

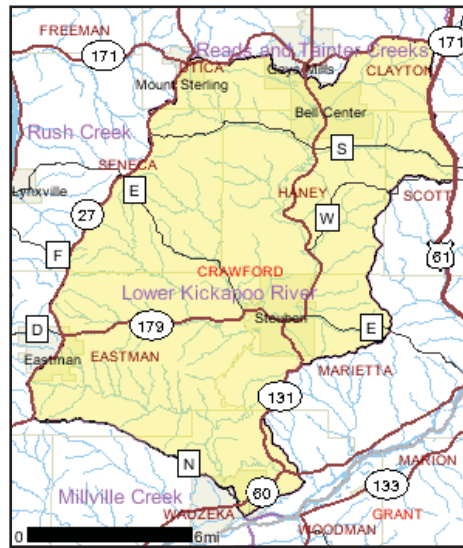
## 2011 Water Quality Management Plan Update

Lower Wisconsin Basin, Wisconsin

November 2011

The Lower Kickapoo River Watershed lies entirely within Crawford County. It includes the reach of the Kickapoo River from Gays Mills downstream to where the Kickapoo meets the Wisconsin River. As with other watersheds in this system, tributary streams have a fairly steep gradient. A significant percentage of land is in woodland. Some sizable wetland complexes exist in the Kickapoo River floodplain.

The Kickapoo River Wildlife Area and a portion of the Lower Wisconsin River State Riverway comprise most of the lands in public ownership in this watershed. Three municipal wastewater treatment facilities discharge in the watershed: Gays Mills, Eastman and Wauzeka. The Crawford County Animal Waste Management Plan ranked this watershed as a priority watershed for animal waste-caused water pollution problems. The Crawford County Soil Erosion Control Plan ranked the Plum and Otter Creeks Subwatershed second priority for controlling soil erosion.



Map 1: Lower Kickapoo River Watershed



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### Watershed Details

#### Population and Land Use

Forest and agriculture dominate land use in this watershed with 50% and 41% of the total area, respectively. Wetlands and open water and open space come in well behind in land use with only four percent and three percent, respectively. Suburban landscapes cover less than one percent of the watershed's area and grassland only accounts for one-half of a percent. Urban areas are even less evident in the Lower Kickapoo River Watershed with only four-hundredths of one percent of the total area.

| Land Use                 | Acres     | Percent of Area |
|--------------------------|-----------|-----------------|
| Forest                   | 48,256.12 | 50.19%          |
| Agriculture              | 39,103.91 | 40.67%          |
| Wetland                  | 4,031.35  | 4.19%           |
| Open Water & Open Space  | 3,339.93  | 3.47%           |
| Suburban                 | 862.89    | 0.90%           |
| Grassland                | 503.72    | 0.52%           |
| Urban                    | 38.25     | 0.04%           |
| Barren                   | 2.45      | 0.00%           |
| Total Acres in Watershed | 96,138.62 |                 |

## Hydrology

Hydrology is the study of water - its occurrence, circulation, distribution and properties. Water in Driftless Area streams is ultimately derived from rainfall and snowmelt that either percolates into the ground or runs off the land. In the most basic sense, the condition of a stream is a reflection of the watershed it drains. This concept is especially true in Driftless Area streams due to steep gradient, small watershed size, and extremely steep hills. To determine the watershed of a Driftless Area stream, one need look no further than the hillsides on either side of a stream. The steep hills found throughout the Driftless Area can shed water very quickly; consequently the vegetative cover and soil condition of hillsides are vital to the health of adjacent streams. The trees or healthy grasses that grow on these hillsides are what effectively retain water with their roots, leaves and ultimately the soil. This water then slowly moves through the underlying rock layers to become groundwater that is either pumped from wells for consumption or resurfaces as springs.

Some springs flow as if from an underground pipe while others gently bubble up out of the ground. This constant source of water that averages around 50 degrees Fahrenheit throughout the year is what keeps dissolved oxygen levels high in the summer and trout eggs developing properly throughout the winter. The greater absorption capacity within a watershed in the Driftless Area, the more water can percolate into the ground which slowly, but eventually, reaches a stream via clean cool springs. In a watershed with little or no absorptive capacity, for example one with acres of concrete, rooftops or soil devoid of vegetation, rainfall moves quickly over these surfaces to the nearest stream causing flash flooding.

Streamflow trends in southwestern Wisconsin were recently analyzed by comparing stream flow data to precipitation data. The study concluded that baseflow (stream flow during dry periods) has increased and peak flood flows have decreased over the last century in the Driftless Area of southwestern Wisconsin (Gebert, Warren A., William R. Krug. August 1996. Streamflow Trends in Wisconsin's Driftless Area. Water Resources Bulletin, American Water Resources Association. Vol. 32, No. 4.) Land management practices which allow more rainwater to infiltrate the ground rather than runoff to the nearest stream have been suggested as the primary reason for the discovered increase in baseflow and decrease in flood peaks.

Since most baseflow of Driftless Area streams is derived from groundwater, an increase in the amount of groundwater would intuitively be reflected in increased baseflow. Alternately, more water soaking into the ground results in less water running off to the nearest stream thus reducing flood levels. That's not to say that floods don't occur in the Kickapoo River Basin, but rather that they are less frequent and less severe than in the past.

Currently, the United States Geological Survey (USGS) operates three stream gauges on the Kickapoo River. These instruments record the water level and discharge, or flow, of the Kickapoo River on an hourly basis. One gauge is in Ontario, the second is downstream in La Farge, and the third is further downstream in Steuben. This type of information is useful for canoeists planning a Kickapoo River float trip.

## Ecological Landscapes

The Western Coulee and Ridges Ecological Landscape in southwestern and west central Wisconsin is characterized by its highly eroded, driftless topography and relatively extensive forested landscape. Driftless topography is a landscape untouched by glacial ice drifts. Water carved down through the soil and rock layers to create the hills and valleys characteristic of driftless topography. Soils are silt loams (loess) and sandy loams over sandstone residuum over dolomite. Several large rivers, including the Wisconsin, Mississippi, Chippewa, Kickapoo and Black, flow through or border this ecological landscape.

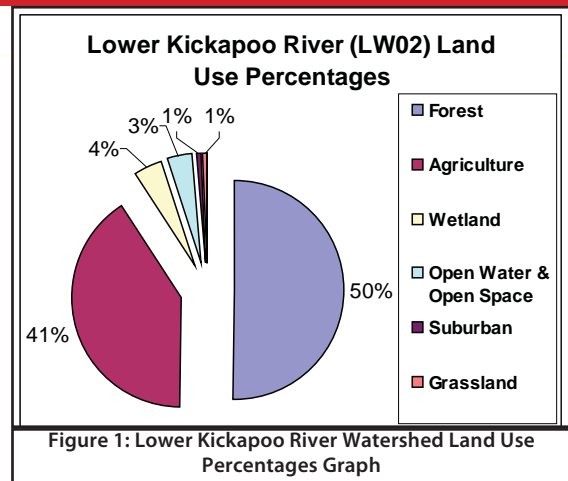
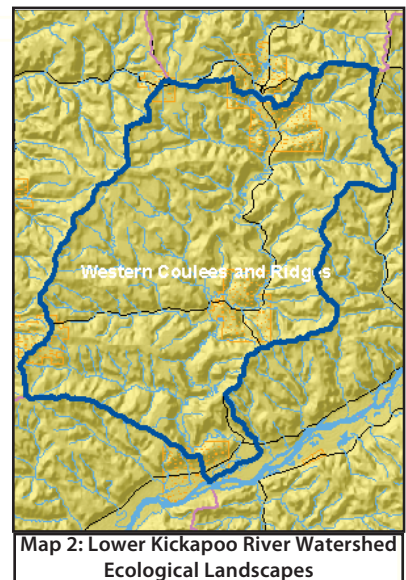


Figure 1: Lower Kickapoo River Watershed Land Use Percentages Graph

Historical vegetation consisted of southern hardwood forests, oak savanna, scattered prairies, and floodplain forests and marshes along the major rivers. With Euro-American settlement, most of the land on ridgetops and valley bottoms was cleared of oak savanna, prairie, and level forest for agriculture. The steep slopes between valley bottom and ridgetop, unsuitable for raising crops, grew into oak-dominated forests after the ubiquitous pre-settlement wildfires were suppressed. Current vegetation is a mix of forest (50%), agriculture (41%), and grassland (<1%) with some wetlands (4%) in the river valleys. The primary forest cover is oak-hickory (51%) dominated by oak species and shagbark hickory. Maple-basswood forests (28%), dominated by sugar maple, basswood, and red maple, are common in areas that were not subjected to repeated pre-settlement wildfires. Bottomland hardwoods (10%) are common in the valley bottoms of major rivers and are dominated by silver maple, ashes, elms, cottonwood, and red maple. Relict conifer forests including white pine, hemlock and yellow birch are a rarer natural community in the cooler, steep, North Slope microclimates.



### Historical Note

Before European settlement of the Kickapoo River Basin, the area was inhabited by many different Indian tribes for more than 2,000 years. The Ho-Chunk people (also known as Winnebago) were the most recent and numerous. The vegetation of the Kickapoo River Basin was curiously split between a sugar maple-basswood-dominated forest and an oak-dominated forest. A small concentration of pines was found along the upper river and prairie was scattered and largely found in the western half of the basin. Prairies were kept treeless by periodic fires, some set by the indigenous people. The Kickapoo River itself seemed to serve as an effective firebreak in the southern half of the basin as evidenced by the stark difference in forest types on either side of the river.

The only wetlands found were adjacent to the Kickapoo River between Viola and La Farge and near the Wisconsin River. The tributary streams were cold, clear, narrow, and deep and contained abundant numbers of brook trout, the only inland trout native to Wisconsin. Deer, black bear, wild turkeys, ruffed grouse, squirrels, wolves, elk, bison, and songbirds were present throughout the area.

European settlers began arriving in the basin by the early 1800's. People of various ethnic backgrounds settled in the basin, but Germans and Norwegians are the major ethnic groups residing in the basin today. By the 1850's, at least 50% of the basin was in agricultural production. The unique hill and valley characteristics of the Driftless Area influenced many cultural features of the region. Roads do not follow section lines; instead they wind through valleys or along ridgetops. Some township boundaries and other governing boundaries sometimes follow a river rather than the man-made section lines.

Conversely, property boundaries conformed to survey sections, which forced a square or rectangular farm onto very irregular topography. Much of the future soil erosion problems stemmed from this unfortunate choice of land parceling that did not follow land contours. Farmers cropped in square and rectangular shaped fields, as they had done in their homelands, with little regard for the steep slopes of the region. Some row crops were plowed up and down hills, creating an easy route for water to scour soil from hillsides.

The first major crop in the basin was wheat, but by the 1870's, the majority of agricultural income was derived from dairy. When the first farmers arrived in the basin, the land could support small numbers of livestock and the soil still retained the rich, water absorbing humus that had accumulated from centuries of forest and prairie vegetation. However, by the 1940's approximately 98% of the Kickapoo River Basin was in agriculture and only two percent of that was ungrazed woods. As the agricultural economy changed to dairy, trees were removed from steep hillsides so more cows could graze them. The rich humus valley soils were drained of their nutrients and soil absorbing capacity by constant plowing and cropping. As the hillside soils compacted under the constant weight of grazing livestock and vegetation became sparse, rains began to quickly run off the hills rather than soak into the once spongy soil. Water carved massive gullies into hillsides, which moved tons of soil to the valley floor.

Large amounts of runoff originating from ridge top fields also carved gullies into hillsides. Aldo Leopold once referred

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to rain on the hillsides of the Driftless Area as water running off a tin roof. By the 1930's, after nearly eighty years of cultivation and grazing, virtually every rainstorm resulted in flash floods. By this time, farming in the Kickapoo River Basin developed into a frustrating venture with every new rainstorm washing away valuable crops, pasture, and soil. An average of 12 to 15 feet of soil was added to many valleys. The once crystal clear streams which held brook trout were now shallow, wide, warm and full of silt. The tons of sediment that reached the valley floor buried many springs and groundwater seeps, causing many perennially flowing streams to become intermittent, flowing only after rainstorms. Streams became braided meanders with their channel lost to the massive amounts of sediment now in the valley. In-stream fish habitat was lost and the cold water brook trout were replaced by warmwater species such as suckers, carp, chubs, and other minnows. In 1934, the Soil Conservation Service, now named the Natural Resource Conservation Service (NRCS), launched the Coon Valley Erosion Project in the Coon Creek Watershed, just ten miles west of the Kickapoo River. They asked farmers to allow men from the newly founded Civilian Conservation Corp to enter their land and plant trees, fence livestock out of steep slopes, reconfigure fields to follow the hills' contours, plant grassed waterways, and stabilized gullies. Efforts to restore streams were also attempted by the addition of brush mats to eroding banks, wood and rock deflectors to force floodwaters away from streambanks toward the stream's center, and re-vegetation of raw streambanks. These land management practices were successfully adopted and are still in use today not only by farmers in the Coon Creek Watershed, but also farmers in the Kickapoo River Basin as well as the entire Driftless Area, including parts of Minnesota, Iowa, and Illinois.

Even after soil conservation measures were added to the land, immediate improvements were not visible. Flash floods continued to damage land and property in the basin. Major floods occurred in 1951, 1961, and again in 1965. It was about this time that a state biologist remarked that "because of watershed management problems... trout stream fishing in the coulee region may practically disappear in the future".

To stem flooding problems in the basin, a large dam at La Farge was proposed. It was during the 1940's to the 1960's that an improvement in land health could be seen as farms on marginal land in the basin did not survive and began to revert back to more natural conditions. During the 1970's, many farming operations were encouraged to expand and many landowners went deep into debt. When overvalued land values fell and interest rates remained high in the early and mid-1980's, many producers were forced to financially dissolve their farms. Large amounts of agriculturally worked land was purchased by hobby farmers, who were not interested in raising livestock or growing crops as their sole source of income.

Inconspicuously, the Food Security Act of 1985 enabled further improvement of the land and water resources of the Kickapoo River Basin. This act contained a component which required compliance with farm specific conservation plans in order to receive any kind of government subsidy. From 1983 to 1988, land under conservation tillage in the area increased over 700%. Wisconsin also began promoting Farmland Preservation Program conservation plans as a tool to keep valuable soil on farm fields. The Conservation Reserve Program (CRP) also was a financial incentive to remove highly erodible land from crop rotation and replace it with perennial vegetative cover.

Infiltration of rain and snowmelt into the ground increased approximately fifty years later, after trees were planted on hillsides, marginal cropland was converted to perennial vegetative cover, and fewer livestock numbers grazed the hillsides. By the 1980's, springs reappeared, effectively cooling streams and causing intermittent streams to once again flow perennially. Watercress, an aquatic plant indicative of groundwater inflow to a stream, was documented not only at springheads, but also further downstream on many small and medium sized streams. In 1978, money became available from the Wisconsin state trout stamp fund to allow installation of in-stream habitat structures designed to improve trout streams around the state. Restoration efforts occurred on stream sections owned by the state or where streambank easements had been acquired. Brown trout have been stocked in many streams for many years, but carryover from year to year and natural reproduction was lacking.

As streambanks became more stable, flood events less frequent, and infiltration of rain to groundwater increased, the streams of the Kickapoo River Basin held more water during dry periods and began to produce self-sustaining brown trout populations. Beginning in the mid-1990's, fishery surveys of streams in the basin revealed not only self-sustaining brown trout streams but also streams capable of supporting native brook trout, absent from the basin for nearly 100 years. Stocking of wild brook trout fingerlings in some streams has since resulted in self-sustaining populations of brook trout.

After the land and water resources of the Kickapoo River Basin had reached their worst conditions in the 1930's, nearly 60 years of changes and improvements in land management were necessary for the resources to recover to near pre-European settlement conditions. Since millions of tons of soil moved from the hilltops and hillsides to the valley floor, the Kickapoo River Basin will never look or act like it did before Europeans settled the area. However, equilibrium has been reached where streams that drain agricultural lands are once again narrow, deep, clear, cold, and contain healthy trout populations.

**Watershed Condition**

**Priority Issues**

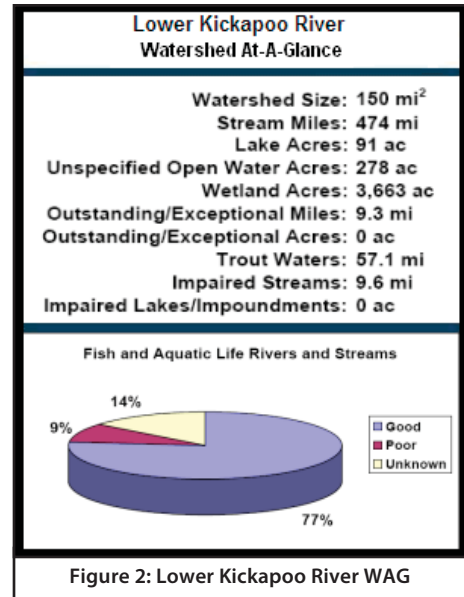
- 1) Nonpoint source pollution from agricultural and urban areas
- 2) Atrazine contamination in shallow aquifers and wells

**Initiatives and Projects:**

- 1) Wild trout reintroduction
- 2) In-stream habitat restoration
- 3) Continuous water temperature monitoring
- 4) USGS Gauging Station at Steuben

**Overall Condition**

The Lower Kickapoo River Watershed is in fairly good condition. Wooded hillsides are found throughout, along with agriculture on the hilltops and valley floors. Areas of concern are where concentrated numbers of livestock have unrestricted access to streams. Some streams have vertical raw streambanks due to historic sedimentation. Each rain that leads to high stream flows further erodes these raw banks and the additional sediment in the stream smothers critical fish habitat.



Trout waters claim a total of 57 miles of stream in the watershed, with the majority (33 miles) classified as Class I trout streams, which include Otter Creek, Pine Creek, Sand Creek, Plum Creek, and Crow Hollow. Segments of Class II trout streams are found on Halls Branch and Steuben Springs. Lastly, a total of ten miles of Class III trout streams can be found on both Citron Creek and Halls Branch. Halls Branch also has over three miles of stream listed as impaired since 1998 due to total suspended solids. Much of the sediment in the stream comes from the severely eroded streambanks in this stretch. Over six miles of the Kickapoo River has also been on the 303(d) list since 1998 for mercury in fish.

**Rivers and Streams**

According to the WDNR's Register of Waterbodies (ROW) database, there are 474 miles of streams and rivers in the Marengo River Watershed; 105 miles of these waters have been entered into the WDNR's assessment database. Of these 105 miles, over three-quarters are meeting Fish and Aquatic Life uses and are specified as "good" condition; about nine percent of streams are considered to be in "poor" condition and are listed as impaired. The condition of the remaining stream miles is not known or documented.

Additional uses for which the waters are evaluated include Fish Consumption, General Uses, Public Health and Welfare, and Recreation. As Table 2 shows, these uses have not been directly assessed for the watershed. However, a general fish consumption advisory for potential presence of mercury is in place for all waters of the state and six stream miles in the watershed are indicated as not supporting Fish Consumption uses.

| Use                       | Supporting | Not Supporting | Not Assessed | Total Size |
|---------------------------|------------|----------------|--------------|------------|
| Fish Consumption          |            | 6.4            | 98.81        | 105.21     |
| Fish and Aquatic Life     | 80.68      | 9.59           | 14.94        | 105.21     |
| General                   |            |                | 105.21       | 105.21     |
| Public Health and Welfare |            |                | 105.21       | 105.21     |
| Recreation                |            |                | 105.21       | 105.21     |

**Citron Creek**

Citron Creek, located in central Crawford County, flows in a southeasterly direction for 8.3 miles before reaching the Kickapoo River near Steuben. This stream has a gradient of 42 feet per mile and drains wooded hillsides and agricultural valleys. Many large springs enter Citron Creek at several places. Citron Creek is a Class III trout stream for its entire length.

Five fish collections have occurred in Citron Creek since 2006 and they document that Citron Creek is able to support a cold water fishery. The most recent biological surveys, conducted in 2010, documented adult brown and brook trout as well as young of year brown trout. Citron Creek was stocked with brown trout between 1960 and 1996 and exclusively brook trout from 1998 to 2007. Access to Citron Creek is from two road crossings.

**Halls Branch**

Halls Branch, located in central Crawford County, flows in an easterly direction for seven miles before reaching the Kickapoo River near Bell Center. This stream has a gradient of 43 feet per mile and drains wooded hillsides and agricultural valleys. Halls Branch is a Class III trout stream for two miles, from its mouth upstream to Zintz Road, and is a Class II upstream from Zintz Road for three miles.

Five fish survey, conducted in 2007, documented small numbers of brook trout and brown trout along with a variety of forage fish species. The FIBI scores that resulted from the five fish collections ranged from 0 to 40 indicating poor to fair water quality. Sedimentation and lack of in-stream habitat for game fish are the primary impediments to higher numbers of trout. This is also the reason why Halls Branch is listed as an impaired water with EPA. WDNR records indicate Halls Branch has been stocked with brown trout from 1961 to 2001, while only wild brook trout have been stocked from 2002 to 2010. Access to Halls Branch is from four road crossings and WDNR owned land and easements. A state threatened species has been found in this stream.

**Kickapoo River**

The most downstream 40 miles of the Kickapoo River flow through the Lower Kickapoo River Watershed. Even though adult brown trout have been documented in this segment of the river, it is classified as Warm Water Sport Fish (WWSF) since walleye, bass, and catfish have also been recorded. A USGS gauging station is located at Steuben.

The most recent survey, conducted in 2000 from the dam in Gays Mills downstream one mile, documented a diverse forage fishery as well as a more diverse sport fishery, which included walleye, sauger, smallmouth bass, largemouth bass, northern pike, channel catfish, bluegill, and pumpkinseed. Streambank erosion is a common sight throughout the Kickapoo River. Much of this erosion is not from current land management practices, but rather from severe sedimentation of the valley floor from poor land use management over much of the last century. This additional sediment on the valley floor resulted in the river cutting down through it to re-establish itself. Consequently, many areas of the Kickapoo River contain vertical or nearly vertical banks of ten feet or more, limiting access by boats to those areas with more gentle banks.

**Otter Creek**

Otter Creek, located in central Crawford County, flows in an easterly direction for four miles before reaching Pine Creek near Steuben. This stream has a gradient of 22 feet per mile and drains forested hillsides and agricultural valleys. Otter Creek is a Class I trout stream for its entire length.

The most recent fish survey, conducted in 2003, documented naturally reproducing brown trout population and several forage fish species, the resulting FBI score was fair (30). Otter Creek is much smaller in size than Pine Creek and consequently it has a smaller fish population. WDNR records indicate that Otter Creek has never been stocked with trout. Access to Otter Creek is from WDNR easements and one road crossing.

### **Pine Creek**

Pine Creek, located in central Crawford County, flows in a southeasterly direction for 6.5 miles before reaching the Kickapoo River near Steuben. This stream has a gradient of 24 feet per mile and drains forested hillsides and agricultural valleys. Pine Creek is a Class I trout stream for its entire length.

Pine Creek receives treated wastewater from the Village of Eastman's wastewater treatment plant near where Otter Creek joins Pine Creek. The most recent survey, completed in 2008, documented several year classes of brown trout and streambank erosion causing sedimentation. WDNR records indicate Pine Creek has been stocked with brown trout consistently from 1960 to 2004, but with wild brook trout only since 2005. Access to Pine Creek is from WDNR easements and five road crossings.

### **Plum Creek**

Plum Creek, located in southern Crawford County, flows in an easterly direction for nine miles before reaching the Kickapoo River near Wauzeka. This stream has a gradient of 35 feet per mile and drains forested hillsides and agricultural valleys. Plum Creek is a Class I trout stream for its entire length and an Exceptional Resource Water (ERW).

A significant amount of in-stream habitat has been installed in Plum Creek's middle section on WDNR owned land and on private land with WDNR easements. This segment of stream holds roughly 3,000 trout per mile, with a mix of brown and brook trout. The dominant trout species changes from year to year through this area. Whereas the most upstream segment of Plum Creek is dominated by brook trout and the lower segment of stream is dominated by brown trout. WDNR records indicate that Plum Creek was last stocked with brook trout in 2001. The naturally reproducing populations of brown and brook trout have eliminated the need for further stocking. Ten fish collections have occurred throughout Plum Creek since 2007 these collections indicate Plum Creek has good to excellent water quality and is supporting a very health cold water fishery. Access to Plum Creek is from two road crossings, WDNR owned land, and WDNR easements.

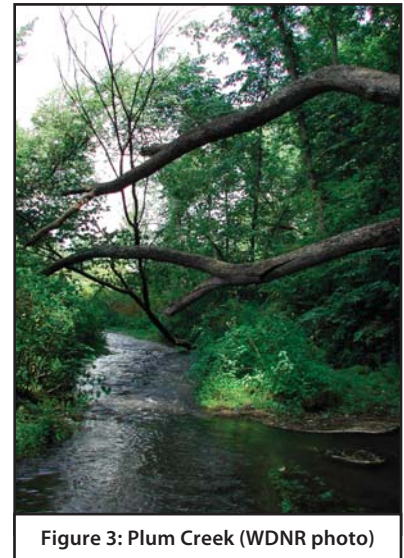


Figure 3: Plum Creek (WDNR photo)

### **Sand Creek**

Sand Creek, located in northern Crawford County, flows in a westerly direction for five miles before reaching the Kickapoo River in Bell Center. This stream has a gradient of 44 feet per mile and drains forested hillsides, recreational land, and some agricultural fields. Sand Creek is a Class I trout stream.

The most recent fish survey, conducted in 2010, indicated Sand Creek had fair water quality and had a naturally reproducing brook trout population. In-stream habitat for fish was abundant, consisting mostly of overhanging vegetation. WDNR records indicate Sand Creek was last stocked in 1977 with brown trout. Access to Sand Creek is from one road crossing.

### **Unnamed Creek 10-11 (Crow Hollow Creek)**

Crow Hollow Creek, also known as Creek 10-11, is located in west central Crawford County. This stream flows in a westerly direction for 4.2 miles before reaching the Kickapoo River near Bell Center. Crow Hollow Creek has a gradient of 42 feet per mile and drains wooded hillsides with agricultural activities found in the valleys. Crow Hollow Creek is a Class I trout stream for its entire length.

The most recent survey, conducted in 1998, documented a naturally reproducing population of brown trout and numerous forage fish species. Beaver dams were present and causing some siltation problems. In-stream cover for fish was not abundant but consisted of undercut banks, boulders and woody debris. This stream would benefit from additional in-stream habitat restoration and the purchase of streambank easements from willing sellers. Crow Hollow Creek was stocked with wild brook trout from 1998. Access to Crow Hollow Creek is from three road crossings.

### Unnamed Creek 9-13 (Steuben Springs)

Steuben Springs, also known as Creek 9-13, is located in southern Crawford County. This stream flows in a westerly direction for approximately three miles before reaching the Kickapoo River at Steuben. Steuben Springs has a gradient of 80 feet per mile and drains wooded hillsides and agricultural valleys. Steuben Springs is a Class II trout stream for its entire length. The most recent fish survey, conducted in 2005, had an excellent fBI score demonstrating that Steuben Springs is supporting a healthy cold water fish community. Access to Steuben Springs is from one road crossing.

### Lake Health

The WDNR's ROW database shows that there are over 90 acres of lakes and ponds and another 278 acres of unspecified open water in the Lower Kickapoo River Watershed. Of these, 270 acres are entered into the state's assessment database. No lakes within the watershed have been assessed for fish and aquatic life use support or any other use support.

Numerous old oxbow and floodplain lakes that edge the very crooked Kickapoo River are found in the Lower Kickapoo River Watershed; however, only a few of them have been studied. Access to these shallow lakes is difficult to impossible and many have become wetlands over the years. In 2009, a study was conducted of sloughs and backwater lakes of the Wisconsin and Kickapoo Rivers. Five were studied within the Lower Kickapoo River Watershed. These shallow waterbodies contained a range of fish and plant life. The groundwater fed lakes contained better water quality than the lakes that only received runoff from overland flow (Surveys of Crawford County Floodplain Lakes, David W. Marshall, Underwater Habitat Investigations LLC, December 2009).

### Wetland Health



Figure 4: Forested Wetlands (Photo courtesy of WDNR)

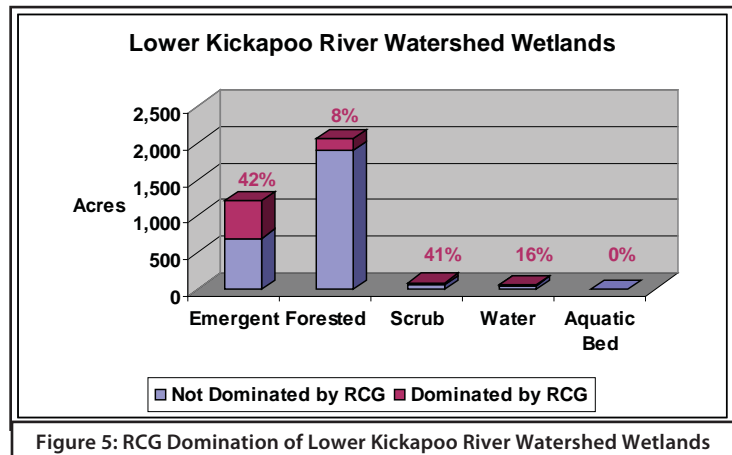


Figure 5: RCG Domination of Lower Kickapoo River Watershed Wetlands

#### Wetland Status:

The Lower Kickapoo River Watershed is located entirely within Crawford County. Less than four percent of the current land uses in the watershed are wetlands. Currently, about 87% of the original wetlands in the watershed are estimated to exist. Of these wetlands, the majority include forested wetlands (60%) and emergent wetlands (35%), which include marshes and wet meadows.

#### Wetland Condition:

Little is known about the condition of the remaining wetlands but estimates of reed canary grass (RCG) infestations, an opportunistic aquatic invasive wetland plant, into different wetland types has been estimated based on satellite imagery. This information shows that reed canary grass dominates 42% of the existing emergent wetlands and eight percent of the remaining forested wetlands (See Figure 5). Reed canary grass domination inhibits successful establishment of native wetland species.

#### Wetland Restorability:

Of the 530 acres of estimated lost wetlands in the watershed, approximately 95% are considered potentially restorable based on modeled data, including soil types, land use, and land cover (Chris Smith, DNR, 2009).



## Groundwater

The following groundwater information is for Crawford County (from Protecting Wisconsin's Groundwater through Comprehensive Planning website, <http://wi.water.usgs.gov/gwcomp/>), which roughly approximates to the Lower Kickapoo River Watershed.

Seneca is the only municipal water system in the Lower Kickapoo River Watershed to have a wellhead protection plan. In addition, Crawford County has adopted an animal waste management ordinance.

From 1979 to 2005, total water use in Crawford County has fluctuated from about 2.9 million gallons per day to about 3.8 million gallons per day. The fluctuations in total water use over this period are due to fluctuations in all usage categories except irrigation, which only increased. The proportion of county water use supplied by groundwater was 99% in 1979 and consistently about 98% from 1985 to 2000. In 2005, the proportion of county water use supplied by groundwater decreased to 90%.

### Private Wells

Ninety-four percent of 54 private well samples collected in Crawford County from 1990 to 2006 met the health-based drinking water limit for nitrate-nitrogen. An analysis of over 35,000 Wisconsin drinking water samples found that drinking water from private wells was three times more likely to be unsafe to drink due to high nitrate in agricultural areas than in forested areas. High nitrate levels were also more common in sandy areas where the soil is more permeable. In Wisconsin's groundwater, 80% of nitrate inputs originate from manure spreading, agricultural fertilizers, and legume cropping systems.

A 2002 study estimated that 43% of private drinking water wells in the region of Wisconsin that includes Crawford County contained a detectable level of an herbicide or herbicide metabolite. Pesticides occur in groundwater more commonly in agricultural regions, but can occur anywhere pesticides are stored or applied. A total of 13,198 acres of land in Crawford County are in the Lower Wisconsin River Valley atrazine prohibition area. All eight private well samples collected in Crawford County met the health standard for arsenic.

### Potential Sources of Contamination

There are no Concentrated Animal Feeding Operations (CAFOs), licensed landfills, or Superfund sites within the Lower Kickapoo River Watershed.

WDNR's Remediation and Redevelopment (RR) Program oversees the investigation and cleanup of environmental contamination and the redevelopment of contaminated properties. The RR Program provides information about contaminated properties and other activities related to the investigation and cleanup of contaminated soil or groundwater in Wisconsin through its Bureau for Remediation and Redevelopment Tracking System (BRRTS) database (WDNR 2010e).

The database shows that there are three sites in the Lower Kickapoo River Watershed that are classified as "open", meaning "contamination has affected soil, groundwater, or more and the environmental investigation and cleanup need to begin or are underway." All three sites are considered Leaking Underground Storage Tank (LUST) sites. A summary of these sites is included in the table below.

**Table 3: Open-status Bureau for Remediation and Redevelopment Tracking System (BRRTS) sites**

| WDNR BRRTS # | Site Name, Location              | Start Date | Activity Type | Remediation Activities | Waste Activities | Substance   |
|--------------|----------------------------------|------------|---------------|------------------------|------------------|---|
| 0312207194   | Kramers Service Station, Eastman | 10/13/1998 | LUST          | 1                      | 1                | Gasoline - Unleaded and Leaded (Petroleum)          |
| 0312104096   | Payne Property, Seneca           | 06/05/1996 | LUST          | 1                      | 0                | Diesel & Gasoline - Unleaded and Leaded (Petroleum) |
| 0312211070   | Featherson Property, Gay Mills   | 01/04/1999 | LUST          | 1                      | 0                | Gasoline - Unleaded and Leaded (Petroleum)          |

The Petroleum Environmental Cleanup Fund Award (PECFA) program was created in response to enactment of federal regulations requiring release prevention from underground storage tanks and cleanup of existing contamination from those tanks. PECFA is a reimbursement program returning a portion of incurred remedial cleanup costs to owners of eligible petroleum product systems, including home heating oil systems. As of May 31, 2007, \$4,249,471 have been reimbursed by the PECFA program to clean up 42 petroleum-contaminated sites in Crawford County. This equates to \$249 per county resident, which is similar to the statewide average of \$264 per resident.

## Point and Nonpoint Pollution

Streambank erosion is a common sight throughout the Kickapoo River and many of its tributaries. Much of this erosion is not from current land management practices, but rather from severe sedimentation of the valley floor from poor land use management over much of the last century. This additional sediment on the valley floor resulted in the rivers and streams cutting down through it to re-establish equilibrium.

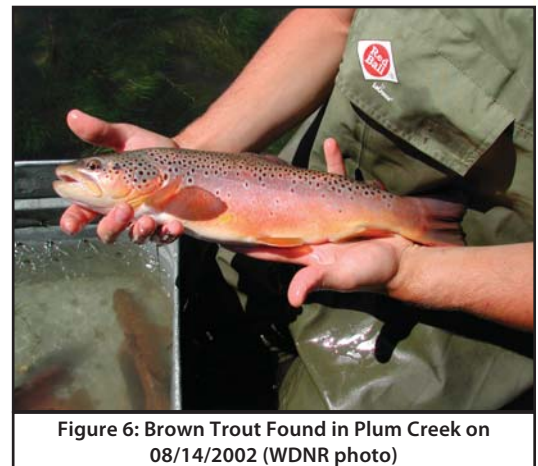
Rivers by their very nature erode the valley they flow through. Consequently many areas of the Kickapoo River contain vertical or nearly vertical banks of ten feet or more, limiting access by boats to those areas with more gentle banks. Most people think of streambank erosion as a rather ugly sight; however erosion of rock by the Kickapoo River has created beautiful sandstone cliffs adjacent to the river. This type of erosion is found largely in the upper half of the Kickapoo River. Some cliffs are large enough to create a micro-climate capable of supporting rare plants that prefer an isolated humid environment.

Other portions of streambanks are eroded due to human management of livestock. Unrestricted access to streams by large livestock denudes the streambanks of vegetation, which then erodes during high water events. This type of erosion is found in the Lower Kickapoo River Watershed and it can be minimized with proper management practices by the livestock owner. Overall, The Lower Kickapoo River Watershed is ranked as a high priority for nonpoint source (NPS) pollution due to high rankings for susceptibility to NPS pollution for both groundwater and streams. Lakes in the watershed have not yet been ranked for NPS pollution.

## Waters of Note

### Trout Waters

Class I trout streams are high quality trout waters that have sufficient natural reproduction to sustain populations of wild trout, at or near carry capacity. Consequently, streams in this category require no stocking of hatchery trout. These streams or stream sections are often small and may contain small or slow-growing trout, especially in the headwaters. Class II trout streams may have some natural reproduction, but not enough to utilize available food and space. Therefore, stocking is required to maintain a desirable sport fishery. These streams have good survival and carryover of adult trout, often producing some fish larger than average size. Class III trout waters are marginal trout habitat with no natural reproduction occurring. They require annual stocking of trout to provide trout fishing. Generally, there is no carryover of trout from one year to the next.



Trout waters claim a total of 57 miles of stream in the Lower Kickapoo River Watershed, with the majority (33 miles) classified as Class I trout streams, which include Otter Creek, Pine Creek, Sand Creek, Plum Creek and Crow Hollow. Segments of Class II trout streams are found on Halls Branch and Steuben Springs. Lastly, a total of ten miles of Class III trout streams can be found on both Citron Creek and Halls Branch. The table below lists the waterbodies and stream segments (starting from the mouth at mile 0) where these trout waters can be found.

**Table 4: Lower Kickapoo River Watershed Trout Waters**

| WADRS ID | Official Waterbody Name | Local Waterbody Name         | WBIC    | Start Mile | End Mile | Trout Class | Trout ID |
|----------|-------------------------|------------------------------|---------|------------|----------|-------------|----------|
| 13129    | Citron Creek            | Citron Creek                 | 1183200 | 0          | 8.29     | CLASS III   | 2976     |
| 923447   | Unnamed                 | Creek 10-11 (Crow Hollow)    | 1184000 | 0          | 4.9      | CLASS I     | 724      |
| 923424   | Unnamed                 | Creek 9-13 (Steuben Springs) | 1183400 | 0          | 3.95     | CLASS II    | 1917     |
| 13131    | Halls Br                | Halls Branch                 | 1184300 | 0          | 1.97     | CLASS III   | 2977     |
| 887220   | Halls Br                | Halls Branch                 | 1184300 | 1.97       | 5.16     | CLASS II    | 1918     |
| 13132    | Halls Br                | Halls Branch                 | 1184300 | 5.16       | 7.74     | CLASS II    | 1918     |
| 13128    | Otter Creek             | Otter Creek                  | 1183100 | 0          | 4        | CLASS I     | 2008-117 |
| 18465    | Pine Creek              | Pine Creek                   | 1183000 | 0          | 11.22    | CLASS I     | 1916     |
| 13125    | Plum Creek              | Plum Creek                   | 1182700 | 0          | 9.24     | CLASS I     | 723      |
| 18467    | Sand Creek              | Sand Creek                   | 1184800 | 0          | 5.99     | CLASS I     | 2008-30  |

### Outstanding and Exceptional Resource Waters

An Outstanding or Exceptional Resource Water is a surface water which provides valuable fisheries, hydrologically or geologically unique features, outstanding recreational opportunities, unique environmental settings, and which is not significantly impacted by human activities. The Outstanding or Exceptional Resource Water distinction requires that all new permitted discharges to these waters are comparable to or better than the existing water quality of the waterbody. The official statewide listing with designated reach descriptions of these waters is found in NR102, Water Quality Standards for Wisconsin Surface Waters. Plum Creek is the only Exceptional Resource Water in the Lower Kickapoo River Watershed. Its entire length is included in the listing. Sheer rock walls, a diversity of aquatic plants and a healthy brook and brown trout population all contribute to the exceptional character of this stream.

### Impaired Waters

About ten miles of impaired waters can be found within this watershed. The Halls Branch also has over three miles of stream listed as impaired due to total suspended solids (TSS) since 1998. Over six miles of the Kickapoo River has also been on the 303(d) list since 1998 for mercury in fish. Sand Creek was delisted in 2002 for TSS and is now listed as a Class I trout stream.



**Table 5: Lower Kickapoo River Watershed Impaired Waters**

| Waterbody Name | Local Waterbody Name | Start Mile | End Mile | WBIC    | Pollutant                       | Impairment               | 303 Status     | Priority      |
|----------------|----------------------|------------|----------|---------|---------------------------------|--------------------------|----------------|---------------|
| Halls Branch   | Halls Branch         | 1.97       | 5.16     | 1184300 | Sediment/Total Suspended Solids | Degraded Habitat         | 303(d) Listed  | Low           |
| Kickapoo River | Kickapoo River       | 19.05      | 25.45    | 1182400 | Mercury                         | Contaminated Fish Tissue | 303(d) Listed  | Low           |
| Sand Creek     | Sand Creek           | 0          | 5.99     | 1184800 | Sediment/Total Suspended Solids | Degraded Habitat         | Water Delisted | Delisted 2002 |

### Fish Consumption

Currently, there are no specific fish consumption advisories in effect for this watershed. However, a general fish consumption advisory for potential presence of mercury is in place for all waters of the state and six stream miles in the watershed are indicated as not supporting Fish Consumption uses.

## Aquatic Invasive Species

No specific aquatic invasive species are listed for this watershed.

## Species of Special Concern

The following table contains federally-listed Threatened, Endangered, Proposed, and Candidate species found in Crawford County, in which the Lower Kickapoo River Watershed is located.

| Species   | Status                                  | Habitat   | Taxa    |
|---|---|---|---------|
| Whooping crane ( <i>Grus americanus</i> )                   | **Non-essential experimental population | Open wetlands and lakeshores                        | Bird    |
| Eastern massasauga ( <i>Sistrurus catenatus catenatus</i> ) | Candidate                               | Open to forested wetlands and adjacent upland areas | Reptile |
| Higgins eye pearlymussel ( <i>Lampsilis higginsii</i> )     | Endangered                              | Lower Wisconsin and Mississippi Rivers              | Mussel  |
| Sheepnose ( <i>Plethobasus cyphus</i> )                     | Proposed as Endangered                  | Chippewa and Wisconsin Rivers                       | Mussel  |

\*\*Whooping Crane - On June 26, 2001, a non-essential experimental population of the whooping crane was designated in a 20-state area of the eastern United States. The first release of birds occurred in Wisconsin in 2001, and the counties listed are those where the species has been observed to date. It is unknown at this time which counties the species will occupy in the future, as the birds mature and begin to exhibit territorial behavior. For purposes of section 7 consultation, this species is considered as a proposed species, except where it occurs within the National Wildlife Refuge System or the National Park System, where it is treated as a threatened species (<http://www.fws.gov/midwest/endangered/lists/wisc-spp.html>).

## Recreational Opportunities

Two popular recreational activities in the Kickapoo River valley that rely on clean streams and rivers are canoeing and trout angling. In fact, during the 1999 summer season, anglers and canoeists spent nearly two million dollars in the Kickapoo River Valley. The Kickapoo River drainage basin contains public land that can be used for a variety of recreational purposes including fishing, boating, hiking, and birdwatching. The lower end of the Kickapoo River is surrounded by the Kickapoo River Wildlife Area - Wauzeka Unit and the Kickapoo River Wildlife Area - Bell Center Unit, which includes over 7,000 acres of DNR owned land and DNR easements offering fishing, hunting, and birdwatching opportunities. The Nature Conservancy owns land just west of Steuben called the Hogback. This hill rises several hundred feet above the valley floor and harbors an excellent example of a native Wisconsin prairie. A wide variety of native prairie plants, birds and butterflies can be seen here.

Further upstream, the Kickapoo Valley Reserve and Wildcat Mountain State Park flank the Kickapoo River between La Farge and Ontario. Within this stretch, numerous bridges provide easy access to the river for canoeists. Wildcat Mountain State Park offers beautiful vistas of the Kickapoo River valley with a hilltop view 400 feet above the valley floor. Camping, horseback riding, hiking, fishing, and canoeing can all be enjoyed in this state park. The Kickapoo Valley Reserve offers camping, hiking, and canoeing also.

Further upstream, the Elroy-Sparta State Trail runs parallel to and crosses the Kickapoo River near Wilton. This trail traverses the northern portion of the Kickapoo River Valley from east to west through Wilton and Norwalk. Throughout the Kickapoo River valley, the Wisconsin DNR has purchased easements along numerous streams for angler access. Streams with WDNR owned easements are identified in the watershed narratives for the Lower Kickapoo River Watershed, Reads and Tainter Creek Watershed, Middle Kickapoo River Watershed, West Fork of the Kickapoo River Watershed, and the Upper Kickapoo River Watershed. The DNR installs signs where access is allowed onto private lands with DNR easements along streambanks. The easement allows for access to the stream for fishing and nature observation. The land is still privately owned and landowner rights should be respected.

The Kickapoo River between Ontario and La Farge is a popular canoe destination for all skill levels. For much of this distance, the Kickapoo River flows through Wildcat Mountain State Park and the Kickapoo Valley Reserve, offering beautiful scenery from the river. Towering rock (sandstone and limestone) walls covered with unique plant life, a complete forest canopy, open meadows as well as the occasional farm field are uniquely appreciated from a water craft on the river. Numerous canoe outfitters found throughout the Kickapoo River Basin provide visitors with equipment and shuttle services. Because of the many trees that line the river, navigational hazards, such as log jams and downed trees, are not uncommon.

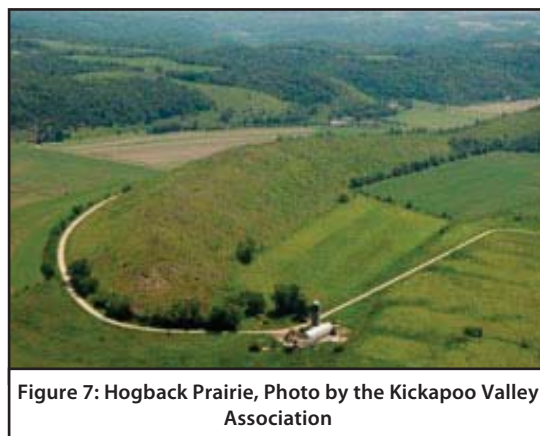
The Kickapoo River at one time had as many as seven dams but currently the only dam remaining on the river is in Gays Mills. This low head dam is a navigational hazard to all boaters and should be avoided.

## State Natural and Wildlife Areas

### **Hogback Prairie** , [Website Link](#)

Hogback Prairie is situated on an impressive geological formation - a narrow, steep-sided limestone-capped ridge that rises 300 feet above the Citron Valley, a former oxbow of the nearby Kickapoo River. The hogback's western and eastern slopes support dry prairie vegetation from the ridge's crest down to its bases. There is also a small segment of north-facing prairie. The multiple aspects of the prairie have resulted in an unusual mix of plants, blending typical dry prairie species, such as side oats grama, little blue-stem, purple prairie-clover, and hoary vervain, with species, such as needle grass and mountain mint, that are more characteristic of moister prairies.

The variety of slope aspect has also contributed to the existence of an excellent population of the state-threatened Hill's thistle (*Cirsium hillii*). Other rare species include Bell's vireo (*Vireo bellii*), ottoe skipper (*Hesperia ottoe*), Richardson's sedge (*Carex richardsonii*), and purple milkweed (*Asclepias purpure-scens*). To the south the ridge widens and the prairie grades into oak woods and an overgrown savanna with several savanna indicator plant species. Management activities, such as controlled burning and brush removal, are helping restore the integrity of the savanna and prairie. The terrain is steep and chiggers are abundant. Hogback Prairie is owned by the DNR and was designated a State Natural Area in 2002.



### **Kickapoo River Wildlife Area**, [Website Link](#)

The Kickapoo River Wildlife Area - Bell Unit, in Crawford County, is located in the Lower Kickapoo River Watershed and is of great significance for its Driftless Area features. The property is also an important bird area because the forests in the southern portion of this site are among the largest and most intact in the whole Driftless Area and contain significant populations of forest interior birds such as red-shouldered hawk, Acadian flycatcher, wood thrush, cerulean warbler, and Kentucky warbler. Prairie and savanna habitats host Bell's vireo, brown thrasher, blue-winged warbler, field sparrow, bobolink, and Eastern meadowlark. Thousands of migrants use the area, particularly in spring. The northern units of the Hogback Prairie State Natural Area are found within the Bell Center Unit.

The Bell Center Unit began as a perpetual hunting and fishing easement unit of the Lower WI River Wildlife area in 1968. In 1975, the Kickapoo River Wildlife Area was separated from the Lower Wisconsin River project and conversion of easements to fee ownership was begun. Gradually about 1,100 acres have been converted to DNR fee ownership. About 300 acres remain under easement. Many croplands have been converted to upland cover

The Wauzeka Unit is managed to provide opportunities for public hunting, fishing, trapping, and other outdoor recreation while protecting the qualities of the unique native communities and associated species found on the property. The upland forests are primarily southern dry-mesic forest types with management focusing on maintaining oak as a viable forest component, incorporating oak savanna habitat adjacent to bluff prairie sites, and minimizing conversion to northern hardwood types. Bottomland hardwoods are managed passively. Cropland is slowly being converted to prairie, with prescribed fire, mowing, and brushing used to maintain the open grassland. Populations of invasive species are controlled or eliminated by cutting, pulling, burning, herbicide treatment, and/or bio-control.

**Kickapoo Wild Woods**, Website Link

Kickapoo Wild Woods is owned by the DNR and was designated a State Natural Area in 2008. It supports a diverse forest ranging from burr and white oak dry forest to sugar maple mesic woodland. Much of the site diversity is due to the extensive topography lending to a great variety of slope aspect. A relatively level ridgetop is surrounded by hillsides, which descend 350 feet to the Kickapoo River. This site contains one of the largest blocks of old forest remaining in the Driftless Area. Large diameter white oak, red oak, and sugar maple are found in the uplands; while silver maple, hackberry, and cottonwood dominate the floodplain forest. There is an abundance of coarse woody debris covering the forest floor. The understory is also diverse with species, such as white baneberry, putty-root orchid, blue cohosh, spring-beauty, false mermaid, round-lobed hepatica, woodland phlox, Jacob's-ladder, and bellwort. The woods also provide critical habitat for nearly every southern Wisconsin forested bird Species of Greatest Conservation Need. Birds include red-headed woodpecker, tufted titmouse, wood thrush, Northern parula, Magnolia warbler, ovenbird, scarlet tanager, hooded warbler, worm-eating warbler, and Acadian flycatcher.



**Kickapoo Wild Woods (No. 570)**

**Wauzeka Bottoms**, Website Link

Part of the Lower Wisconsin Riverway, Wauzeka Bottoms contains an extensive stand of mature floodplain forest on the north side of the Wisconsin River. The canopy is dominated by silver maple, swamp white oak, river birch, and green ash, with lesser amounts of hackberry, American elm, honey locust, cottonwood, black willow, yellowbud hickory, and basswood. The forest structure varies from closed canopy with an open understory to semi-open canopy with brushy understory of button bush, winterberry, elderberry, and prickly ash where the canopy is broken due to running sloughs, oxbow lakes, and beaver ponds. Lianas of poison ivy, wild grape, and Virginia creeper proliferate with a rich herbaceous layer of wood nettle, sedges, grasses, cardinal-flower, green dragon, and false dragonhead. The forest supports a diverse avifauna with numerous rare birds: red-shouldered hawk (*Buteo lineatus*), yellow-crowned night heron (*Nyctanassa violacea*), cerulean (*Dendroica cerulea*), Kentucky (*Oporornis formosus*), and prothonotary (*Protonotaria citrea*) warblers. Other resident birds include pileated woodpecker, blue-gray gnatcatcher, brown creeper, yellow-bellied sapsucker, and hooded merganser. A state-threatened reptile has also been seen. One state-endangered mussel species inhabits the Wisconsin River, which forms the southern boundary of the site, along with the yellow sandshell, three ridge, fragile papershell, stout floater, squawfoot, pink heelsplitter, pink papershell, and salamander mussel. Wauzeka Bottoms is owned by the DNR and was designated a State Natural Area in 1989.

**Watershed Actions**

**Grants and Projects**

*River Planning Grant - The Valley Stewardship Network 10/01/2001 – Complete*

The Valley Stewardship Network (VSN) received a second year of funding to continue the conservation/stewardship/education work in progress and expand the base of members to create a self-sufficient river organization. Two major goals and objectives for the VSN were to become a stable watershed conservation organization and increase the visibility and credibility of VSN through education and publicity. Products and deliverables included: achieving 501(c)3 status, increasing the number of board members, recruiting 200 new members, distributing a newsletter twice a year, collecting, tabulating and refining the water quality monitoring data, coordinating an annual Celebrate the Kickapoo Day and two Stewardship education events, developing one to three slide shows, and finally VSN initiated a pilot project to help landowners be stewards of their land, assisting the board in strategic planning and creating an avenue for recruiting members.

*River Planning Grant - Community Conservation, INC 04/01/2000 – Complete*

The Community Conservation, Inc. conducted an organization development and information & educational project in the Kickapoo River watershed. Activities involved with this project included: organizational development of the

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Valley Stewardship Network as a nonprofit corporation registered under Chapter 181 Wisconsin Statute and approved with 501(c)(3) status, distribution of newsletters and informative brochures, coordination with local media to build organizational visibility, recruitment and training of the VSN board of directors, sponsoring and organizing education and stewardship activities, development of a strategy to assist in coordinated land use planning. Specific deliverables for this grant project included: documentation of the formation of the Valley Stewardship Network and a final report that summarizes the grant project activities and includes examples of outreach materials. The Department of Natural Resources was provided with both a paper copy and an electronic copy of the final report.

## Monitoring

### Lakes Baseline and Trends Monitoring

- River Monitoring to comply with Clean Water Act implementation - water quality standards: use designations, criterion, permit issuance and compliance, assessments, and impaired waters management.
- Fisheries projects include a wide variety of “baseline” monitoring and targeted fieldwork to gain specific knowledge related to Wisconsin’s fish communities.
- In close cooperation with UW Extension and Wisconsin Sea Grant, education efforts focus on working with resource professionals and citizens statewide to teach boaters, anglers, and other water users how to prevent transporting aquatic invasive species when moving their boats. Additional initiatives include monitoring and control programs.

### Volunteer Monitoring

Citizen monitoring has been active in this watershed over the past decade. The Valley Stewardship Network (VSN) based out of Viroqua, Wisconsin solicited interested residents to monitor water quality in area streams. Halls Branch and Sand Creek have been monitored for numerous years for water clarity, dissolved oxygen, continuous temperature, and nutrients.

## Basin/Watershed Partners

Community Conservation Inc., based in Gays Mills, Wisconsin, originated in 1989, and operates as a non-profit 501(c)(3) organization. Community Conservation was formed to provide support to experimental grassroots conservation efforts in Belize, but has expanded their work to projects from Wisconsin to New Guinea. Community Conservation strives to establish community-based conservation programs with a strong emphasis on voluntary local participation and respect for rural people as being the best stewards of their lands. Their goal is to empower local communities to manage their lands with minimal outside interference and their programs work toward leaving a local group in charge of managing and perpetuating the newly formed community conservation program.

Valley Stewardship Network grew from the local steering committee of the Trout Unlimited Home Rivers Initiative in cooperation with Community Conservation, Inc. of Gays Mills. This group met from 1997 to 1999 and they provided GIS computers, software, local data layers and teacher training to eight local Kickapoo watershed schools and also drafted a final Kickapoo Management Plan. The group envisioned a citizen-driven, non-regulatory organization, operating neighbor to neighbor, as the path to grassroots success in preserving the quality of life in the Kickapoo Watershed. VSN is that group and was incorporated in October of 2000.

## Recommendations

- Unrestricted access of livestock to streams should be evaluated for possible impacts to the associated stream.
- Walleye, smallmouth bass, northern pike, carp and catfish should be collected and tested for the presence of toxic substances in the Kickapoo River near Steuben
- Fisheries should consider reclassifying Citron Creek.
- Crawford County Land Conservation Department should apply for Targeted Runoff Management (TRM) grants to address sedimentation in Halls Branch

## Contributors

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Wauzeka Bottoms State Natural Areas



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Wisconsin DNR's mission involves preserving, protecting, and restoring natural resources. Watershed Planning provides a strategic review of water condition to enhance awareness, partnership outreach, and the quality of natural resource management.

# Lower Kickapoo River Watershed