



Before & After

A series of conservation projects with before & after images showing how Iowa NRCS and our partners help private landowners address natural resource concerns on their land



United States Department of Agriculture
Natural Resources Conservation Service
Helping People Help the Land

www.ia.nrcs.usda.gov



@IowaNRCS

Denitrifying Bioreactor/Water Monitoring



Location
Hamilton County

Years
2009-2011

Resources Treated
**Water Quality
Nutrient Management**

Project Partners
**Iowa Soybean
Association (ISA)
Iowa State University
Iowa Learning Farm
USDA-NRCS
Landowner**

Funding Source
**Landowner
Iowa Soybean
Association (ISA)
Mississippi River Basin
Healthy Watersheds
Initiative (MRBI)
USDA-NRCS**



Before

Background:

Denitrifying bioreactors are underground structures filled with wood chips that intercept and treat tile water. They help reduce nitrate levels in water leaving agricultural land. The newly constructed bioreactor at left is about 3,900 square feet.

Success:

Hamilton County farmer Arlo Van Diest has two bioreactors – one installed by the Iowa Soybean Association (ISA) and another through USDA-NRCS. Both are helping improve water quality where there is concentration of nitrogen of subsurface, or ground, water. Keegan Kult (below) monitors the ISA installed bioreactors regularly for water quality.



After

Photos by Lynn Betts

Filter Strip



Location
Wapello County
Cedar Creek

Year
1995

Resources Treated
Water Quality
Sediment Reduction
Nutrient Management
Wildlife Habitat

Project Partners
USDA-FSA
USDA-NRCS
Landowner

Funding Source
Landowner
Conservation Reserve
Program (CRP)



Background: The number one water pollutant in Iowa is sediment, and a lot of that comes from runoff from adjacent cropland. Along with a high residue management system, several other conservation practices can help crop producers reduce the amount of sediment running into adjacent streams. Practices such as terraces, contour buffer strips, and grassed waterways can reduce in-field erosion. A final stop-gap to keep sediment and other pollutants from water is a filter strip - an area of vegetation along a water course used to reduce pollutants from runoff to improve water quality.

Success: The landowner installed a filter strip along Cedar Creek in 1995. He is seeing improved water quality and more wildlife in the area.



Floodplain Restoration



Location
Linn County

Year
2010

Resources Treated
**Flooding
Sediment Runoff
Water Quality
Wildlife Habitat**

Project Partners
USDA-NRCS

Funding Source
**Emergency Watershed
Protection Program-Flood-
plain Easements (EWP-FPE)
American Recovery and
Reinvestment Act of 2009
(ARRA)**

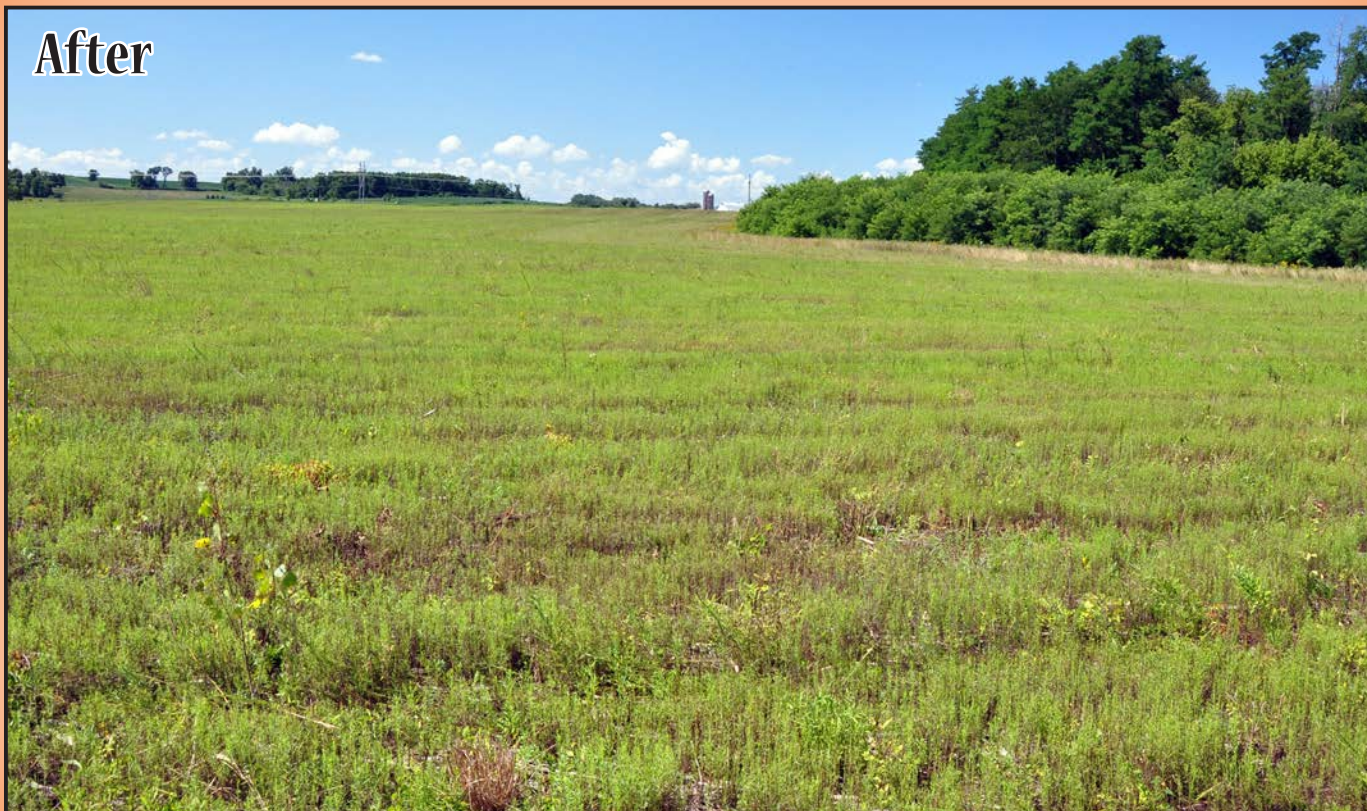
Before



Background: Craig Byers experienced flooding more years than not on his 480-acre cropland that sits in a floodplain near the Cedar River. Flooding meant sediment delivery to the nearby river and, oftentimes, a ruined crop. So when the USDA offered to place the flood-prone cropland into a permanent easement, Byers took the offer.

Success: Restoration work on Byers' cropland consisted of drilling in a native seed mix that fits the local ecosystem. If that land floods now, the floodwater will slowly recede back into the river without causing damage to the environment, infrastructure or valuable crops. The native grasses in floodplains also serve as good habitat for wildlife.

After





Location
Pottawattamie County

Year
2010

Resources Treated
Soil Erosion
Wildlife Habitat

Project Partners
USDA-NRCS
Iowa State University

Funding Source
Iowa State University

Grassed Waterway

Before



Background: A gully formed in cropland at Iowa State University's Armstrong Research Farm near Lewis. Gully erosion is caused by areas of concentrated flows of water down a slope. One of the best conservation practices to fix gully erosion is a grassed waterway.

Success: To combat the gully, the Armstrong Research Farm crew seeded down a grassed waterway of permanent vegetative cover. Waterways are designed in a parabolic, or dish, shape wide enough and deep enough to carry peak runoff from a 24-hour storm. Following installation, fabric checks were installed to help control ephemeral gully erosion. Fabric checks are required on all NRCS-funded waterway installations in the East Pottawattamie Soil & Water Conservation District (SWCD).

After



Prescribed Burning



Location
Wayne County

Year
2011

Resources Treated
**Soil Erosion
Wildlife Habitat**

Funding Source
**Landowner
Conservation Reserve
Program (CRP)**

Before



Background: The landowner worked with the local fire department to implement a prescribed burn on his tall grass prairie CRP land. (The Farm Service Agency requires mid-contract management, such as a prescribed burn, during the CRP contract.) His goal was to control the invasion of cool season introduced species and some woody plants.

Success: Following the burn, the landowner noticed a strong comeback and increased diversity of the forb (native flower) component of the prairie. Prescribed burns also help enhance seed production, control plant disease, and improve wildlife habitat.

After



Prescribed Grazing



Location
Mahaska County

Year
2011

Resources Treated
**Soil Erosion
Plant Condition/
Livestock
Wildlife Habitat**

Project Partners
**USDA-NRCS
Landowner**

Funding Source
**Landowner
Environmental Quality
Incentives Program
(EQIP)**

Before



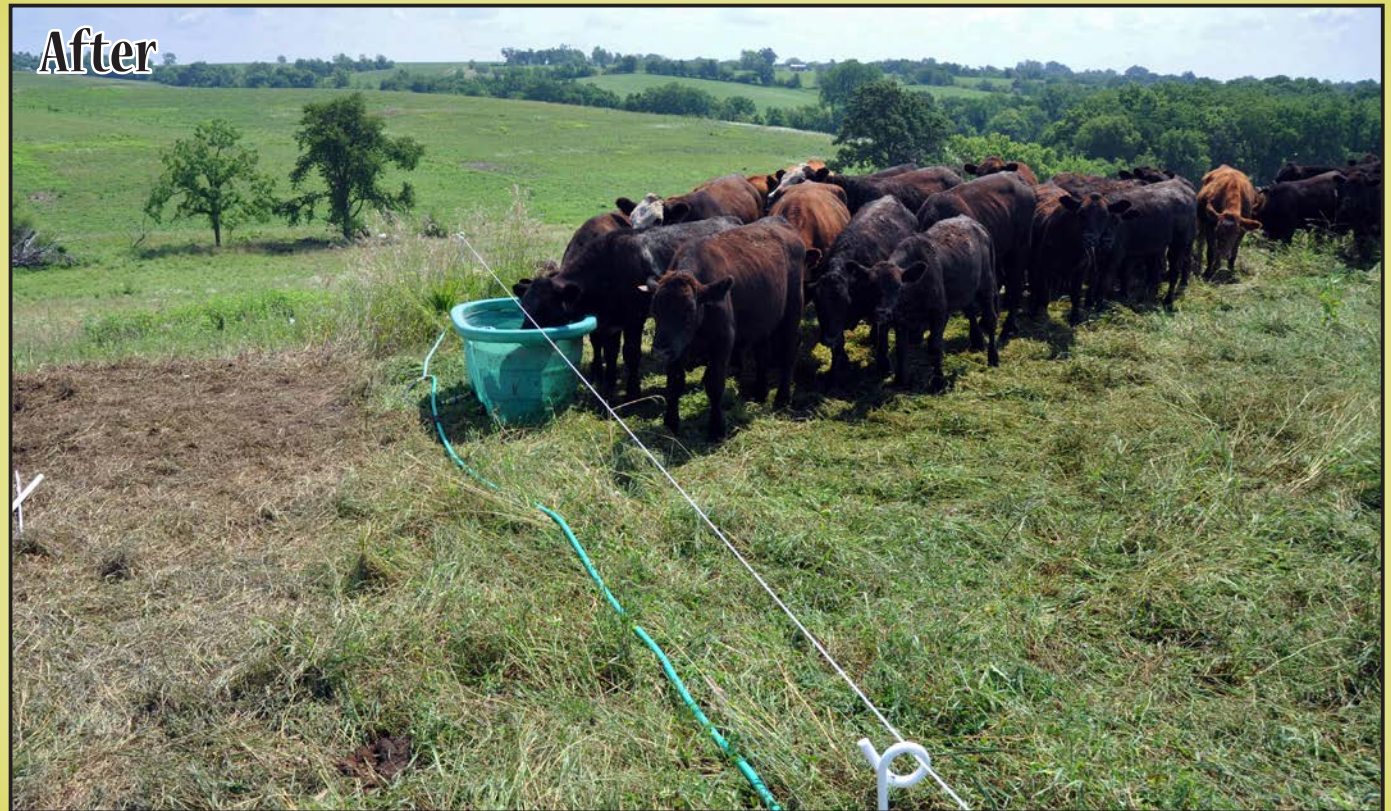
Background:

With continuously grazed pastures, livestock tend to congregate in areas and form trails, leading to bare, eroded soils. If a farm pond is supplying water, cattle often stand in these areas causing animal health issues and poor water quality.

Success:

A Mahaska County father-son grazing operation implemented a grazing system where they successfully graze 100 stockers per acre using temporary fences and move water with the cattle. This type of system allows plants sufficient time to recover and for diverse wildlife and plant species to move in. This system also provides the animals optimal feeding and weight gain.

After



Rain Garden



Location
Polk County

Year
2009

Resources Treated
Water Quality
Water Quantity
Flood Reduction

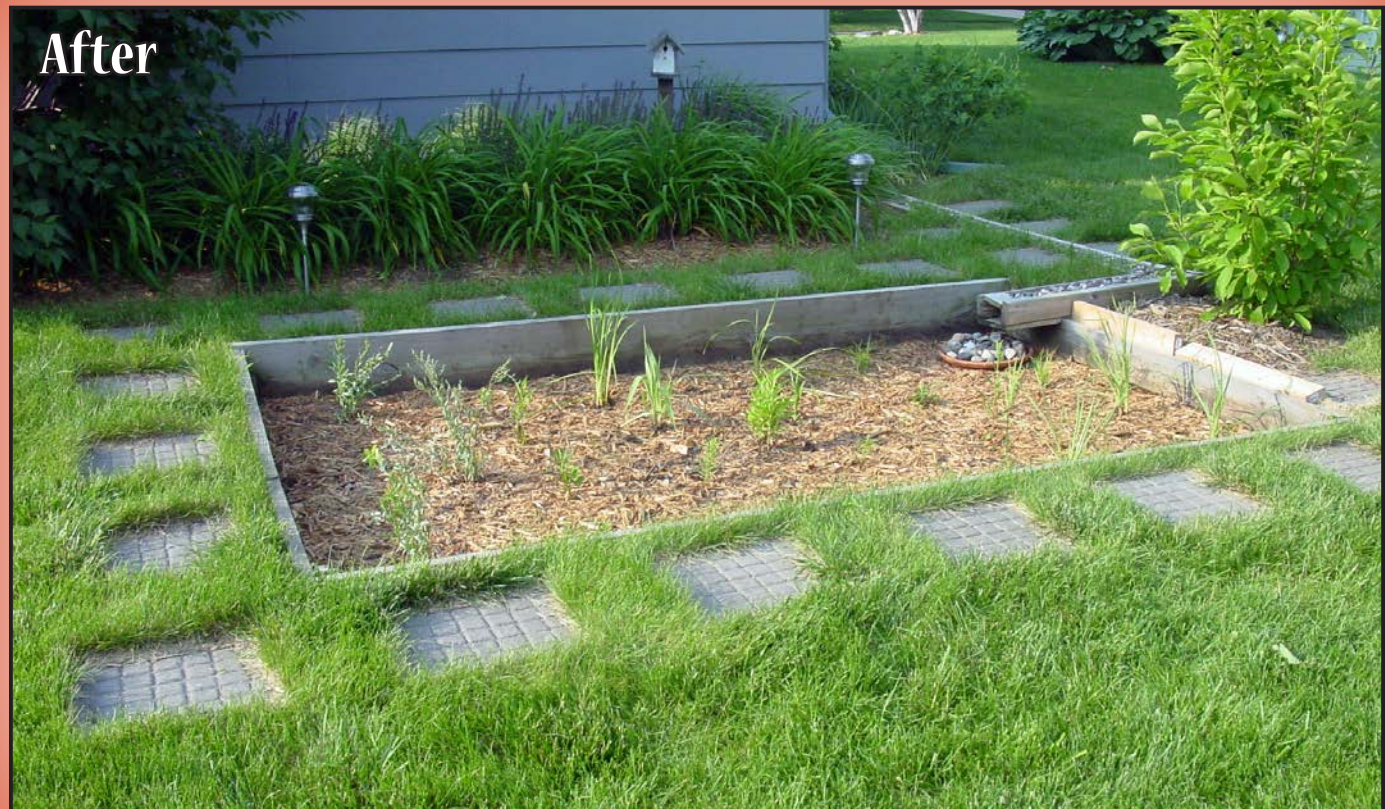
Project Partners
Polk SWCD
IDALS-DSC
Landowner

Funding Source
Landowner



Background: Like so many suburban homeowners, Paul Miller's yard had areas of ponding following heavy rains. Storm water runoff from impervious surfaces (i.e. rooftops, driveways, patios) carries pollutants like grass clippings, hydrocarbons, and sediment to receiving waters without treatment. Rain gardens are shaped like shallow bowls. They are built with amended soils with high percolation rates and planted with native plants and flowers to capture and infiltrate water before it can reach any water bodies.

Success: Miller placed his rain garden in his backyard near enough to the downspout to capture rainwater from his roof. He estimates that about 100,000 gallons of rainwater will flow into his rain garden annually.



Restored Wetland



Location
Plymouth County

Years
2006-07

Resources Treated
**Flood Reduction
Water Quality
Sediment Runoff
Wildlife Habitat**

Project Partners
**Landowner
USDA-NRCS**

Funding Source
**Landowner
Wetlands Reserve Program (WRP)**

Before



Background:

Cropland adjacent to the Big Sioux River in northwest Iowa frequently flooded and was eventually used for hayland. By the mid 2000s the land was too wet to even get a solid hay crop.

Success:

The landowner transitioned a portion of the ground to wetlands. A new landowner purchased the property and restored the remainder to wetlands through the Wetlands Reserve Program (WRP). The new owner uses the newly created wildlife habitat for hunting. The wetland complex is also used for family recreational outings such as camping and fishing in the adjacent river.

After



Riparian Buffer Strip



Location
**Bear Creek
Story County**

Year
1990

Resources Treated
**Streambank Erosion
Sediment Runoff
Water Quality
Wildlife Habitat**

Project Partners
**Iowa State University
Iowa DNR
Pheasants Forever
USDA-NRCS**

Funding Source
**Iowa State University
Iowa DNR
Pheasants Forever
USDA-NRCS**



Background: Bear Creek in Story County is much like many streams in Iowa that run through areas of intensive cropping or heavy grazing. The creek's banks had eroded, the creek bottoms were loaded with sediment, and the water quality was degraded by high concentrations of suspended solids, nutrients, and agricultural chemicals.

Success: A conservation partnership implemented a restoration plan. The team installed a multi-species riparian buffer strip to reduce the impact of non-point source pollution on the creek. The buffer includes an outside area of undisturbed trees, a middle area of managed fast-growing trees, and a strip of grass along the creek to intercept surface runoff.

Steel Roofed Livestock Building



Location
Shelby County

Year
2008

Resources Treated
Manure Runoff
Soil Erosion
Water Quality

Funding Source
Landowner
Environmental
Quality Incentives
Program (EQIP)

Before



Background: Cattleman Clint Sonderman battled manure runoff issues, particularly during spring snowmelt, on his 20-acre feedlot. In October 2008, he installed a 20,000 square foot total containment monoslope building for his 500-head livestock feeding operation. The new building includes three pens and cornstalks for bedding.

Success: Sonderman's monoslope building totally eliminates the manure runoff and soil erosion issues he faced with his open feedlot, thus improving water quality in nearby streams. The new facility also allows for better manure utilization and is helping him produce healthier, more productive livestock.

After



Stream Crossing/Stabilization



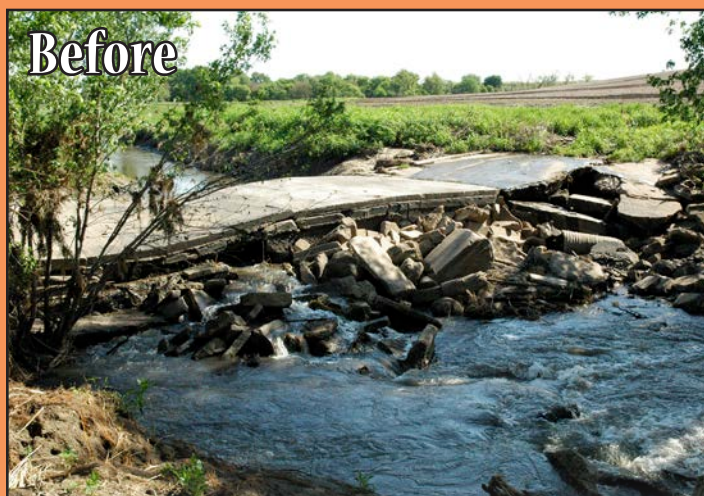
Location
Jordan Creek
Pottawattamie County

Year
2009

Resources Treated
Streambank Erosion
Streambank Degradation
Wildlife Habitat

Project Partners
Pottawattamie Co.
USDA-NRCS
Hungry Canyons
Alliance
IDALS-DSC
East Pottawattamie SWCD

Funding Sources
Watershed Protection
Fund (WSPF)
Hungry Canyons
Clean Water Act
(Section 319)
Landowners



Before

Background: There were several reasons and partners with interest in this project. Pottawattamie County needed something done along Jordan Creek to reduce erosion beneath a bridge. That stretch of the creek was also the most unstable, and needed to be stabilized. Additionally, an old stream crossing (left) that allowed a farmer to access his field was ready to collapse.

Success: The final Jordan Creek Watershed Project included large-scale streambank stabilization and a new crossing upstream from the old location. This project stabilizes the stream bed and banks along a two mile stretch, and allows the farmer easier access to cropland on the other side of Jordan Creek.



After

Streambank Stabilization



Location
South Canoe Creek
Winneshiek County

Year
2010

Resources Treated
Streambank Erosion
Wildlife Habitat

Project Partners
Seed Savers Exchange™
Iowa Natural Heritage
Foundation (INHF)
Iowa DNR
USDA-NRCS
Trout Unlimited

Funding Source
Landowner
Cooperative
Conservation
Partnership
Initiative (CCPI)

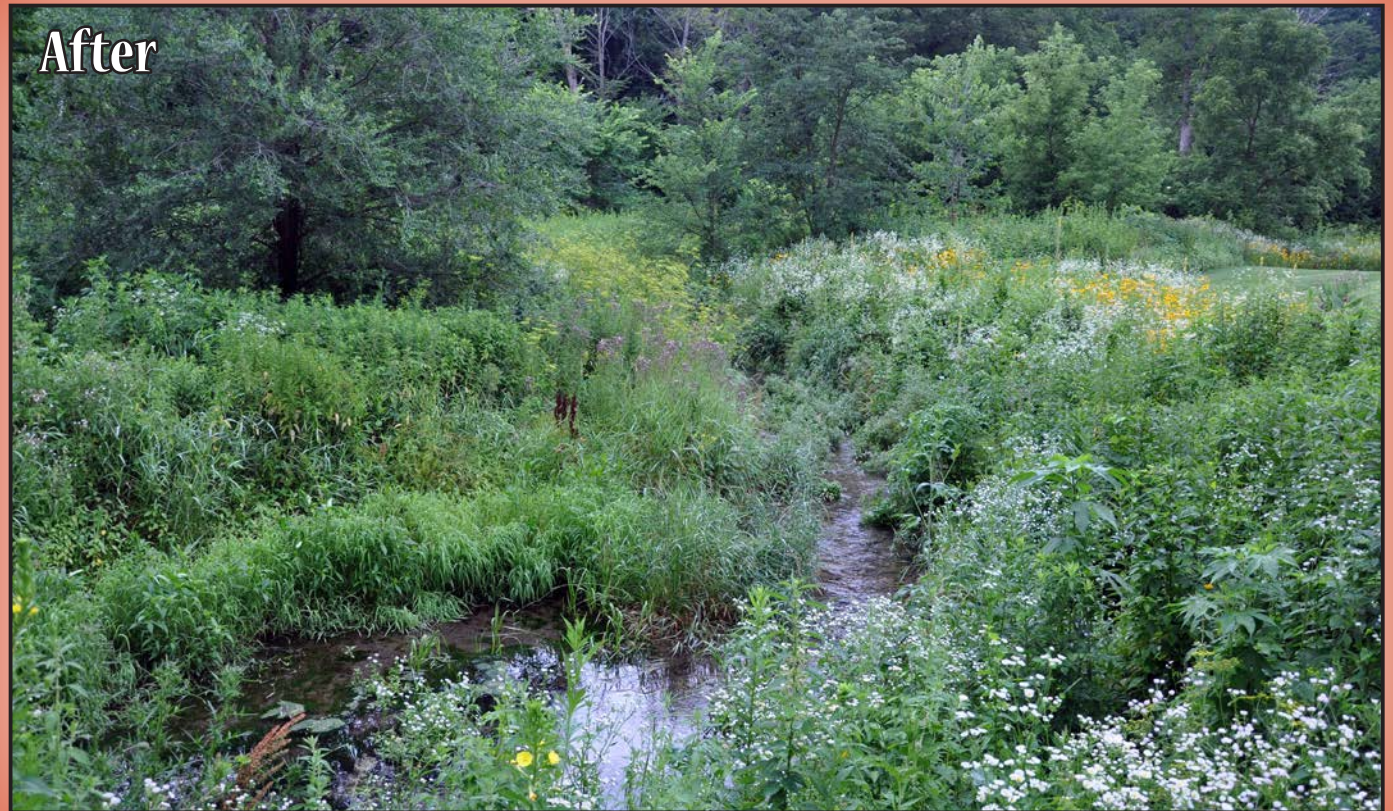
Before



Background: In the summer of 2010 the non-profit group Seed Savers Exchange™ stabilized 1,915 feet along the banks of a trout stream – South Canoe Creek. The project included removing trees and other brush from the area and reducing the slope of the bank to provide a suitable condition for native vegetation. Rip rap and fish hides were also installed along portions of the stream project.

Success: Now that vegetation is established along South Canoe Creek, sediment delivery from stream banks is being reduced. This project is producing a healthier stream through cleaner water for natural brook trout spawning.

After



Terraces



Location
Montgomery County

Year
2009

Resources Treated
Soil Erosion
Wildlife Habitat
Water Quality

Funding Source
Landowner
American Recovery and
Reinvestment Act of 2009
(ARRA)

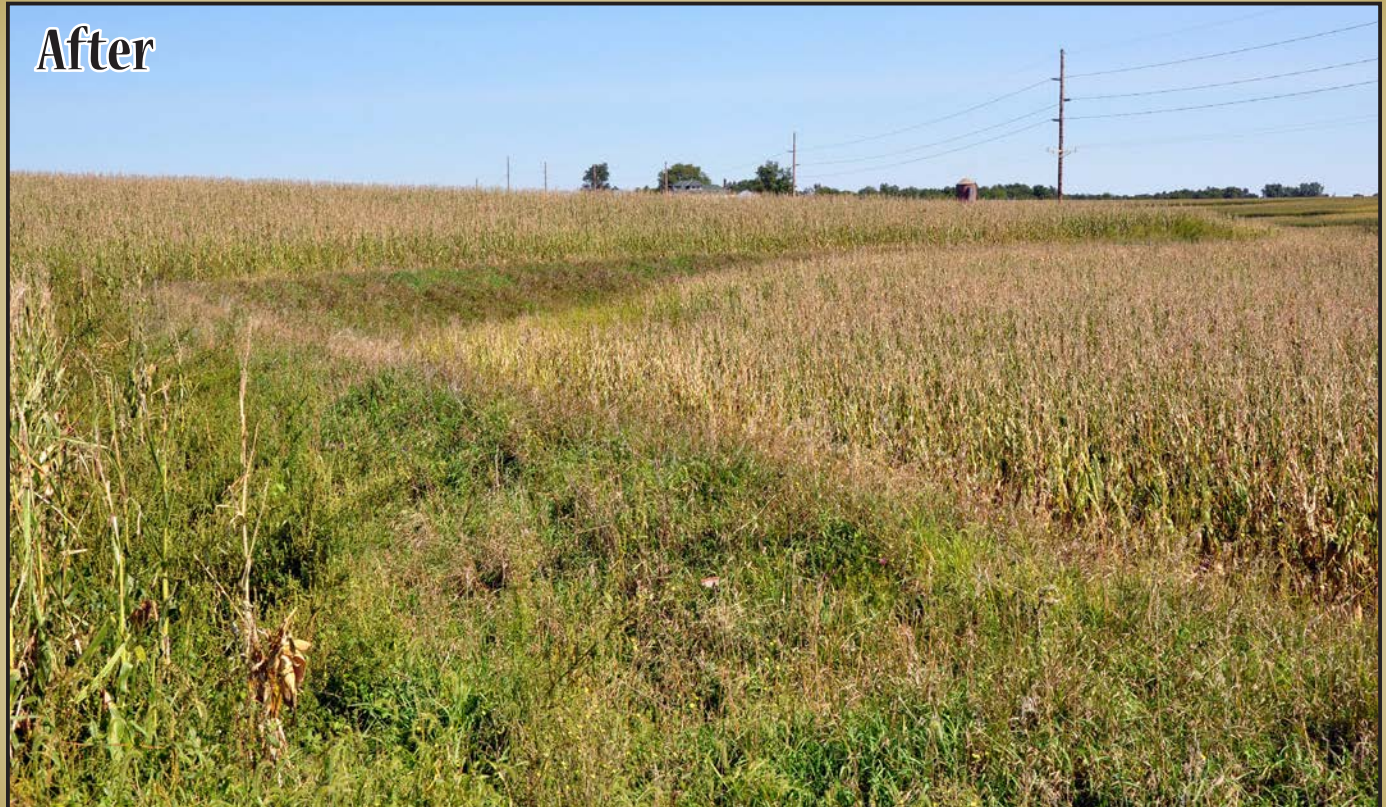
Before



Background: Seven Montgomery County landowners in the Hacklebarney Watershed took advantage of special funding on conservation practices through the American Recovery and Reinvestment Act of 2009 (ARRA). This landowner installed tile outlet terraces on cropland that is highly susceptible to soil erosion.

Success: The landowner's newly constructed terraces did the job reducing soil erosion during near-record rainfall totals in June 2011. This erosion reduction will ultimately help maintain soil quality and reduce sediment delivery to nearby ditches.

After



Watershed Dam/Road Structure



Location
**Bear Creek Watershed
Site 26
Winneshiek County**

Years
2010-2011

Resources Treated
**Flooding
Soil Erosion
Sediment Runoff**

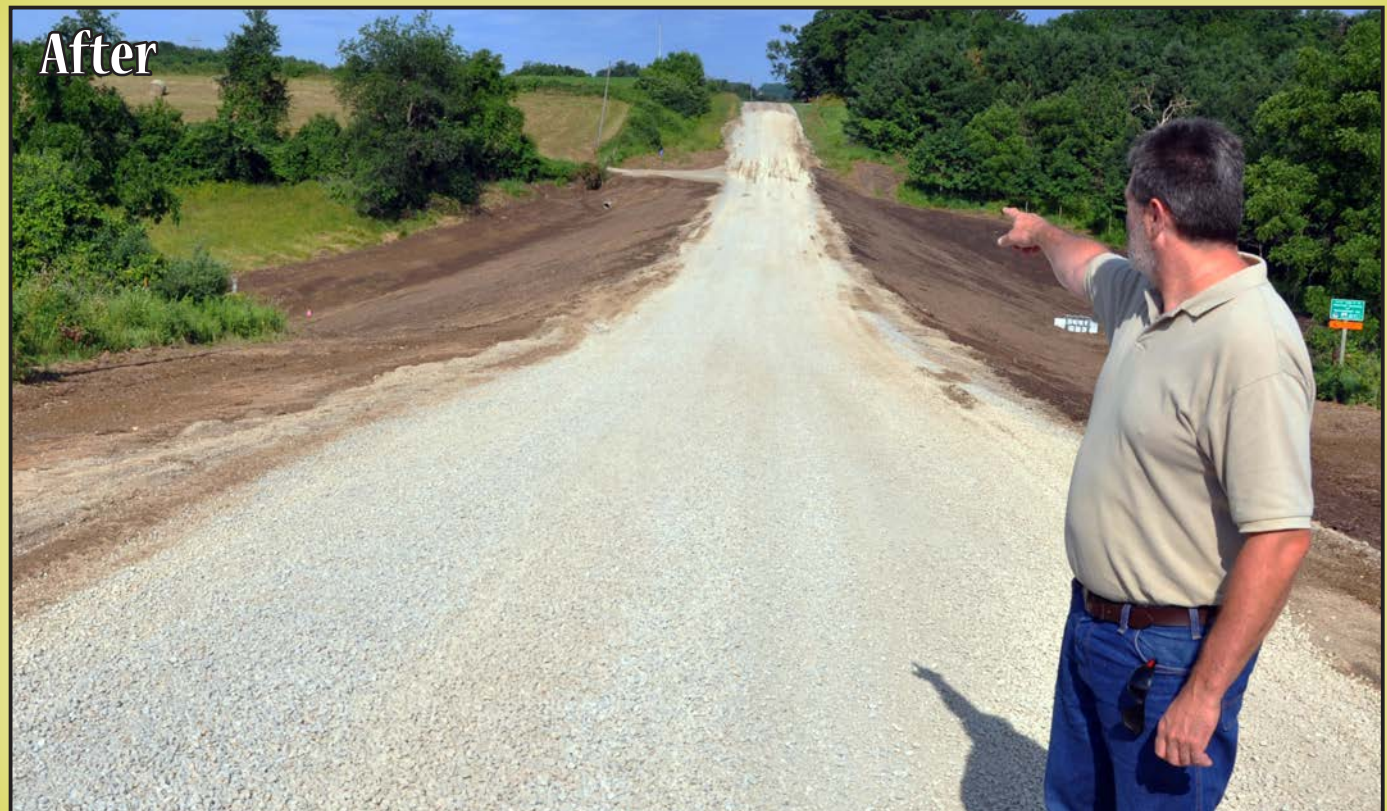
Project Partners
**Winneshiek SWCD
Winneshiek County
Bear Creek
Advisory Board
USDA-NRCS**

Funding Source
**American Recovery and
Reinvestment Act of 2009
(ARRA)
Winneshiek County**



Background: Special federal funding in 2009 allowed the Bear Creek Watershed Project to add several new flood control structures. The watershed covers parts of four counties in northeast Iowa and southeast Minnesota.

Success: Site 26 is a combination watershed dam and new road structure. The completed structure levels the steep side slopes along the road. That area can now be mowed and the road is safer for traffic and snow removal. The pool area will impound the runoff from a 50-year rainfall event, and a significant amount of damage to local infrastructure is being reduced below this and other new structures in the watershed.



NRCS Offers Conservation Planning

With an office in every Iowa county, USDA's Natural Resources Conservation Service (NRCS) has conservationists nearby to help you through the conservation planning process. The Before & After projects in this brochure, for example, were part of a conservation plan designed specifically for that farm, property or watershed.

NRCS employs soil conservationists, agricultural engineers, soil scientists, wetland specialists, and other experts to help you develop a plan that addresses resource concerns on your farm, including soil erosion, water quality, wildlife habitat, and energy efficiency.

NRCS Provides Financial Assistance

In addition to providing free, voluntary technical assistance, NRCS administers several conservation programs that help reduce the cost of installing conservation practices.

One of our main programs that helps fund conservation is the Environmental Quality Incentives Program (EQIP). This program helps eligible landowners fund the cost of installing or implementing structural, vegetative and management practices on eligible agricultural land.

Through EQIP, NRCS provides assistance in the implementation of practices such as grassed waterways, animal waste storage facilities, cover crops, and nutrient management activities. In fiscal year 2011, NRCS provided more than \$25 million in financial assistance to Iowa farmers to install such practices.



Before & After



October 2013

www.ia.nrcs.usda.gov

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases will apply to all programs and/or employment activities.)