

Section 2: History, Background Information and Resource Assessment

History and Background Information

The County is located in Southwest Wisconsin and is part of the Driftless Area, an area that escaped the most recent glacial advance some 10,000 years ago. The glaciers melt water created the Driftless Area that is known for its rugged topography creating scenic bluffs and valleys. The County is approximately 586 square miles in size. Its boundary on the west is the Mississippi River and its boundary to the south is the Wisconsin River. The County is bisected from North to South by the Scenic Kickapoo River.

The first known inhabitants of Crawford County were prehistoric Native American tribes, including the Ho-Chunk, Mesquakie, Sioux, Fox, and Dakota. Traces of their presence have enhanced the cultural history in the form of artifacts, archeological remains, and animal-shaped burial mounds, some of which are preserved for public viewing at Effigy Mounds National Monument across the river north of Marquette, Iowa.

Explorers Marquette and Joliet were the first European first explorers to arrive in Crawford County in 1673. Voyageurs, entrepreneurs, and traders of French, British, and American descent followed and developed military interests in the area. They explored the land and sought fortune, trading their goods at their annual meetings of traders and trappers still celebrated today. The French called the area 'Coulee de Male', hence the name of the area today as the Coulee region. Many stayed to live out their lives in this special area, and it soon became an established and well-known region.



A view of Crawford County's Rolling Landscape

Crawford County was created on October 26th, 1818, from a territory of the Michigan legislature. Named after William H. Crawford, a Georgia senator and James Monroe's Treasurer at the time, Crawford County covered the entire western half of Wisconsin. At this time, the County covered all land north of the Wisconsin River, but it was later divided to such an extent as to become one of the smallest counties in the state. In 1836 the County was transferred to the newly formed Wisconsin Territory as Michigan prepared for statehood.

Today there are 11 town governments in the county ranging in size from the Town of Bridgeport's 23 square miles to the Town of Freeman that covers 78 square miles. The county also has 10 villages ranging in size from DeSoto's 1.3 square miles to the Village of Steuben with 6 square miles. The City of Prairie du Chien is approximately 6 square miles in size and is the only local government that is incorporated as a City. As of 2007, Crawford County's population was estimated as 17,553 a gain of 310 people from the 2000 census figure of 17,243.

Agriculture Snapshot

The following tables illustrate historical trends in agriculture over the past 15-20 years.

Table 1 shows that the total number of farms in Crawford County has increased from 978 in 1992 to 1,347 in 2007. The information also illustrates that farms are being fragmented as the number of farms over 180 acres has substantially decreased over the 15 year period while the number of smaller farms (less than 180 acres) has increased. Also interesting to note is that the primary occupation of the principal operator being a farmer is also decreasing.

**Table 1 Farms by Size and Type
(Crawford County)**

Year	Farms by Size							Principal Operator by Primary Occupation	
	1-9 Acres	10-49 Acres	50-179 Acres	180-499 Acres	500-999 Acres	1,000+ Acres	Total	Farming	Other
1992	56	80	296	443	88	15	978	689	289
1997	33	90	322	424	74	15	958	570	388
2002	42	202	532	409	70	23	1,278	700	578
2007	54	303	565	347	59	19	1,347	545	802

Census of Agriculture - County Data - USDA, National Agriculture Statistics Service

Table 2 illustrates cropland information. The table shows that corn production has remained relatively stable over the 17 year period. However, the acres of hay harvested has been cut in half over the period while soybean production has gone from 78,000 bushels in 1990 to 572,000 bushels in 2007.

Table 2 Changes in Crop Acres and Production (Crawford County)

Year	Corn for Grain			Corn for Silage		Hay All (dry)		Soybeans		
	Planted All Purposes (acres)	Harvested (acres)	Production (bushel)	Acres Harvested	Production (tons)	Acres Harvested	Production (tons)	Planted All Purposes (acres)	Harvested (acres)	Production (bushel)
1990	35,200	31,000	3,830,000	4,100	65,000	57,300	166,900	1,450	1,400	78,000
1995	29,700	22,900	2,539,000	6,600	88,100	45,600	123,000	2,200	2,200	103,600
2000	29,400	23,600	3,157,000	5,600	90,800	37,700	126,100	10,100	9,800	463,000
2005	31,400	26,700	4,650,000	4,500	93,000	34,100	96,800	13,000	12,800	683,000
2007	33,000	28,800	4,340,000	4,100	74,000	29,300	74,500	13,100	12,800	572,000

USDA-National Agriculture Statistics Service (NASS) Quick Stats

Table 3 illustrates that animal agriculture (milk cows, cattle, and hogs) all have greatly decreased since 1990.

Table 3 Livestock Changes (Crawford County)

Year	Milk Cows			
	Annual Milk Production	Annual Average Milk Cows	Cattle	Hogs All
1990	244,480	19,100	53,500	20,900
1995	209,250	15,500	47,000	14,000
2000	180,180	11,700	40,000	9,500
2005	150,720	9,600	39,000	8,500
2007	146,940	9,300	37,500	7,000

USDA-National Agriculture Statistics Service (NASS) Quick Stats

Geography and Geology

Crawford County's deeply dissected valleys characterize the driftless area with elevation changes from valley floor to ridge top averaging 300-400 feet. The steep forested hillsides give way to narrow agricultural lands on the valley floor and ridge tops. Two main north-south ridges in the county define the Kickapoo River Valley. State Highway 27 is located on the westernmost ridge. Many rock outcroppings can be seen throughout the county on steep hillsides. Fractured bedrock of dolomitic limestone and porous sandstone are allowing rapid water movement to aquifers once water reaches those layers.

Resource Assessment

A key to planning and understanding land and water resources is to have an assessment of the resources. The following information has been gathered to provide a clear picture of the land and water resources and their condition.

County Soils

In general there are five soil areas, Uplands, Sandy terraces, Silty terraces, Silty bottoms, and Alluvial. The Uplands are made up mainly of Fayette and Dubuque soils. Where ridges predominate, the soils are on rolling ridgetops in uplands that are deeply dissected. Slopes are predominantly 5 to 15 percent. Steep, stony areas have many escarpments of bedrock. Slopes are between 30 and 60 percent.

Principal soils in the Sandy terraces are those of the Dakota and Sparta series. They are nearly level and are in two areas of the county. One is by Prairie du Chien and is a nearly level plain underlain by acid sand and gravel. The Mississippi River deposited the coarse-textured underlying materials at the time of the Wisconsin glaciation. The other is along the northern half of the Kickapoo River. They are subject to serious erosion and in places runoff has cut deep gullies far into the terraces.

Silty Terraces have silty soils on highly dissected terraces, or benches. The Bridgeport Terraces lies about 120 ft. above the Wisconsin River and occupies approximately 4,200 acres. Other terraces go up the Wisconsin and Kickapoo valleys. The Citron and Haney Valley consist of old channels formed by the meandering Kickapoo River. The Hogsback is an oxbow feature now preserved by The Nature Conservancy and the Wisconsin DNR for its unique topography, fauna, and flora.

Silty soils on bottomlands are generally Arenzville, Orion, and Chaseburg. They are in the major drainageways in the interior of the county. They are productive but their use is limited due to occasional flooding.

Alluvial land has wet sandy soils on the bottoms of the Mississippi and Wisconsin Rivers. Its texture varies but is mainly silt, coarse sand, and gravel. It has a high, fluctuating water table.

Cropland and Gully Erosion

Crawford County has had several inventories and surveys that have determined cropland soil loss rates. Midwest Reclamation Planners completed a Soil Erosion Control Plan in 1987 and calculated an average erosion rate of 8.5-tons/acre/year-soil loss, this figure is above the T-value or allowable soil loss limit of 5.0 tons/acre/year on average. With the advent of the USDA 1985 Farm Bill and the Farmland Preservation Program conservation compliance implementation as major conservation practice generators in Crawford County, soil loss rates have been *reduced* to an average of 1.3-tons/acre/year-soil loss as figured in the 2009 Crawford County transect survey.

Gully erosion continues to be an elusive measurement to gather. Sheet and rill erosion from cropland continues to have the majority of attention from such measurement tools as the Revised Universal Soil Loss Equation (RUSLE II). Administrative rule (ATCP 50.04) and NRCS policy both require the use of

RUSLE II. Gully erosion methods have not undergone change for two decades. Because of the deeply carved hills and valleys in Crawford County measurements are a guess at best. It should also be noted that any measure of erosion does not necessarily mean the soil is being delivered to surface waters.

Animal Waste

Barnyard runoff and land spreading of manure (especially on frozen ground) are the two principal sources of animal waste pollution in Crawford County streams and wells. Bacteria, sediment, ammonia, and nutrients are the major culprits that foul county water.

Crawford County farmers have followed a statewide trend and expanded their operations, resulting in fewer barnyards and more confined herds. The result is fewer barnyard issues, but more land spreading problems, especially in late winter and early spring. Currently sixteen dairies in the county average between 100 and 200 cows milked daily with approximately a third confining the herd and two thirds using pasture in their management. The rotational grazing community is growing and is beyond 35% of the dairies and milking approximately 20% of the estimated 14,000 cows in the county (source – UW Extension, USDA-NRCS, LCD). They contribute little to no overland flow to waters of the state.

Nutrient Management

When farming started in Crawford County animal manure was a valuable commodity. It was stacked, saved, and spread to increase crop yields. As commercial fertilizer became available, manure became a waste product, not fit to haul to the back forty. The pendulum has swung back to the valuable side for manure. As soil health is better understood, and environmental regulatory pressures are brought to bear, animal waste is again being managed more carefully.

Poorly managed nutrients wash into county wells. The Crawford County Land Conservation Department offers ongoing private well screening for nitrates and coli form bacteria. The last five years of private well volunteer testing continues to show 10% of Crawford County wells screen above the 10 mg/l standard for nitrates and 30% screen positive for coli form bacteria. Most well positive detects have agricultural impacts (source – Land Conservation Department).

Southwest Technical College has trained 20 + Crawford County farmers to prepare their own nutrient management plans. In addition, cost sharing has been available through the EQIP program administered by USDA to hire consultants to write plans. This program has had marginal interest by farmers.

Watersheds

There are five major Watersheds in Crawford County, Rush Creek, Reads & Tainter Creek, Lower Kickapoo River, Knapp Creek, and Millville Creek.

The Rush Creek Watershed extends west from Highway 27 toward the Mississippi. It has steeply wooded hillsides with narrow ridge tops and valleys. Rock outcrops along the bluffs facing the Mississippi are common. The scenic beauty found in the watershed has attracted many new landowners that have built seasonal and permanent homes. Most streams in this watershed are trout streams with eroding stream banks and lack of adequate trout habitat. Purple loosestrife is a widespread exotic invader (source - Wisconsin Wetlands Assn.). There are many small steep prairies on the bluffs that create a unique climate for rare flora and fauna. USDA – NRCS are moving to protect these areas. The Mississippi Valley Conservancy is also active here purchasing conservation easements.

The Reads and Tainter Creeks watershed is the northeast corner of Crawford County. All waters flow to the Kickapoo. Much of the acreage is wooded. The remainder is either agriculture or private property not farmed. A multi-million dollar apple industry is located on the ridge east and west of Gays Mills. Agriculture strongly persists here with recreational ownership not as advanced as in other areas of the

county. An eclectic population is very active in land use policy. Eroding stream banks are common. Many of the riparian areas hold DNR fishing easements.

The Lower Kickapoo River Watershed, in south central Crawford County, and includes all streams that flow to the Kickapoo between Gays Mills and Wauzeka. Several shallow oxbow lakes can be found adjacent to the Kickapoo. Almost half of the acreage is woodland.

The Knapp Creek Watershed, on the eastern border of the county, overlaps into Richland County and drains to the Wisconsin above Boscobel. There are no major municipalities in this watershed. The Crawford portion of the watershed is mostly wooded.

The Millville Creek Watershed extends from the mouth of the Wisconsin River upstream to Wauzeka on both sides of the river and includes a portion of Grant County. Much of the acreage is forested. The remainder is either in agriculture or private property not farmed. There are significant wetlands in the floodplain near the mouth of the Wisconsin River.

Watershed Rankings and DNR Basin Plan Recommendations

Crawford County contains all or part of five watersheds as delineated by DNR. These watersheds are part of two different river basins, managed as Geographic Management Units (GMUs) by DNR. These watersheds are designated Low, Medium, High, or Not Ranked in the Basin plans as a priority for projects to curb Non-Point Source (NPS) pollution.

Under the Clean Water Act, states must submit 303 (d) lists of impaired waters to the Environmental Protection Agency (EPA) for the purpose of developing Total Maximum Daily Loads (TMDLs). The following table summarizes Crawford County watershed rankings and 303(d) list status.

<i>Watershed Name</i>	<i>River Basin</i>	NPS Ranking	NPS 303(d) list	Comments
Knapp Creek LW08	Lower Wisconsin	Medium		
Reads and Tainter Creek LW03	Lower Wisconsin	High		
Lower Kickapoo LW02	Lower Wisconsin	High	Kickapoo River near Steuben Halls Branch (lower 3 miles)	Impaired by mercury Impaired by sediment
Millville Creek LW01	Lower Wisconsin	Not Ranked		
Rush Creek BL01	Bad Axe – La Crosse	High		

Crawford County has used these plans and consulted with DNR staff on resource priorities in the county. DNR staff and Crawford County LCD staff agree on the resource priorities in the basins and watersheds. These plans make the following recommendations and observations:

Lower Wisconsin River Basin: (July 2002 plan date)

Millville Creek Watershed (LW01)

- Gran Grae should be surveyed for fish, habitat, and rare aquatic elements. The stream uplands should have a non-point source pollution reduction project.

Lower Kickapoo River Watershed (LW02)

- DNR should perform fish and habitat surveys on Sand, Plum, Halls Branch, and the Kickapoo rivers to update existing data
- DNR should summarize the long term (since 1977) water quality data at Steuben

Reads and Tainter Creeks Watershed (LW03)

- DNR should update fish & habitat survey on Baker, Bear, and Tainter Creeks
- In-stream habitat improvement is needed in Nederlo, Tainter, and Trout Creek
- Do an experimental wild brook trout stocking above the county dam (BK#6) on Nederlo Creek
Knapp Creek Watershed (LW08)
- Collect fish, habitat, and water quality data for Richland Creek
- Consider West Fork of Knapp Creek & Boydtown Creek for non-point source pollution reduction project and experimental wild strain brook trout introduction

Bad Axe – La Crosse Basin: (July, 2002 plan date)

Rush Creek Watershed (BL01)

- Conduct fish and habitat surveys on Buck, Copper, Sugar, Kettle Hollow,
- Consider riparian buffers and in-stream habitat for Cooley,

Hydrology and Fish Habitat

The streams of Crawford County are defined and greatly influenced by the steep topography of the area. Five drainage areas, defined by the Wisconsin DNR, lie within the county: Rush Creek, Reads and Tainter Creeks, Lower Kickapoo River, Millville Creek and Knapp Creek. The Rush Creek Watershed is located within the Bad Axe – LaCrosse River Basin and flows into the Mississippi River. The remaining four watersheds drain into the Lower Wisconsin River.

Crawford County contains approximately 415 miles of streams (recent source – DNR personnel). (excluding the Mississippi River), with at least 150 miles (or 36%) classified as trout water. A total of 29.6 miles of streams (or 7%) is classified as exceptional resource water and streams classified as impaired total 3 miles. There are no natural lakes in the county.

Trout streams in Crawford County are:

Baker Creek	Knapp Creek
Bear Creek	Nederlo (Johnstown) Creek
Boydtown Creek	Pine Creek
Citron Creek	Plum Creek
Clear Creek	Richland Creek
Cooley Creek	Rush Creek
Copper Creek	Sugar Creek
Du Charme Creek	Mill Coulee Creek
English Run Creek	Tainter Creek
Gran Grae Creek	Trout Creek
Halls Branch	Several unnamed creeks
Leitner Creek	

Because of the topography of Crawford County, sediment from eroding streambanks is a major contributor to the degradation of the counties surface waters. Streambank erosion occurs naturally at many sites. It is caused by steep stream gradients, which result in high stream velocities. Sites not pastured for extended periods typically grow trees and other woody vegetation that replace dense grass cover. This results in more bare ground that erodes easier. Trees fall into streams and further accelerate the process.

Although streambank erosion occurs naturally, the problems are accelerated by erosive land use activities. Referring upstream to Monroe County’s Middle Kickapoo River Watershed Inventory, 66% of the degraded streambanks had agricultural erosive impacts. This is a reasonable figure to apply to Crawford County. The Land Conservation Department staff believes this finding shows that cattle exclusion does not necessarily solve stream bank erosion problems.

Outstanding and Exceptional Resource Waters of Crawford County

The creation of Chapter NR 207 “Water Quality Standards for Wisconsin Surface Water,” allows the Department of Natural Resources to classify high quality streams as outstanding resource waters (ORW) or exceptional resource waters (ERW). An exceptional resource water is surface water, which provides valuable fisheries, hydrological, or geologically unique features, outstanding recreational opportunities, unique environmental setting and which is not significantly impacted by human activities.

Exceptional Resource Waters of Crawford County

Stream Name	Watershed	Miles	ORW/ERW
Boydton Creek	Knapp Creek	.7	ERW
Cooley Creek	Rush Creek	All	ERW
Copper Creek	Rush Creek	All	ERW
Plum Creek	Lower Kickapoo River	All	ERW
South Branch Copper Creek (Class I portion)	Rush Creek	2.7	ERW
Tainter Creek (Cnty B to County Line)	Reads / Tainter Creek	4.8	ERW
Wisconsin River	Several	3.1	ERW
Sugar Creek (S10) upstream	Rush Creek	7	ERW

Crawford County currently has no water body designated Outstanding Resource Water.

The Blackhawk/Kickapoo Dam #6

The Crawford County actively operates and maintains one large, earthen embankment flood control dam built under the federal program PL566 in partnership with USDA/NRCS. Reduction of serious flash flooding in Johnstown valley in the north central part of the county is the primary purpose of the dam. The dam does not impound water. Nederlo Creek flows through the structure.

Wetlands

Crawford County has experienced a decline in the number and quality of wetlands (source – NRCS). The DNR wetland inventory (1979) shows 27,331 acres or 7.5% of the total county acreage as wetlands, the majority located along major stream corridors and in the lower Kickapoo River system as it approaches the confluence with the Wisconsin River.

Substantial wetland acreage occur along the Mississippi and Wisconsin River valleys and are managed by the US Fish and Wildlife Service in the Mississippi and the DNR in the Wisconsin River Valley. The Wisconsin DNR and the US Army Corp of Engineers require mitigation (a creation) when natural wetland sites are destroyed. State and federal programs, primarily the Wetlands Reserve Program (WRP) administered by the NRCS have been available to cost-share with private landowners who wish to return their ditched, tiled, or drained fields to wetlands. One landowner in the last five years has continued to participate in this program.

Forest Land

Most of Crawford County’s forests grow on productive, silt loam soils. Hardwoods dominate the landscape. 50% of Crawford County’s 184,400 acres are forested. That is an increase from the 1980 inventory, of 47%. This increase can be attributed to field abandonment, conversion to pasture, tree plantation and changes in inventory criteria.

Over 93% of the forest lands in Crawford County are privately owned. Fragmentation of land and use value assessment have had an impact on forest land in the County. Impacts include:

Land Fragmentation

Subdividing land into smaller parcels results in the property having management issues for certain forestry practices. The fragmentation and selling of parcels to multiple landowners impacts the County's forestland. In many cases once forestland is sold its use changes to a residential parcel or a recreational parcel. Upon this happening the property is more actively used and forest management is often overlooked. The activity many times disrupts wildlife habitat and due to mismanagement (in most cases unintended) invasive species thrive, and the productivity of the forest is reduced.

Use Value Assessment

Overgrazing of livestock in woodlands remains an important issue for forest managers. Livestock in the woods compact the soils, trample and eat young trees, damage larger ones and generally reduce the productivity of most woodlands. The shift in Wisconsin's use value assessment has put pressure on landowners to pasture woods to change their highly assessed "recreational land" into cropland. This threatens to reverse some of the progress made in recent years to restrict livestock from more productive woodlands. However the change has caused an increase of enrollees in the Managed Forest Law Program that reduces their taxes while requiring a responsible woodland management plan. As of January 1, 2008 4,630 acres of forestland were enrolled in the Managed Forest Law Program.

Gypsy Moth and Emerald Ash Borer

Gypsy Moth and Emerald Ash Borer are pests that pose a great threat to the County's forested lands. Gypsy moths are not abundant in the County but continue to be a growing threat as they spread from the east. The WDNR operates a Gypsy Moth Suppression program that's goal is to stop the spread of the insect. Emerald Ash Borer has recently been discovered in northern Crawford County. The insect poses a major threat to ash trees in the county, region and state. Once detected the state implements plans to deal with infestations. Unfortunately to date, methods to control the spread of the ash borer have had limited success.

Invasive Plants and Species

County citizens have become more aware of invasive plant and animal species. Older invaders haven't raised much public ire. Multi-flora rose control has been a thorn in the side (pun intended) of farmers and woods walkers since it's introduction in the 1950's. NRCS and Crawford County have partnered with it's EQIP program and county rental equipment to give landowners the tools to make a start at multi-flora rose control.

More folks have been paying attention to flora and fauna invaders since the zebra-mussel have wiped out county native mussels and the industry around them that used to thrive in the Mississippi along Prairie du Chien (Courier Press – 2001). Garlic Mustard is currently the weed of choice to eradicate along with purple loosestrife.