

# Southwestern Illinois Lands at Risk

An assessment of threatened habitats within the St. Louis Metro East Region



Prepared by:  
Southwestern Illinois RC&D, Inc.  
2005

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The Southwestern Illinois RC&D, Inc. would like to extend a special thank you to the many stakeholders and other interested parties who provided input, and/or assisted in the review process associated with this project. Without your expertise and assistance, this effort could not have been completed.

This effort serves as an important opportunity to reflect on our existing resources and to plan future protection efforts. More effective partnerships, in conjunction with the implementation of existing programs, as well as assisting in the creation of new programs will ensure that critical habitat area is protected for future generations.

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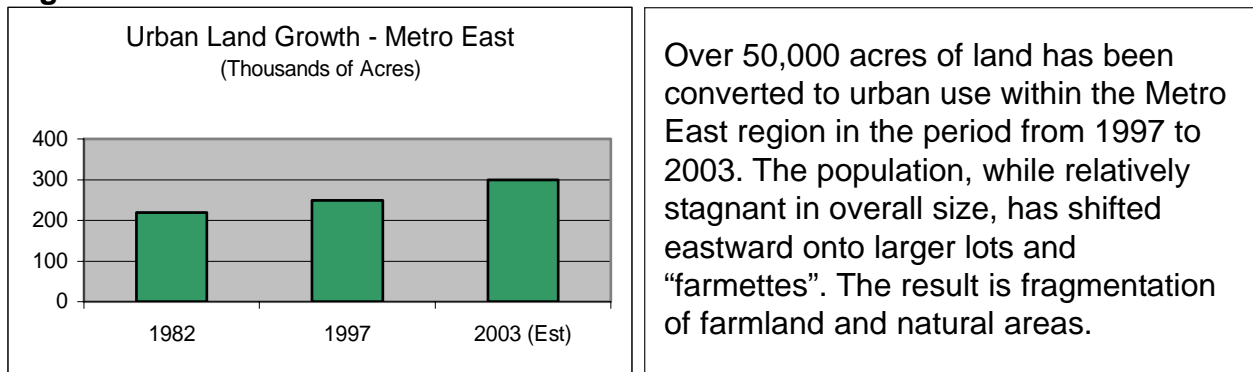


**Introduction:**

The Southwestern Illinois RC&D, Inc. (RC&D) has been in existence since 1989, and in that time has seen a significant consumption of land within the St. Louis Metro East (Metro East) region. This utilization of land is having a direct impact on many of the valued natural resources found within the region. As the mission of the RC&D is to conserve and responsibly develop natural resources within its seven counties, it is important that a blueprint of the remaining resources is created, so that organizations and agencies that work to protect our natural resources are better able to direct and implement their programs.

The St. Louis City and County is rapidly depleting its supply of “buildable” land, forcing longer commute time for residents. Missourians are now realizing that just east of the Mississippi River, is within an easily commutable distance of downtown St. Louis, and has an abundant supply of affordable land, much of which is bordered by forests, wetlands, bluffs and prime/important farmland. Developers are quick to respond to a need, and natural areas and farmland are quickly being converted to urban use within southwestern Illinois (see Figure 1).

**Figure 1**



Recognizing the importance of protecting resources before they are fully depleted, the RC&D Board of Directors formally developed “The Land Conservancy” (TLC), (July 2003), as a division of the RC&D that works exclusively with landowners and similar organizations to provide a “toolbox” of land protection options for interested property owners. Generally land trusts work in a small, defined area; making the identification of critical areas for protection relatively simple. As TLC covers seven counties, (2,469,750 acres), identifying specific areas where efforts are best directed is a daunting task.

In March 2004, the RC&D applied to **The McKnight Foundation** for a grant that would allow the organization to work with resource managers to identify and digitally map (GIS) critical habitat(s) within the region that individuals felt were at risk of conversion. An assessment of existing data, combined with interactive feedback from resource managers, has created a compilation of areas that are perceived as threatened within the region.

This report is not fully inclusive of all quality habitat sites within the region; however it does represent a cross-section of general corridors, ecosystem regions, and a diverse sampling of areas either of high resource quality or areas that could be converted to a high resource quality.

## **Process:**

The goal of the project was: to identify and digitally map lands that stakeholders within the region perceive as “at risk”. For purposes of this project, “region” was defined as the following seven counties: Bond, Clinton, Madison, Monroe, Randolph, St. Clair and Washington, in Illinois. “Stakeholders” was defined as individuals and/or groups that actively participate in habitat restoration and or protection efforts within some, or all of the counties listed above. Finally, “at risk” was defined as parcels, or general areas, that are of high resource quality and are in jeopardy of incurring habitat loss due to development, or other similar threat, as well as habitat areas where restoration activities will likely be successful in redeveloping a specific high-quality habitat type.

Data collected and used during the analysis portion of this project is housed at the Southwestern Illinois GIS Resource Center. For the past several years, the Center has been developing a data library of digital geography from a variety of sources and as well as completed projects. To begin the inventory process, general reference data in the form of administrative boundaries, transportation corridors, municipalities, water bodies and public land survey were compiled as a standard base map. These layers helped individuals to orient themselves to the landscape and identify areas or regions. In addition to reference landmarks, information about known landuse classifications, wetlands areas, rivers & streams, parks, natural and conservation areas were overlaid to develop a picture of the current status of resources within the region. All data is stored in a standard coordinate system to facilitate the overlay of features and to enable more accurate measurement on the surface. The data for this project utilized the UTM Zone 16 (NAD83) coordinate system, as this is the adopted standard of the Center’s library efforts as well as the State of Illinois and USDA-NRCS in Illinois.

In addition to layers that reference man-made and natural features in vector format, the project utilized imagery in the form of digital orthophoto quadrangles from USGS. This aerial photography allowed the stakeholders to identify specific features on the landscape that could not easily be referenced by a street address or administrative boundary. Often the natural resources that individuals wanted to preserve are best seen in a “big picture” sense, where patterns are more evident. Photography often enables this vision. Stakeholders were engaged in a process that allowed them to interactively “steer” the GIS technician to specific areas, draw on existing data layers for orientation or reference, and draw their own boundaries on the landscape as identifiable resources. The attributes for each feature were then developed from the individual stakeholders experience and knowledge of the region. The final datafile represents this interactive input, in a standard coordinate system and tied to other existing data, that can be used in conjunction with information from many sources.

As the stakeholder process was implemented, we quickly realized that each resource manager viewed the effort from a different perspective, (i.e. specific parcels versus ecosystem regions), and for a different purpose (i.e. recreational benefits versus protecting a specific endangered specie). We were therefore required to develop a comprehensive database that would allow us to capture the true intent of the individual, and to also allow us to develop a document that was useful in the future.

The following fields were developed and compiled within a Microsoft Access database to assist us in this effort: (See Figure 2)

**Figure 2**

**Database Attribute Template**

<u>Attribute</u>	<u>Description</u>
ID	software assigned ID
IDENT_AGEN	Identifying agency or organization (eg: IDNR)
CONTACT	Individual (eg: Dave Eustis)
DATE	Date identified
NAME	Common name of area or region identified
HABITAT	Current type of habitat / use
RESOURCE	Perceived Resource value (Highest & best use)
THREAT	Threat to habitat Sample Values:           Transportation Commercial development Industrial development Residential development
CURR_OWNER	Current owner (if known)
OUTCOME	Desired action / long-term goal Sample Values:           Restoration Preservation Conversion
TIMEFRAME	Potential for conversion (time frame: 1yr, 1-3, 3-5, 5-10, 10+)
APROX_VAL	Approximate land value (if known)
ENDORSED	“Counter” to log repeated identification of same area
SENSITIVITY	High, Medium or Low per Individual stakeholder view
AREA	Computer calculated value in sq meters
ACREAGE	Calculated acreage of digital area
PERIMETER	Computer calculated value in linear meters
CATEGORY	Assigned during analysis for display

The outcome of this effort is two-fold. First, information has been developed in a Geographic Information System (GIS), and we can therefore review and/or display information back to stakeholders in a variety of fashions, based on geography, or by specific resource, (i.e. wetlands, forests, etc.). SDecond, individuals that are not yet GIS savvy, we have developed this report which highlights the bulk of our findings, all be it at a fairly large scale.

Showing all information collected on one map was impossible, so we have broken the report into three geographical regions, (See Figure 3), as well as several habitat types, (See Figure 4) and have depicted the data on a series of maps throughout this document.



## **Protected Lands:**

(See Figure 7)

There are a number of existing programs available to assist in the protection of land, and we felt that it was important to have information on these properties accessible to stakeholders as they worked through their interactive process. Data used in developing this layer came from a number of sources and included the following types of properties:

1. Federal Land (as available)
2. State Land (as available)
3. Illinois Nature Preserves Commission
  - a. Illinois Nature Preserve
  - b. Land & Water Reserve
  - c. Natural Heritage Landmark
4. County and/or local properties (as available)
5. Conservation easements
6. Federal Farm Bill Programs (Collected 2002)
  - a. CRP (Active contracts)
  - b. WRP, EWRP (Active contracts)
  - c. WHIP (Active contracts)
  - d. EQIP (Active contracts)
7. Illinois Forestry Development Act (Active contracts)

While properties displayed in this section are considered protected, opportunities for additional protection efforts do exist. For example, several stakeholders listed property immediately adjacent to existing state facilities, Illinois Nature Preserves Commission sites, and conservation easements as likely areas for expansion of the current facility or land protection mechanism. This expansion could include direct acquisition, or, in some cases, additional conservation easements.

Many programs under the federal farm bill, including the Conservation Reserve Program (CRP), are temporary in nature, and do not fully ensure the long-term protection of land. It is therefore important to ensure that future Farm Bills recognize this and include incentives to landowners for extensions to their conservation program.

A number of land trusts operate within the region, including the Great River Land Trust, The Karst Conservancy, St. Clair County Greenspace Foundation, OKAW (Original Kaskaskia Area Wilderness) and The Land Conservancy, a division of Southwestern Illinois RC&D, Inc. We have included protected parcels for each of these organizations. The American Land Conservancy has also protected many parcels within the Mississippi River floodplain which have also been included.

The Illinois Forestry Development Act (FDA) (525 ILCS 15) was created to assist private landowners in better managing their forest resources. As part of this act, landowners receive cost-share assistance in the development of a forest management or tree planting plan for their property. Property tax incentives may also be available as part of this act. A total of 464 landowners, who have already completed 505 forest management plans, have been depicted.

The Illinois Nature Preserves Commission offers several programs which assist in the protection of high quality natural resource areas, including:

### Illinois Nature Preserve

Only high-quality natural areas qualify for this land protection tool. Dedication is the strongest protection that can be given to land and provides permanent protection. The owner retains custody but voluntarily restricts future uses of the land in perpetuity to preserve its natural state and to perpetuate natural conditions. Qualifying lands in private, corporate, or government ownership can be dedicated as an Illinois Nature Preserve. This agreement may result in financial benefits to the landowner, primarily in the form of a charitable contribution deduction on federal income taxes and a local property tax reduction.

### Illinois Land & Water Reserve

Lands and waters of Illinois that support significant natural heritage or archaeological resources qualify for this land protection tool. The agreement to register an area as a Land and Water Reserve determines allowable uses and stipulates management objectives. Registered reserves may be in public or private ownership. The agreement may be for a term of years or permanent. The property can be sold or passed on to heirs subject to the agreement. Land and waters permanently registered may qualify for reduced tax benefits in the form of a local property tax reduction and possibly a charitable contribution deduction on federal income taxes.

### Natural Heritage Landmark

This is a recognition program that introduces a landowner to the concept of natural area protection and allows the state to assist with management of the natural area. It is a voluntary program that increases understanding of the value of natural areas and encourages their preservation by private landowners.

Overall, Illinois ranks extremely low in the amount of public conservation & recreation acres owned per 1,000 in population. Figure 5<sup>1</sup> depicts how Illinois “stacks up” against other Midwestern States, while Figure 6 depicts how the Metro East compares with the State of Illinois average.

**Figure 5**

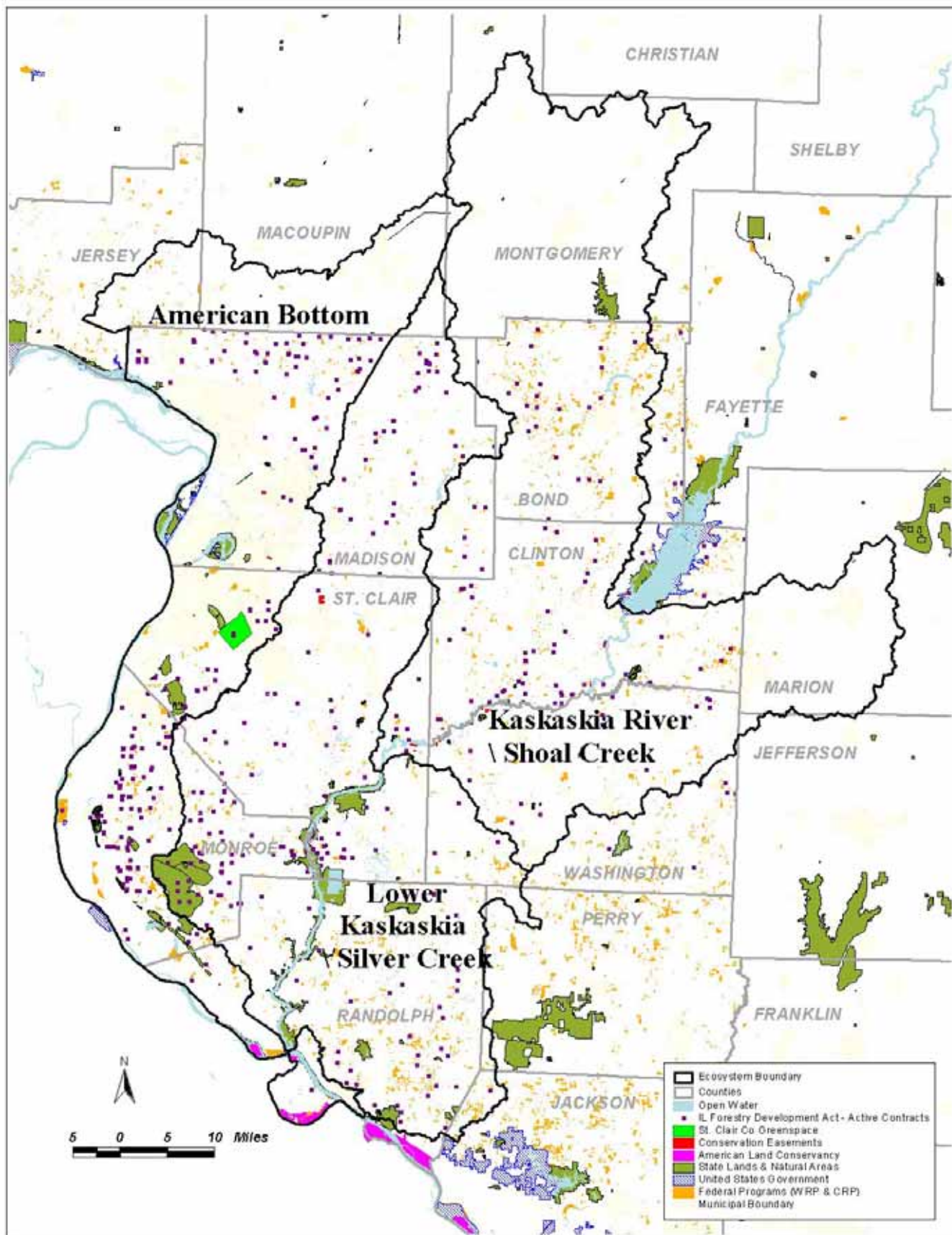
Conservation & Recreation Acres Owned by Midwest				
	Population	Total Acres	State-Owned Recreation Acres	% State Owned
Michigan	9,938,144	36,453,760	4,472,175	1
Minnesota	4,919,479	50,910,720	6,018,000	1
Wisconsin	5,363,675	34,831,360	1,317,525	
Ohio	11,353,140	26,242,560	478,876	
Indiana	6,080,485	23,017,600	339,068	
<b>Illinois</b>	<b>12,419,293</b>	<b>35,613,440</b>	<b>306,187</b>	
Iowa	2,926,324	35,817,600	302,552	

**Figure 6**

Southwestern Illinois Public Conservation & Recreation				
	Population	Total Acres	State-Owned Recreation Acres	% State Owned
Illinois	12,419,293	35,613,440	306,187	
<b>SW Illinois</b>	<b>649,063</b>	<b>2,469,750</b>	<b>39,585</b>	

<sup>1</sup> Wisconsin Joint Legislative Audit Committee, *An Evaluation: Warren Knowles-Gaylord Nelson Stewardship Program*, 2000

Figure 7 - Protected Lands (Entire region)



### **Priority Protection Areas:**

(See Figures 8, 9)

A number of agencies and non-governmental organizations have already made individual recommendations as to priority protection areas within the region. Some of these areas are identified for specific resources, some are general conservation areas, while others represent a declining, or threatened habitat.

A total of four “Resource Rich Areas” (RRA) as defined by the Illinois Natural History Survey, intersect the region. Areas that qualify for resource rich areas status must meet the following criteria:

1. *Provide areas large enough to allow for the natural dynamic nature of ecosystems and to allow management to simulate natural forces to meet the needs of various communities and species.*
2. *Protect, restore, and enhance areas to provide the ecological requirements for animals and plants that need large areas.*
3. *Include representative examples of the natural communities of Illinois.*
4. *Protect areas with significant habitat and species diversity.*
5. *Protect habitat types that are diminishing at an alarming rate, such as wetlands, forests, prairies, and biologically significant streams.*

The karst/cave area contains 291,305 acres (455 square miles) and generally runs along the Mississippi River in Madison, Monroe, St. Clair and Randolph counties (See Figure 8). The karst/cave RRA has the second highest acreage of the 30 identified RRAs in Illinois, and includes 27 specific natural areas, four nature preserves and 92 heritage sites. Noteworthy features within the region include limestone bedrock outcroppings, numerous caves, sinkholes, old growth forest and unique flora and fauna. The area originally contained large blocks of forest, prairie and wetland.

The Kaskaskia Bottoms RRA contains 197,654 acres (309 square miles) and generally follows the Kaskaskia River and Shoal Creek in Clinton, Monroe, St. Clair and Washington counties. The predominant natural feature noted here is the significant (18% of land area) bottomland hardwood forest. The state’s largest contiguous block of forest (7,000 acres) is found here, in addition to three additional large forest blocks (500 or more contiguous acres). Modifications to the natural flow of the river have led to fragmentation of this forest, as well as a change in vegetative species. Fragmentation of the forest has also impacted wildlife, including neo-tropical songbirds, whose populations are declining as a result.

The Big Rivers RRA covers a portion of northwestern Madison County and is focused on the bluffs, hill prairies and upland forest along the Mississippi River. The Illinois Ozarks RRA covers a portion of southern Randolph County, focusing on the Mississippi River bottomlands as well as the significant upland forest along the bluff.

The Nature Conservancy has identified several regions within the area, including the main stem of the Kaskaskia River from its confluence with the Mississippi River to Carlyle Lake. This priority area also includes portions of Crooked Creek, Silver Creek, and Shoal Creek. Much of the area outlined falls within the Kaskaskia Bottoms RRA, however a narrow band along the lower section of the river (Fayetteville to Chester) is outside of the RRA designation.

Other areas identified by The Nature Conservancy include a large block in Monroe County which includes several cave recharge areas, the bluffline in Monroe County (hill prairies, upland forest), as well as the bluffline and bottoms in northern Madison County (wetlands, bluffs, upland forests).

The Illinois Natural History Survey has outlined an important bird area which generally follows The Nature Conservancy portfolio area in Clinton and Washington Counties, with the exception of an expanded area following Elkhorn Creek in Washington County. The Kaskaskia Valley Audubon Society has highlighted additional areas along the bottoms and bluffs in Monroe County, as well as floodplain habitat in western Madison County.

Additional areas of focus have been designated within the St. Clair County Greenspace Plan. This plan identifies a corridor along the main stem of the Kaskaskia River, as well as the Silver Creek corridor north to the Madison County line. Several additional sites have been identified in the northwestern portion of the county. A total of ten wetland mitigation sites have been identified, as well as an area of highly erosive soils along the bluffline in St. Clair County.

Figure 9 identifies a total of 703 stream miles (38.5% of the total 1,824 miles within the ecosystem boundaries) which are listed as impaired on the 2004 IEPA 303 d listing. Causes of impairments vary but are generally agricultural related. This map also depicts "sections" within the region in which a Federal or State Threatened or Endangered Species has been located. While not point specific, this file does offer patterns, or concentrations, of E & T species.

Figure 8 – Priority Protection Areas - Partners; (entire project area)

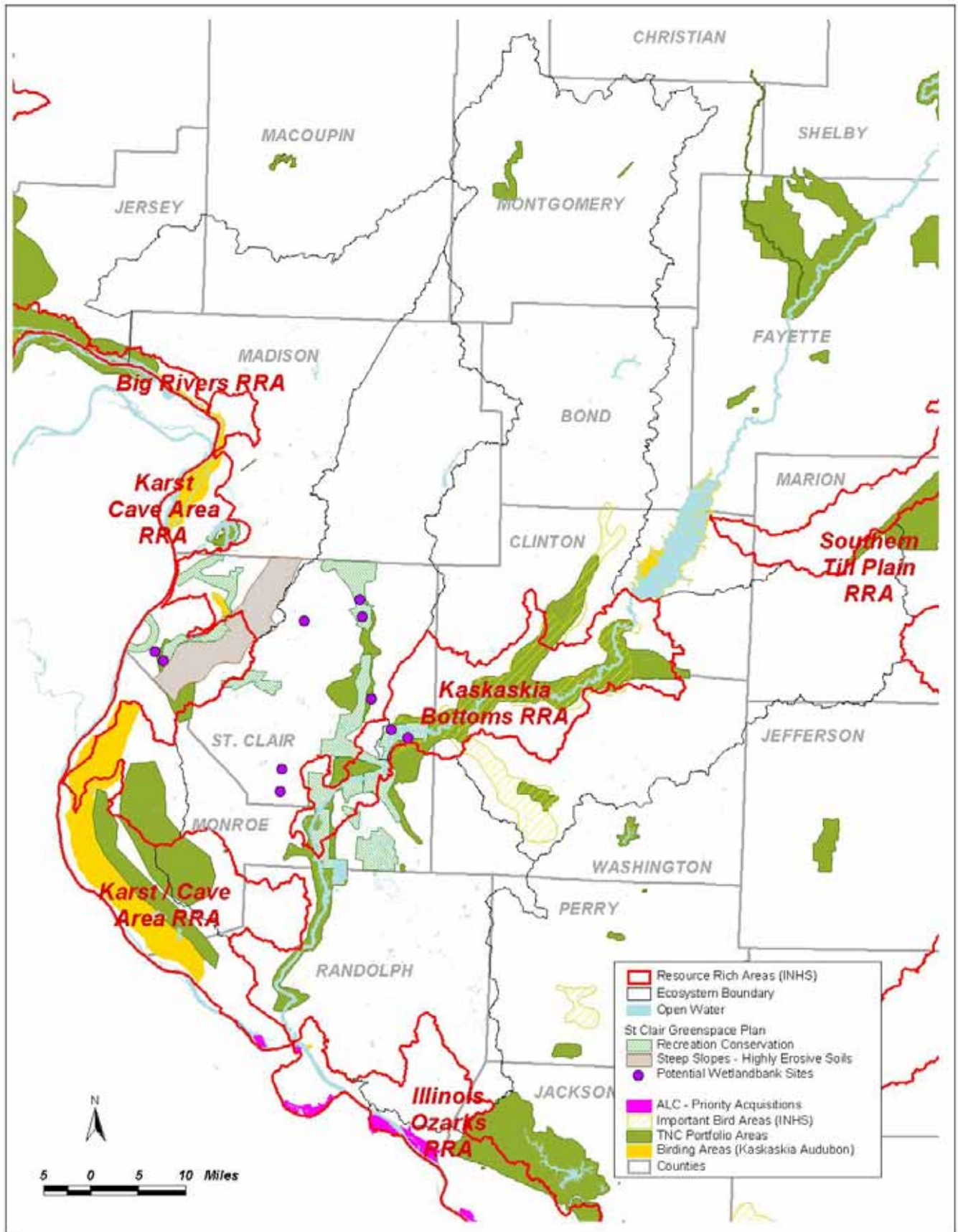
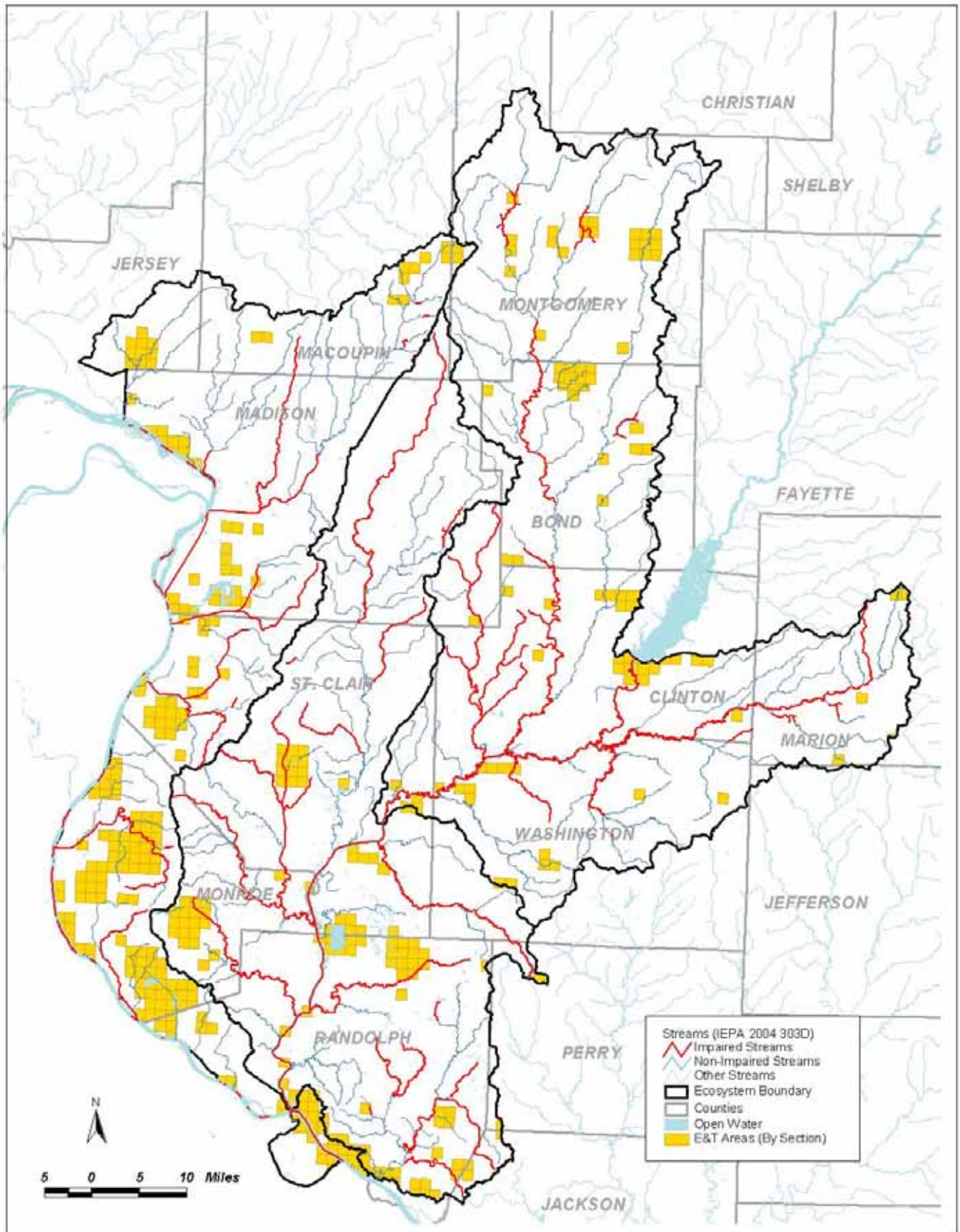


Figure 9 - Priority Protection Areas – E & T Species; Impaired Streams (entire project area)



## **Wetlands:**

Throughout the region, modifications to the normal flow of water over the past two centuries have led to a significant reduction in the amount and the quality of remaining wetlands. These hydrologic modifications are beginning to have a significant impact, as flooding and/or interior ponding is becoming more prevalent throughout the region.

Utilizing Public Land Surveys from the early 1800s, geologists know that significant portions of the American Bottom ecosystem were underwater for most, or all of the year. PLS data indicates that rivers, wetlands, swamps, lakes and sloughs once covered approximately 35% of the American Bottom region. Over the past two centuries however, tiles, levees and sedimentation have reduced this number to 9.8 percent.

(See Figure 10) Urban growth within the American Bottom ecosystem has led to a series of stormwater issues, including four flood disaster declarations from 1993–1996, and there is once again renewed interest in recreating a portion of these wetlands in order to better manage stormwater. Examples of projects supported by resource managers in the American Bottom include:

- Implementation of the East St. Louis & Vicinity, Illinois Ecosystem Restoration and Flood Damage Reduction Project<sup>2</sup>, which, when fully implemented, will restore:
  - 1,700 acres of bottomland forest
  - 843 acres of shrub swamp
  - 460 acres of lake
  - 10.4 miles of streams
  - riffle & pool complexes in 178 miles of streams
  - 131 tributary stream detention basins
- Implementation of the Chouteau Island Master Plan<sup>3</sup>, which will restore:
  - 3 miles of remnant sloughs
  - 880 acres of floodplain forest
  - 430 acres of restored wetlands
- Acquisition and restoration of a meander scar (Edelhardt Lake) east of Horseshoe Lake State Park, which has filled with sediment.
- Acquisition and restoration of land adjacent to Kidd Lake State Natural Area, which has been converted to agriculture.

(See Figures 11, 12) Bottomland forests make up a large percentage of the overall wetland habitat within the Kaskaskia River Watershed. Wetlands account for an unusually large 4.5% of the watershed's surface; with bottomland forest making up three-fourths of the wetlands. These 166,000 acres are nearly a quarter of the pre-settlement wetland acreage<sup>4</sup>.

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<sup>2</sup> US Army Corps of Engineers, *East St. Louis & Vicinity, Illinois Ecosystem Restoration and Flood Damage Reduction Project*, November 2003

<sup>3</sup> Chouteau Island Coordination Team, US Army Corps of Engineers, St. Louis District, Southwestern Illinois RC&D, Inc.; *Chouteau Island Master Plan*; 2002

<sup>4</sup> Illinois Department of Natural Resources, *The Kaskaskia River Basin, An Inventory of the Region's Resources*, 2001

The placement of two large flood-control reservoirs within the watershed has allowed landowners to clear and farm many additional acres, especially immediately south of the dam at Carlyle Lake<sup>5</sup>. In addition, management of the river for navigational purposes has changed flood frequency and duration to a point where many wetlands, including several remnant oxbows, no longer retain connectivity to the main river channel other than at peak flood events. Sedimentation, much of which is caused by headcutting along the main river channel north of Fayetteville, is also severely degrading the quality of the remaining wetlands and remnant oxbows within this corridor.

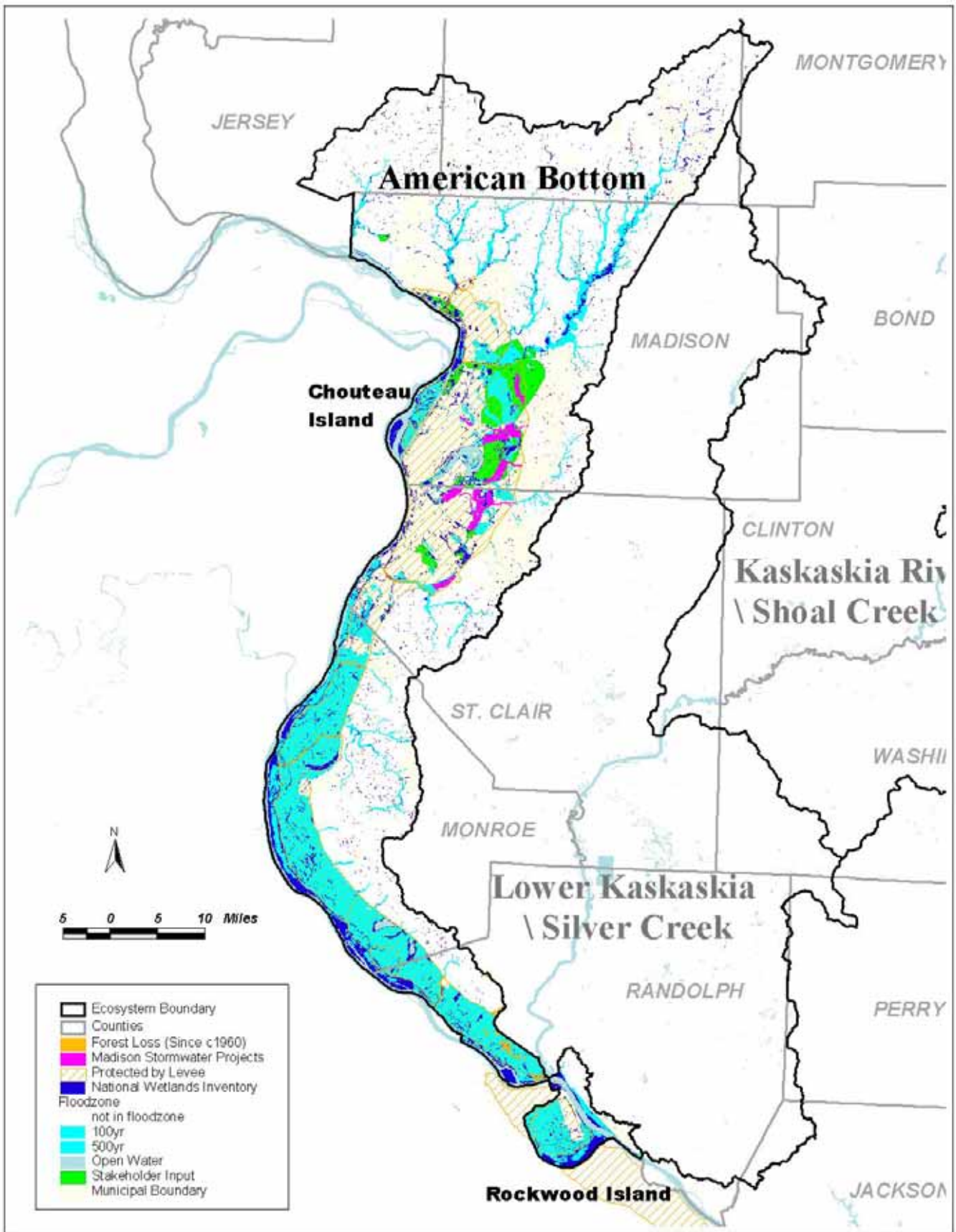
The Silver Creek corridor was identified by many stakeholders as an area that was under immediate threat from urbanization. It is important that units of government, in both Madison and St. Clair County work together to develop a stream corridor protection strategy for this watershed. This strategy should include a full assessment of the stream's current condition, a defined protection strategy, the development of a landowners guide to stream protection, a listing of proposed sites for public access, and a listing of programs that would assist in acquisition and/or protection efforts on both public and private property.

Shoal Creek, in Bond County was also identified, although less from an urban encroachment perspective. Loss of the vegetated riparian corridor along this tributary (as well as many other tributaries within the Kaskaskia River) have resulted in increased sediment yields, bank destabilization and associated log jams. Programs that encourage the reintroduction of buffers along these stream corridors will go a long way towards reducing water quantity and improving water quality throughout the watershed.

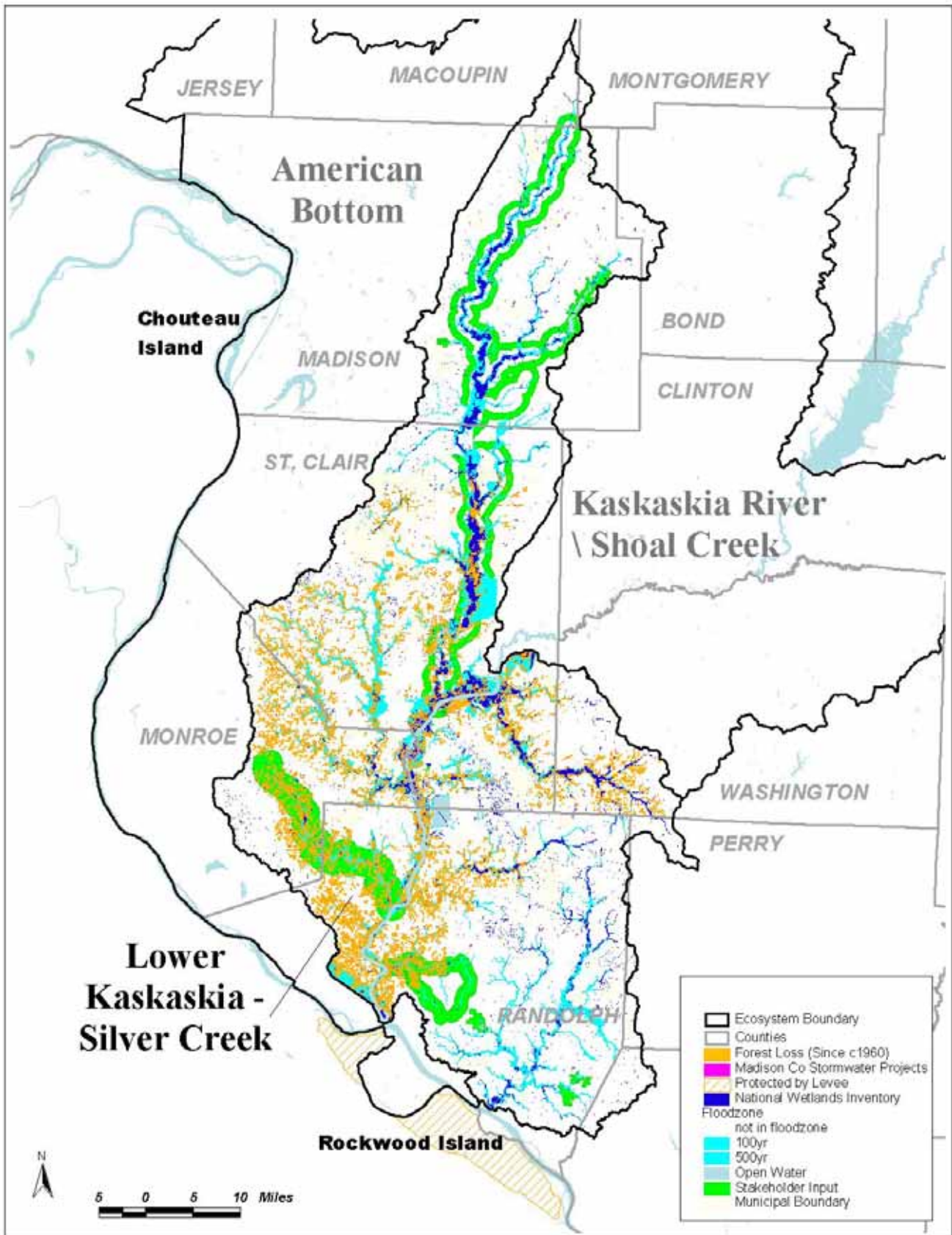
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<sup>5</sup> Southwestern Illinois RC&D, Inc., *Land Registry for Forest Health of the Kaskaskia River Watershed*, 2003

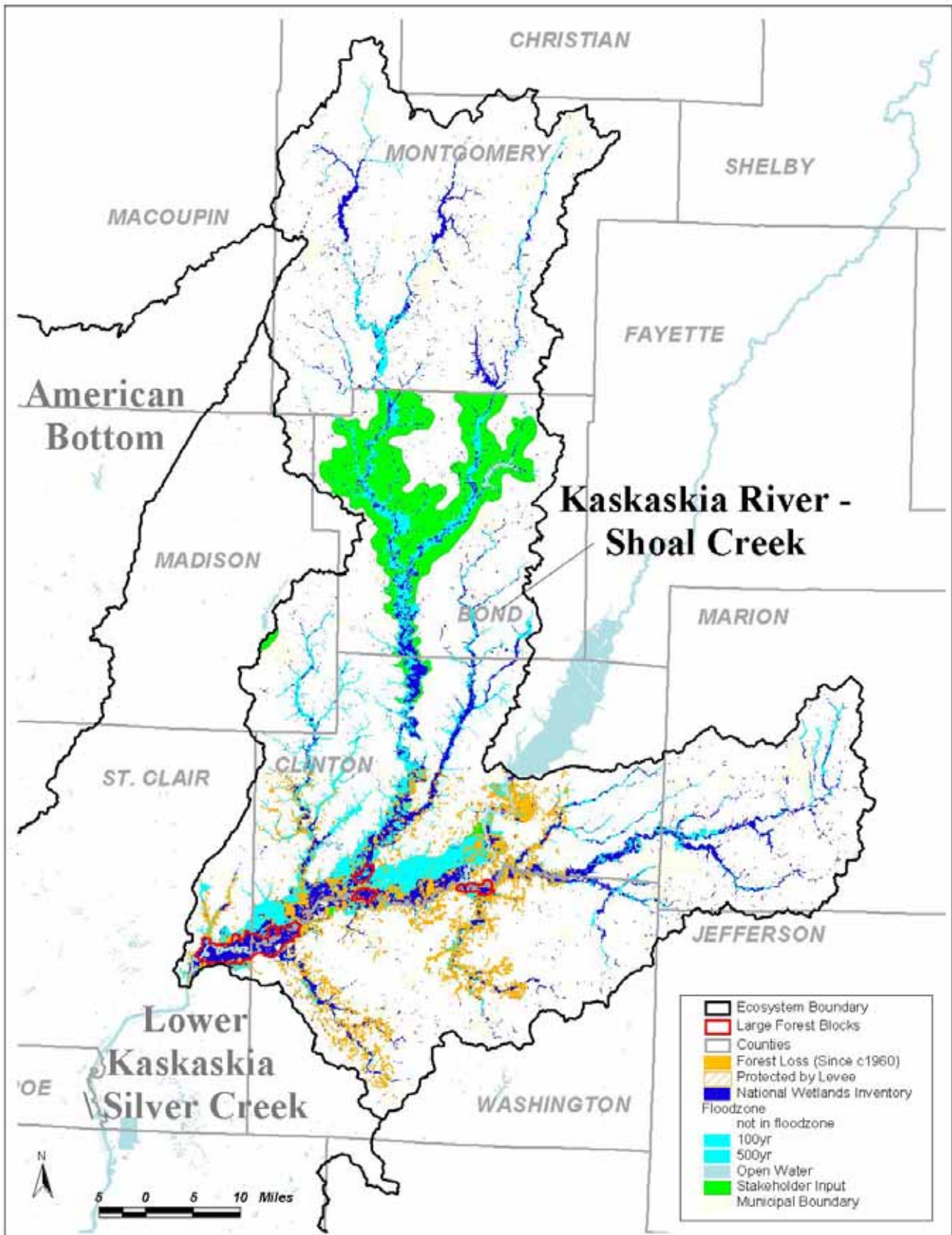
Figure 10 - Wetlands & Bottomland Forest (American Bottom Ecosystem Partnership)



**Figure 11 – Wetlands & Bottomland Forest (Lower Kaskaskia/Silver Creek Ecosystem Partnership)**



**Figure 12 – Wetlands & Bottomland Forest (Kaskaskia River/Shoal Creek Ecosystem Partnership)**



### **Upland Forests:**

The southwestern Illinois region is blessed to have varied topography which supports a wide range of upland forests. Much of the bluff topography from Madison County south to Randolph County has slopes which are too steep for agriculture, and therefore have been allowed to remain in upland forest, although a relatively small percentage is of high ecological quality. Invasive species, such as bush honeysuckle and autumn olive, encroachment of more shade-tolerant species such as sugar maple, and urbanization have all had a negative impact on the traditional oak-hickory forest that once dominated this corridor.

Inland from the bluffline lays a significant karst region in Monroe, Randolph and St. Clair Counties. Being too steep for agricultural activities, these sinkholes have been allowed to develop significant forest resources; however, as this land becomes urbanized, additional clearing and/or encroachment of invasive species is occurring.

The Kaskaskia River corridor once contained some of the best southern flatwood sites within the Midwest. As these sites lie just above the floodplain, and possess very flat terrain, most sites have been lost to agriculture or urbanization. (The Southwestern Illinois GIS Resource Center has recently completed a project to identify with a geographic information system areas for potential restoration of this particular forest type utilizing digital soil information, landcover and elevation.<sup>6</sup>)

The entire seven-county region has recently made an application for acceptance into the Forest Legacy Program. As depicted on Figure 13, within the region six priority areas have been created:

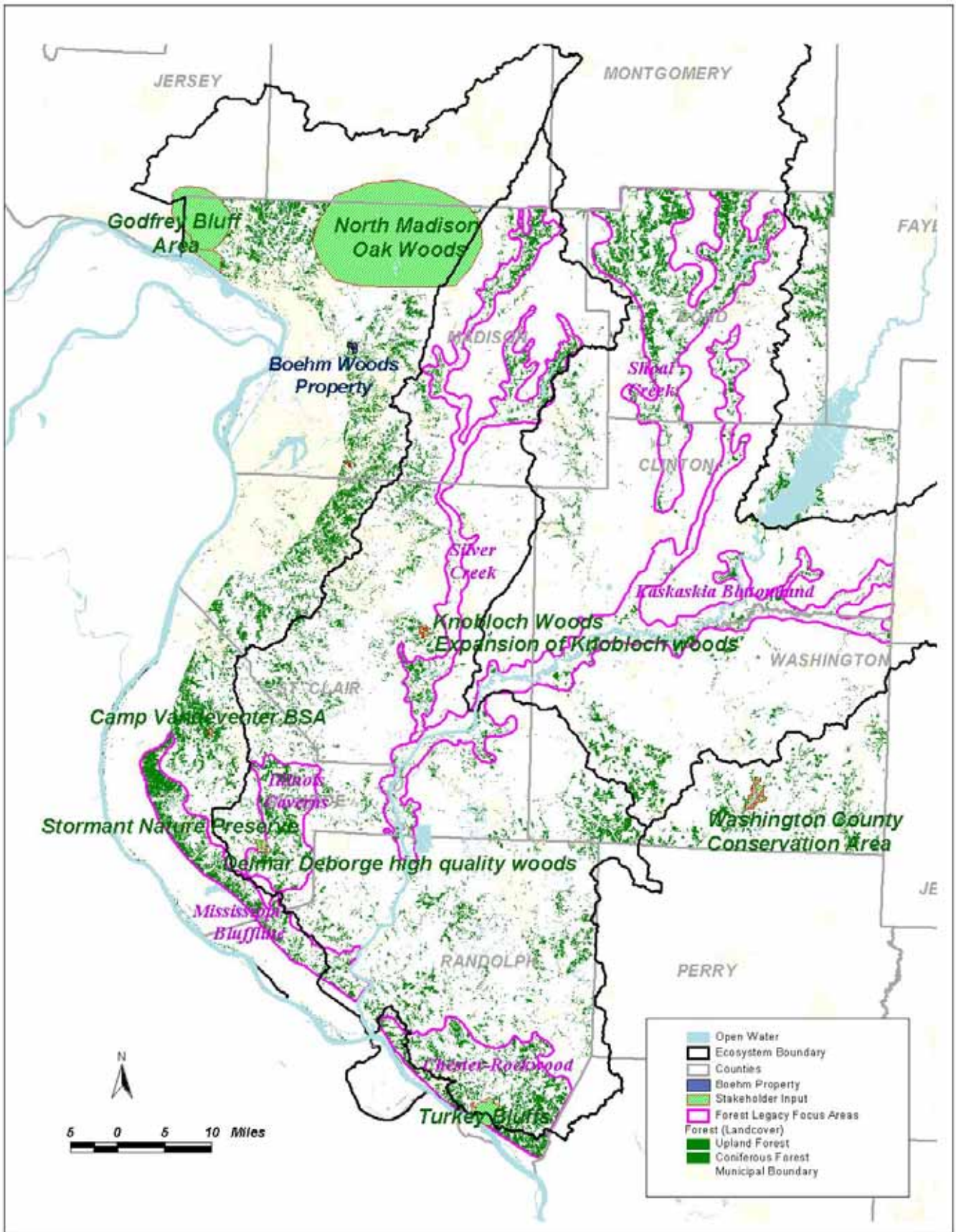
- Silver Creek
- Shoal Creek
- Kaskaskia Bottomland
- Illinois Caverns
- Mississippi Bluffline
- Chester-Rockwood

The Forest Legacy Program (FLP), a federal program in partnership with states, supports state efforts to protect environmentally sensitive forest lands. Designed to encourage the protection of privately owned forest lands, FLP is an entirely voluntary program. To maximize the public benefits it achieves, the program focuses on the acquisition of partial interests in privately owned forest lands. FLP helps the states develop and carry out their forest conservation plans. It encourages and supports acquisition of conservation easements, legally binding agreements transferring a negotiated set of property rights from one party to another, without removing the property from private ownership. Most FLP conservation easements restrict development, require sustainable forestry practices, and protect other values.

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<sup>6</sup> Southwestern Illinois RC&D, Inc.; (*Inventoring Forest Communities of the Kaskaskia Resource Rich Areas using GIS/GPS Technology*); 2004

Figure 13 – Upland Forests (Entire area)



### **Grasslands:**

Stakeholders identified several areas within the region where prairie restoration and/or redevelopment of prairie habitat would be desirable. Prior to settlement, this region contained large blocks of prairie habitat which has largely been converted to agricultural use. Remaining patches do still occur, along railway corridors and more prominently along the Mississippi River bluffline where land was not suitable for agricultural conversion due to steep slopes. There has also been a recent interest by many landowners in the Kaskaskia River corridor, primarily in Washington County, to reintroduce native prairie habitat. Another group is currently uniting to protect and restore remnant hill prairies in Monroe County.

A total of four large blocks have been identified in Bond, Madison and St. Clair Counties where there would be a high probability of successful prairie reintroduction (See Figure 14). These areas are currently primarily agriculture (row-crop) and historically supported large blocks of prairie habitat. While it is not likely that all of these areas will be converted to grasslands, Farm Bill programs such as the Conservation Reserve Program (CRP) and Grasslands Reserve Program (GRP) can work in conjunction with agricultural production to reintroduce grasslands. For best success in the reintroduction of desirable species, such as the Greater Prairie Chicken, large blocks should be created with a variety of vegetation types, as well as smaller satellite blocks.<sup>7</sup>

A second area with significant potential for the restoration of prairie habitat is the bluffline in southern St. Clair, Monroe and northern Randolph counties. There are a total of 12 Illinois Natural Areas Inventory (INAI) sites in the bluff corridor between Dupon and Prairie du Rocher that contain prairie complexes. These complexes have essentially been left alone as the slopes are too steep for agricultural activities. Approximately 25% of these sites have had treatment (exotic management, controlled burns) within the past several years, and as a result are slowly beginning to recover.

Much more work is needed to treat new sites. More than half of the untreated sites are in very serious decline, with at least a quarter of them vulnerable to being lost within the next 5 to 10 years without resource management. The Illinois Nature Preserves Commission has already documented four prairies that have been completely lost since 1976.

The Chouteau Island Master Plan<sup>8</sup> projects approximately 670 acres of restored grasslands in western Madison County.

Additional opportunities exist at the following locations:

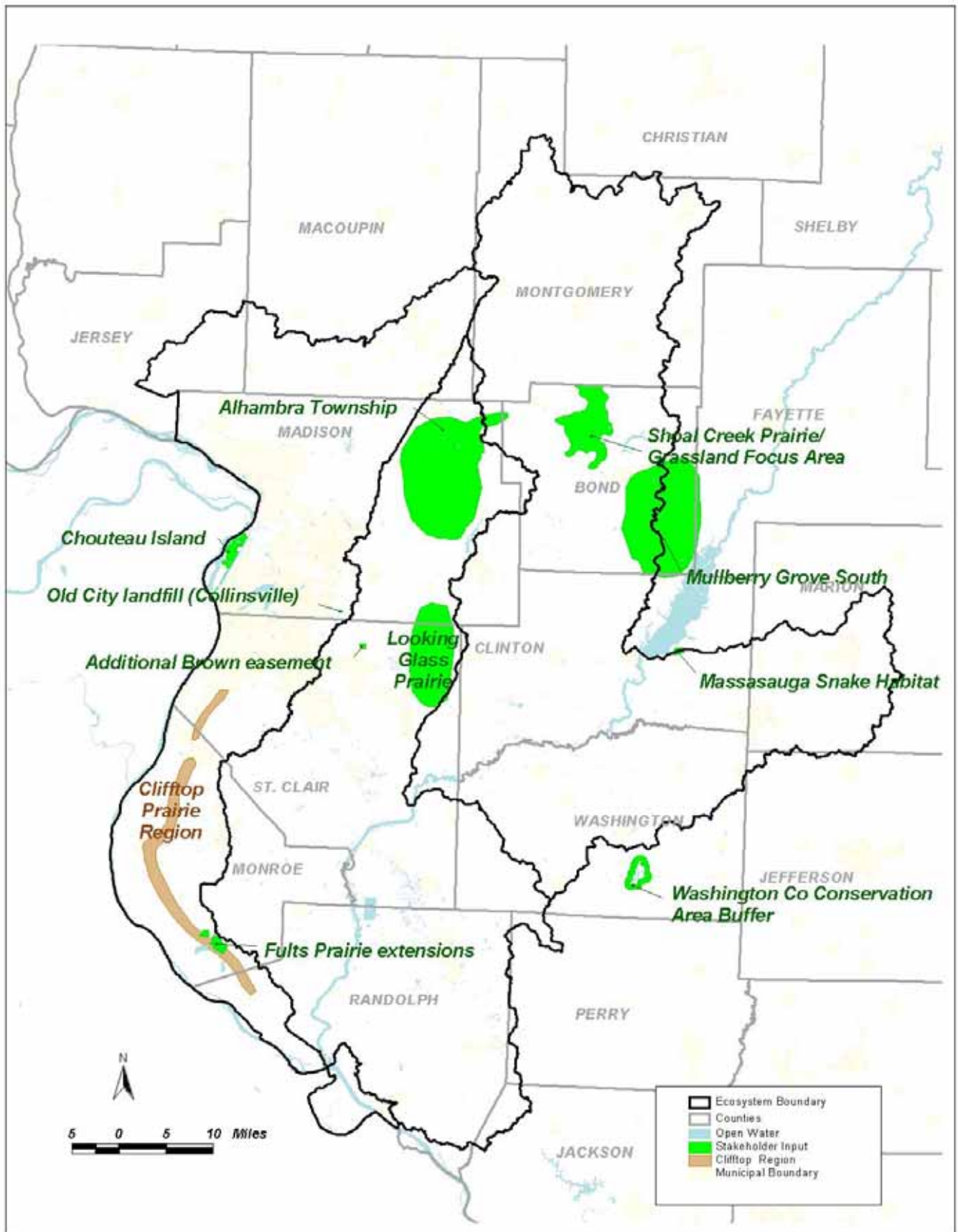
- Old City Landfill, Collinsville
- Massasauga Snake Habitat, Carlyle Lake
- Buffer to Washington County Conservation Area
- Restoration of strip mine lands with the area (See Figure 15)

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<sup>7</sup> University of Illinois & the Illinois Department of Natural Resources, (*A Plan for the Recovery of the Greater Prairie-Chicken in Illinois*) 2004

<sup>8</sup> Chouteau Island Coordination Team, US Army Corps of Engineers, St. Louis District, Southwestern Illinois RC&D, Inc.; *Chouteau Island Master Plan*; 2002

Figure 14 – Grasslands (Entire area)



### **Karst / Bluff:**

The karst region of Southwestern Illinois covers portions of Madison, Monroe, Randolph, and St. Clair Counties (See Figure 15). This region contains an estimated 10,000 sinkholes, with as many as 230 per square mile. Water percolating through cracks and fissures has eaten away at the limestone bedrock, leaving the underground landscape riddled with cracks, crevices and caves. As a result, gathering streams may disappear, only to reappear through the side of a cave as a spring, which may then form a new, or reconstituted, stream<sup>9</sup>.

This geology allows seepage from aeration systems almost immediate access to groundwater. Figure 16 reflects several identified recharge areas, although it is generally accepted that further research needs to be conducted to refine existing areas as well as to identify new recharge areas within this karst region. Additional research also needs to be conducted to determine if additional populations of *Gammarus acherondtes* (Illinois cave amphipod) exist, as well as monitoring the condition of existing known populations. This species in particular has declined over the past few decades, indicating that growth within the region is having a negative impact on groundwater quality. The most common threat to the groundwater within the region is malfunctioning septic systems. Where feasible, regional sewer systems should be incorporated to alleviate this situation.

Nearly half of Illinois' surviving loess hill prairie is found along the bluffs in southern St. Clair, Monroe and northern Randolph Counties. Only 173 acres of what remains is high-quality prairie, less than one one-thousandth of the acreage that prairies covered in pre-settlement days.

Thousands of acres of mined properties lie idle in southwestern Illinois (See Figure 15). Some of these properties, such as the Peabody River State Fish & Wildlife Area, have been converted to wildlife use, but many more opportunities exist. With proper vegetation control, to reduce the impact of exotics and through the proper selection of warm and cool season grasses, these properties can be utilized to regain a portion of the 99.9% of native grasslands that have been lost throughout the State of Illinois. As a result of the habitat loss many species of grassland birds, mammals, reptiles and amphibians have seriously declined. An excellent example is the Greater Prairie Chicken (*Tympanuchus cupido pinnatus*), whose populations in 1900 covered all but the immediate southern tip of Illinois. In 2002, this species only supports populations in two areas in east-central Illinois.

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<sup>9</sup> Illinois Department of Natural Resources, *The Sinkhole Plain, An Inventory of the Region's Resources*, 1999

Figure 15 – Karst & Mined Areas (Entire region)

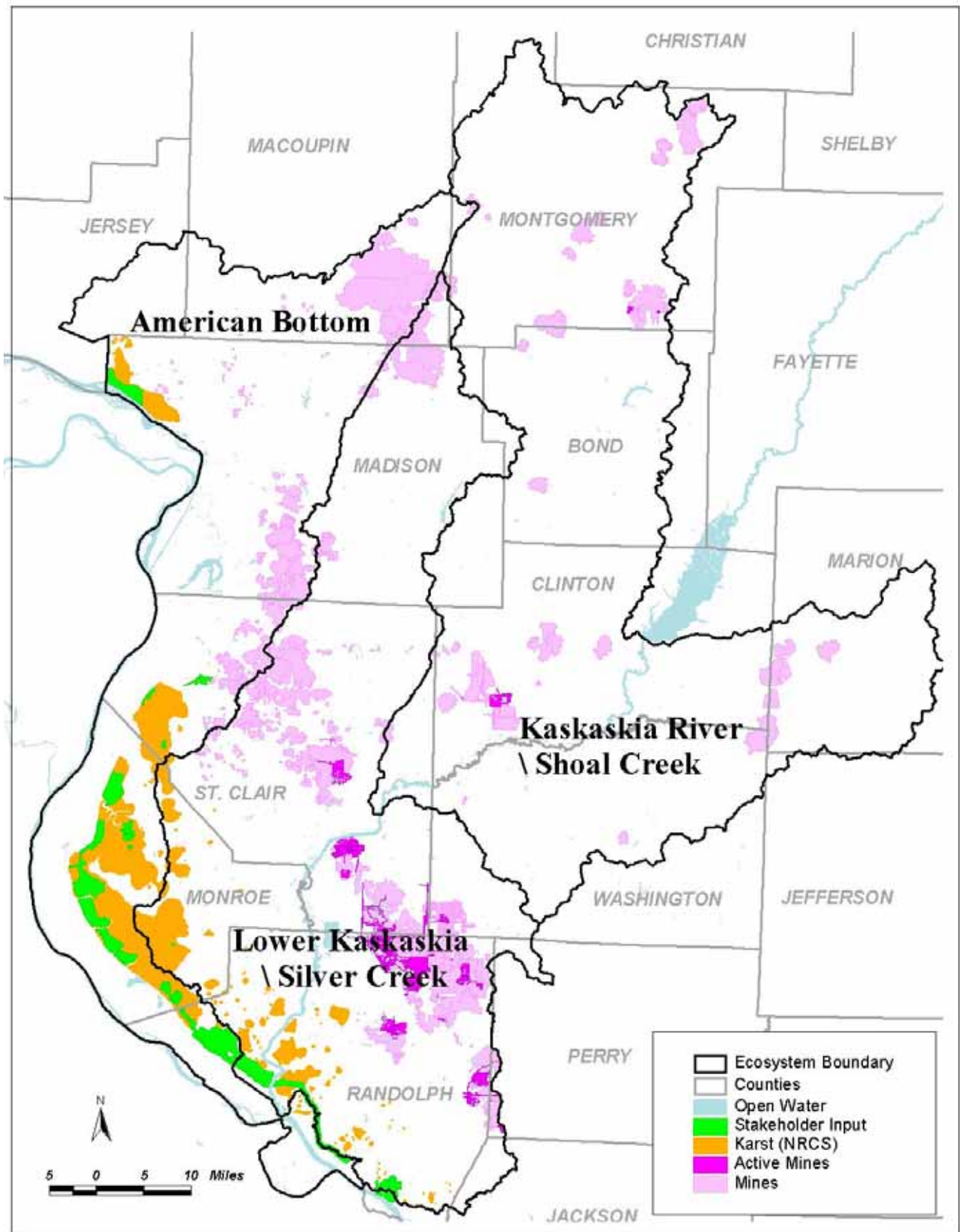
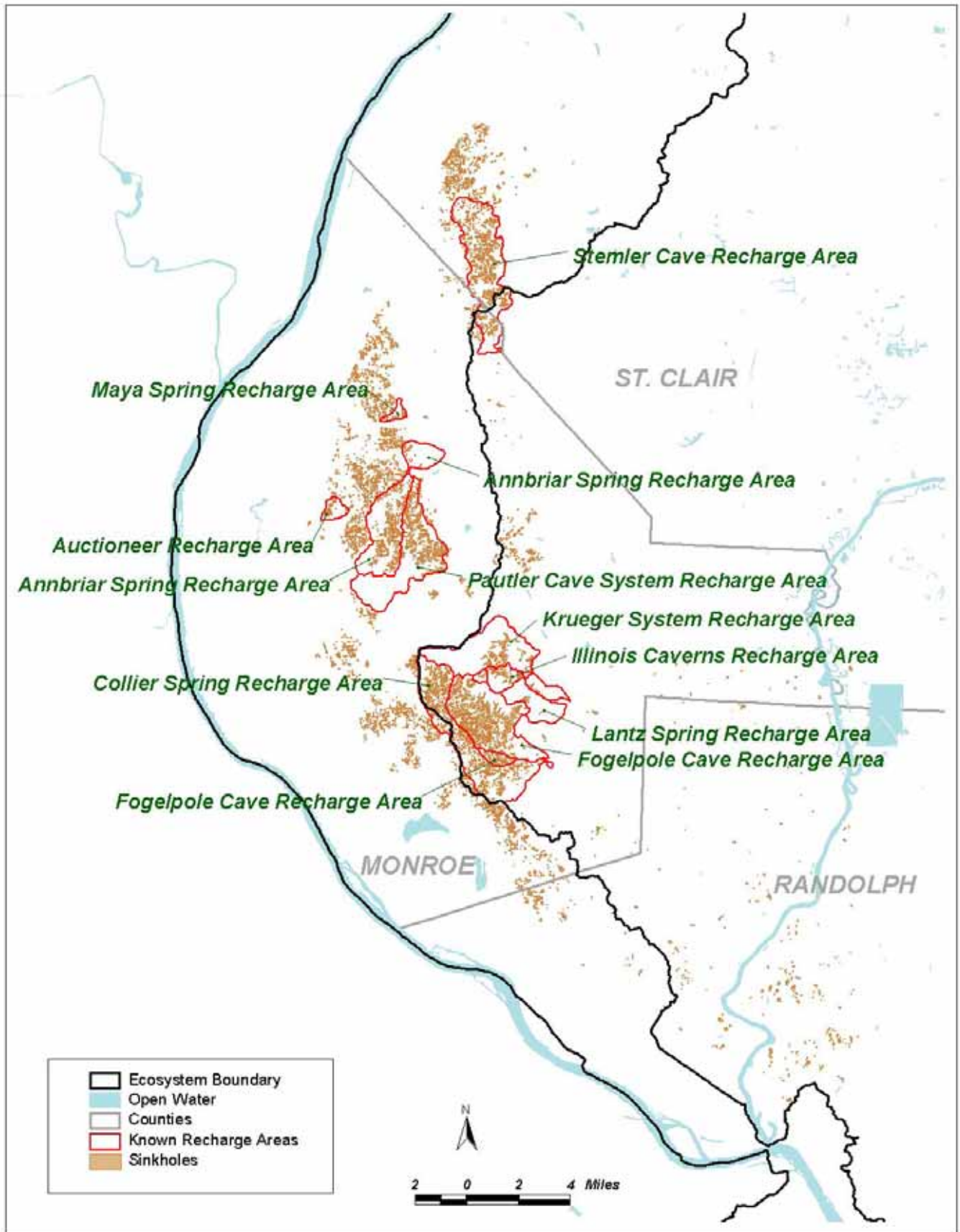


Figure 16 - Sinkholes & Recharge Areas (Entire region)



## **Farmland:**

Loss of farmland within the Metro East is a serious concern as the reduction and fragmentation of agricultural areas generally leads to a decline in the ability of suppliers to service those markets. In addition, agricultural activities are an important component of the economy within the Metro East, as depicted in Figure 17.

**Figure 17**

Southwestern Illinois - Agriculture at a Glance (2002 Census of Ag. – County Data)

	<b>Bond</b>	<b>Clinton</b>	<b>Madis</b>
Farms	668	915	
Ave. Size	374	278	
Acres of Cropland	168,843	227,552	20
Market Value of Products (average per farm)	\$61,678	\$153,809	\$0
Cattle & Calves Inventory	11,378	36,849	
Hogs & Pigs Inventory	10,810	177,880	
Chickens/Layers	597	514,945	NA
Corn (bushels)	5,712,899	8,725,448	11,2
Wheat (bushels)	792,629	1,382,141	1,00
Soybeans (bushels)	2,899,038	3,904,424	4,8

	<b>Randolph</b>	<b>St. Clair</b>	<b>Washin</b>
Farms	823	811	
Ave. Size	308	333	
Acres of Cropland	205,706	249,638	30
Market Value of Products (average per farm)	\$47,644	\$83,773	\$10
Cattle & Calves Inventory	17,967	6,985	
Hogs & Pigs Inventory	10,034	30,188	
Chickens/Layers	182	790	
Corn (bushels)	3,615,877	9,772,839	6,5
Wheat (bushels)	1,466,483	1,287,758	2,5
Soybeans (bushels)	6,302,470	6,578,045	4,2

Protection efforts for farmland cannot begin until a determination is made of what lands are truly important to protect. It is unreasonable to believe that all, or even most, farmland can be saved, so we must focus on strategic parcels, or blocks of land, that if protected, could retain a reasonable level of agricultural production within the region. As land continues to be consumed, agricultural production may change from row crop to farm stands and other agri-tourism related activities, thereby meeting the needs of future generations.

In searching for a mechanism to identify key parcels, we looked to a project completed within the State of Maryland. In this project, led by the American Farmland Trust and the Chesapeake Bay Foundation, GIS was used to merge prime farmland with urban growth projections as well as natural, cultural and historic features on the landscape. Where certain data overlaid, a determination was made that this particular parcel could receive higher consideration when reviewed for protection efforts.

For purposes of this report, we have completed analysis of the “strategic farmland” within one county in the region. The identification of strategic farmland in Monroe County is based on the combination of high-quality farmland, natural resources, cultural resources, and growth pressure that is present on a particular unit of land. For this analysis, the county was divided into a grid of 160 acre units. Each unit was assigned a number of points based on the presence and quantity of each category of resources. Additional points

were assigned for the amount of land within the unit that is projected to develop by the year 2030. The units with the highest number of points represent areas that have high resource value and are experiencing pressure to develop.

The agricultural resource points were based on two layers of information: soil quality and existing agricultural land use. The soil data is from the USDA Natural Resources Conservation Service digital soil survey (SSURGO) for Monroe County. Soils that were classified as “Prime farmland”, “Farmland of statewide importance”, or conditionally prime (prime if drained, prime if protected from flooding, etc.) moved on to the next step in the analysis. Land in agricultural use was selected out of the USGS National Land Cover Dataset (2000). The agricultural land was used to clip the high-quality soil data, effectively limiting the data to only the areas that have high quality soil and were in agricultural use in 2000. This output was then split into units of 160 acres, and the percentage of land in each unit that was high-quality agricultural land was calculated. Units with 80% to 100% high-quality agricultural land were given five points. Units with 60% to 80% were given four points, and so on. Units with no high-quality agricultural land were given a score of zero.

Natural resources points were assigned based on the presence of multiple overlapping resources. The resource data used for this analysis includes: karst geology/topography, streams, floodzones, aquifer recharge areas, and generalized locations of threatened and endangered species. For each layer, any unit that intersected the resource area was given a point. The total number of natural resource points for each unit was calculated by adding up the points earned from each of the five resource layers, for a maximum of five possible natural resource points.

Cultural/historic resource points were based on historic districts (polygons) and historic features (points) from the Illinois Historic Preservation Agency database. One point was assigned to each unit that intersects a historic district. Four additional points were awarded based on the number of historic features that are located within each unit. Units with one feature were assigned one point, two features earned two points and so on. Units with four or more features were assigned the maximum number of four points. The total number of points for historic/cultural resources is the sum of the points for historic feature and the point for a historic district, for a maximum score of five points.

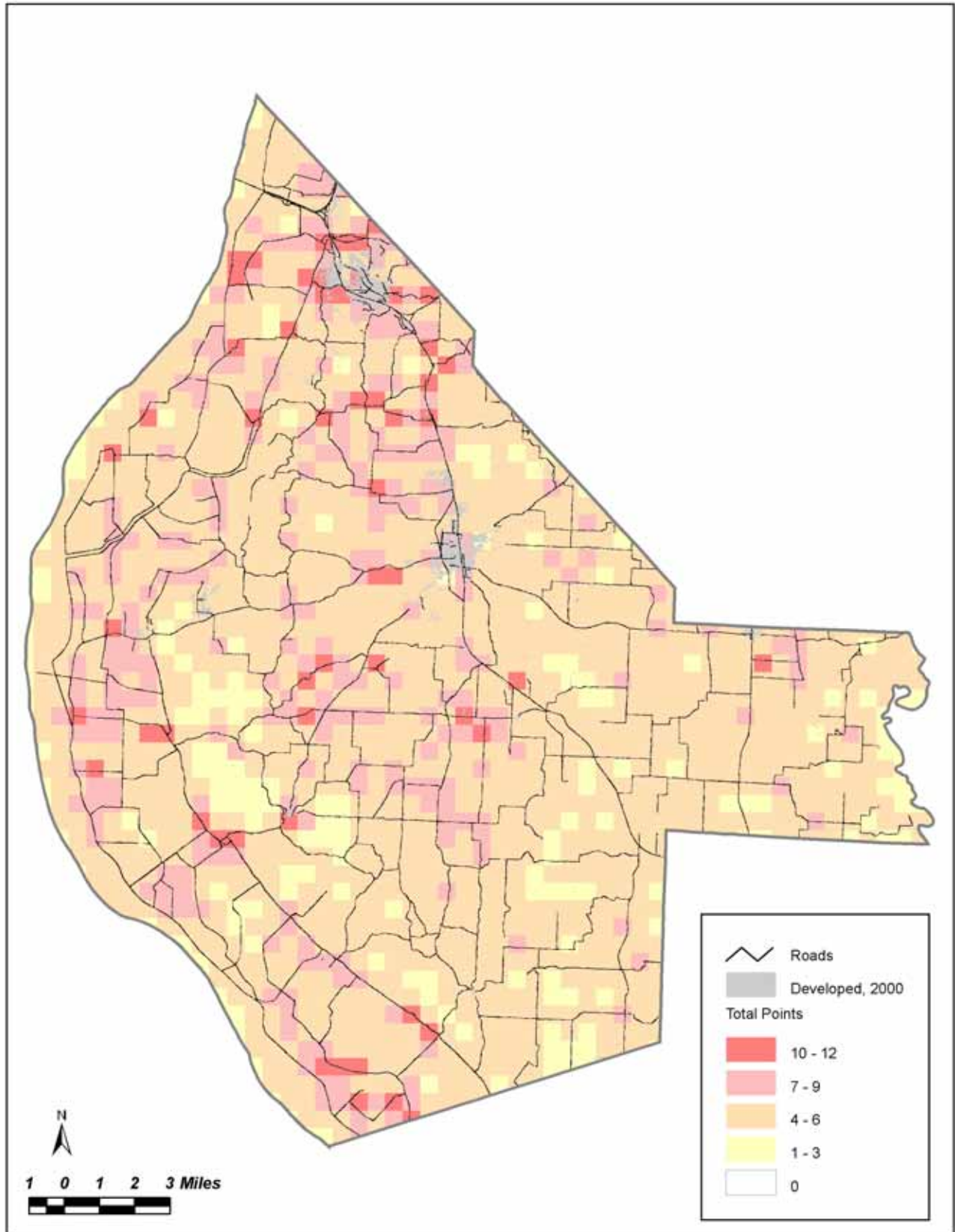
Points for development pressure were based on projected land use change between the 2000 land cover layer and the outputs of the Land Use Evolution and Impact Assessment Model (LEAM) for the year 2030. LEAM uses sophisticated computer modeling technology to project which 30m x 30m cells of the land cover dataset are likely to change over a given period of time. The difference in developed cells between the 2000 land cover dataset and the 2030 land cover (as modeled by LEAM) is the projected growth. The acreage of projected development within each 160 acre unit was calculated as a percentage of the area within the unit. Units with projected development of 20% or more were assigned the maximum value of five points. Lower percentages of projected development received fewer points, with zero points assigned for areas not projected to develop within the timeframe.

The final step of analysis was the calculation of the total number of points for each unit. Five points were possible in each of the four categories, for a total of twenty possible points. The scores for the units were divided into four equal-interval classes for the final figure. The highest score for a unit in Monroe County was 12 points. The combined acreage of units in the highest category (scores of 10, 11, or 12) is 4,241 acres, or 1.66% of the land in Monroe County.

This effort is an important first step in analyzing 'strategic' farmland within the Metro East. We are continuing to work with partners to fine tune the inputs, 'weighing' of criteria, as well as the best use of the end project.

<b>Point Range</b>	<b>Acres</b>	<b>Percent of county</b>
10 to 12	4,241	<b>1.66%</b>
7 to 9	45,345	17.79%
4 to 6	141,037	55.35%
1 to 3	64,189	25.19%
0	14	0.01%
<b>Total</b>	<b>254,826</b>	<b>100.00%</b>

**Figure 18 - Strategic Farmland Map (Monroe County)**



### **Cultural / Historic / Recreation:**

In considering “lands at risk” we have also tried to account for the rich cultural and historic heritage of the region that gives it a unique “sense of place”. Policies which focus on the preservation of cultural and historic resources within the region not only help communities to recognize and protect elements that depict a collective character, but also provide a backbone for many of the area’s strongest economic development, tourism and greenway investments for the future.

The Southwestern Illinois RC&D has been a partner with the Confluence Greenway for the past 8 years in an ongoing effort to educate citizens on the rich heritage that exists in our region specifically because of our location at the Mississippi and Missouri Rivers. The Confluence team seeks to identify cultural, historic and natural resources and to connect them; through a physical system of trails and greenways as well as a human network of specialists that can inform the public, advise the policy makers and celebrate with everyone what makes our region special.

GIS staff has been involved with mapping bicycle routes throughout the region that connect historic communities and sites, facilitating the way people access these assets and understand their significance. By focusing efforts on greenway development, investment in cultural and historic assets becomes integral to a lifestyle rich with physical activities, family oriented recreation opportunities and festivals that celebrate community heritage. The scenic views along the river bluffs still entice cyclists and families to visit. Local governments are tying into a network of several trail systems, including The Confluence Bikeway, Great American Bike Trail, American Discovery Trail and the Trans-America Trail. These major trails form the backbone of a total system that currently includes 312 miles of existing and 376 miles of proposed trails.

For the immediate southwestern Illinois region, Figure 19 illustrates a variety of cultural assets. In addition to trails, there are 25 state designated historic districts in the four counties of Madison, St. Clair, Monroe and Randolph. The presence of these districts immediately on the river’s edge demonstrates the impact of the riverfront on historic development patterns. There is also a growing body of data from both the state and local level on existing historic structures. The Illinois Historic Preservation Agency launched their HAARGIS website to display a statewide inventory of historic sites, with digital photo links to each point from the 1970 era. The data provided for four counties; included 6,947 structures to be verified and updated in light of growing suburban development. The GIS staff has been able to incorporate these points into our library and seek verification from local experts on the status and condition of structures.

As the 2004 anniversary focus on the Lewis & Clark expedition brought to mind, it was from Illinois that the explorers set forth. Drawing on the already well-established fur and river trades of the era, they gained knowledge and supplies from local settlers. Southwestern Illinois is rich with historical places, events and people that left a mark on the landscape. By identifying these and promoting them, we can often achieve the preservation of surrounding landscapes and the natural resources discussed in other sections of this report.

Figure 19 – Cultural / Historic / Restoration (Entire region)

