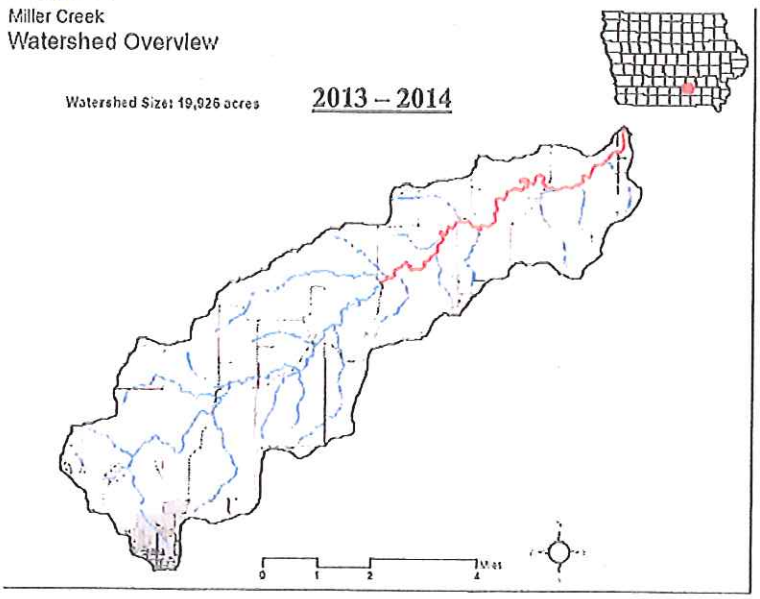
Final Report

1233-015

Miller Creek Phase II Water Quality Improvement Project

Watershed Improvement Review Board

Figure 1
Miller Creek
Watershed Overview



X _____ Date 4-30-14

Mervin Mc Danel
Monroe County SWCD Commissioner Chairman

Executive Summary

Project Title: **Miller Creek Phase II Watershed Improvement Project**

Grant Number: 1233-015

Project Start Date: April 1, 2013 Project Completion Date: June 30, 2014

Funding: **Total WIRB Budget** **$87,793.71**

	Totals	% of Total App
WIRB	$74,170.88	46%
NRCS	$1,800.00	1%
EQIP	$7,951.35	5%
IDALS-DSC	$3,600.00	2%
IFIP	$16,002.08	10%
CRP	$8,753.00	5%
Other	$750.00	0%
Recipient	$49,212.97	30%
Total Expenditures	**$162,240.28**	**100%**

Summary of Goals

Project Goal:

The goal of this project was to finish planned practices in the targeted priority areas and to continue to improve water quality in Miller Creek by reducing sediment delivery by 70% on 245 acres. In addition, project goals include the reduction of sheet and rill erosion in targeted locations is based on the watershed assessment. The reduction in soil loss and sedimentation will also reduce turbidity and runoff of associated nutrients. These strategies are based on the application of priority Best Management Practices (BMPs) with a high potential for reducing sediment. The BMPs will address in order of priority- sedimentation from upland sheet and rill erosion (greater than .5 ton of delivery per year, gulley erosion greater than 16 tons of side wall erosion or head-cut/knick points greater than 2 tons annually); uncontrolled livestock access to the stream and excessive bank erosion along the one mile of unstable channel. Achieving these goals will be through the implementation of the following practices:

Goals of Project:

1. Install 1 Grade Stabilization Structure
2. Install 2,800 feet of Terraces
3. Install 8 Water and Sediment Control Basins
4. Install 120 acres of upland treatment a combination warm and cool season grass seedings

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Introduction

Miller Creek is a warm-water stream located in the northeastern part of Monroe County in Southern Iowa. The watershed consists of approximately 19,926 acres of land that starts at the northeastern corner of Albia and extends northeast toward the town of Eddyville where it outlets in at the Des Moines River. This area is located in the Iowa and Missouri Heavy-Till Plain, which is best described as steep rolling hills interspersed with areas of uniformly level upland divides and level, alluvial lowlands. The majority of land use is cropland, with the principal crops for the area being corn and beans. Hay and feed grains are also produced but on a smaller scale.

Monroe County's Soil & Water Conservation District (SWCD) & Natural Resource Conservation Service (NRCS) became concerned when Miller Creek had been listed on our State's 303d Impaired Waters list. This list represents lakes and streams failing to fully support our state's water quality standards. With this resource concern in mind, a water quality project "Phase I" was implemented in 2010 through spring of 2014. As Phase I neared completion, the District submitted an application for a Phase II project, hoping to give those landowners who remained on the Phase I waiting list the opportunity to implement practices.

The Phase II agreement was for a one-year period that began on April 1, 2013 and ended June 30, 2014. The agreement continued to support work completed and planned in Phase I while addressing an additional 245 acres. When Phase I came to a close, it was obvious that it was very successful in implementing practices on high priority lands; therefore, the amount of acres needing treatment for the Phase II extension was less than Phase I. Phase II focused on reducing an additional 842 tons of sediment and 1,094.6 pounds of phosphorus entering Miller Creek. With the collaboration of several partners, landowners were able to also use matched funds through the EQIP, IFIP, and CRP programs. Another way landowners were able to secure project implementation was by utilizing the low interest and no interest loan program provided through IDALS-DSC State Revolving Loan Fund.

Financial Accountability

Of the $87,793.71 grant, a total of $74,170.88 has been spent this past year implementing practices with I-Jobs funds. The agreement with WIRB and the SWCD established three BMPs that represented the goals for the county; see ***Table 1***. Funds were divided among the following projects: one Grade Stabilization Structure, 8 Water & Sediment Control Basins and 2,800 feet of Terrace. Two amendments to the grant were made to increase the quantity of planned basins and to increase the amount of money allowed for the grade stabilization. A total of $45,385.25 has been spent in these three categories, achieving the agreement goals.

It was determined early in Phase II that there was a major need for water sediment control basins on cropland areas. The original budget of $8,000 for 8 basins was greatly under estimated. The District did not anticipate the quantity needed for terraces and basins in upland areas. In February 2014, the District applied for an additional $25,000.00 to increase in the original project goal of 8 to 27 basins. The additional 19 basins gave an opportunity to assist the conservation needs to a total of seven landowners, three more than original planned.

In October 2013, the unpredicted shutdown of the Federal Government delayed the remaining grade stabilization project for Phase I. Time constraints related in obtaining an easement from a neighbor and the shutdown, made it difficult to complete the remaining grade stabilization structure by December 30, 2013. Therefore, the District requested an extension which was approved in October 2013. This allowed the landowner to complete their grade stabilization project the spring of 2014. Jerry Neppel suggested in April of 2014 that it would be advantageous for the District to transfer the remaining grade stabilization monies from agreement 9032-017 to I-Jobs funding 1233-015 to allow the District to complete the 9032-017 Phase I final report sooner. This best utilized the state I-Jobs funding without forfeiting any unobligated funds. The amount for this structure was increased from the original amount of $6,875.00 to $10,593.71 to cover the difference obligated under grant agreement 9032-017.

Another event in April caused an unforeseen cancellation of 8 basins due to an opposing neighbor. The obligated amount of $8,000.00 would have contributed to a total of $32,699.16 spent for water sediment control basins, just $300.00 shy of the $33,000.00 planned for the agreement goal. With only 7 weeks left in the project at the time of cancellation, Jerry Neppel suggested the District not re-obligate those funds to another landowner.

Table 1 **Grant Agreement Budget Line Item**	**Total Grant Funds Approved**	**Amended**	**Total Funds Expended**	**% of Total Spent Projects**
Salary/Benefits	$33,000.00	----------	$28,785.63	30%
Grade Stabilization Structures	$6,875.00	$10,593.71	$9,968.23	10%
Water/Sediment Control Basins	$8000.00	$33,000.00	$27,008.89	28%
Terraces	$11,200.00	----------	$8,408.13	9%
Totals	$59,075.00	$87,793.71	$74,170.88	77%

Table 2 **Partner Funding Totals** **Funding Source**	**Approved Application Budget($)**	**Total Spent from Budget($)**	**% Total Spent - Projects**
WIRB	$87,793.71	$74,170.88	46%
NRCS Technical Support	$3,500.00	$1,800.00	1%
EQIP	$18,500.00	$7,951.35	5%
IFIP	$13,100.00	$16,002.08	10%
CRP	$0.00	$8,753.00	5%
OTHER (WQI)	$0	$750.00	0%
IDALS-DSC	$5,000.00	$3,600.00	2%
RECIPIENT	$23,725.00	$49,212.97	30%
TOTAL	127,893.71	$162,240.28	100%

Watershed Improvement fund Contributions: **Approved application budget 48%**
Actual 46%

Environmental Accountability

Phase II focused on an additional 70% or 245 acres of priority land. Unlike WIRB funds, I- Jobs funds are managed on a 12 month period with no leeway on project implementation based on seasonal work. The District found that utilizing I-Job funds within a strict time frame can create problems when dealing with farming practices and the weather. Due to the agreement beginning April 1, 2013 practice implementation was challenged from the start. The majority of producers' seed had already been purchased as well as fertilizer and/or anhydrous already applied; therefore, many chose to not commence construction last spring. The government shutdown in the fall of 2013 delayed many projects. The final hurdle was the weather. Due to the early onset of winter weather in November 2013; all projects had to then be carried over until spring 2014 when the ground thawed.

Overall, the project was successful in accomplishing most of the environmental goals in relation to sediment reduced in Phase II. However, the project did not meet the goal in the number of water & sediment control basins installed. The amended goal of 27 basins was not met due to the unforeseen cancellation of 8 basins in April due to an opposing neighbor. The District did however successfully install 19 basins, 11 more than the original agreement. The District was able to meet the goal for one grade stabilization by transferring funding from the Phase I grant agreement 9032-017 to I-Jobs agreement 1233-015 Phase II. Due to the fact that the watershed is mostly composed of cropland, the project also fell short of implementing any additional grazing systems. However, three landowners that enrolled approximately 95 acres in CRP and one landowner planted over 30 acres of cover crop.

A new program was launched in 2013 to replace the Soil Sediment Calculator. This program was designed to give reduction estimates based on information using the RUSLE II program. The cumulative estimated amount for this project using the new Pollutant Reduction Calculator indicates that 866 tons/year of sediment and 1125.8 pounds/year of phosphorus were reduced from entering Miller Creek. Even though we fell short of some project goals, we were still able to exceed the overall project sediment goal of 842 tons/year and the phosphorus goal of 1095 pounds/year.

Maps were generated by a DNR GIS Analyst toward the end of the Phase I project to update new projects and incorporate more accurate information since the 2008 maps were generated, ***See Appendix A***. Following the conclusion of Phase II an additional may was created to reference practices installed in the Miller Creek watershed from 2013 through 2014, ***See Appendix B***.

Table 3 **Practice Activities**

BMP Practice Goals	**Unit**	**Planned**	**Amendment**	**Installed**	**Percent Completed**	**Load Reductions/year**	
						Sediment (tons)	**P (lbs.)**
Grade Stab Structures	EA	1	----------	1	100%	**89**	**116**
Water & Sediment Basins	EA	8	27	19	55%	**310**	**403**
Terraces	FT	2,800	----------	2,705	96.6%	**214**	**278.2**
Cool Season Seeding	FT	50	----------	76	150%	**121**	**157.3**
Warm Season Seeding	AC	20	----------	19	95%	**18**	**23**
Grazing System	AC	50	----------	0	0%	**0**	**0**
Pasture & Hayland Planting	AC	50	----------	107	214%	**101**	**131.3**
Other (Cover Crop)	AC	------	----------	30	100%	**13**	**17**
Total						**866**	**1,125.8**

Program Accountability

The bulleted items below show the on-going public outreach activities and education that was key to this project's success. Quarterly newsletters and informative hand-outs also kept the public aware of Miller Creek's progress. One-on-one landowner contacts along with Field Day tours provided public education on how proper conservation efforts can help land productivity and the environmental impact of the creek. The District began working with the local Albia FFA students and local volunteers in April 2014 upon the start of Miller Creek's Phase III project. The Phase III project for Miller Creek will focus on Nutrient Management in efforts working toward the Iowa's Reduction Strategy. On-going education for the watershed is continuing and will be utilized in the Phase III project.

Education/Activities Conducted

- Articles in the county newspaper & Quarterly Newsletters
- Farm Bureau Days presentation of watershed functions
- Annual Field Day Tours of installed projects within the watershed & the annual contractor meeting
- "Trees for Threes" An activity the SWCD provides to third grade students regarding the importance trees have on the environment and watersheds
- Three additional signs were also place in highly visible areas showing the boundary of the watershed to continue public awareness of the creek.

Trees for Tree's

Farm Bureau Ag Days

Cover Crops Field Day

Double--sided "Entering/Leaving" signs placed in visible locations along Hwy 137 and 6 signs placed at site locations

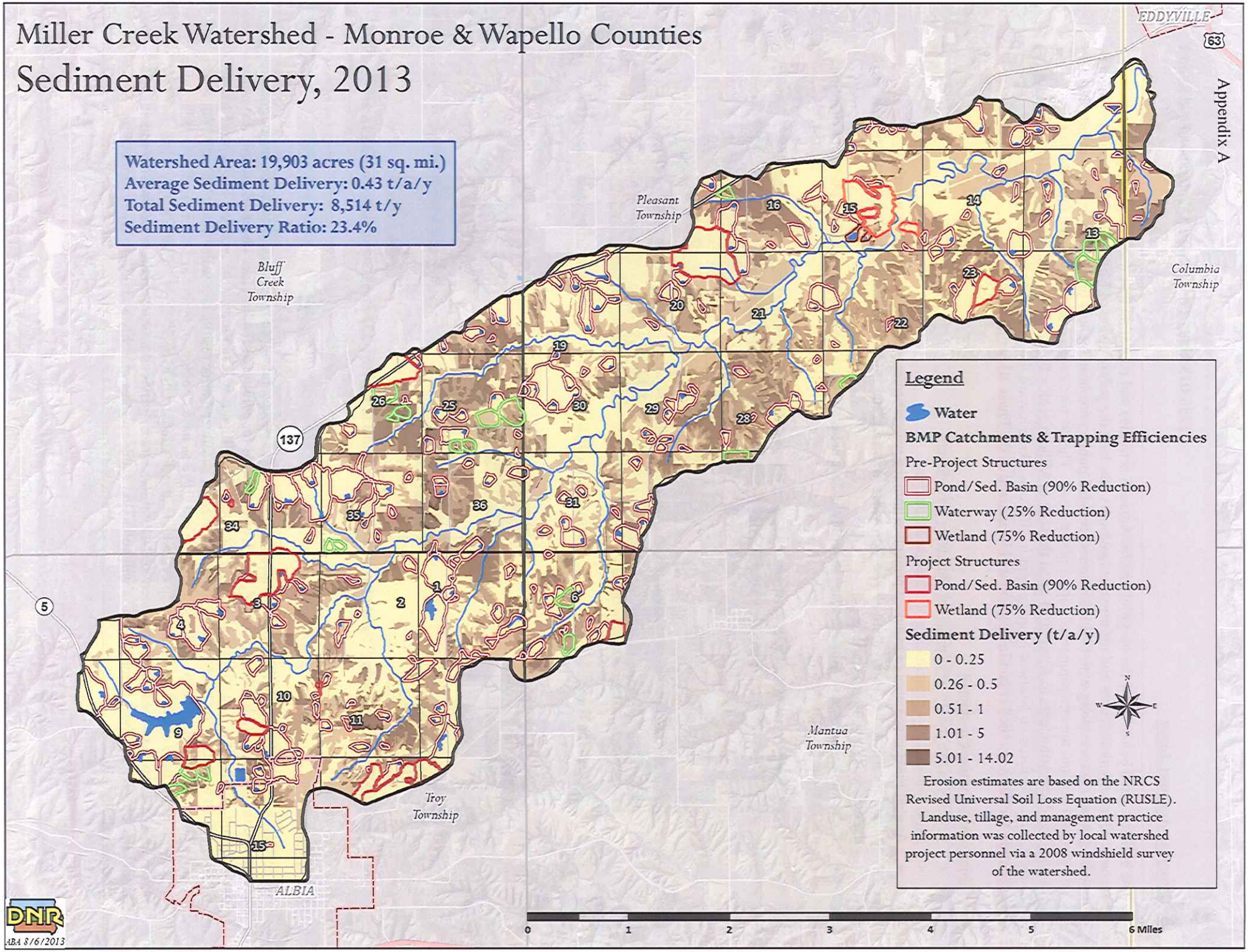
Conclusion

In conclusion, Phase II of the Miller Creek Watershed project was successful in accomplishing most of its major goals as set forth in the agreement. In March of 2014, the District applied for additional funding for "Phase III" with a different plan in mind, soil health. The additional funding for Phase III will focus its attention on the Nutrient Reduction Strategy for Iowa. Two tools used by the District to be able to track a before and after results are: water monitoring and fall stalk testing. The information gathered will assist farmers and serve as base line data of before and after practices are installed to help determine their effectiveness and help estimate load reductions. On May 3rd. 2014 Lynette Siegly with IOWATER, a division of the Iowa Department of Natural Resources, provided training to the watershed coordinator, Albia FFA Chapter and local volunteers who will collecting water samples monthly and during heavy rain events. ***See Appendix C***

Miller Creek Watershed - Monroe & Wapello Counties

Sediment Delivery, 2013

Watershed Area: 19,903 acres (31 sq. mi.)
Average Sediment Delivery: 0.43 t/a/y
Total Sediment Delivery: 8,514 t/y
Sediment Delivery Ratio: 23.4%

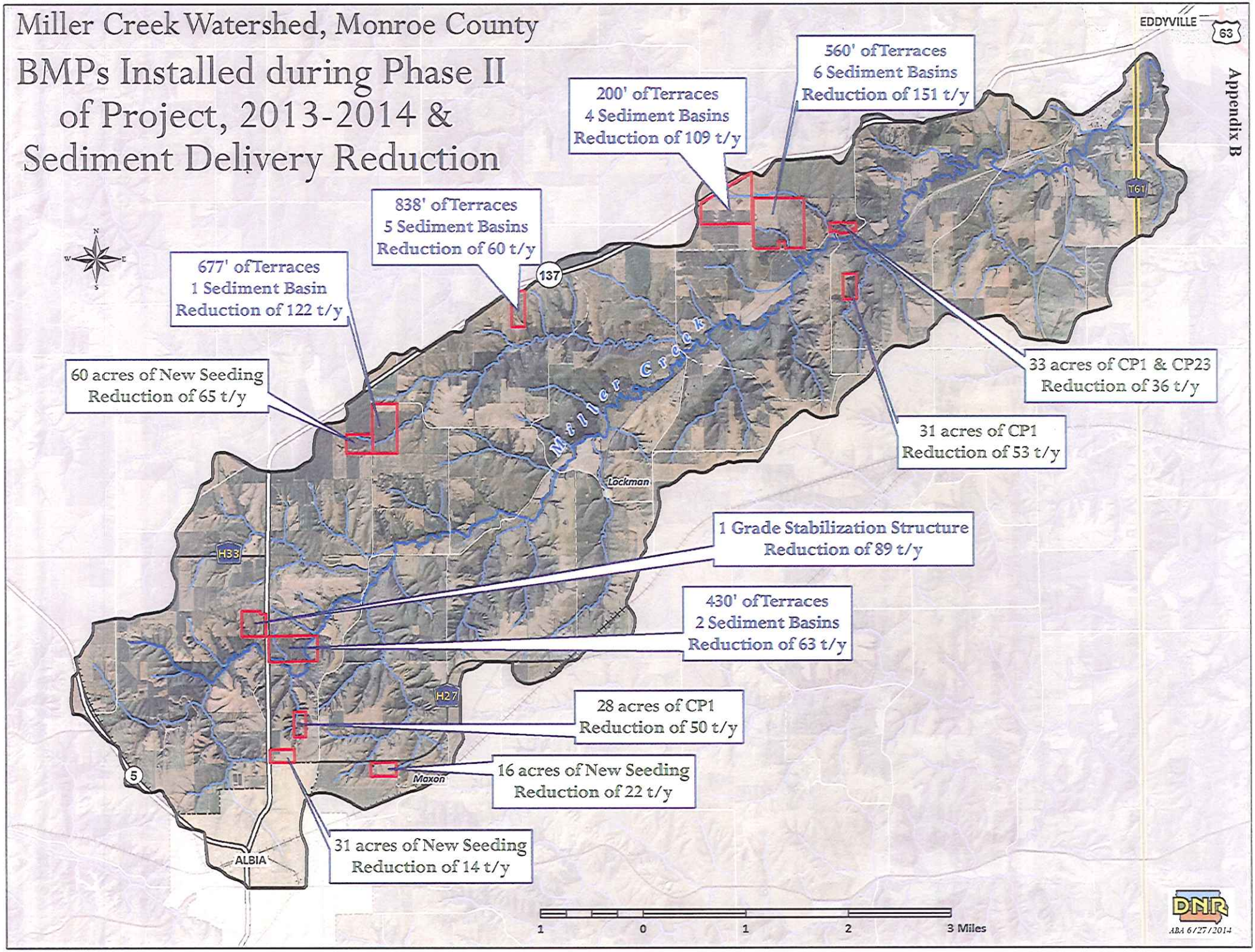


DNR

ABA 8/6/2013

Miller Creek Watershed, Monroe County

BMPs Installed during Phase II of Project, 2013-2014 & Sediment Delivery Reduction



Appendix C IOWATER TRAINING

On May 3rd 2014, the Albia FFA Chapter along with Monroe County Watershed Coordinator and local volunteers participated in the IOWATER training. The participation from volunteers such as this will help strengthen community awareness and provide the District valuable information regarding the benefits of practices installed and how overall conservation is working in the watershed.