/1	T 6/24

141	Warbler, Blue-winged	76			Busey is of Statewide	√			√	5/2		√	8/31	
142	Golden-winged	60			significance as a rest area	√						√	8/26	
	(Lawrence's) hybrid	86			for migrating warblers									
	(Brewster's) hybrid	93			in spring and fall. It is possible									
143	Tennessee	60			to see almost all of these	√			√	5/2		√	5/8	
144	Orange-crowned	60			in one day in May if conditions	√			√	5/2		√	4/27	
145	Nashville	60			are right.	√			√	4/25		√	4/27	
146	Parula	63	FL	88	has nested in Busey	√			√	4/18		√	4/29	
147	Yellow	59	X	88	nests at Meadowbrook	√						√	4/27	
148	Chestnut-sided	59	X	83	migrant	√			√	5/9		√	5/15	
149	Magnolia	60			migrant	√			√	5/15		√	5/16	
150	Cape May	75			migrant	√			√	5/2		√	8/31	
151	Black-throated Blue	59			migrant	√			√	10/13				
152	Yellow-rumped	59			migrant	√			√	3/31		√	4/3	
153	Black-throated Green	59			migrant	√			√	5/2		√	4/10	
154	Blackburnian	59			migrant	√			√	5/16		√	5/22	
155	Yellow-throated	75			nests at Lake-of- Woods				√	4/18		√	4/11	
156	Pine	75			migrant	√			√	5/15		√	5/1	
157	Prairie	77			migrant	√								
158	Palm	60			migrant	√			√	4/25		√	5/1	
159	Bay-breasted	59			migrant	√			√	5/9		√	9/4	
160	Blackpoll	60			migrant	√			√	9/19		√	10/9	
161	Cerulean	75	X	85	migrant							CLP	5/7	
162	WARBLER,BLACK & WHITE	59	X	85	occasionally summers	√			√	5/2	/	√	4/10	
163	Redstart. American	59	FL	85	occasionally summers	√			√	5/2		√	5/7	
164	WARBLER, PROTHONOTARY	60	X	05	ooccasionally summers							√*	4/12	X 6/25
165	Worm-eating	76			migrant				√	4/29		CLP	5/7	
166	Swainson's	85			one record									
167	Ovenbird	59	T	78	used to nest in area	√			√	5/2		√	5/8	
168	Waterthrush, North.	60			migrant	√			√	4/25		√	4/27	
169	Louisiana	78			nest ot Lake-of-Woods one year	√			√	4/11		√	4/10	

170	Warbler, Kentucky	60			migrant							√	5/18	
171	Connecticut	76			migrant									
172	Mourning	63			migrant	√						√	5/18	
173	Common Yellowthroat	59	FL	76	summer resident	√			√	4/25		√*	5/22	X 6/24
174	Warbler, Hooded	75			migrant				√	5/8		√	5/22	
175	Wilson's	59			migrant	√			√	5/15		√	5/22	
176	Canada	60			migrant	√			√	9/5		√	5/22	
177	Chat, Yellow-breast.	60	P	85	summer resident									
178	Tanager, Summer	60	T	76	rare summer				√	5/2		√	4/28	
179	Scarlet	60	FL	76	scarce summer resident	√			√	5/2		√	5/1	
180	Towhee, Rufous-sided	59	FL	75	summer resident	√			√	3/12		√*	3/27	X 6/25
181	Sparrow, Tree	62			winter	√			√	2/9		√	1/31	
182	Chipping	60	FL	79	summer resident	√	7/14	FL	√	4/12	fL	√*	4/3	T 6/25
183	Clay-color	OO			migrant				√	10/18				
184	Field	59	FL	62	summer resident	√			√	3/28		√	4/10	
185	Vesper	76			summer resident									
186	Lark	89			rare summer									
187	Savannah	84			summer resident									
188	Henslow's	77			scarce summer resident									
189	Le Conte's	94			migrant									
190	Sparrow, Sharp-tailed	94			migrant									
191	Fox	59			migrant	√			√	2/14		√	3/19	
192	Sparrow, Song	59	FL	77	summer resident	√			√	3/12		√*	3/7	T 7/1
193	Lincoln's	59			migrant	√			√	10/10		√	10/2	
194	Swamp	59			migrant	√			√	3/21		√	4/24	
195	White-throated	59			now winters at feeders	√			√	1/1		√	1/1	
196	White-crown.	60			migrant	√			√	5/8		√	5/7	
197	Harris'	78			infrequent migrant									
198	Junco, Dark-eyed	59			winter	√			√	1/1		√	1/10	
199	Longspur, Lapland	81			fly over, winter									
200	Smith's	82			fly over									
201	Bunting, Snow	81			fly over, winter									
202	Cardinal, Northern	59	ON	76	resident	√	7/14	FL	√	1/1	fL	√*	1/10	FL 6/18

203	Grosbeak, Rose-br.	59	FL	77	occasionally summers	√			√	5/2		√	5/7	
204	Evening	75			migrant									
205	Blue	85			nests at Middlefork									
206	Bunting, Indigo*	60	FL	76	summer resident	√	7/14	FL	√	4/30	T	√*	4/23	NE 6/18
207	Dicksissel	91			summer resident									
208	Bobolink	60			flies over	√			√	5/9				
209	Blackbird, Red-wing.	59	FL	77	summer resident	√			√	3/21		√*	2/26	T 6/24
210	Meadowlark, Eastern	59			summer	√			√	4/11		√	5/1	
211	Blackbird, Yellow-hd.	80			one record									
212	Rusty	59			declining							√	3/20	
213	Brewer's	78			occasional migrant									
214	Grackle, Common	59	FL	76	summer resident	√	7/3	FL	√	2/18	fL	√*	3/6	FL 8/10
215	Cowbird, Brown-hd.	59	FL	76	nest parasite	√	7/3	X	√	3/21	fL	√*	3/6	FL 8/10
216	Oriole, Orchard	75	ON	76	summer resident	√						CLP	5/7	
217	Baltimore	60	ON	76	summer resident	√			√	4/25		√*	5/6	T 6/25
218	Grosbeak, Pine	93			winter, rare			/						
219	Finch, Purple	59			migrant	√			√	4/11		√	1/27	
220	House*	84	ON	90	resident	√			√	1/1	fL	√*	1/10	FL 6/30
221	Crossbill, Red	80			winter, sporatic									
222	White-winged	78			winter, sporatic									
223	Redpoll, Common	81			winter, sporatic									
224	Siskin, Pine	76	FL	98	summers occasionally				√	10/13				
225	Goldfinch, American	59	ON	76	resident	√	7/3	P	√	1/1	P	√*	1/10	FL 8/8
226	House Sparrow	59	ON	76	resident	√	7/3	FL	√	1/1	fL	√*	1/10	FL6/30
227	Sparrow, Eurasian tree	83			one record, Earl Long									

CONFIRMED EVIDENCE OF BREEDING

UN-used nest found

FL-fledgling

ON-on nest

FY adult with food for young

C- courtship

N-visiting probable nest site

A-agitated behaviour or calls from adult

POSSIBLE EVIDENCE OF BREEDING

/-observed in suitable habitat

small x- species present but no details known

NE-nest with eggs	x-singing male		
NY nest with young	OTHER		
PROBABLE EVIDENCE OF BREEDING	F- flying over area		nc- not counted
M- multiple singing males (7 or more)	O-observed during the breeding season not believed to be breeding		
P -pair		Observers:	
T- holding territory			RC= Robert Chapel
			EC= Elizabeth Chato

PERKINS ROAD SITE
HISTORICAL LIST
CUMMULATIVE 1970'S+

Leased to UPD 2002
30 acres wetland project

	Historical list 201 species	seen since 2002	Status in area	05 date 1st	05 breed evid
	#Species	131		seen	49
	# Observers				1
	# Visits				4
	# Hours				7.5
1	Grebe, Pied-billed	03	M		
2	Grebe, Horned		M		
3	Grebe, Eared		M		
4	Double Crested Cormorant		M		
5	BITTERN, AMERICAN	03	M		
6	Bittern, Least		M		
7	Heron, Great Blue	02	S	19-Feb	/
8	HERON, LITTLE BLUE	05	M	15-Aug	
9	Green Backed	02	S	15-Jun	T
10	Night Heron, Black-crowned		M		
11	Vulture, Turkey	02	M		
12	Goose, Canada	02	R	19-Feb	
13	Duck, Wood	02	S	14-Jan	FL
14	Gadwall	02	M		
15	Wigeon, A.	02	M	6-Mar	
16	Black	02	M		
17	Mallard	02	S	19-Feb	/
18	Teal, Blue winged	02	S	5-May	
19	Shoveller	03	M	14-Feb	
20	Pintail	05	M	14-Feb	
21	Teal, Green -winged	02	M		
22	BUFFLEHEAD	03	M		
23	DUCK, REDHEAD	02	M		
24	Ring-necked		M		
25	Scaup, Lesser	05	M	14-Feb	
26	Merganser, Hooded	03	M		
27	Harrier, Northern		M		
28	Hawk, Sharp-shinned	02	M		
29	Cooper"s	02	R	15-Aug	T
30	Red-shoulder		M		
31	Broadwinged	04	M		

32	Hawk, Red-tailed	02	R	5-May	/
33	MERLIN	02	M		
34	Kestrel	02	S	5-May	
35	Pheasant, Ring-neck	02	R	6-Mar	X
36	Rail, Yellow		M		
37	Rail, Virginia		M		
38	SORA	04	M	5-May	
39	COOT	02	M		
40	Plover, Black-bellied		M		
41	Plover, Golden		M		
42	Semi-palmated		M		
43	Killdeer	02	S	15-Jun	M
44	Yellowlegs, Greater	05	M	5-May	
45	Lesser	03	M	5-May	
46	Sandpiper, Solitary	02	M	5-May	
47	Willet		M		
48	Sandpiper Spotted	02	S	23-Jun	X
49	Upland		M		
50	Godwit, Hudsonian		M		
51	Turnstone, Ruddy		M		
52	Sanderling		M		
53	Sandpiper, Semi-palmated	05	M	15-Aug	
54	Western		M		
55	Least	03	M	15-Aug	
56	White-rumped		M		
57	Baird's		M		
58	Pectoral	02	M	25-Aug	
59	Dunlin		M		
60	Sandpiper, Stilt		M		
61	Buff-breasted		M		
62	Ruff		M		
63	Dowitcher, Short-billed		M		
64	Dowitcher, Long-billed		M		
65	Woodcock	03	S	13-Mar	/
66	Snipe	03	M		
67	Phalarope, Wilson's		M		
68	Red-necked		M		
69	Gull, Laughing		M		
70	Franklin's		M		
71	Ringbilled	05	M	19-Feb	
72	Sabine's		M		
73	Tern, Caspian		M		
74	Common		M		
75	Forster's		M		
76	Black		M		
77	Pigeon, Rock	02	R	5-Sep	
78	EURASIAN COLLARED	05	R	23-Jun	F
79	Dove, Mourning	02	R	6-Mar	FL

80	Cuckoo, Yellow-billed	04	S		
81	Cuckoo, Black-billed	04	S		
82	Owl, Great Horned		R		
83	Screech	04	R		
84	Nighthawk	03	S		
85	Swift, Chimney	02	S	5-May	F
86	Hummingbird, Ruby-throated	04	S		
87	Kingfisher, Belted	03	S		
88	Woodpecker, Red-headed	03	S		
89	Red-bellied	03	R	15-Aug	X
90	Sapsucker,Yellow-bell.	03	M		
91	Woodpecker, Downy	02	R	15-Jun	FL
92	Flicker, Northern	02	S	15-Jun	T
93	Flycatcher Olive-sided		M		
94	Pewee, Eastern	05	S	15-Jun	X
95	Alder		M		
96	Willow	02	S	15-Jun	p/T
97	Least		M		
98	Phoebe, Eastern	02	S	15-May	
99	Flycatcher, Great Cr.	04	S	28-Jul	FL
100	Kingbird, Eastern	03	S	15-Jun	T
101	Vireo, White-eyed	04	M		
102	Bell's		M		
103	Yellow-throated	06	M		
104	Blue-headed		M		
105	Warbling	02	S	15-May	T
106	Philadelphia	03	M		
107	Red-eyed		S		
108	Jay, Blue	02	R	6-Mar	T
109	Crow, American	02	R	25-Aug	/
110	Lark, Horned		R		
111	Martin, Purple		S		
112	Swallow, Tree	04	M	15-Jun	/
113	Rough-winged	02	S	15-Jun	M
114	Bank	03	M		
115	Cliff	05	M	28-Jul	/
116	Barn	02	S	15-Jun	M
117	Chickadee, Carolina	02	R		
118	Titmouse, Tufted	02	R	13-Mar	
119	Nuthatch, White-br.	02	R		
120	Creeper, Brown	06	W		
121	Wren, Carolina	03	R	15-Jun	FL
122	House	02	S	5-May	FL

123	Winter	03	W		
124	Sedge	06	M		
125	Marsh	03	M		
126	Kinglet, Golden-crown		M		
127	Ruby-crowned	02	M		
128	Gnatcatcher,Blue-gray	02	S	5-May	X
129	Veery		M		
130	Thrush, Gray-cheeked		M		
131	Swainson's	03	M		
132	Hermit	06	M		
133	Wood		M		
134	Robin, American	02	S	5-May	FL
135	Catbird,Gray	02	S	15-Jun	FL
136	Thrasher, Brown	02	S	5-May	FL
137	Starling, European	02	R	15-Jun	FL
138	Pipit, American		M		
139	Waxwing, Cedar	02	S	15-Jun	FL
140	Warbler, Blue-winged		M		
141	Golden-winged	03	M		
142	Tennessee	03	M		
143	Orange-cr.	02	M		
144	Nashville	03	M		
145	Parula	02	M		
146	Yellow	02	S	5-May	T
147	Chestnut-sided	03	M		
148	Magnolia	03	M		
149	Cape May		M		
150	Yellow-rumped	02	M		
151	Black-thr. Green	03	M		
152	Prairie		M		
153	Palm	02	M		
154	Bay-breasted		M		
155	Blackpoll		M		
156	Black & Wh.		M		
157	Redstart, American	03	M		
158	Warbler, Worm-eating		M		
159	Ovenbird	03	M		
160	Waterthrush, North.	03	M		
161	Louisiana		M		
162	Warbler, Kentucky		M		
163	Connecticut		M		
164	Mourning		M		
165	Yellowthroat, Common	02	S	5-May	T
166	Warbler, Wilson's		M		
167	Canada		M		
168	Chat, Yellow-breast.	02	S	15-Jun	T
169	Tanager, Scarlet		M		
170	Towhee, Rufous-sided	02	S		
171	Sparrow, Tree	06	W		
172	Chipping	02	S	5-May	X
173	Clay-color		M		

174	Field	02	S	15-May	
175	Vesper		M		
176	Savannah		M		
177	Sparrow, Grasshopper		M		
178	LeConte's		M		
179	Nelson's Sharp-tail.	02	M		
180	Fox	03	M	13-Mar	
181	Song	02	S	6-Mar	FL
182	Lincoln's	02	M		
183	Swamp	02	M	13-Mar	
184	White-throated	02	M	7-May	
185	White-crown.	02	M		
186	Junco, Dark-eyed	02	W	13-Mar	
187	Cardinal, Northern	02	R	6-Mar	FL
188	Grosbeak, Rose-br.	02	S		
189	Bunting, Indigo	02	S	15-Jun	FL
190	Dicksissel	03	S		
191	Blackbird, Red-wing.	02	S	16-Mar	ON
192	Meadowlark, Eastern	04	S	5-May	P
193	Blackbird, Rusty	05	M	13-Mar	
194	Grackle, Common	02	S	15-Jun	FL
195	Cowbird, Brown-hd.	02	S	5-May	X
196	Oriole, Orchard	03	S	12-Jul	A
197	Baltimore	02	S	15-Jun	FL
198	Finch, Purple		M		
199	House	02	S	6-Mar	FL
200	Goldfinch, American	02	S	5-May	FL
201	House Sparrow	02	S	6-Mar	ON

KEY:

SEASONAL STATUS

M Migrant
R Resident
S Summer resident
W Winter resident

BREEDING EVIDENCE

Confirmed :
FL-fledgling, IM immature bird
FY-adult with food for young
MP-many nesting pairs
Ny-nest with young
NE-nest with eggs
ON-on nest

Probable:

P -pair
T- holding territory
M- multiple singing males (7 or more)
C- courtship
A-agitated behaviour or calls from adult
N-visiting probable nest site
P/T pair on territory

Possible:

/- present during breeding season
X- singing in suitable habitat
F- flying over area
O-observed during the breeding season

HOMER LAKE
FOREST PRESERVE

HISTORICAL LIST

CUMMULATIVE

1983+

800 acres
Dam completed
1969
Owned by CCFPD
since 1992

First recorded breeding bird study done in 1983

Included in Illinois Breeding Bird Census, 1986-91

Much of the Homer Lake Preserve was originally farmland which is heavily overgrown
with non-native honeysuckle and autumn olive. The Forest Preserve District is now working
hard to reclaim some of these areas. It does have good river corridor habitat and several woodland

remnants as well as the lake. Notable bird life includes the Cliff Swallow colony by the dam and resident Pileated Woodpeckers. There are several unusual summer warbler records.

	#Observers											2			2
	# Visits											4			6
	# Hours											6			14
	Historical list 230	Highest breeding evidence	Status of species in County + comments	03 seen 104	03 date 1st	03 Breeding evidence	04 seen 114	04 date 1st	04 Breeding evidence	05 seen 115 species	05 date 1st seen	05 Breeding 61 species	06 seen 128 species	06 date 1st seen	06 breeding 75 species
1	Loon, Common		migrant, occasional summer												
2	GREBE, PIED-BILLED*	FL 85	breeds in suitable habitat							√	4/9		1	3/17	
3	Horned		migrant							√	3/22				
4	Eared		migrant												
5	Cormorant, Double Crested		migrant	1	10-May		√	19-Sep		√	4/23				
6	Bittern, American		migrant												
7	Least		migrant	1											
8	Heron, Great Blue	P85	several colonies in area	1	3-May	/	√	8-May	/	√	4/9	/	1	3/17	
9	Egret, Great		migrant							√	7/29	O			
10	Heron, Little Blue		migrant				√	26-Aug		√					
11	HERON, TRI-COLORED		Rare species, new to list '03		18-May										
12	Egret, Cattle		migrant												
13	Heron, Green	P85	breeds	1	3-May	/	√		P	√	5/7		1	5/6	
14	Night Heron, Black-Crowned		migrant				√	21-Aug		√	5/10		1	4/11	
15	IBIS, WHITE		rare species, new to list '05							√	7/31	O			

16	Vulture, Turkey	/85	probably nests somewhere	1	10-May	/	√	8-May	/	√	4/9		1	4/14	
17	GOOSE, WHITE-FRONTED		migrant, new to list										1	3/18	
18	Goose, Canada	ON86	resident	1	3-May	FL	√	8-May	FL	√	5/7	FL	1	2/17	
19	CACKLING		new to list										1	12/2	
20	Snow		migrant										1	12/2	
21	Swan, Tundra		migrant										1	3/17	
22	Duck, Wood	FL83	breeds				√	18-Apr	NE	√	4/9	/	1	3/30	
23	Teal, Green -winged		migrant				√	14-Apr							
24	Mallard	FL85	breeds	1	3-May	P	√	14-Apr	/	√	7/31	FL	1	3/17	
25	Pintail, Northern		migrant												
26	Teal, Blue-winged		migrant				√	14-Apr		√	4/9		1	3/17	
27	Shoveller, Northern		migrant				√	14-Apr					1	1/4	
28	Gadwell		migrant												
29	Wigeon, American		migrant										1	3/30	
30	Canvasback		migrant												
31	Redhead		migrant												
32	Duck, Ring-necked		migrant							√	3/22				
33	Scaup, Lesser		migrant							√	3/22				
34	Goldeneye, Common		migrant										1	12/2	
35	Bufflehead		migrant												
36	MERGANSER, HOODED	/94	breeds on Middle Fork										1	3/17	
37	Common		migrant												
38	Red-breasted		migrant				√	11-May		√	3/22				
39	Duck, Ruddy		migrant												
40	Eagle, Bald		migrant, nest in Vermilion County										1	4/7	
41	OSPREY**		migrant	1	3-May		√	2-May		√	5/7		1	4/7	
42	HARRIER, NORTHERN**	/86	migrant	1	3-May					√					
43	Hawk, Sharp-shinned		migrant												
44	Cooper's	X02	resident							√	5/7	T	1	3/17	/
45	Goshawk, Northern		winters												
46	HAWK, RED-SHOULDERED*	/94	some nesting records in County										1	1/1	/
47	Broadwinged		migrant				√	6-May					1	5/4	
48	Red-tailed	FL04	resident	1	10-May	FL	√	8-May	FL	√	4/9	T	1	2/17	UN
49	Rough-legged		winters												
50	Eagle, Golden		migrant												
51	Merlin		migrant												
52	FALCON,		migrant												

	PEREGRINE**														
53	PRAIRIE		rare migrant or winter visitor												
54	Kestrel, American		resident	1									2-Jan	1/1	
55	Pheasant, Ring-necked	FL86	resident	1	3-May	T	√	14-Apr	X	√	7/29	T	1	4/14	T
56	Turkey, Wild	/94	resident on all preserves				√		/				1	10/6	X
57	Bobwhite	T 06	very few in our area now				√		X				1	6/28	T
58	Rail, Virginia		migrant												
59	Sora		migrant												
60	Coot	/96	has occasionally bred in County				√	8-May		√	5/7				
61	Crane, Sandhill		migrant												
62	Plover, Black-bellied		migrant												
63	Golden		migrant	1	10-May										
64	Killdeer	P94	breeds	1	10-May	X	√		/	√	5/7		1	2/27	
65	Yellowlegs, Greater		migrant							√	5/7				
66	Lesser		migrant							√	5/7				
67	Sandpiper, Solitary		migrant				√	8-May		√	4/30		1	4/5	
68	Willet		migrant												
69	Sandpiper, Spotted	/85	breeds	1	3-May		√	8-May		√	5/7		1	5/6	/
70	Upland		breeds Monticello Field station												
71	Godwit, Hudsonian		migrant, Jim Smith's record												
72	Semi-palmated		migrant												
73	Western		migrant												
74	Baird's		migrant												
75	Least		migrant												
76	Pectoral		migrant												
77	Dunlin		migrant												
78	Sandpiper, Stilt		migrant												
79	Dowitcher, Short-Billed		migrant												
80	Long-Billed		migrant												
81	Woodcock, American	FL86	on woodcock walk	1			√		C				1	3/15	C
82	Snipe, Common		migrant										1	3/7	
83	Gull, Bonaparte's		migrant												
84	Herring		migrant												
85	Ringbilled		migrant				√	8-May					1	3/30	
86	Tern, Common		migrant												
87	Forster's		migrant												

88	Tern, Black	O85	migrant												
89	Pigeon, Rock	/85	resident												
90	Dove, Mourning	ON85	resident	1	3-May	ON	√	14-Apr	T	√		T	1	3/17	C
91	Cuckoo, Black-billed	X87	unusual in summer												
92	Yellow-billed	FL85	breeds	1	2-Jul	T	√	31-Jul	T	√	7/29	T	1	8/1	X
93	Owl, Screech	FL85	resident	1	3-May	/	√		X	√		T	1		X
94	Great Horned	FL85	resident	1			√	2-May	FL						
95	Barred	/86	resident				√		X	√	5/7	X	1	4/14	X
96	Long-eared		none seen in usual winter roost												
97	Short-eared		winters												
98	Nighthawk		nests in town												
99	Whip-poor-will		migrant												
100	Swift, Chimney	NB 96	breeds	1	3-May	/	√	8-May	/	√	5/7	/	1	5/6	/
101	Hummingbird, Ruby-throated	/86	breeds	1	10-May		√	2-Jul	/	√	5/7	/	1	5/6	/
102	Kingfisher, Belted	FY86	occasionally overwinters	1	10-May	/	√	8-May	T	√	4/7	X	1	1/9	X
103	WOODPECKER, RED-HEADED	FL85	decreasing in area	1	10-May		√	2-May	T	√	4/30	X	1	6/28	X
104	Red-bellied	FL85	resident	1	3-May	X	√	14-Apr	T	√	4/9	FL	1	1/9	T
105	Sapsucker, Yellow-bellied		migrant				√	14-Apr	X	√	4/9		1	3/30	
106	Woodpecker, Downy	FL86	resident	1	3-May	T	√	14-Apr		√	4/9	X	1	2/7	FL
107	Hairy	FL88	resident	1	2-Jul	FL	√	8-May		√	7/29	X	1	2/17	T
108	Flicker, Northern	FL85	breeds	1	3-May	NB	√	14-Apr	FL	√	4/9	X	1	1/1	FG
109	WOODPECKER, PILEATED	P94	not many in County	1	2-Jul	X	√	14-Apr	T	√	4/8	P	1	3/17	T
110	Flycatcher, Olive-sided		migrant												
111	Pewee, Eastern	0N85	breeds	1	10-May	FL	√	31-Jul	FL	√		IM	1	5/6	X
112	Yellow-bellied		migrant												
113	ACADIAN	NB94	occasionally breeds	1	10-May										
114	Alder		migrant												
115	Willow	FY89	breeds							√	7/29	X	1	6/22	X
116	Least	X86	occasionally summers	1	10-May		√	8-May					1	5/6	
117	Phoebe, Eastern	FL94	breeds	1	3-May	ON	√	8-May	UN	√	4/9	ON	1	3/17	FL
118	Flycatcher, Great Crested	ON83	breeds	1	10-May	X	√	2-May	T	√	5/7	T	1	5/6	FG
119	Kingbird, Eastern	ON85	breeds	1		FL	√	8-May	ON	√	5/7	T	1	5/6	FG
120	SHRIKE, LOGGERHEAD*	NY91	now a rare breeder												
121	Vireo, White-eyed	NY85	breeds	1	2-May	X	√	8-May							
122	BELL'S	NY85	breeds in few places in County												

123	Blue-headed		migrant	1	10-May					√	5/7				
124	Yellow-throated	ON94	breeds	1	1-Jul	X							1	5/6	X
125	Warbling	FL87	breeds	1	10-May	FL	√	8-May	T	√	5/7	T	1	5/6	T
126	Philadelphia		migrant												
127	Red-eyed	A94	breeds	1	2-May	X	√	8-May	T	√	5/7	T	1	5/6	T
128	Jay, Blue	FL83	resident	1	2-May	FL	√	14-Apr	FL	√	4/9	T	1	2/17	/
129	Crow, American	FL85	resident	1	2-May	X	√	8-May	T	√	4/9	X	1	2/17	/
130	Lark, Horned	FL89	resident	1											
131	Martin, Purple	ON85	breeds										1	7/12	X
132	Swallow, Tree	FL86	breeds	1	3-May	ON	√	8-May	ON	√	4/9	ON	1	3/30	ON
133	Rough-winged	ON85	retaining wall of dam	1	3-May	ON	√	8-May	ON	√	4/9	ON	1	4/14	0N
134	Bank	ON95	breeds										1	4/14	
135	CLIFF	NB94	I of few County colonies , growing	1	3-May	ON				√	5/7	ON	1	5/4	ON
136	Swallow, Barn	ON83	breeds	1	10-May	ON	√	8-May	ON	√	5/7	ON	1	4/14	ON
137	Chickadee, Carolina	FL85	breeds	1	3-May	P	√	14-Apr	FL	√		X	1	2/17	T
138	Titmouse, Tufted	FL85	breeds	1	2-May	T	√	14-Apr	T	√	4/9	T	1	2/17	T
139	Nuthatch, Red-breasted		winters				√	18-Sep		√	4/30		1	1/1	
140	White-breasted	FL85	resident	1	10-May	FL	√	11-May	T	√	5/7	T	1	1/1	FL
141	Creeper, Brown		winters				√	14-Apr		√	4/9		1	4/4	
142	Wren, Carolina	FL94	resident	1	2-May	FY	√	14-Apr	T	√	4/9	T	1	1/1	FL
143	House	FL85	breeds	1	2-May	ON	√	8-May	ON	√	5/7	T	1	5/6	FL
144	Winter		migrant										1	4/13	
145	SEDGE		scarce breeder												
146	Marsh		migrant												
147	Kinglet, Gold-crowned		migrant				√	14-Apr		√	4/9		1	3/30	
148	Ruby-crowned		migrant				√	8-May		√	4/9		1	4/4	
149	Gnatcatcher, Blue-gray	FL89	breeds	1	2-May	T	√	14-Apr	X	√	5/7	X	1	4/14	
150	Bluebird, Eastern	FL89	successful nest box program	1	2-May	ON	√	14-Apr	ON	√	4/9	ON	1	1/1	ON
151	Veery		migrant												
152	Thrush, Gray-cheeked		migrant										1	5/6	
153	Swainson's		migrant	1	10-May					√	5/7		1	5/6	
154	Hermit		migrant										1	4/14	
155	Wood	FY85	not many in County now	1	1-Jul	T	√	31-Jul	T	√	4/30		1	5/3	
156	Robin, American	FL85	breeds	1	2-May	UN	√	14-Apr	FL	√	4/9	FL	1	1/9	NB
157	Catbird, Gray	FL85	breeds	1	2-May	T	√	8-May	M	√	5/7	T	1	5/6	FY
158	Mockingbird, Northern	FL?	old record, now												

			scarce												
159	Thrasher, Brown	FL83	breeds	1	2-May	FL	√	14-Apr	FL	√	4/9	/	1	4/7	P
160	Starling, European	FY85	resident	1	2-May		√	14-Apr	FL	√	4/9	ON	1	3/17	M
161	Waxwing, Cedar	ON 85	breeds	1	10-May	X	√	8-Jun	ON	√	7/31	IM	1	5/6	T
162	Warbler, Blue-winged		migrant				√	8-May							
163	Golden-winged		migrant										1	5/6	
164	Tennessee		migrant	1	10-May		√	8-May		√	5/7				
165	Orange-crowned		migrant												
166	Nashville		migrant	1	10-May		√	8-May		√	5/7		1	5/6	
167	Parula, Northern	T 94	a few breeding records	1	10-May	X	√	2-May	T	√	4/30		1	4/15	X
168	Warbler, Yellow	A 94	breeds	1	2-May	T	√	8-May	T	√	4/30		1	5/6	T
169	Warbler, Chestnut-sided		migrant	1	10-May										
170	Magnolia		migrant	1	10-May		√	8-May					1	5/6	
171	Cape May		migrant	1	10-May		√	8-May		√	5/7				
172	Black-throated Blue		migrant				√	23-Sep		√	5/7				
173	Yellow-rumped		migrant	1	10-May		√	14-Apr		√	4/9		1	1/9	
174	BLACK-THROATED GREEN	X 02	migrant, unusual summer	1	13-May		√	8-May		√	5/7		1	5/6	
175	Blackburnian		migrant				√	8-May		√	8/27				
176	YELLOW-THROATED	T 06	breeds at Lake-of Woods										1	6/28	T
177	Pine		migrant	1	10-May								1	5/6	
178	PRAIRIE	X 03	Unusual in summer in area	1	2-Jul	X	√	12-May							
179	Palm		migrant	1	10-May		√	8-May		√	5/7		1	5/6	
180	Bay-breasted		migrant	1	10-May		√	19-Sep		√	5/7				
181	Blackpoll		migrant	1	10-May					√	5/7		1	5/6	
182	Cerulean		migrant							√	5/7				
183	BLACK & WHITE		migrant, few summer records	1	10-May		√	12-May		√	5/7		1	5/6	
184	Redstart, American	T 85	migrant, some summer records	1	10-May		√	8-May		√	5/7				
185	Warbler, Prothonotary		migrant, has nested in County							√	5/7				
186	Worm-eating		migrant												
187	OVENBIRD	X 04	migrant, used to nest in area				√	6-May	X	√	5/7		1	5/6	
188	Waterthrush, Northern		migrant	1	13-May		√	8-May		√	5/7		1	5/6	
189	Louisiana		migrant												
190	Warbler, Kentucky	T05	Unusual in summer in area												

191	Mourning		migrant												
192	Yellowthroat, Common	NY85	breeds	1	10-May	T	√	8-May	T	√	5/7	X	1	5/6	T
193	Warbler, Hooded		migrant												
194	Wilson's		migrant	1	10-May										
195	Canada		migrant												
196	Chat, Yellow-breasted	T85	breeds	1	10-May	T									
197	Tanager, Summer	T76	migrant, occasional summer	1	13-May										
198	Tanager, Scarlet	FL86	breeds	1	10-May		√	8-May		√	5/7		1	5/3	X
199	Towhee, Rufous-sided	FL85	breeds	1	2-May	T	√	8-May	T	√	4/9	X	1	2/17	T
200	Sparrow, Tree		winter visitor							√			1	2/17	
201	Chipping	FY85	breeds	1	2-May	FL	√	14-Apr	FL	√	4/9	FL	1	4/4	FL
202	Field	FL83	breeds	1	2-May	P	√	8-May	FL	√	3/22	T	1	4/4	FL
203	Vesper	T86	breeds												
204	SAVANNAH	X 86	breeds, scarce												
205	GRASSHOPPER	T86	breeds, scarce												
206	Fox		migrant				√	14-Apr					1	3/17	
207	Song	FL85	breeds	1	2-May	X	√	8-May	X	√	4/9	X	1	2/17	T
208	Lincoln's		migrant	1	10-May		√	6-May		√	4/30		1	5/6	
209	Swamp		migrant	1	10-May		√	14-Apr					1	3/17	
210	White-throated		migrant	1	10-May		√	14-Apr		√	4/9		1	2/17	
211	White-crowned		migrant	1	10-May		√	6-May		√	5/7		1	5/6	
212	Junco, Dark-eyed		winter visitor	1			√			√			1	2/17	
213	Longspur, Lapland		winter visitor												
214	Bunting, Snow		winter visitor												
215	Cardinal, Northern	FL85	resident	1	2-May	FL	√	14-Apr	FL	√	7/29	FL	1	2/17	FL
216	Grosbeak, Rose-breasted	NY85	breeds	1	2-May	X	√	8-May	FL	√	5/7		1	4/20	A
217	Bunting, Indigo	FY85	breeds	1	2-May	T	√	8-May	T	√		M	1	5/6	FL
218	Dickcissel	FL85	breeds				√	8-Jun	M				1	6/21	M
219	BOBOLINK	T85	migrant, scarce breeder												
220	Blackbird, Red-winged	NE85	breeds	1	10-May	X	√	8-May	X	√	4/9	X	1	3/17	A
221	Meadowlark, Eastern	FY85	breeds	1	10-May	X	√	14-Apr	T	√	5/7	X	1	2/17	T
222	BLACKBIRD, YELLOWHEADED		rare migrant												
223	Rusty		migrant										1	3/13	
224	Grackle, Common	FL83	breeds	1	2-May	FL	√	8-May	/	√		/	1	2/17	FL
225	Cowbird, Brown-headed	FL85	breeds	1	2-May	X	√	8-May	P	√		/	1	3/17	FL

226	Oriole, Orchard	FL89	breeds	1	2-May	X	√	15-Jun	P	√	5/7	X	1	5/6	P
227	Baltimore	ON85	breeds	1	2-May	FL	√	8-May	P	√	5/7	NB	1	5/6	P
228	Finch, Purple		winter visitor				√	14-Apr					1	4/4	
229	House	FL89	resident	1		FL	√	8-May	P	√		X	1		X
230	Siskin, Pine		winter visitor										1	2/17	
231	Goldfinch, American	FL85	resident	1	2-May	P	√	14-Apr	P	√	4/9	X	1	3/17	P
232	House Sparrow	FL85	resident	1	2-May	ON	√	8-May	ON	√	5/10	ON	1	2/17	FL

KEY

CAPITAL LETTERS indicate unusual species

CAPITAL LETTERS* State threatened species

CAPITAL LETTERS** State endangered species

from Checklist of Endangered and Threatened Animals and Plants of Illinois, 1999 Illinois Endangered Species Board

Confirmed evidence of breeding:

FL-fledgling, IM immature bird
FY- adult with food for young
MP-many nesting pairs
NY- nest with young
NE-nest with eggs
ON-on nest

Possible evidence of breeding:
/- present during breeding season
X- singing in suitable habitat
F- flying over area
O-observed during the breeding season

Probable evidence of breeding:

P -pair
T- holding territory
M- multiple singing males (7 or more)
C- courtship
A-agitated behaviour or calls from adult
N-visiting probable nest site

Boneyard Creek Bibliography

(compiled by Berns, Clancy & Associates)

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Boneyard Creek
University of Illinois, Urbana-Champaign Campus
Champaign County, Illinois
September 16, 1997

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