Watershed Improvement Fund Final Report
5037-014 Elk River
Clinton County Soil & Water Conservation District
Length of Project: March 1, 2006 to December 31, 2008

Financial Accountability

Watershed Improvement Funds

Grant Agreement Budget Line Item	*Total Funds Approved*	*Total Funds Expended*	*Available Funds*
Salary	$79,015.00	$58,826.40	$20,188.60
Sediment Basin	$171,375.00	$30,901.00	$140,474.00
Grade Stabilization Structure	$19,875.00	$9,694.03	$10,180.97
Grassed Waterway	$21,780.00	$16,977.28	$4,802.72
Totals	$292,045.00	$116,398.71	$175,646.29
Difference			$175,646.29

Watershed Improvement Funds expended on salary reflect a half time technicians support to the full time project coordinator to provide technical and personnel support. The annual expenditures for the half time technician were lower than anticipated.

Fewer sediments basins were implemented than what was proposed in the agreement. Plans for utilizing Watershed Improvement Funds on two applications totaling $43,691 were cancelled. The two applications were funded through EQIP. The EQIP 2008 payment rate made this funding source economically advantageous to the applicants and the use of EQIP with these applications reduced the amount of Watershed Improvement Funds to levels originally indicated in the grant application.

Ten grade stabilization structures rather than the proposed twenty four were constructed. During July-December 2007 another funding source was used to approve two grade stabilization structures while correspondence between the WIRB and the District occurred regarding the use and cost share obligation rate of Watershed Improvement Funds.

Majority of waterway funds were expended. One potential applicant to utilize the remaining funds could not commit to completion of the project by December 2008 and therefore was not approved.

Total Project Funding During WIRB Timeframe

Funding Source	*Proposed Expenditures*	*Funds Expended*
WIRB	$292,045.00	$116,398.71
319/WSPF/WPF	$567,800.00	$147,170.83
CRP	$32,400.00	$10,038.00
EQIP	$213,030.00	$145,320.91
Applicant	$310,635.00	$89,092.48
REAP		$1,460.00
IFIP		$4,940.43

Total	$514,421.36

Watershed Improvement Fund contribution: Approved application budget: 21%
Actual: 23%

The differences between the approved application budget and the actual funds expended can be summarized through three main factors. These factors include: 1) fewer practices were implemented than what was proposed and budgeted for with Watershed Improvement Funds and other funding sources; 2) some of the practices proposed were a part of the original 319/WSPF Elk River Water Quality Project and were no longer promoted after 2006 due to a lack of NRCS construction spec on the practice; and 3) salary expenditures for the coordinator and the half time technician were lower than what was budgeted for.

The use of Watershed Improvement Funds during the project timeframe remained within the range indicated in the approved application budget.

Environmental Accountability – Goals & Practices

Project goals outlined in the WIRB application were based off the original 319 Elk River Water Quality Project application and included:

1) Eliminate toxic ammonia peaks in Elk River by reducing agriculture waste runoff and implementing proper nutrient utilization of 50% of the small and medium livestock operations in the priority sub-watersheds
2) Achieve a 30% sediment delivery reduction in the watershed
3) Achieve increased dissolved oxygen level in the priority sub-watersheds
4) Promote the watershed approach to water quality to 100% of the watershed stakeholders through an effective diverse information/education program

With the implementation of four sediment basins during the WIRB application timeframe the goal to address runoff on 50% of the livestock operations in the watershed was not attained. Of the basins implemented one was an identified high risk operation in a priority sub-watershed, one was an identified medium risk operation and two were identified low risk operations. Under proper management, the risk level on all operations is reduced by the increase in yard manure containment and a decrease in conduits to surface water. The following table outlines the re-evaluation of the risk levels and points assessed based on the difference between the original feedlot assessment and the assessment after the Best Management Practice sediment basin was implemented.

Sediment Basin	*Pre Risk Factor/Score*	*Post Risk Factor/Score*
#1	High 160	Medium 110
#2	Medium 114	Low 36
#3	Low 88	Low 38
#4	Low 79	Low 39

Based upon the Environmental Protection Agency's Region 5 Model for estimating load reductions these four sediment basins are estimated to reduce feedlot pollution loading by 1,409 pounds of phosphorus and 7,335 pounds of nitrogen per year.

With all various practices and funding sources considered during the WIRB project timeframe the estimated sediment loading reduction to the stream is 1,445 tons per year as estimated by the Sediment Delivery Calculator modeling tool. This reduction is not 30% of the estimated sediment delivery within the watershed. In order to achieve the 30% reduction goal a sediment delivery reduction of over 9,400 tons of sediment would have been needed. By utilizing the Sediment Delivery Calculator tool that is available now, one can figure far more practices and funding for practices would have been needed to accomplish the proposed 30% reduction goal in this 49,000 acre watershed. Reduction in sediment delivered to the stream is estimated at 1,445 tons per year and includes a reduction of 1,878 lbs of phosphorous per year.

The pre-project sediment delivery map included in the WIRB application showed an estimated sediment delivery for a 2 inch rain event of 31,339 tons per year. This was estimated by section based upon generalized soils and crop rotations. The post-project sediment delivery map shows a sediment delivery of 26,017 tons per year. This newer version of modeling was estimated by field with field specific soils and crop rotations. Due to variations in the two versions of modeling, the sediment delivery reduction for implemented practices is estimated at 1,445 tons per year based on the Sediment Delivery Calculator.

The goal of increasing dissolved oxygen levels was proposed through the use of rock riffle pool structures. Lack of interest in the practice prevented accomplishment of the goal.

Achieving a diverse information/education was accomplished through newsletters, fact sheets, a feedlot forum in conjunction with ISU Extension, news articles, field days, open houses and a Conservation Showcase article.

An important point for consideration is the WIRB application goals correlated to the goals in the original 319 Elk River Water Quality Project the District was administering. The goals proposed in the 319 application were based on practices needed to protect water quality addressing all resource concerns. To address all resource concerns the goals did not reflect realistic or achievable goals or consider the likely hood of implementing all practices.

Practices – All Sources During WIRB Timeframe

Practice	*Unit*	*Approved Application Goal*	*Accomplishments*	*Percent Complete*
Sediment Basin	No.	27	4	15
Picket Fence System	No.	24	0	0
Veg Infiltration Fields	No.	24	0	0
Gutter System	No.	18	1	6
Filter Strips	Ac.	30	0.6	2

Exclusion Fence	Ft.	1800	0	0
Rock Riffles	No.	24	0	0
Grade Stab Str	No.	24	10	42
Grass Waterway	Ac.	30	18.3	61
Riparian Buffers	Ac.	60	23.7	40

The sediment basins installed were on larger scale open concrete feedlot cattle operations within the watershed where the producers have plans to continue the cattle feeding business or even expand. Although the number of basins installed was significantly less than originally proposed, the importance of the projects being placed on larger operations where cattle feeding will continue to occur cannot be over looked. These sediment basin projects also had a much higher cost than originally planned and budgeted for which was a deterrence factor for producers with few cattle numbers.

The picket fence system and vegetative infiltration fields were a component of the original 319/WSPF Elk River Water Quality Project. A picket fence system was proposed at one feedlot location but was never implemented. This practice was included as part of the project as a cheaper alternative to sediment basins on open feedlots, however this option was not promoted by NRCS engineering staff during site visits. No picket fence systems were implemented due to a lack of interest in this practice. Due to a lack of an NRCS construction spec on the vegetative infiltration field it was no longer promoted after 2006.

The gutter systems were a component of the original 319/WSPF Elk River Water Quality Project. One gutter system was installed. Four other producers were worked with on potential gutter systems. Due to the large surface area of cattle shed roofs the size requirement of the gutter was often 7". This size gutter was not available seamless and producers chose against having sectioned gutters.

Filter strips were a component of the original 319/WSPF Elk River Water Quality Project as secondary treatment with sediment basins. Two filter strips were installed with two of the sediment basin projects. NRCS evaluation determined if a filter strip was necessary. These filter strips are typically 20-30' wide by a couple hundred feet long. Thirty acres of proposed filter strips was set as an unrealistic goal proposed in the original 319/WSPF Elk River Water Quality Project. The proposed exclusion fence was not needed on the two filter strips installed.

Rock riffles were also a component of the original 319/WSPF Elk River Water Quality Project. Early in the project there was some interest in these structures, however both interested parties had naturally occurring riffle-pool areas. One producer desired to implement a rock riffle pool structure to also be used as an equipment crossing. Due to the landowners lack of cooperation the practice was never implemented by the operator.

Ten grade stabilization structures were installed. The majority of these structures were in the form of rock chutes at the outlets of grass waterways to correct and prevent additional gully development. Two of the ten structures were water impounding grade stabilization structures.

Over eighteen acres of grass waterways were constructed on watercourses in need of reestablishing correct shape and seeding.

Environmental Accountability – Monitoring

Documentation of the biological monitoring conducted by IDNR/UHL on Elk River shows an increase in Fish Index of Biotic Integrity (FIBI) score and an increase in the Benthic Macro-invertebrate Index of Biotic Integrity (BMIBI) score.

Year Sampled	*FIBI Score*	*BMIBI Score*
1999	Poor 17	Fair 42
2007	Fair 42	Fair 48

The most recent 2007 bio-assessment scores indicate a biological impairment with an unknown cause continues. Elk River is currently scheduled for a water quality improvement plan (TMDL) in 2012. A TMDL should identify the water quality problem, locate where the problem is coming from and determine how improvement can be made for Elk River to meet Iowa's water quality standards.

Funding for water monitoring was not a component of the project. Water quality data had been collected through the IDNR Long Term Resource Monitoring Program in this watershed but was eliminated in 2004 due to a lack of funding. Insufficient volunteer IOWATER data is available to draw any conclusions or summarize water quality parameters.

Program Accountability

In effort to expand the impact of the project in collaboration with the 319/WSPF Elk River Water Quality Project quarterly newsletters were sent out to landowners and operators in the watershed. Quarterly newsletters were informative and highlighted practices being constructed. Two field days were held. A manure application field day was held in July 2007 and a sediment basin open house was held in September 2008. Over 20 local producers attended the field days.

In March 2008 a large two page article was published in a special edition called Rural Reflections in The Observer. The article highlighted two completed sediment basin projects and the two producers reasoning behind getting involved with the project and their outlook on water quality. In June 2008 a Conservation Showcase article was written by an USDA-NRCS Public Affairs Specialist on the one of the completed projects. This article was also published in the Wallaces Farmer in June.

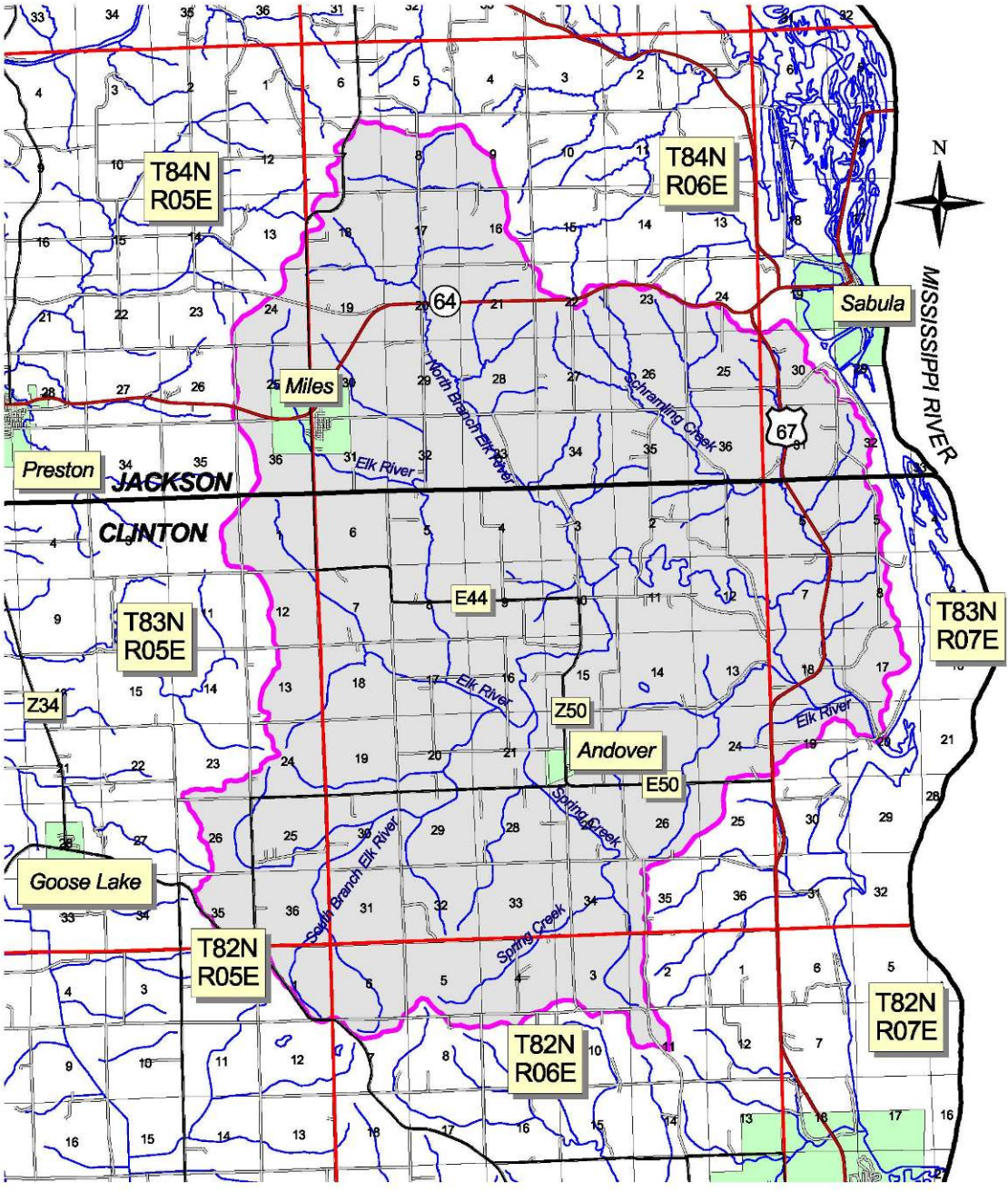
It is important to note that the timeframe for implementing the sediment basin practice should be considered for future project program managers. A significant time can lapse through the investigation and evaluation of a potential project site by NRCS engineering staff, a producer committing to the project and being approved for funding depending on the source, the sediment basin getting designed by NRCS engineering staff, and contactor

scheduling in construction of the project. This process took two years on two of the sediment basin projects constructed in the project.

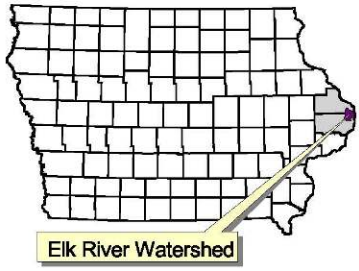
A modification to the WIRB financial spreadsheet should be considered for improvement. It is recommended that under Line Item Budget Activities (All Funding Sources) the “Unobligated Balance” cells formula be modified to reflect all “Allocations”, “Obligated”, and “Expended” balances for the entire length of project. Current setup reflects only the “Allocations”, “Obligated”, and “Expended” amounts for the six month funding period. This makes it difficult to decipher obligated and expended amounts without manually calculating it by going back through each six month funding period.

The WIRB should recognize that in attempt to document environmental accountability WIRB is relying on knowledge from other program tools and it seems to be after the fact. In the first WIRB grants awarded no training was provided on tools to use or how to calculate environmental accountability. I am unaware if this has changed since the WIRB has evolved or if training is being offered to more recently funded grants. If not, I feel it should be. In my scenario using the EPA Region 5 Model for estimating load reduction for the sediment basins was after the fact. This model is not used by project coordinators at our level; I didn't even know it existed. More accurate load reductions can be figured with before practice implementation data rather than after. The WIRB should establish their own method to document environmental accountability and provide the WIRB funded grants the associated tools or models to do so.

Elk River Watershed
Clinton County & Jackson County, Iowa



1 0 1 2 3 Miles

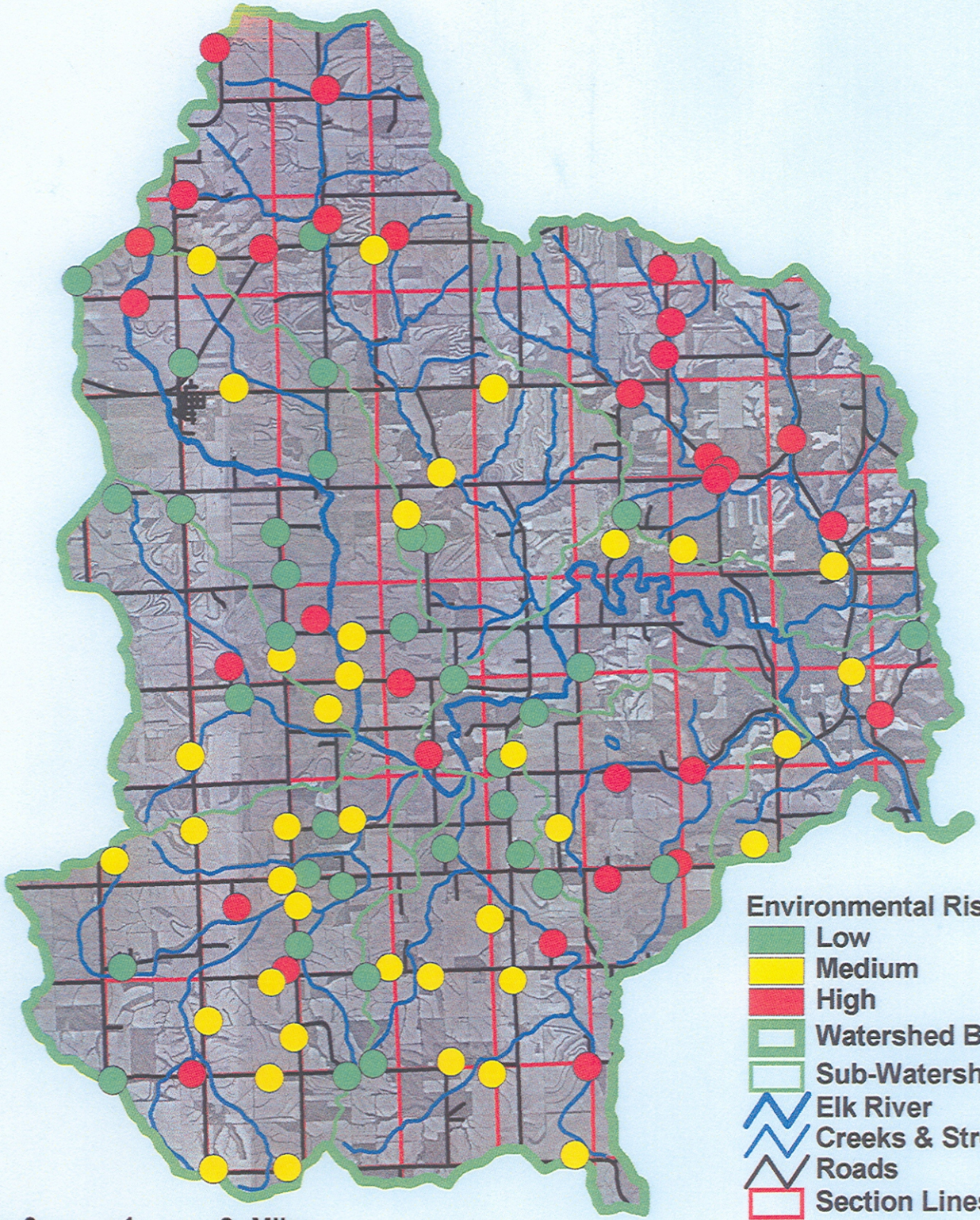


County Boundary
Major Highways
Primary road with limited access
Primary road
Secondary and connecting road
Access ramp
Township Boundary
Roads
Rivers/Streams
Section Lines
Cities/Towns
Elk River Watershed Boundary

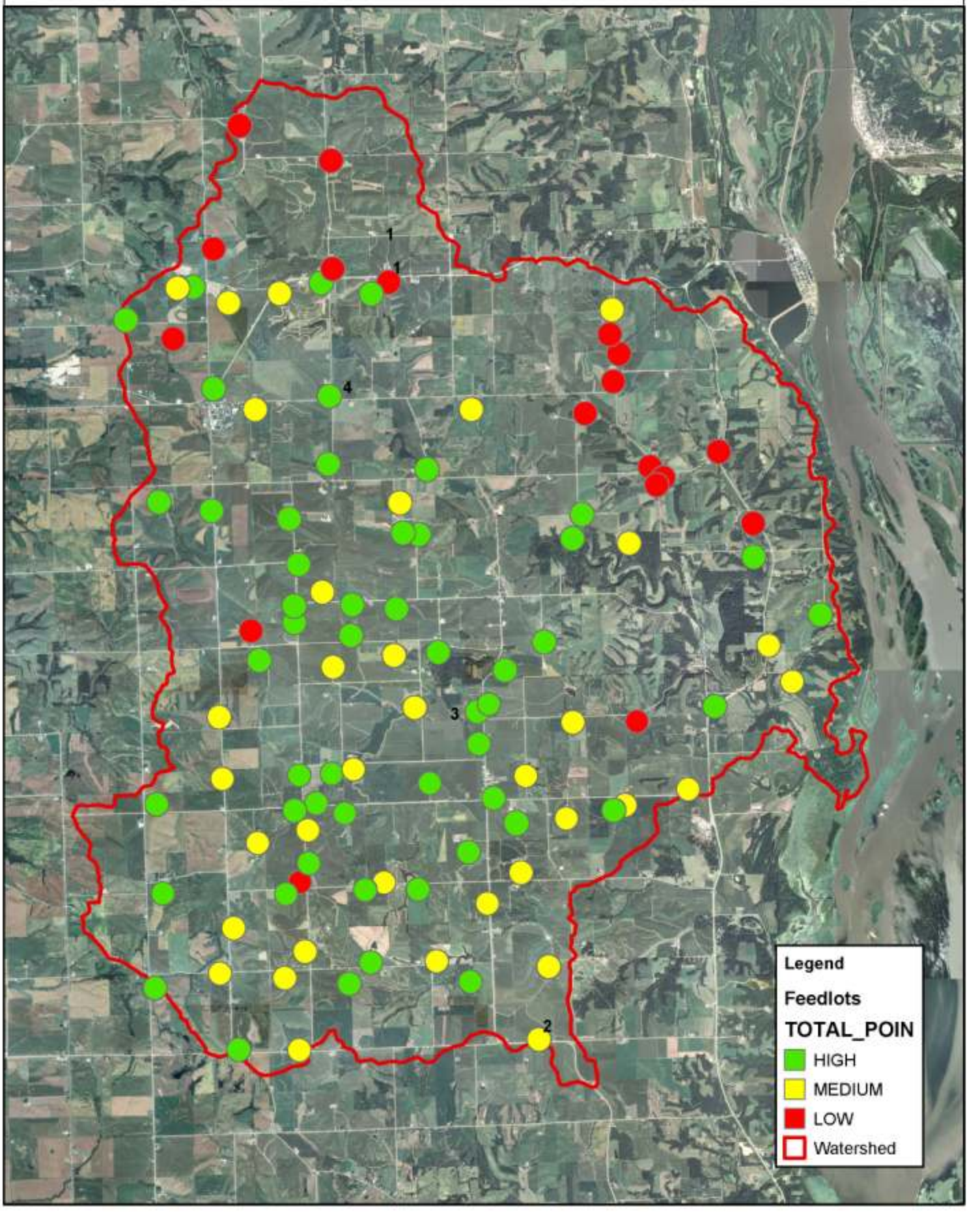
Prepared By:
USDA NRCS
Natural Resources Conservation Service
Planning Team
Des Moines, Iowa

2/01/01

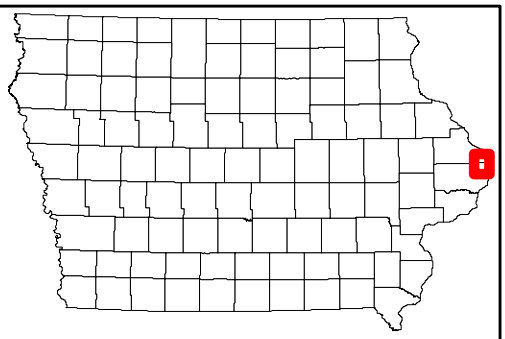
Feedlot Evaluation of Environmental Risk Elk River Watershed



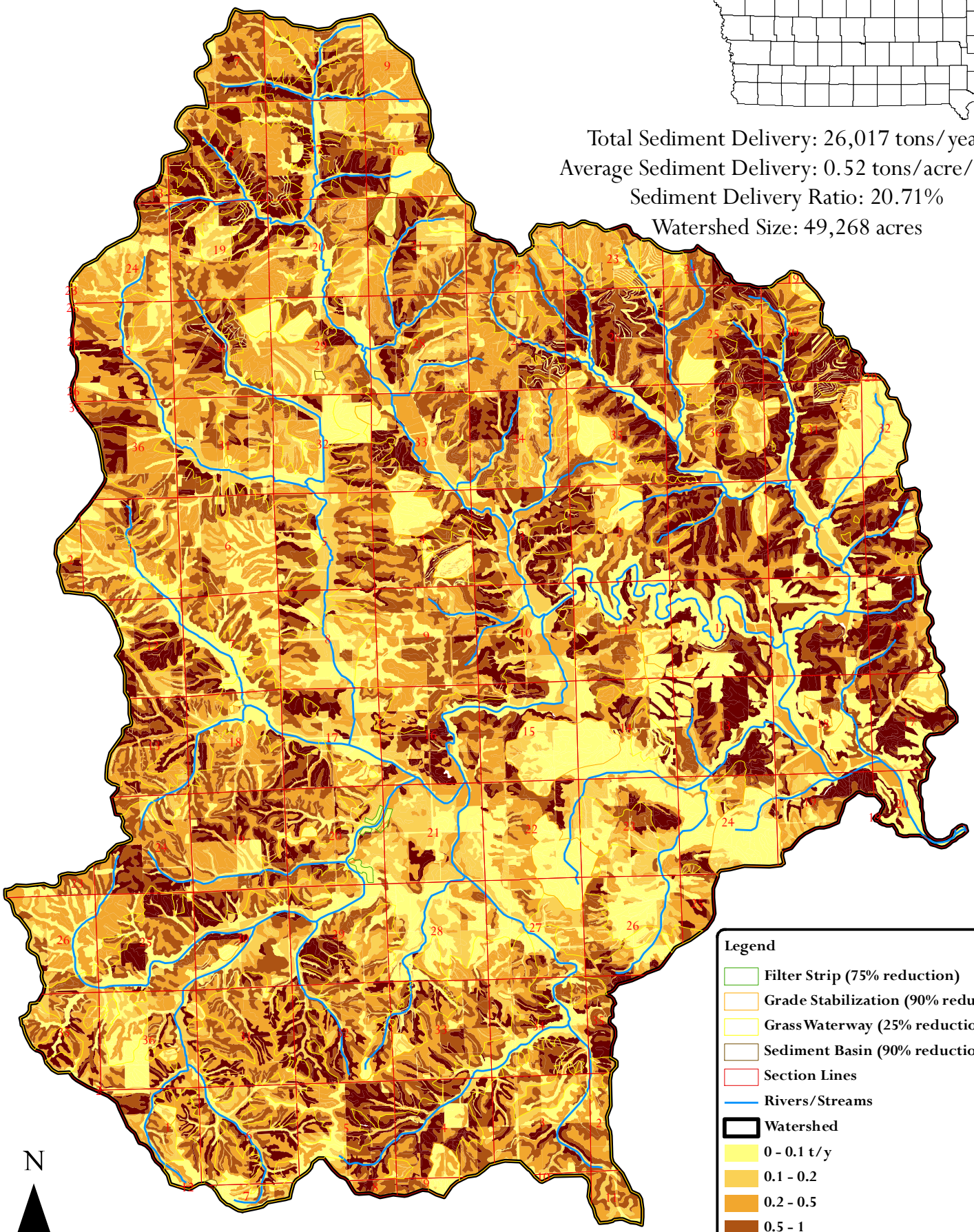
SEDIMENT BASINS IMPLEMENTED



Post-Project Elk River Watershed
Estimated Sediment Delivery



Total Sediment Delivery: 26,017 tons/year
Average Sediment Delivery: 0.52 tons/acre/year
Sediment Delivery Ratio: 20.71%
Watershed Size: 49,268 acres



Legend

- Filter Strip (75% reduction)
- Grade Stabilization (90% reduction)
- Grass Waterway (25% reduction)
- Sediment Basin (90% reduction)
- Section Lines
- Rivers/Streams
- Watershed
- 0 - 0.1 t/y
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- >1

N

0 1 2 4 Miles

CONSERVATION Showcase

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Sediment Basin to Benefit Elk River, Livestock Production

Thanks to a newly constructed sediment basin built to reduce manure and sediment runoff and increase farm productivity, longtime livestock producer Loren Peters of Clinton County says he now feels good about the environmental condition of the operation he is leaving to his family.

Loren and Brad Peters

The 75-year-old Peters recently recruited his son, Larry, and two grandsons, Brian and Brad, to form L Peters & Sons, Inc. They plan to carry on the family farming business for decades. As a family business, one of their first major moves was to implement a concrete sediment basin into their 225-head cattle feeding operation.

Their sediment basin is 84 feet long, including a 30-foot ramp, and 54 feet wide with three-foot high concrete walls. It was engineered by the USDA's Natural Resources Conservation Service (NRCS) to settle solids from feedlot runoff.

Protecting the Elk River

The Peters' feedlot is located in the Elk River Watershed. Loren Peters said one of the reasons they chose to install the basin was to protect Elk River. "Farmers are accused of a lot of pollution," said Loren Peters. "We want to keep our manure from going into the stream."

Elk River Watershed Coordinator Leah Sweely with the Clinton County Soil and Water Conservation District (SWCD) said several local livestock producers have shown recent interest in sediment basins. "The producers who plan to feed cattle for the long-term are the ones asking questions and showing the most interest," she said.

Better Manure Utilization

Another benefit the sediment basin will provide to the Peters' is better manure utilization. Prior to installing the sediment basin, the Peters spread manure on their 260 cropland acres until it flowed down a grassed waterway.

CONSERVATION Showcase

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

"We were having problems with too much runoff and residue in the fields where it enters a big waterway," said Loren Peters. "We had a sort of delta that was getting so rich with manure that crops didn't produce."

The youngest partner, 21-year-old Brad, said the basin helps improve their ability to record how many more loads of manure they can utilize. "It's interesting to see how much more manure we are able to utilize as fertilizer compared to before and how much less goes down that waterway," he said.

Top: *Before the sediment basin was installed, manure and sediment runoff flowed down a waterway, affecting cropland and possibly Elk River. (Photo by Leah Sweely)* ***Above:*** *Now solids are confined to the concrete sediment basin, and more easily and efficiently spread across cropland as fertilizer. (Photo by Jason Johnson)*

And better manure utilization means easier recordkeeping and better crop yields. "I know that when we go out there with the corn planter, the fields are going to be a lot drier [in areas typically saturated by runoff]," said Brad Peters.

Expansion

L Peters & Sons, Inc. plans to expand their livestock feeding operation to about 400 head. They think the new sediment basin will make that transition easier, since it has a holding capacity for the additional planned lot expansion area.

Loren Peters said the sediment basin will do a lot for the future of the operation. "My wife and I are so happy that my son and grandchildren want to continue producing livestock," he said. "This new sediment basin will help the children for years to come."

Funding

To help pay for their new sediment basin, the Peters received funding through the Iowa Watershed Improvement Fund, which is administered by the Watershed Improvement Review Board (WIRB) with support from the Iowa Department of Agriculture and Land Stewardship-Division of Soil Conservation (IDALS-DSC). They were also funded through the Watershed Protection Fund (WSPF), which is administered by IDALS-DSC.

A few similar sediment basin installation projects in the Elk River Watershed were funded through the Environmental Quality Incentives Program (EQIP), which is administered by NRCS.

Jason Johnson, Public Affairs Specialist
USDA-NRCS, Des Moines
May 2008