Miners Creek Watershed Improvement Project Final Report
Project # 7039-014
Project Sponsor: City of Guttenberg
Length of Project: May 1, 2008 to April 30, 2011

Project Partners: Iowa Watershed Improvement Review Board, City of Guttenberg, Clayton SWCD, Northeast Iowa Resource Conservation & Development, Inc., Iowa Department of Natural Resources-Fisheries, Natural Resource Conservation Service, Miners Creek Landowners

Summary of accomplishments and water quality outcomes

The Miners Creek Watershed Improvement Project is complete and was successful in improving water quality, enhancing watershed health, bettering quality of life, generating local excitement for watershed stewardship and kindling cooperation between city and rural residents. The largest portion of the project was the wide-scale sewage outfall redirection and improvement project in the City of Guttenberg that prevented sewage and stormwater runoff from the City of Guttenberg from entering into Miners Creek and negatively impacting water quality in the stream. The sewage outfall and urban stormwater runoff in this small watershed had been previously identified as likely sources of water quality impairments in Miners Creek. Eliminating these sources of impairments had a positive impact on stream conditions, water quality and aquatic life conditions in Miners Creek. This project also provides an excellent example of ways to effectively reduce urban contributions to water quality impairments and develop partnerships to improve water quality and watershed health.

The City of Guttenberg also completed work to develop and enhance 13 acres of wetlands in the Miners Creek riparian zone. This work resulted in the creation of 3 acres of wetland, the enhancement of an additional 2 acres and the preservation of 8 acres of wetlands along the lower portion of Miners Creek which will improve water quality by filtering sediment, chemical and biological contaminants from runoff prior to reaching the stream. The newly created wetland complex directly drains over 412 acres of the watershed. The wetland complex also allows native vegetation to uptake nutrients from the water to reduce the delivery of nitrogen and phosphorus from Miners Creek to the Mississippi River that ultimately contribute to the Zone of Hypoxia in the Gulf of Mexico. As an added benefit, the wetlands will help restore the natural hydrology of the watershed and increase water-holding times to significantly reduce potential damage caused by flooding.

Landowners in the Miners Creek Watershed also implemented sediment delivery reducing Best Management Practices to reduce erosion and sediment loading into Miners Creek, including: stabilizing 1840 feet of severely eroding stream bank, constructing 6700 feet of terraces on highly erodible land and constructing one sediment control basin and one grade stabilization structure in priority areas to reduce sediment delivery by over 1000 tons/year to Miners Creek.

Despite facing limitations and unforeseen challenges, the efforts in Miners Creek have resulted in improved water quality, increased habitat and an overall improvement in watershed health and function.

Watershed Improvement Funds Summary			
Grant Agreement Budget Line Item	**Total Funds Approved ($)**	**Total Funds Expended ($)**	**Available Funds ($)**
Project Management/Outreach	30,000	30,000	0
Water Quality Monitoring	4,500	4,500	0
Supplies	1,200	1,200	0
Wastewater Outfall Redirection	338,300	338,300	0
Wetlands Development or Restoration	30,000	30,000	0
Streambank Stabilization	15,000	14,945	55
Grade Stabilization Structures*	45,000	16,257	28,743
Terraces*	21,000	23,100	(2,100)
Water & Sediment Control Basins*	15,000	9,180	5,820
Totals	500,000	467,482	32,518
Difference			32,518

Financial Accountability

*The project originally had divided cost share dollars between streambank stabilization and grazing management, but due to several factors including increased support from WHIP for streambank stabilization and no approved EQIP contracts for grazing management, an amendment to the original application was requested. The amendment allowed practices above marked with and asterisk to be eligible for cost share in order to help meet the project goal of reducing sediment delivery to Miners Creek, shifted funding from grazing management and some funds originally dedicated to streambank stabilization.

The amendment to the project was not made until it was determined that grazing management systems would not be funded through EQIP. By that time (August 2010) there was less than 8 months left in the project, most of which were winter months. Despite the short time frame for the newly added practices, the project was able to work with landowners and the SWCD resulting in the implementation of 6,700 feet of terraces, one grade stabilization structure and one water and sediment basin. The differences in the approved budget and expended budget resulted from not being able to get additional grade stabilization structures and sediment basins engineered and installed in the short time frame available post-amendment, as well as the project securing over $50,000 in WHIP funds that reduced the need for WIRB project dollars for streambank stabilization practices.

Total Project Funding Summary						
Funding Source	**Cash**		**In-kind Contributions**		**Total**	
	Approved Application Budget ($)	**Actual ($)**	**Approved Application Budget ($)**	**Actual ($)**	**Approved Application Budget ($)**	**Actual ($)**
WIRB	500,000	467,482	0	0	500,000	467,482
City of Guttenberg	578,895	598,224	10,000	13,620	588,895	611,844
Northeast Iowa RC&D	0	0	3,500	3,500	3,500	3,500
Iowa DNR Fisheries	0	0	12,500	12,500	12,500	12,500
Clayton SWCD	0	0	44,000	25,032	44,000	25,032
EQIP	28,000	7,152	0	0	28,000	7,152
Private Landowners	41,333	42,390	0	0	41,333	42,390
WHIP	0	50,504	0	0	0	50,504
Totals	1,148,228	1,165,752	70,000	54,652	1,218,228	1,220,404

Watershed Improvement Fund contribution: Approved application budget: 41%
Actual: 38%

The overall project budget in terms of total cost was very close to the original approved project budget though the WIRB contribution was slightly less than originally anticipated due to some unspent funds described above. The project budget reflects the fact that no grazing management systems in the watershed were awarded EQIP funding during the project period resulting in less than expected EQIP funds with the only EQIP funds coming for terrace projects. The budget was buoyed by the fact that over $50,500 in WHIP funds were secured for the project to more than make up for the difference. The overall cost of the wastewater outfall redirection project was higher than originally budgeted as well, so the City of Guttenberg's cash contributions to the project were greater than proposed in the approved budget helping to drive the percentage of total WIRB contribution lower.

Environmental Accountability

Example Summary: Practices and Activities				
Practice or Activity	**Unit**	**Approved Application Goal**	**Accomplishments**	**Percent Completion**
Wastewater Outfall Redirection	No.	1	1	100
Wetland Creation and Enhancement	No. Ac.	5 13	5 13	100 100
Streambank Stabilization	Ft.	2000	1840	92
Grade Stabilization Structures	No.	3	1	33
Terraces	Ft.	6500	6700	103
Water & Sediment Control Basin	No.	3	1	33

Water monitoring was conducted throughout the project to create a baseline for water quality in the watershed and analyze the changes in water quality attributable to land use changes and project activities. Water monitoring was conducted monthly from April-October at 3 sites throughout the watershed. Samples were collected and sent to the University Hygienic Laboratory and analyzed for Nitrate + Nitrite as N, Ammonia Nitrogen, *E.* coli bacteria and Total Phosphates and were field tested for temperature, pH and transparency. Results of the monitoring showed significant reductions in bacteria levels and nitrates immediately adjacent to and below the wastewater treatment facility upon redirection of the wastewater outfall project completion. The best management practices installed in the watershed upstream from the City of Guttenberg have not yet been in place for a year, so it is difficult to make a direct correlation to water quality improvements from these practices with the limited monitoring and variations in rainfall. However, private funding was secured by Northeast Iowa RC&D to continue water monitoring in the Miners Creek Watershed beyond the project end date into future years to build upon the baseline collected and hopefully document improvements resulting from best management practices installed.

The major portion of the project planned and accomplished was the redirection of the City of Guttenberg's wastewater outfall away from Miners Creek. This project was completed and was successful in improving water quality below the former outfall location. The second component of the City of Guttenberg's water quality improvement efforts was the creation of a new 3 acre wetland to help filter run-off from over 412 acres of the watershed as well as reduce flooding potential by increasing water holding times and restoring natural hydrology. The project also proposed and accomplished the enhancement of 2 acres of wetlands to make them more effective and the protection of 8 acres of wetlands in the Miners Creek Watershed through a conservation easement to ensure future water filtering and infiltration benefits are realized.

The secondary efforts of the project in partnership with Clayton SWCD and Miners Creek landowners was to begin to increase landowner interest in watershed protection in Miners Creek,

which had previously not been a targeted area for outreach or assistance. The project succeeded in stabilizing 1840 feet of severely eroding streambank, which resulted in the reduction of over 330 tons of sediment delivery per year to Miners Creek. The original project goal was 2000 feet and while the project fell just short of that goal, it is anticipated that 2 other landowners in the watershed will complete streambank stabilization projects in the upcoming year utilizing WHIP funding through the TUDARE program that will far surpass the total project goal. The streambank stabilization practices also included the installation of bank hides to improve in-stream habitat for trout and other aquatic species. The project also had an amended goal to construct 6500 feet of terraces and was successful in surpassing that goal by installing 6700 feet in a few short months, which resulted in annual sediment delivery reductions of almost 158 tons/year. Although the project fell short of its ambitious goal to install 3 water and sediment control basins and 3 grade stabilizations structures in short time, it did succeed in treating over 100 acres with the grade stabilization structure and one water and sediment control basin that were implemented, which resulted in sediment delivery reductions of 477 tons/year. Overall, practices installed throughout the watershed resulted in sediment delivery reduction of over 1000 tons/year and phosphorus delivery reductions of 1280 lbs/year.

The original project application prior to amendment called for the installation of grazing management systems to reduce livestock access to the streambanks in the Miners Creek Watershed. Due to no approved EQIP contracts being awarded, the cost share available was insufficient and the fear of replacing flooded out fence deterred landowners from installing fencing in the narrow stream valleys in Miners Creek. The stream corridor is largely pastured and ideally future efforts will be more effective in translating into limited livestock access to the streambanks. One landowner as a result of this project did install an improved stream crossing for his livestock and developed a grazing management system, but did not want project funding assistance.

Overall, the project was successful in accomplishing its environmental goals in relation to improving the water quality and watershed health in Miners Creek Watershed and the City of Guttenberg. The redirection of the wastewater outfall drastically improved water quality in the lower section of Miners Creek. The project fell initially short of its goal of reducing livestock access to the stream, but efforts and outreach to landowners may pay off in the future. The stabilization of severely eroding streambanks, creation and protection of wetlands and installation of upland best management practices resulted in the reduction in over 1000 tons of sediment/year and 1280 lbs of phosphorus/year being delivered to Miners Creek. In addition, the wetlands and streambank stabilization bank hides created and enhanced habitat for numerous species including aquatic invertebrates, waterfowl and trout. The project also delivered targeted watershed outreach to watershed landowners that had been underserved in the past and helped to develop a sense of ownership and pride in the watershed. Project outreach also was conducted in the City of Guttenberg to educate city residents about the importance of water quality and the role watersheds play in impacting water quality. These efforts had an impact in creating a greater understanding of the dynamics between land use, human activities and the natural function of watersheds and will only help to improve future watershed stewardship.

Program Accountability

The impacts of the project were made more successful by expanding the number of partners involved in the project and by providing outreach to clientele that had previously not been targeted. During the course of the project, project partners worked with the TUDARE (Trout Unlimited Driftless Area) program to secure WHIP funding for streambank stabilization practices which helped stretch project dollars further and allow for an amendment to utilize WIRB funding originally allocated to streambank stabilization to instead help install upland best management practices to maximize sediment delivery reductions. The project also worked with partners to piggyback outreach efforts and materials in order to maximize the effectiveness of contacts with landowners and city residents as well. For example, Northeast Iowa RC&D forestry outreach personnel who had visits arranged with Miners Creek landowners made sure to include information about the watershed improvement project in their presentation to increase the number of times folks heard the information.

There were several minor obstacles encountered which caused a shift in the original proposed plan. The first was the fact that no EQIP contracts were approved for grazing management in the watershed during the project period, which eliminated the added incentive for landowners to complete the practice. As a result, a project amendment was made during the last 8 months of the project to utilize the unspent funds from the grazing management budget to install over 6700 feet of terraces to directly accomplish a project goal of reducing sediment delivery to Miners Creek and subsequently improve the soil conservation ethic in the watershed. The project also fell during a tough economic period where residents whose annual income is already much lower than the state average found it difficult to pull the trigger on watershed improvement practices. In order to help overcome this obstacle, project staff tried to identify as many project funding partners as possible to minimize the landowner cost as much as possible (25%).

In conclusion, the Miners Creek Watershed Improvement Project was successful in accomplishing its major goals and resulted in improved water quality, watershed health, soil conservation, wildlife habitat and agricultural productivity, as well as increased knowledge of residents and an enhanced conservation ethic and sense of pride in Miners Creek and its watershed.

Miners Creek Watershed Improvement Project Practices