Improving our water for the future

Farmers Creek: Our stream needs your help

Clean Water starts with you

DNR

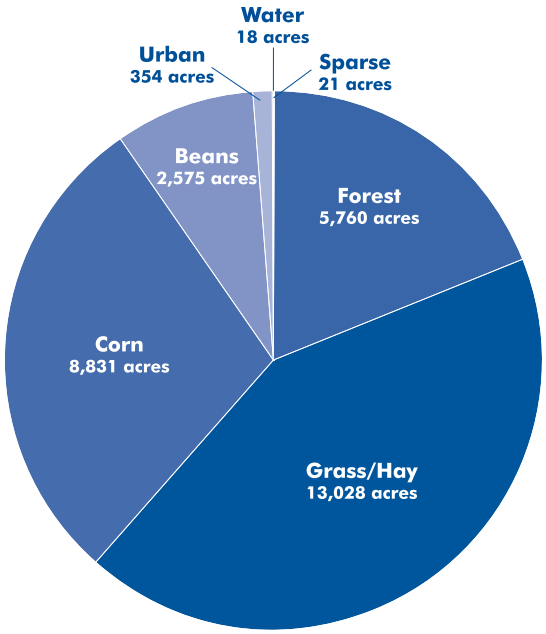
Farmers Creek
Improving water

Pollution from sediment and nutrients has hurt Farmers Creek's fish population and placed the stream on the state's impaired waters list. If we want to give our children and grandchildren clean water for drinking, swimming and fishing – we need to act now.

Photo by Michelle Turner

Farmers Creek flows through Jackson County.

Land use in the Farmers Creek Watershed



What's wrong with the water?

The quality of the water in Farmers Creek has fallen below standards set by the state for supporting aquatic life. Two fish kills within a three year period – caused by manure-laden runoff – killed more than 137,000 fish. Because of this, Farmers Creek was added to Iowa's impaired waters list.

Excess nutrients and sediment from the watershed, or the area of land that drains into Farmers Creek, are polluting the water and hurting the fish and other aquatic life. Livestock waste contributes to high nutrient and fecal contamination levels. Plus, the area's hilly terrain means that 86 percent of the watershed is classified as highly erodible land, according to the Natural Resources Conservation Service (NRCS).

In fact, the Farmers Creek watershed contributes more sediment and phosphorus than 14 of 16 other Maquoketa River tributaries.

To learn more about the problems facing Farmers Creek, please see pages 4 and 5.

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quality begins with you

What can I do?

Landowners can consider installing conservation practices, such as the ones on pages 6 and 7, to control the amount of sediment, nutrients and other pollutants reaching Farmers Creek.

Financial assistance is available, and the benefits extend beyond cleaner water – often conservation practices can produce financial benefits, create recreational opportunities and provide habitat for wildlife. Landowners in the Farmers Creek watershed have already discovered this for themselves – like Carl Selzer, John Deppe, and Bob and Judy Kremer, who tell their stories on page 8.

Project goal:

Reduce the amount of sediment and nutrients reaching streams in the Farmers Creek watershed.

Volunteer opportunities, such as monitoring water quality through groups like IOWATER, can provide hands-on experiences while helping the Farmers Creek Watershed Project track the creek's progress. For example, the local chapter of the Izaak Walton League offers help with water testing and biological assessments.

For other ways you can get involved with the Farmers Creek Watershed Project, contact Michelle Turner, watershed coordinator, at (563) 652-2337 or Michelle.Turner@ia.usda.gov.

Farmers Creek Facts

- Twists and turns through 17 miles of Jackson County in northeast Iowa.
- Drains into the North Fork Maquoketa River.
- There are about 6,000 head of cattle in the watershed.
- The only urban area in the watershed is La Motte, which covers 354 acres.
- The area's hilly terrain can lead to water traveling at higher rates of speed. The faster the drainage, the more potential for flooding and increased soil erosion.

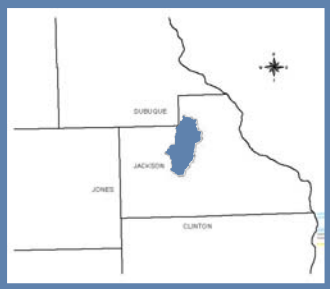
What's a watershed?

A watershed is an area of land that drains water into the lowest point – a body of water, such as a stream, lake or marsh.

Watersheds can be as small as a city block or very large.

The Farmers Creek watershed covers 30,590 acres in Jackson County.

During a rainfall, water either travels over the surface or seeps into the ground. Water traveling over the surface or through the soil may pick up contaminants like sediment, chemicals and waste and deposit them in a body of water.

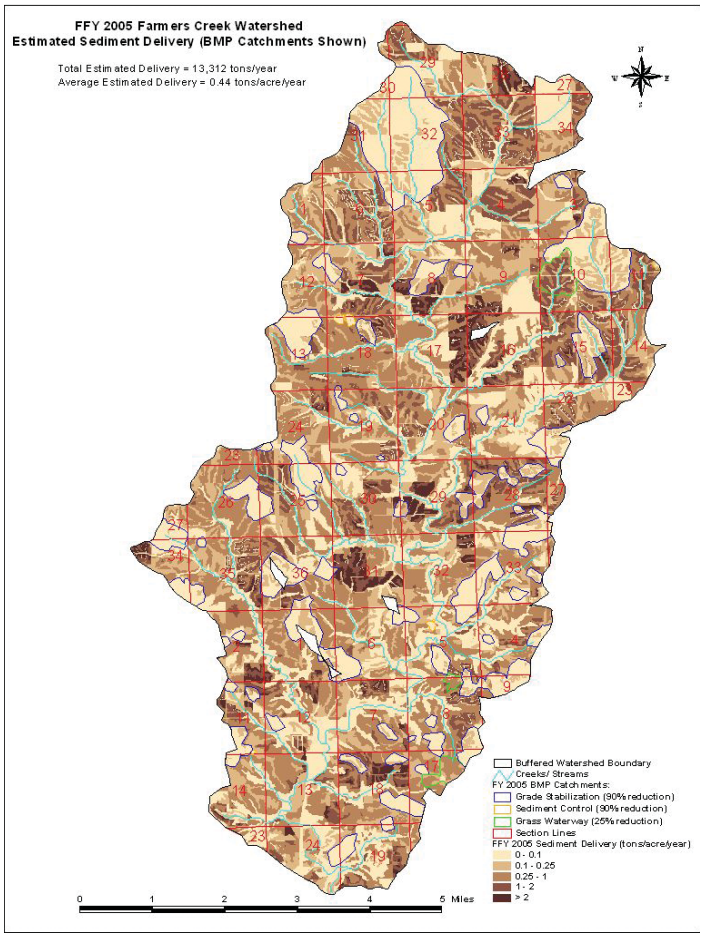


The Farmers Creek watershed.

Excess sediment and nutrients lead

Photo by Michelle Turner

Above: Streambank erosion along Farmers Creek.



Sediment

When rain falls on the watershed, it erodes valuable topsoil from crop fields and washes it into the creek. In one year, an estimated 13,312 tons of sediment can reach Farmers Creek. Why is this a problem?

Excess sediment can:

- Reduce water clarity
- Damage the habitat of aquatic life
- Fill in lakes and streambeds
- Clog drainageways
- Deliver phosphorus to streams

Sediment reaches Farmers Creek through three types of erosion:

Sheet and rill erosion

- Sheet erosion occurs when rainfall and runoff removes a thin layer of soil from the surface of the land.

- Rill erosion forms small channels with a concentrated flow of water on sloping fields.

Gully erosion

- Gully erosion happens after heavy rains or snowmelts and the concentrated runoff creates channels or ditches in the soil.

Streambank erosion

- Streambank erosion occurs when water in streams removes soil from the streambank. Some streambank erosion happens naturally. However, livestock using the streams can trample the banks, leading to a higher erosion rate.

Left: A GIS map estimates that about 13,000 tons of sediment will reach Farmers Creek every year.

to other water quality problems

Nutrients

The most common nutrients in Iowa are nitrogen and phosphorus. These nutrients are needed for healthy waters, but too much of them can lead to poor water quality. High nutrient levels, like in Farmers Creek, can:

- Cloud the water
- Create low oxygen and high ammonia levels
- Lead to poor diversity of aquatic life
- Lead to nuisance levels of algae and aquatic plants that interfere with recreation
- Lead to potentially toxic algae blooms

DNR photo

Nutrients cause an algae bloom.

Due to Iowa's naturally rich soils and intensive agriculture, the state has very high levels of nitrogen and phosphorus in its waters. About 90 percent of nitrogen and 80 percent of phosphorus in Iowa's waters come from "nonpoint" sources like agriculture. "Point" sources, like wastewater treatment plants, account for the rest.

Livestock waste

Livestock waste is a primary source of nutrient pollution in the Farmers Creek watershed, increasing the toxicity of the water for aquatic life.

Nutrients can cause an excessive demand for oxygen. Low oxygen levels in a stream impact fish and other aquatic life, often resulting in fish kills.

DNR photo

Manure enters a tile line inlet, which will send the manure into a stream.

Fecal contamination

Viruses, bacteria and parasites in fecal matter from humans and warm-blooded animals can contaminate water. That can make a person sick if the water is swallowed or comes in contact with a person's eyes, ears or open wounds.

Fecal matter washes into Iowa waters from a number of sources, including wildlife, livestock, pets, improper manure application and inadequately treated domestic sewage.

DNR photo

Livestock trample a streambank and contaminate the water.

Conservation practices help the

Nutrients and sediment are the largest problems facing Farmers Creek. The conservation practices found on these pages are just some of the ways you can help reduce the amount of nutrients and sediment reaching the creek. The Farmers Creek Watershed Project can help you plan for any of these practices and discuss what financial assistance may be available. For more information, contact Michelle Turner, the Farmers Creek watershed coordinator, at (563) 652-2337 or Michelle.Turner@ia.usda.gov.

Nutrient management solutions:

Manure containment structures

These structures allow farmers to store manure until conditions are right for land-applying. The structures help keep manure out of streams and can help landowners save on fertilizer costs. About five structures are planned for the Farmers Creek watershed.

Diversions

Diversions are earthen channels built across slopes. They collect unwanted runoff water and direct it to an appropriate outlet. Often, diversions are used to move water away from feedlots, where runoff could carry manure into streams. The Farmers Creek watershed project plans to install 10 diversions in the watershed.

DNR photo

Nose pumps bring water from fenced-off streams to livestock.

Livestock exclusion from streams

Fencing livestock away from streams prevents livestock from trampling streambanks and keeps livestock waste on the land. Buffer areas along the stream filter runoff water and provide habitat for small animals and birds. Livestock exclusion is planned for 172 acres in the Farmers Creek watershed.

Manure and nutrient management plans

A manure management plan (MMP) is a tool producers use to optimize crop production when they plan nutrient placement. Filling out an MMP helps producers identify the amount of manure being produced, the nutrient concentration in the manure, the number of acres that are required for land application and the amount that will be applied to each available acre. Some livestock producers are required by state law to fill out and file an MMP with the DNR. Implementation of MMP and nutrient management plans are planned for 35 farms in the watershed.

Financial incentives for conservation practices

Conservation practices can often provide financial benefits to landowners as well as environmental and recreational benefits.

Assistance with a number of cost-share, low-interest loan and other programs is available to landowners considering installing conservation practices and management techniques on their land.

For more information on these programs, contact the Jackson County NRCS/FSA office in Maquoketa at (563) 652-3237.

Sediment control solutions:

Streambank stabilization

Stabilizing streambanks with rocks (rip rap), grass, trees or other cover works to reduce erosion, filter out nutrients and minimize flood damage.

The watershed project plans to install 4,000 feet of stream bank stabilization.

Photo by USDA NRCS

Contour buffer strips

With contour buffer strips, a series of grass or legume strips are planted on the contour, alternating with crops. The strips work to slow runoff, trap sediment and nutrients, and provide habitat for small wildlife. Contour buffer strips are planned for 50 acres in the Farmers Creek watershed.

Photo by USDA NRCS

Grade stabilization structures

A grade stabilization structure is usually a dam, embankment or other structure that reduces water flow. The structures are built across a grass waterway or gully to slow water and trap sediment. About 30 structures are planned for the Farmers Creek watershed.

Photo by Clay Smith, DNR

Conservation buffers

Conservation buffers slow sediment and filter runoff water before it reaches a stream. In addition, buffers reduce erosion from wind and provide habitat for wildlife. The Farmers Creek watershed project plans to install about 100 acres of conservation buffers.

Photo by USDA NRCS

Grassed waterways

Grassed waterways are shaped and placed in areas with concentrated water flow to slow water, guide it off the field and reduce gully erosion. Grassed waterways help disperse water, preventing small streams from forming. They can also trap nutrients and sediment.

The Farmers Creek watershed project plans to install 25 acres of grassed waterways in the watershed.

Photo by USDA NRCS

Working to protect their creek

Carl Selzer

Carl Selzer remembers perfectly blue water. Born and raised near Farmers Creek, he's seen that clear water change.

"It's always been a very pure creek," he said. "I think it's getting too many farm chemicals in it. It's not quite as good as it used to be."

Carl Selzer

Selzer has been raising beef cattle in the watershed since 1971. He has fenced cattle out of the creek, uses rotational grazing and installed two ponds. The ponds provide water for cattle and trap sediment from a 600-acre drainage area.

Part of Selzer's 160-acre farm is strictly virgin ground. The land has never been tilled and boasts prairie grass and wildflowers.

"It's just beautiful," he said.

Selzer installed six miles of fencing along the creek in 2005 and plans on another three miles this spring.

John Deppe

Like Selzer, John Deppe grew up in the watershed. He and his family are continuing a tradition of using conservation practices on the family farm.

His father put in terraces and practiced contour farming. The younger Deppe, along with wife Joell and their sons, has added sediment basins and grade stabilization structures. The family has built and renovated several waterways and practices rotational grazing.

Austin, John, Chance and Montana Deppe (L to R)

"It's been a family thing," Deppe said of conservation practices. "I think it's important because we're just here for a short time."

By using conservation practices, Deppe hopes to keep the farm in shape to pass on to his sons, Montana, Chance, Austin and Nick. Right now, Deppe's main goal is to conserve the soil on the area's rolling hills.

"Otherwise it (the soil) would all be in Louisiana," he said.

The family plans to keep improving water quality in the creek by adding more waterway projects and installing a sediment basin near a feedlot.

Bob and Judy Kremer

Bob Kremer watches Farmers Creek move from crystal clear every winter to muddy in the spring, as sediment washes in from nearby farms.

"Once the top soil is gone, it's gone," he said.

Judy and Bob Kremer

To do his part, Kremer has installed numerous conservation practices on his land. With his wife, Judy, he raises stock cows on 440 acres. Except for 25 acres of corn, the land is pasture and hay and includes a mile of Farmers Creek.

The Kremers already have seven sediment basins and two ponds, one of which is a watering system for the cattle. The ponds catch sediment and also provide fishing for the family.

Using rotational grazing improves the quality of feed for the cattle, Bob said. "The pastures last longer, there are less weeds," he said.

In addition, there are plans for rip rap on two stream sections to reduce streambank erosion, and plans for waste diversion to hold back manure from the stream.

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