

2009 Watershed Improvement Fund Final Report

**Upper Miller Creek Watershed Project
Black Hawk Soil and Water Conservation District
March 1, 2006-January 31, 2009**

Counties included in the project area: Black Hawk Soil and Water Conservation District

Financial Accountability

Grant Agreement Budget Line Item	Total Funds Approved (\$)	Cumulative requested (\$)	Total Funds Expended (\$)	Available Funds (\$)
Personnel	34,500	17,800	31,356.02	3,144
Information/ Education	5,000	5,000	1,526.65	3,473
Equipment/ Supplies	9,000	7,000	39.59	8,960
Buffers- Roadside Planting	8,250	2,700	700	7,550
Buffers- Roadside Incentive	12,150	5,200	2,812.65	9,337
TOTAL	68,900	37,700	36,434.91	32,464

- Buffers- Roadside Planting/ Incentives:

The practices that were applied within Upper Miller Creek watershed were to reduce soil erosion, improve water quality, and reduce county road infrastructure cost by implementing conservation practices, reducing nutrient and pesticide use and improving wildlife habitat. One goal was a proposed over-seeding of rye grass to protect soybean fields from erosion. Another project incorporated the collaboration of the county engineer, the County Conservation Board, the Soil and Water Conservation District, NRCS, the Integrated Roadside Vegetation Management and private landowners to install native grass plantings adjacent to roads (roadside buffers). In addition, our goal was to meet with landowners to increase their awareness of resource management plans and apply additional funding from other sources to encourage conservation practices.

One of the first projects receiving funding was to be applied to cover crops. However, due to logistical difficulties in locating a helicopter for aerial seeding, combined with the reduced effectiveness from a fixed-wing applicator (airplane), the odds of completing a successful cover crop application in 2007 and 2008 were diminished. Therefore, funding for this project did not get requested.

Nevertheless, there was success with the roadside buffers project that was applied in the spring of 2007, with the assistance of the Black Hawk Engineer's Office, Integrated Roadside Vegetation Management, and Black Hawk County Conservation Board. The purpose of establishing this project was to reduce the amount of sediment delivery, due to increased amount of runoff from sediment and cornstalks from heavy rains in 2004; the cornstalks and sediment were displaced onto county roads, ditches, and culverts.

There were 5 contracts established equaling 7.3 acres of roadside buffers. To have a successful roadside buffer program, meetings were established to educate local landowners within UMC watershed. Funding was requested from line items, information and education, roadside plantings, and roadside incentives for maintenance of the buffer strips. Correspondence with landowners was essential in relaying the message of roadside buffers, as well as other environmental practices that would reduce the amount of sediment delivery in the UMC watershed. Meetings with landowners was ongoing, to determine the progress of the roadside buffers. The contracts that were established with the landowners was for 5 years, three of the five years were incentives from WIRB and the remaining two years will be funded by the Black Hawk Engineer's office.

- Personnel job duties- including information/ education:

Funding for Upper Miller Creek financed 3 employees throughout its tenure. Different activities were conducted with each coordinator. Activities were planned and informative newsletters were addressed to areas of interest within UMC watershed.

Newsletter that were sent varied based on different information that was being gathered to determine the best management practices possible for their land use; RUSLE calculations were also applied to conduct the amount of soil loss for specific landowners. In addition, personnel sent newsletters to inform landowners about additional funding for conservation practices; there were responses that led to additional acres being implemented that led to reduction of sediment delivery.

Funding Source	Approved Application Budget (\$)	Actual (\$)
WIRB	68,900	37,700
County	6,550	2,628
EQIP	105,750	24,630
IFIP	0	7,134.38
IRVM	12,750	1,891
CRP	81,650	37,706.25

Along with the grant money, UMC also had federal and state funded projects to help reduce the amount of sediment delivery. Due to supplementary funding provided by various partnered agencies, Black Hawk County Engineer's Office, County Conservation Board, Soil and Water Conservation District, and NRCS, we were able to apply additional practices of waterways, filterstrips, and no-till, thus reducing the amount of sediment delivery.

- WIRB:

WIRB funding provided the costs as mentioned above. The roadside buffer program was developed from the WIRB funding; all consisted of buffer initiatives, buffer planting, and information/ education.

- Black Hawk County:

County funding assisted the roadside buffers. The contract between Black Hawk Soil and Water Conservation District and the Black Hawk County Engineer's Office was for a total of 5 years. Through WIRB funding, Black Hawk SWCD would fund for the duration of the grant and the County would provide the remaining 2 years.

- IFIP:

Iowa Financial Incentive Program provided cost share funding for waterways that were placed in UMC watershed.

- CRP/ EQIP:

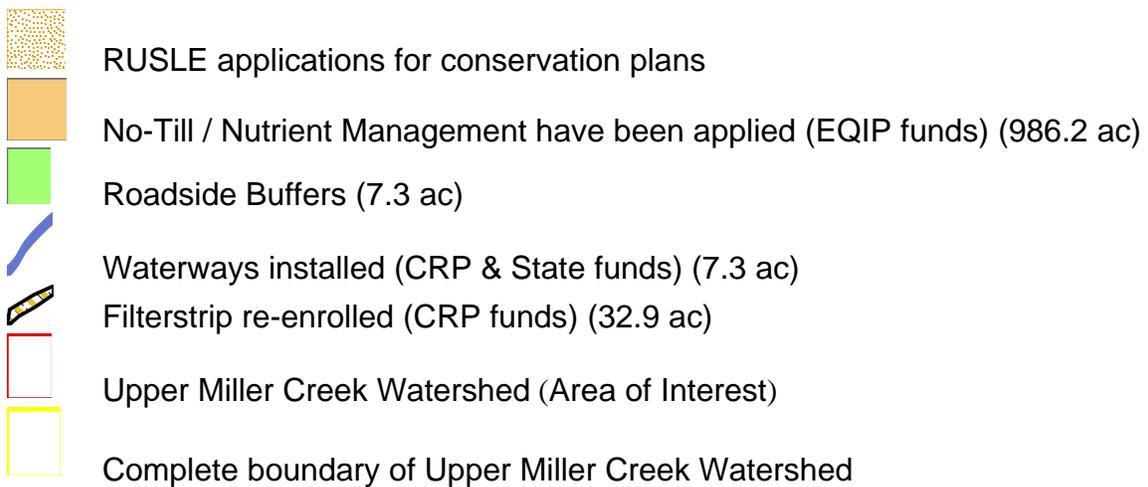
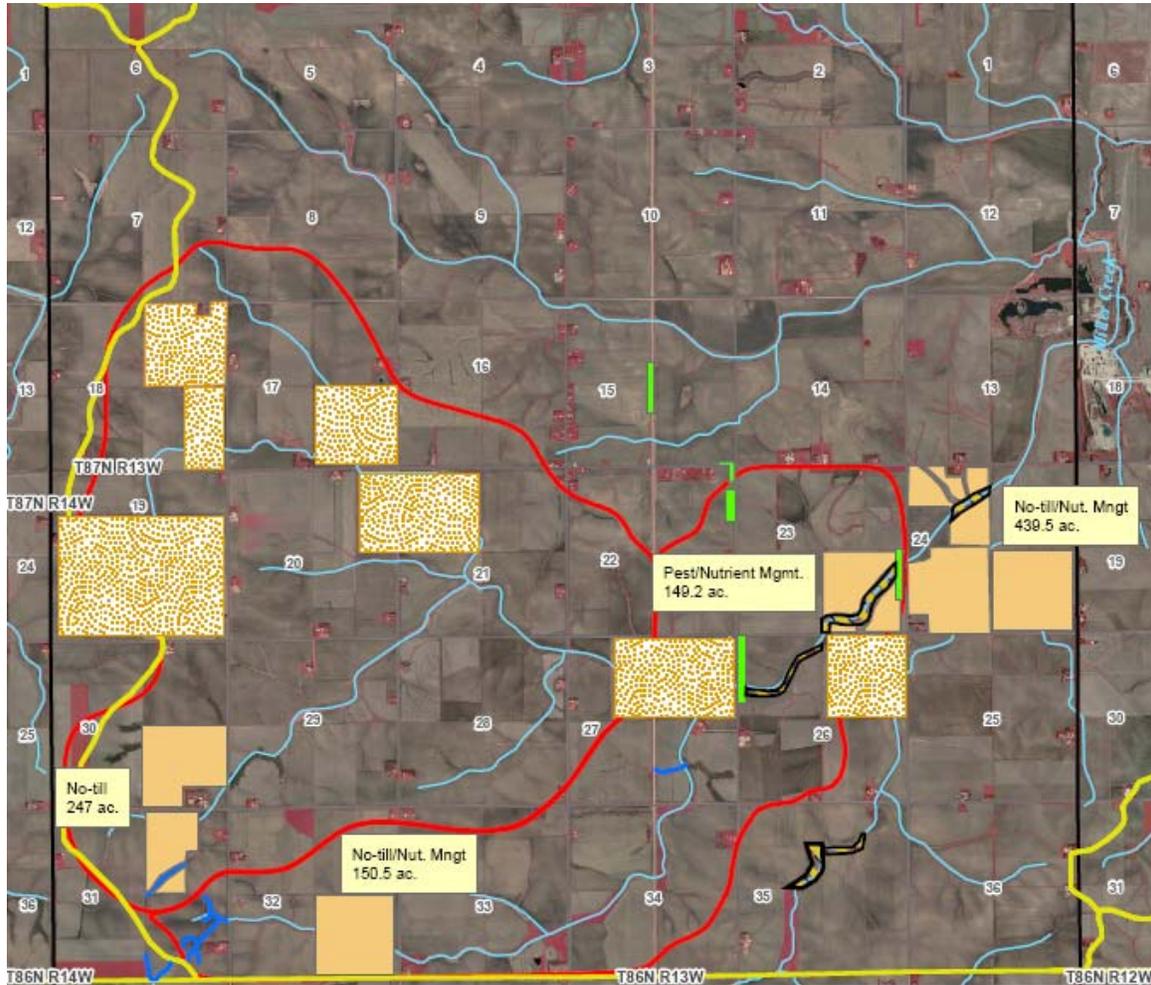
The Conservation Reserve Program and EQIP, from NRCS, provided costshare funding for re-enrolled filterstrips, waterways, nutrient/ pest management, and no-till. The federal funding provided approximately 75% cost share for the landowner.

Environmental Accountability

Practices and Activities

Practice or Activity	Unit	Approved Application Goal	Accomplishments	Percent Completion
Roadside Buffers	ac.	40	7.3	18
Waterways	ac.	25	7.3	29
Management Systems	ac.	1000	986.2	99
Grass Filterstrips	ac.	25	32.9	130

UPPER MILLER CREEK PRACTICES

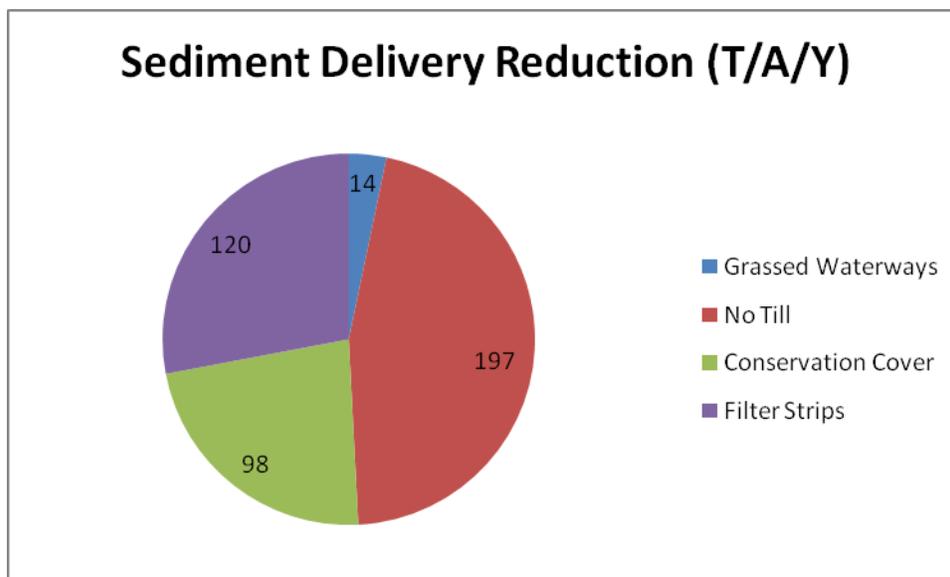


- Education/Information:

Within UMC watershed, meetings were held for landowners participating in roadside buffer projects, as well as informative gatherings to discuss water monitoring with residents and FFA students from Union High School. The group was IOWATER certified and provided data from different points along UMC watershed. Data that was gathered from the monitoring groups was a cumulative amount to determine the water quality.

- Grass Filterstrip:

A total of 32.9 ac of filterstrips were re-enrolled into the CRP program. The majority of re-enrollments are positioned along the major branch of Miller Creek. Within the location of these filterstrips, monitoring sites were established. The continuation of these filterstrips contributes to the reduction of sediment flow, pollutants, improving the quality of water and wildlife habitat.



- Roadside Buffers:



For the establishment of roadside buffers, there was anticipation for a larger turnout, but the increase in crop prices led to fewer participants. With the installment of the 7.3 acres of roadside buffers, there was a total of 98 t/y of sediment delivery reduction in UMC watershed. The buffers have an agreed contracted term of 5 years. The chart above shows the sediment delivery reductions for the project, of the original 649 tons/year 429 tons/year of sediment delivered was eliminated

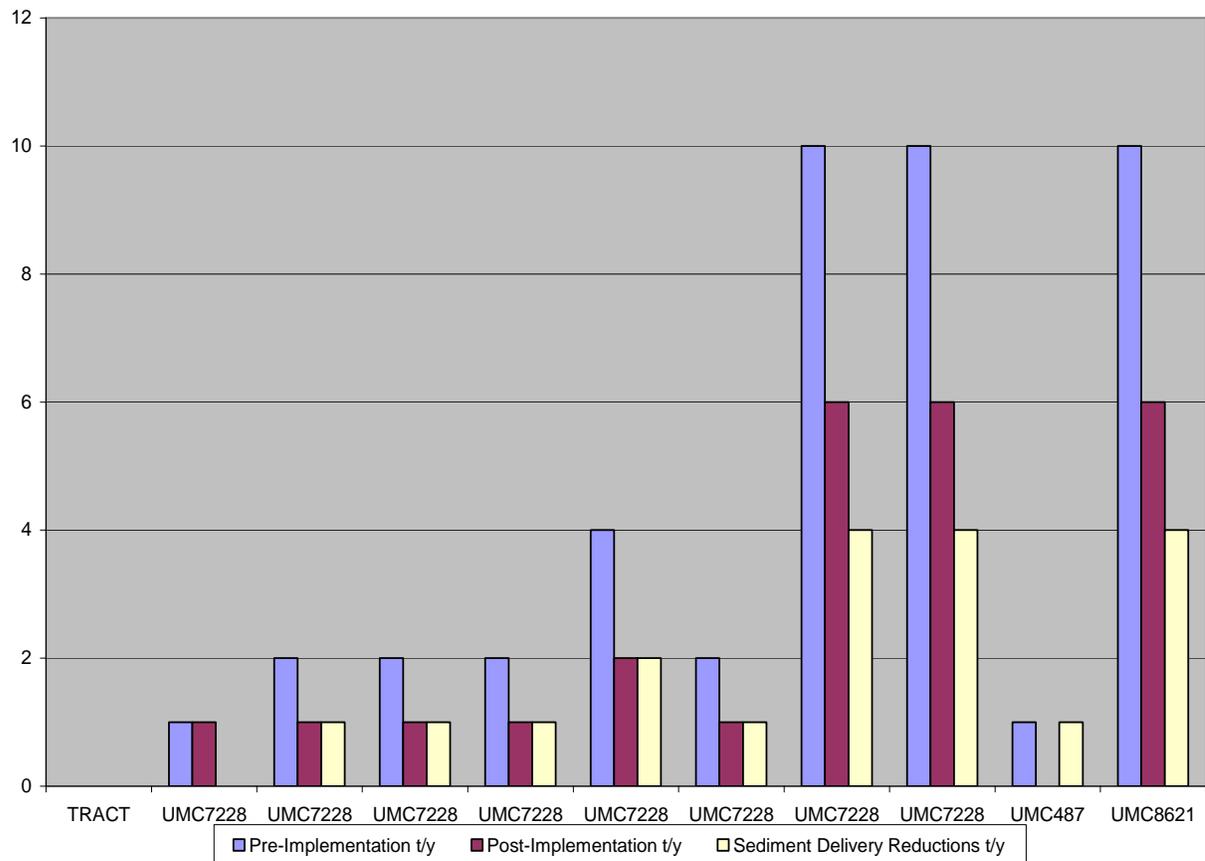
from the treated lands. These reductions are further broken down by practice. Roadside buffers were calculated as a management practice and labeled as 'conservation cover'. The sediment delivery calculations were figured by estimated trap efficiency given the drainage area and the pre-implementation soil loss rate.

- Management Systems:

This category combines no-till, nutrient management and pest management. A total of 986.2 ac were installed, completing 99% of our goal. The amount of sediment delivery before implementation was 296 t/y and post- implementation was 99 tons per year, thus reducing sediment delivery by 197 tons per year.

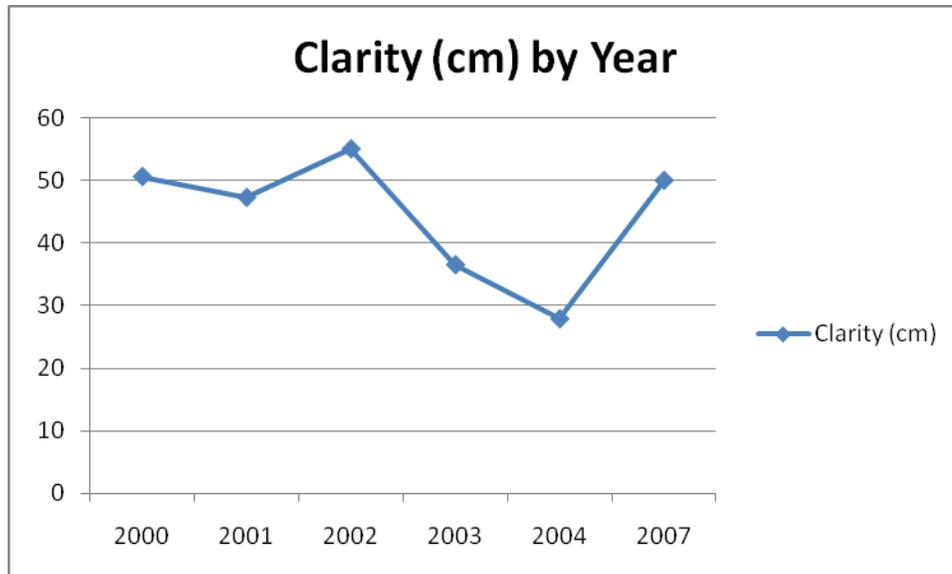
- Waterways:

The waterways were applied with IFIP and CRP funding. There were a total of 10 waterways implemented, totaling 7.3 acres and reducing the sediment delivery reduction to 14 tons per year. Below is a chart demonstrating the pre and post implementation sediment delivery reduction. Each waterway is broken down according to the tract number.



- Water Quality Data

According to the EPA, 1,013.30 miles are impaired due to agricultural use. The monitoring sites that were observed were located on predominantly agricultural ground. The sites in UMC were located in close approximation to sites with environmental practices installed. An annual average from 2000-2007 was calculated for the monitoring sites. For the average clarity, it was close in range, until 2004; in 2004 the cause of lower clarity was due to heavy rains washing soil and corn stalks into the ditches and streams. This also led to higher nitrate levels in 2004 (which should average around 10mg/l for healthy drinking water); a major cause would be fertilizers that were carried into creeks from stormwater runoff. With increase applications of environmental practices, the goal was to reduce the amount of sediment delivery during heavy rains. According to 2007, there was a decrease in the amount of nitrates at the monitoring sites. However, in 2007, there was an increase in the amount of phosphates; the source of phosphorous includes human and animal wastes, industrial wastes, soil erosion, and fertilizers.



With sediment delivery being the major goal of this project, water clarity improvements are desirable to be seen in monitoring results. While there is a substantial increase in clarity between 2004 and 2007 (no data was collected in 2005 or 2006), the variation in the sampling data makes proving the significance of this increase very difficult over such a short timeframe.

The levels of chloride and nitrite are at medium to low levels in all the years monitored. There are no significant depletions of dissolved oxygen at the monitoring sites in UMC. In addition, the pH balance is between normal levels of 6.5-8.2, which is optimal for most organisms.

With continued application of environmental practices, the reduction of sediment delivery and nutrients will have an overall effect on water quality, wildlife habitat, and an in general improvement of the land.

Year	Air Temp	Rain	Clarity	pH	Nitrite	Nitrate	DO	Phos.	Chloride	H2O Temp	Width	Depth
2000	76	0.3"	50.6cm	9	0	3	8	n/a	n/a	68	3.7m	0.5m
2001	73	0"	47.3cm	7.3	0.25	2	7.3	0.1	n/a	64	3.5m	0.17m
2002	67	0"	55cm	8.5	0.8	1	9	0.1	25	63	3.9m	0.4m
2003	78	0.18"	36.6cm	8.6	0.15	7.3	10	0.13	25	64	1.6m	0.1m
2004	77	0.5"	28cm	8	0.15	20	10	0.15	25	64	n/a	n/a
2007	70	3.5"	50cm	7.7	0.19	5.5	6.6	0.27	41.7	n/a	1.9m	0.24m

*Water monitoring data

Program Accountability

The goals set forth by this project were as follow:

- To reduce erosion of soil resources from 20 tons/acre/year to 5 tons/acre/year
- To reduce sediment transport to streams and rivers by 30%
- To reduce nutrient, pesticide, and pathogen transport to surface and ground water
- To retain more rainfall in the topsoil by increasing organic content
- To enhance water quality within and downstream of the proposed project area
- To increase available wildlife habitat in the project area by 80 acres
- To reduce costs of maintenance and repair of roadway infrastructure for local government and the citizens by 50%.
- Develop an information and education program to promote economically environmentally sound agricultural practices.

Progress was made toward many of these goals. However, it is difficult to relate these accomplishments back to the original goals because pre-implementation numbers are not available for the watershed as a whole. In all, sediment loading was reduced by 450 tons/year as a direct result of the implementation efforts undertaken as part of this project. It should be noted, however, that the utility of the sediment delivery calculator was flexed in its application to this project report. Since many of the objectives of this project related to the reduction of sediment delivery to roadside ditches, the ditch was considered the point of delivery in several of these calculations.

Soil loss reduction was also accomplished through the use of buffer strips and grassed waterways that were implemented in this project. On the 248 acres that received treatment through these practices, soil loss was reduced by 1,397.67 tons/year bringing the average soil loss per acre in that area to 2.09 tons/acre/year.

Reduction of nutrient and pathogen transport to ground water is achieved not only through the practices listed above, but is also affected by the development of a comprehensive nutrient management plan on the 296.4 acres of the Henry Shephard property.

The goal of establishing 80 acres of wildlife habitat within the watershed was exceeded, in part, due to the designation of no-till acres as wildlife habitat. There were also 36.5 acres of buffer strips and cover crop seedings, bringing the total amount of habitat implemented to 283.5 acres watershed-wide.

Retention of additional stormwater through the increase in soil organic matter was primarily confined to the implementation of 247 acres of no-till put into practice as part of this project.