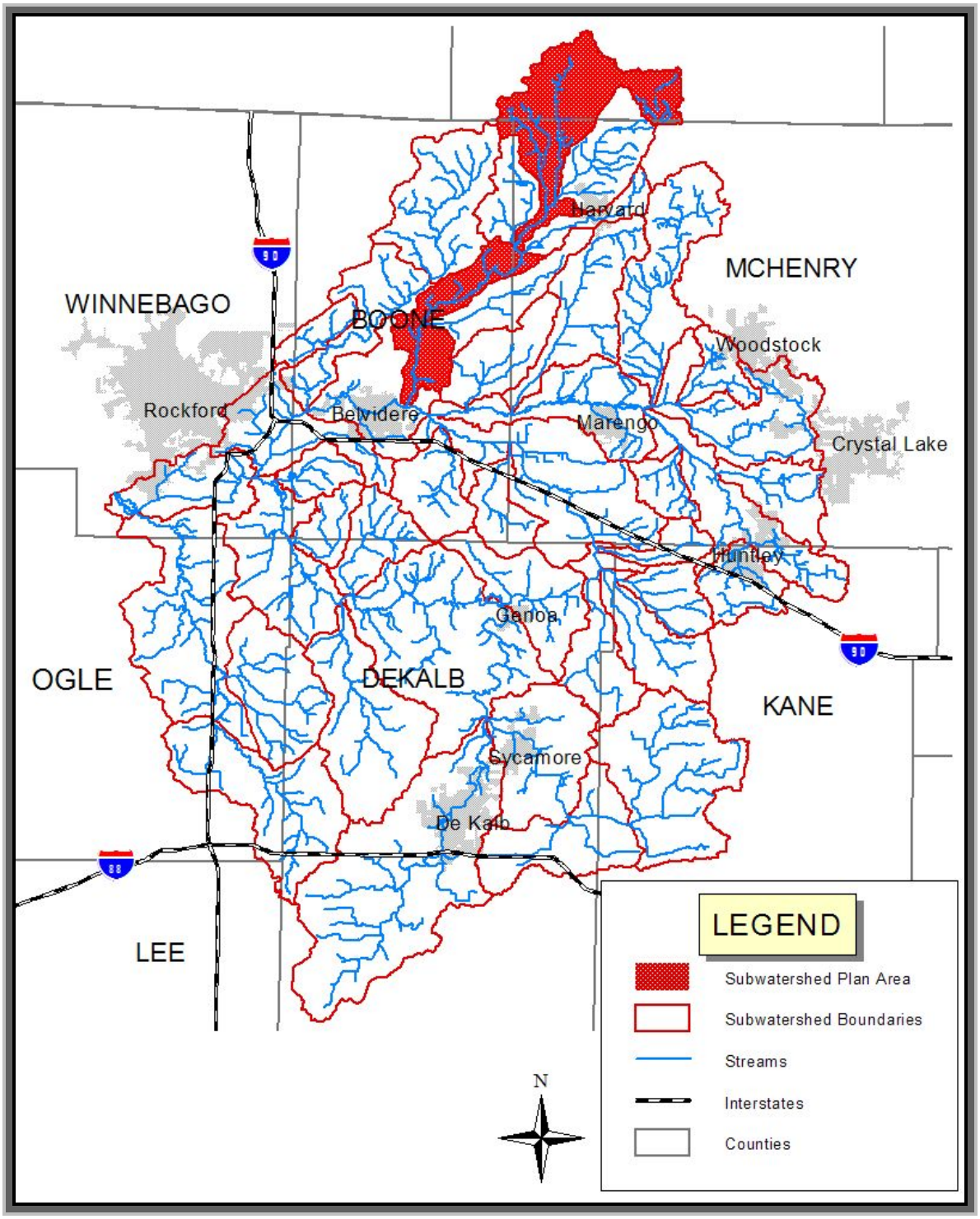
PISCASAW CREEK
SUBWATERSHED PLAN



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PREPARED BY THE
KISHWAUKEE RIVER ECOSYSTEM PARTNERSHIP

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Introduction:

This report is intended to serve as an interim report of existing natural resource conditions and concerns within the **Piscasaw Creek** subwatershed. It also establishes a framework for identifying strategies and recommendations that should be implemented to protect and enhance those natural resources.

Any protection strategies must be developed and implemented with awareness that agriculture has historically been, and will remain, a dominant land use in the Kishwaukee River Watershed, while at the same time recognizing that the amount of land undergoing urban development is rapidly increasing. In order to develop feasible, cost effective strategies that will be accepted and implemented, it is critical that the concerns and issues affecting all stakeholders in the subwatershed be considered. The recommendations contained in this report are intended to spark interest in watershed protection and promote cooperation amongst stakeholders, whether it is at the federal, state, local, or individual landowner level. Only by working together can we create and implement a plan that will provide a benefit to the entire Kishwaukee River watershed and maintain a high quality of life for those who live, work, or play here.

This natural resource information was obtained from various public sources, as well as from input from those stakeholders participating to date in this planning effort. If during the course of reviewing this information, you should find erroneous or out of date information, please contact the Kishwaukee River Ecosystem Partnership so that the plan can be kept current and relevant. Your local knowledge and participation is key to achieving our goal of protecting the character of the watershed and our way of life.

For more detailed information on the data used to compile this report, please refer to the Kishwaukee River GIS Dataset or website produced by the Kishwaukee River Ecosystem Partnership. http://krep.bios.niu.edu

Summary of Subwatershed Features:

Location

The Piscasaw Creek Subwatershed is a large, 67.1 square mile subwatershed that stretches from the Kishwaukee River near Belvidere northeast through rural Boone and northwest McHenry County and into southern Wisconsin (Walworth County). Piscasaw Creek is the receiving stream for several smaller subwatershed's, including Geryune Creek, Mokeler Creek, Lawrence Creek, and Little Beaver Creek. These subwatershed's account for an additional 61 square miles of drainage area, making the Piscasaw the fourth largest tributary to the Kishwaukee (behind South Branch Kishwaukee, Coon Creek, and Kilbuck Creek). The subwatershed is characterized as a rural area, dominated by row crops and rural grasslands (pasture), which make up 91% of the land cover in Illinois. The creek has its origins west of the town of Walworth, Wisconsin, and flows generally south to its confluence with the Kishwaukee River just upstream of Belvidere, Illinois.

Stream and Stream Corridor Characterization

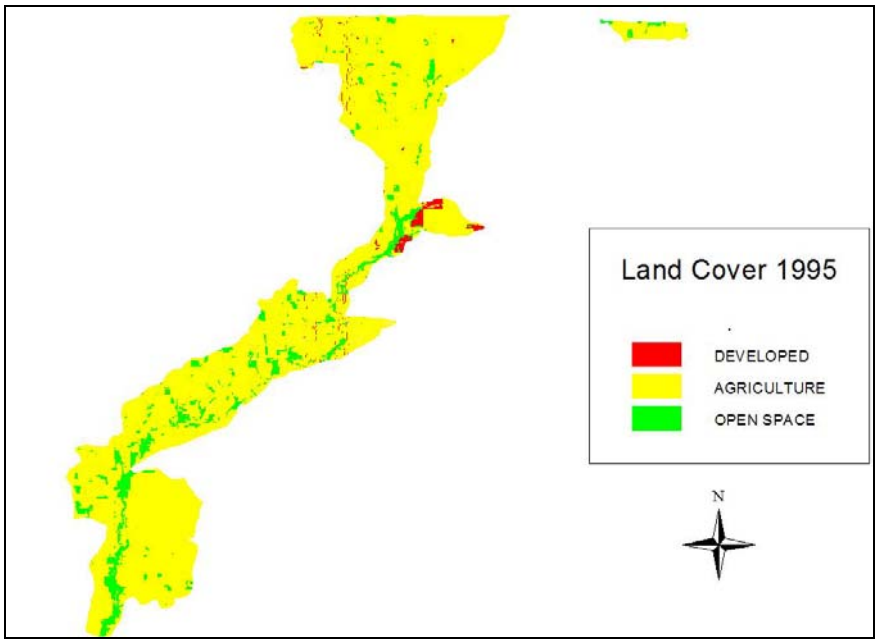
Piscasaw Creek varies in size from a small 1st order stream at the headwaters near Walworth, Wisconsin, into a 5th order stream through much of Boone County. Upstream of Chemung, Illinois, Piscasaw Creek is and its tributaries are almost entirely channelized, and the natural stream corridors have been heavily encroached upon by row crop agriculture (streamside buffer width typically < 50 ft). This region of the stream either was or currently is under the jurisdiction of the Chemung Drainage District. Downstream of Chemung, there is no record of a drainage district, and consequently, there is little channelization on the main stem. The adjacent landuse along the channel is predominantly rural grasslands (active and vacant pastures) and narrow woodlands. These practices function as a fairly natural stream corridor buffer, varying in with from 100 feet to more than 500 feet on either side of the stream channel.

- 49 % of all stream channels are channelized (Average of all Kishwaukee subwatershed is 72%); 80% of the channelization is upstream of Chemung.
- 36% of the main stem is channelized (compared to the 59% for average of all Kishwaukee subwatershed's); only 10% of the stream channel is channelized downstream of Chemung.

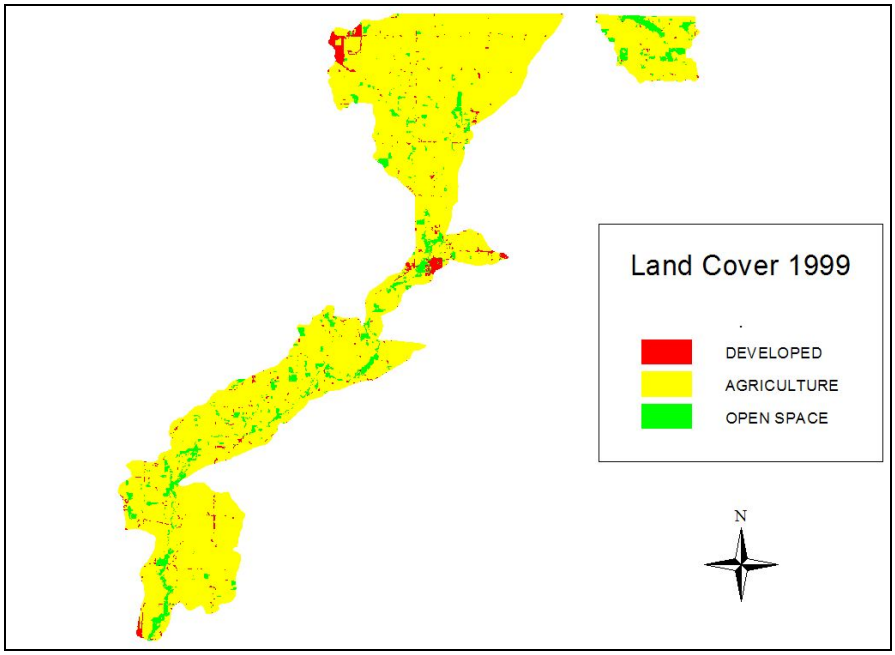
Piscasaw Creek at Mill Rd

Land Cover

Below are simplified Land Cover maps for the subwatershed according to the 1995 and 1999 Illinois Department of Natural Resources GIS land cover datasets.

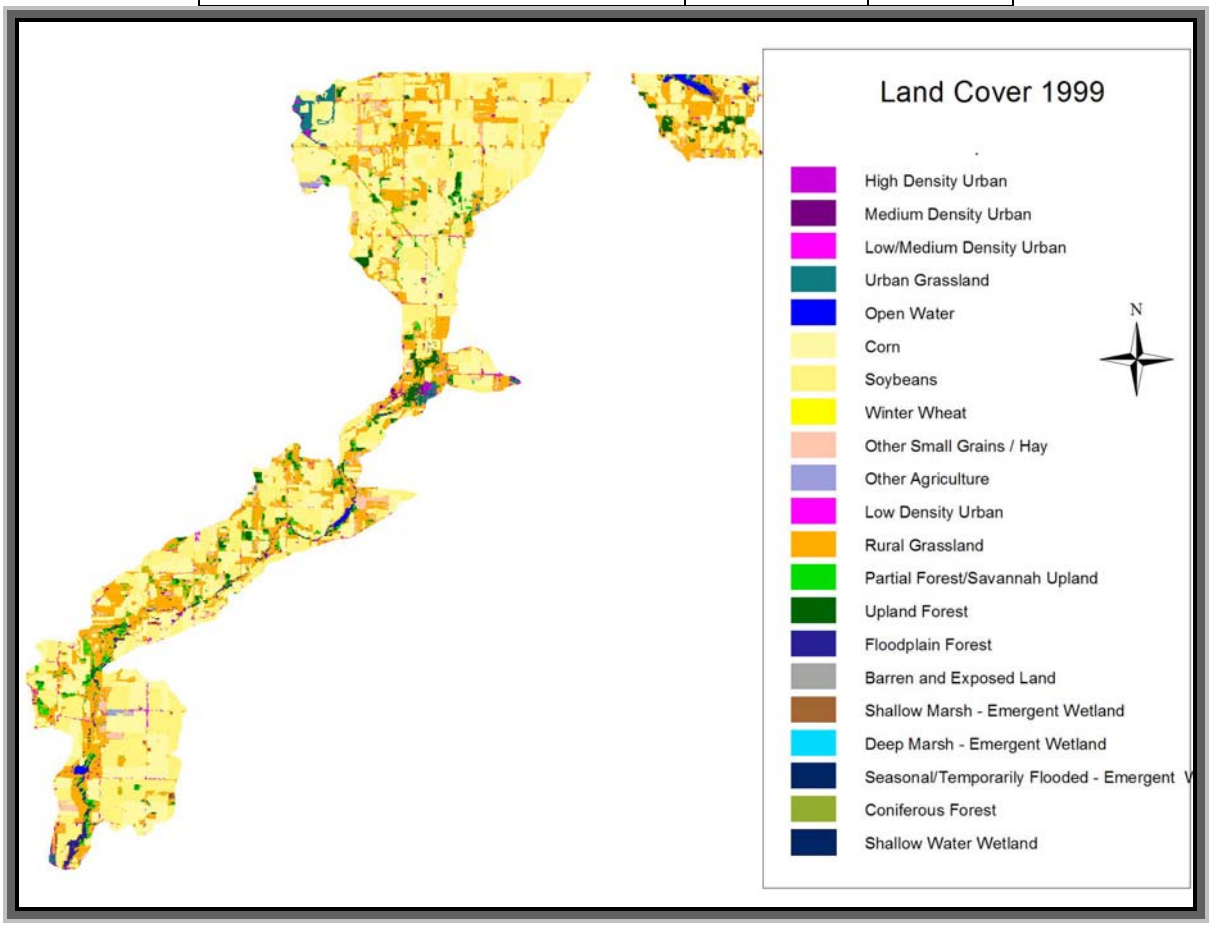


Basic Land Use 1995	Percentage of Subwatershed
Developed Land (urban areas, subdivisions, etc.)	*1.3%*
Agricultural Land (row crops, pasture, etc.)	*90.0%*
Open Space (forests, wetlands, etc.)	*8.7%*



Basic Land Use	Percentage of Subwatershed
Developed Land (urban areas, subdivisions, etc.)	*2%*
Agricultural Land (row crops, pasture, etc.)	*92%*
Open Space (forests, wetlands, etc.)	*6%*

1999 Land Cover of the Piscasaw Creek Subwatershed		
Land Cover Classification	Area (acres)	Percent
High Density Urban	35.4	0.11%
Medium Density Urban	138.2	0.42%
Low/Medium Density Urban	0.0	0.00%
Urban Grassland	331.2	1.00%
Open Water	162.6	0.49%
Corn	10,916.9	32.86%
Soybeans	10,729.5	32.30%
Winter Wheat	0.7	0.00%
Other Small Grains	859.5	2.59%
Double Cropped Wheat/Soy	0.0	0.00%
Other Agriculture	67.7	0.20%
Low Density Urban	308.7	0.93%
Rural Grassland	7,682.2	23.13%
Partial Forest/Savanna Upland	615.9	1.85%
Upland Forest	967.5	2.91%
Floodplain Forest	282.6	0.85%
Barren and Exposed Land	27.2	0.08%
Shallow Marsh/Wet Meadow	92.3	0.28%
Deep Marsh	0.0	0.00%
Seasonally/ Temp Flooded Wetland	0.0	0.00%
Coniferous Forest	0.0	0.00%
Shallow Water Wetland	0.0	0.00%
Swamp	0	0.00%
TOTAL	33,	100.00%

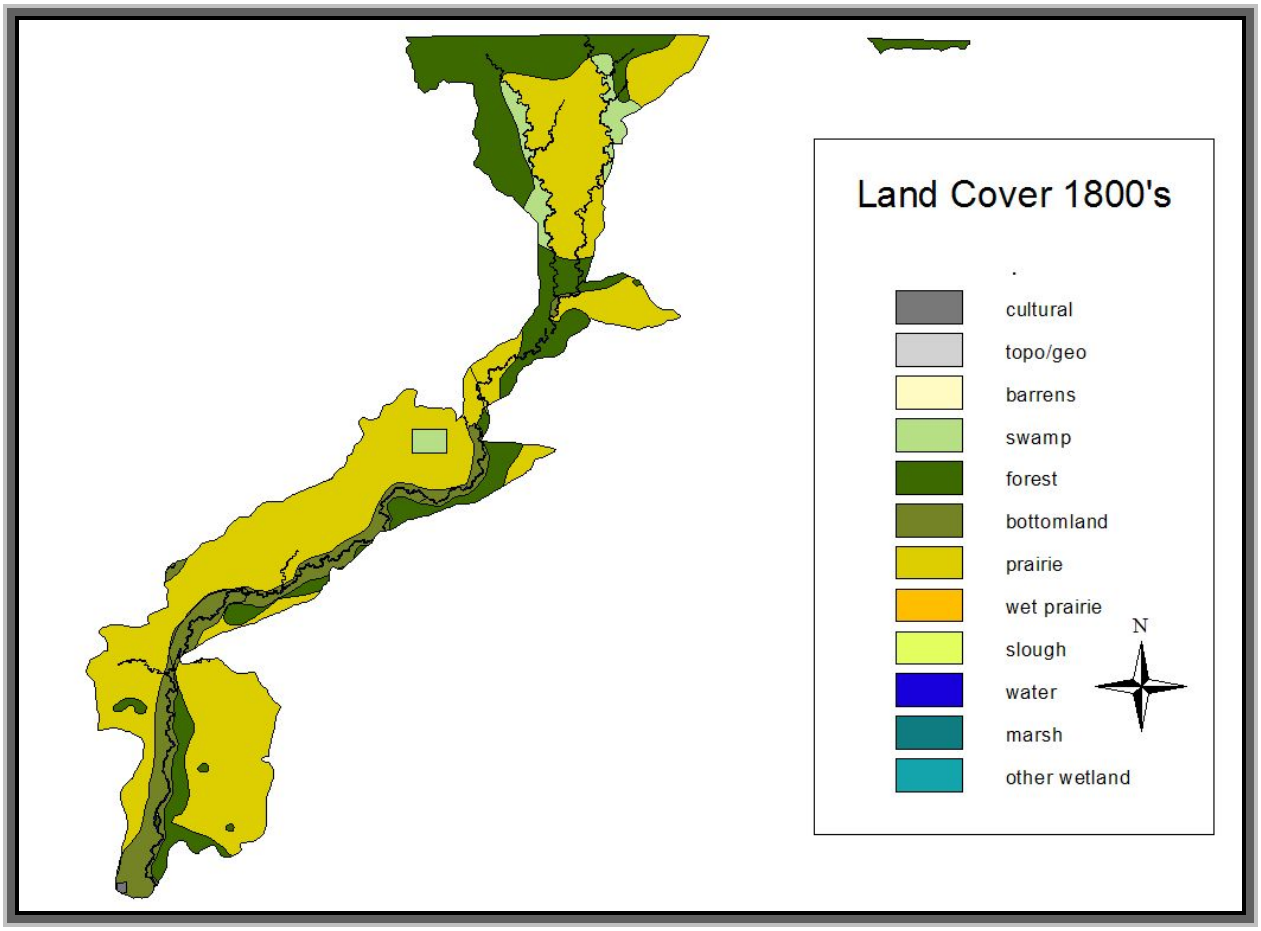


Historic Land Cover -

The following is a tabulation of the estimated Land cover for the subwatershed in the 1820's.

Land Cover Type	Acreage
Bottomland	2549
Prairie	14907
Forest / Woodland / Savanna	6053
Slough	4.1
Swamp	950.1
Water	398
Developed	20

Source: IL Dept. of Natural Resources



Hydric Soils

Hydric soils are thought to underlie a significant portion of the subwatershed. About 23% of the subwatershed soils (7,026 acres) are hydric in nature (based on analysis of NRCS SURRGO data). Even though hydric soils make up about 23% of the subwatershed, wetlands make only about 3% of the subwatershed. Hydric soils are a key indicator to the existence of a pre-settlement wetland.

Wetlands

The National Wetlands Inventory (NWI) and State of Wisconsin have identified a total of 267 existing wetlands in the subwatershed, ranging in size from 0.002 acres to more than 73 acres. Including wetlands within Wisconsin, wetlands account for 1,366 acres, or about 3.2% of the subwatershed land surface.

NWI Wetlands in the Piscasaw Creek Subwatershed**		
Wetland Type	Number of Wetlands	Total Area (Acres)
Adventive Bottomland Forest	44	229
Deep Marsh	1	2
Shallow Marsh / Wet Meadow	107	713
Open Water Wetlands	50	40
Perennial	2	3
Shrub-Scrub Wetlands	8	16
Total	**212**	**1,003**

** Illinois portion of subwatershed only. There are an additional 50 acres in 9 wetlands in Wisconsin that is directly tributary to the stream. The 7.8 mi2 subcatchment SE of Walworth (cut off from the Piscasaw by development) contains an additional 300 acres in 46 wetlands.

Compared to other subwatershed in the Kishwaukee River Watershed, the Piscasaw Creek ranks 15th in terms of percentage of NWI wetlands. However, it should be recognized that the NWI maps are only one means of identifying the presence, location and extent of potential wetland areas. The absence of a NWI wetland designation in a given area does not preclude that area from still having wetlands subject to governmental regulations. It should be also noted that the NWI typically under-represent the amount of wetlands present in the northeastern Illinois landscape.

McHenry County has recently completed an Advanced Identification (ADID) Study of wetlands in the county. This includes about 25% of the Piscasaw Creek subwatershed. This information provides detailed information on the location of all wetlands as well as their quality.

Biological Resources of the Subwatershed:

Piscasaw Creek has recorded more pollution-intolerant species of fish than any other subwatershed in the Kishwaukee Watershed, including the main stem of the river. Lower Beaver and Kilbuck Creek recorded 15 species. All of these streams have at least two common similarities: almost no main-stem channelization and a substantial natural buffer along the stream corridor of wetlands, woodlands, and rural grasslands.

The McHenry County Conservation District is currently completing an inventory of breeding birds: reptiles and amphibians; and butterflies within the subwatershed. Information on these databases can be obtained from the MCCD by calling (815) 338-6223.

Fish

FISH OF THE PISCASAW CREEK SUBWATERSHED

Total Species of Fish Documented in the Subwatershed: 46
(3 species not collected in the last 30+ years)

Genus / species	Common Name	Collection Year	Pollution Intolerant?	Data Source
Lampetra appendix	American brook lamprey	1997		IDNR
Etheostoma zonale	banded darter	2001	Y	IDNR
Notropis dorsalis	bigmouth shiner	2001		IDNR
Ameiurus melas	black bullhead	2001		IDNR
Pomoxis nigromaculatus	black crappie	1997		IDNR
Moxostoma duquesnei	black redhorse	1997	Y	IDNR
Rhinichthys atratulus	blacknose dace	2001	Y	IDNR
Percina maculata	blackside darter	1997		IDNR
Fundulus notatus	blackstripe topminnow	1998		IDNR
Lepomis macrochirus	bluegill	2001		IDNR
Pimephales notatus	bluntnose minnow	2001		IDNR
Culaea inconstans	brook stickleback	1991		IDNR
Umbra limi	central mudminnow	1997		IDNR
Campostoma anomalum	central stoneroller	2001		IDNR
Cyprinus carpio	common carp	1997		IDNR
Luxilus cornutus	common shiner	2001		IDNR
SFISHemotilus atromaculatus	creek chub	2001		IDNR
Etheostoma flabellare	fantail darter	2001	Y	IDNR
Pimephales promelas	fathead minnow	2001		IDNR
Moxostoma erythrurum	golden redhorse	2001		IDNR
Notemigonus crysoleucas	golden shiner	2001		IDNR
Esox americanus	grass pickerel	1997		IDNR
Lepomis cyanellus	green sunfish	1998		IDNR
Nocomis biguttatus	hornyhead chub	2001		IDNR
Etheostoma nigrum	johnny darter	2001		IDNR
Micropterus salmoides	largemouth bass	2001		IDNR
Campostoma oligolepis	largescale stoneroller	1997	Y	IDNR
Etheostoma microperca	least darter	1991	Y	IDNR
Percina caprodes	logperch	1997		IDNR
Hypentelium nigricans	northern hog sucker	2001	Y	IDNR
Lepomis humilis	orangespotted sunfish	1965		IDNR
Carpiodes cyprinus	quillback	1997		IDNR
Etheostoma caeruleum	rainbow darter	2001	Y	IDNR
Lythrurus umbratilis	redfin shiner	1998		IDNR
Ambloplites rupestris	rock bass	1998	Y	IDNR
Notropis rubellus	rosyface shiner	1965	Y	IDNR
Notropis ludibundus	sand shiner	2001		IDNR
Moxostoma macrolepidotum	shorthead redhorse	2001	Y	IDNR
Moxostoma anisurum	silver redhorse	1998	Y	IDNR
Micropterus dolomieu	smallmouth bass	1997	Y	IDNR
Phoxinus erythrogaster	southern redbelly dace	2001	Y	IDNR
Cyprinella spiloptera	spotfin shiner	2001	Y	IDNR
Noturus flavus	stonecat	1965	Y	IDNR
Phenacobius mirabilis	suckermouth minnow	1997		IDNR
Catostomus commersoni	white sucker	2001		IDNR
Ameiurus natalis	yellow bullhead	2001		IDNR

Mussels

17 species of mussels have been collected in Piscasaw Creek, more than any other tributary subwatershed (some segments of the Kishwaukee River between the Rock River and Marengo have been found to contain as many as 19-20 species of mussels). A stream can be

classified by the Illinois Department of Natural Resources as a Natural Heritage Stream if ten or more species of living mussels are found with the stream system.

MUSSELS OF THE PISCASAW CREEK SUBWATERSHED

Genus / species	Common Name	Collection Date
Actinonaias ligamentina	Mucket	1998
Alasmidonta marginata	Elktoe	1998
Alasmidonta viridis	Slippershell	1996
Amblema plicata	Threeridge	1998
Anodontoides ferussacianus	Cylindrical Papershell	1998
Elliptio dilatata	Spike	1996
Fusconaia flava	Wabash Pigtoe	1998
Lampsilis cardium	Plain Pocketbook	1998
Lampsilis siliquoidea	Fatmucket	1998
Lasmigona complanata	White Heelsplitter	1998
Lasmigona compressa	Creek Heelsplitter	1998
Lasmigona costata	Flutedshell	1998
Pleurobema sintoxia	Round Pigtoe	1998
Pyganodon grandis	Giant Floater	1998
Strophitus undulatus	Squaw Foot	1998
Toxolasma parvus	Lilliput	1998
Venustaconcha ellipsiformis	Ellipse	1998

Birds

No published information, except Threatened & Endangered Species data (refer to next section), available as of draft date. Contact MCCD for more information.

Reptiles / Amphibians

REPTILES / AMPHIBIANS OF THE PISCASAW CREEK SUBWATERSHED

Genus / species	Common Name	Year Collected
Elaphe vulpina	Fox snake	Unknown
Elaphe vulpina	Fox snake	Unknown
Terrapene ornata	Ornate box turtle	Unknown
Thamnophis radix	Plains garter snake	Unknown
Thamnophis radix	Plains garter snake	Unknown
Thamnophis radix	Plains garter snake	Unknown
Thamnophis sirtalis	Chicago garter snake	Unknown
Rana clamitans	Green frog	Unknown
Rana clamitans	Green frog	Unknown
Rana clamitans	Green frog	Unknown
Rana clamitans	Green frog	Unknown
Rana pipiens	Northern leopard frog	Unknown
Bufo americanus	American toad	Unknown

Crustaceans

No information available. No known surveys completed for the subwatershed.

Threatened & Endangered Species:

There are currently eight recorded Federal or State threatened and endangered (T&E) species of plants and animals listed for the subwatershed. However, as additional biotic surveys of the subwatershed are implemented, the potential for undocumented T&E species to be located remains.

FISH

None recorded; no information available.

MUSSELS

Mussels

Genus / species	Common Name	Status	Source
Ellipto dilatata	Spike	Threatened	INHS
Alasmidonta viridis	Slippershell	Endangered	INHS

REPTILES

None recorded; no information available.

BIRDS

None recorded; no information available.

PLANTS

Genus / species	Common Name	Status	Source
Alnus rugosa	Speckled Alder	Endangered	INH

MAMMALS

Genus / species	Common Name	Status	source
Lontra canadensis	River Otter	Endangered	INH

INH = Illinois Dept. of Natural Heritage
INHS = Illinois Natural History Survey
MCCD = McHenry County Conservation District

Water Quality:

There has been a limited amount of water quality data collected for the subwatershed. The IEPA publishes water quality reports every other year and the latest report was released in 2002. This report provides general water quality ratings that are derived from the IEPA's Intensive Basin Survey (IBS), which is a survey of the watershed done on a 5-year cycle. The last IBS completed in the Kishwaukee River Watershed was in 1997. The Piscasaw Creek was not listed as impaired on the IEPA 303(d) List, although investigations by the USEPA in 1996 and 1997 revealed excessive nutrients in some reaches and noted violations of waters quality standards in reaches downstream of point source discharges.

Upstream of Mokeler Creek, the Piscasaw was found to have the following water quality violations (compared to state water quality standards):

Low Dissolved Oxygen:	August 1997
Excessive Residual Chlorine:	Oct. 1996, June 1997, August 1997,
Excessive Fecal Coliform:	Oct. 1996, April 1997, August 1997, Oct. 1997

None of the stations on Piscasaw Creek downstream of Mokeler Creek were found to be in violation of IL water quality standards during the USEPA investigations on 1996 – 1997.

Existing Development in the Subwatershed:

Population Data (2000 Census):

Total Population: 6,312
Population Density: 94 persons per square mile

Village of Walworth, WI: 2000 Census Population = 2,304 (70% of municipality within subwatershed)
Village of Sharon: 2000 Census Population = 1,549 (5% within subwatershed)
Village of Capron; 2000 Census Population = 961 (only about 10% of municipality is within subwatershed)

Miscellaneous Development Data

Development, defined as non-natural, non-agricultural land cover according to the IDNR 1999 Land cover, accounts for 573 acres, or 1.7% of the 42,929-acre subwatershed. This places the Piscasaw Creek subwatershed 33rd of 42 in terms of total percentage of the subwatershed that is developed. There are about 163 miles of paved roads in this subwatershed, which equates to around 2.4 miles (12,600 feet) of roadway for every square mile of subwatershed. There are about 330 wells recorded within the subwatershed, or 4.9 per square mile, which indicates that most residents get the drinking water from shallow private wells.

Point Source Discharges

There are 3 known permitted point source discharges within the subwatershed.

Permit #	Name	Discharge Rate (gallons/day)	Discharge Rate (cfs)	Receiving Stream	Receiving Stream 7Q10 (cfs)
WID988614376	Fontana – Walworth WWTP	1,450,000	2.24	Piscasaw Creek	0.5
ILD984778969	Dean Foods - Chemung	166,000	0.26	Piscasaw Creek	2.7
??	Sharon Foundry	??	??	West Br. Piscasaw Cr.	0.0

The 7-day, 10 year low flow for the Piscasaw Creek near its confluence is 6.8 cubic feet per second (cfs). Effluent from point sources account for 37% of this flow (2.5 cfs)

Drainage Districts

There is one drainage district known to have operated in this subwatershed at one time or another. It is not known whether or not this drainage district is actively maintaining the channelized segments of the streams in the subwatershed.

- Chemung Drainage District

Dams

There are no known dams on the perennial streams in the subwatershed.

Development Growth in the Subwatershed:

The population in the Piscasaw Creek subwatershed grew from 4,934 in 1990 to 6,312 in 2000 (U.S. Census Data). This represents a 28% increase in population over the last 10 years, which indicates that the population growth was moderate (average subwatershed growth is 33.5%). This subwatershed ranked 9th of 42 in terms of net population change (+1,378).

The amount of land developed between 1995 and 1999 was calculated to be about 230 acres, which is a 68% increase in developed land. This percentage of increase is 23rd most of the 42 subwatershed's.

There is one municipal treatment plant within the subwatershed at this time and it is likely this plant will expand their capacity in the next decade to accommodate the expected additional development in and around the Walworth area.

Existing Watershed Restoration and Preservation Efforts:

Protected Open Space

There are two publicly owned parcels that are entirely or partially within the subwatershed:

Name	Acreage	Owner
Beck Woods	243	MCCD
O.O. Stimes	25	BCCD
Total	268	

Based on available information, there are 32 parcels enrolled in the Conservation Reserve Program, totaling 343 acres

The total amount of protected open space is 611 acres, or 1.4% of the subwatershed. The protected open space also only includes 1.5 miles of stream (950 ft at OO Stimes and 7,200 ft at Beck Woods). This represents only 4% of the main stem of Piscasaw Creek and 2% of all stream channels including tributaries. 98% of the streams in the subwatershed do not have any formal protection.

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Local Watershed Organizations / Preservation Groups

Friends of the Kishwaukee River

Existing Plans / Strategies to Protect the Watershed

McHenry County Watershed Development Ordinance.

Natural Resource Concerns:

Upon inspecting the available watershed data, the Kishwaukee River Ecosystem Partnership has identified the following natural resource concerns:

- Excessive phosphorus loading in the upper subwatershed, most likely from point source discharges (phosphorus levels more than 4 times higher in concentration downstream of WWTP discharge than upstream of WWTP discharge). There may be a lack of effective nutrient management plans / over application of fertilizers.
- Channelization of main stem and extensive encroachment of agriculture into the stream corridor has drastically degraded the aquatic ecosystem upstream of Chemung.
- There is a general lack of protected open space in the subwatershed. (CRP parcels, private easements, public parks/preserves, etc.)
- Development pressure, while generally low, may increase drastically if development adjacent to Poplar Grove and Belvidere municipal boundaries occurs.

Recommendations:

Below are the Kishwaukee River Ecosystem Partnership's recommendations to protect the subwatershed. These recommendations are intended to provide the local stakeholders with ideas and strategies that they can implement to preserve, protect and enhance the natural resources.

- **Work with municipal & county development departments to revise development guidelines to mandate innovative land planning and stormwater management techniques which minimize runoff from development and maximize pollutant removal before runoff reaches the stream corridor or existing wetlands. In order to preserve the Kishwaukee Watershed's high-quality resources, *Conservation Development* must be the rule, rather than the exception in all future development.**
- Investigate impacts of point source discharges on the stream ecosystem and coordinate with decision makers to insure effluent quality that is within current and proposed water quality standards. Develop a strategy to address nutrients in effluent to insure discharges are close to background levels observed in reaches without point sources.
- Restore, enhance or protect existing open space parcels.
- Educate and assist agricultural landowners with parcels along the stream corridor to enroll natural open space and cropland in programs to protect high quality biological resources along the stream corridor.
- Work with local drainage districts and/or individual property owners to develop and implement stream channel maintenance programs that are cost effective and ecologically sensitive so that water quality and biodiversity can be maintained, or enhanced (invasive species removal, instream habitat installation, woody debris management, etc.).
- Coordinate and support the protection of undeveloped parcels that have wetlands, floodplain, perennial or ephemeral streams, woodlands, or other high quality natural resources.
- Work with SWCD, NRCS and local landowners to implement conservation tillage and nutrient management plans.
- Increase landowner cooperation to expand natural stream buffers to 100+ feet on either side of channel. This would create an additional 391 acres of Filter strips. Work with SWCD's and NRCS to encourage landowners to enroll in Conservation Reserve Program (CRP).
- Riparian buffers are also needed in the floodplain