

Yellow River Watershed Improvement Project

#5011-005

March 1, 2006-Dec. 31, 2008

Final Project Report

Financial Accountability

A total of \$223,412 of the \$229,000 Watershed Improvement Review Board (WIRB) funding awarded to the Yellow River Watershed Improvement Project has been spent during the three year term of the project. There were two differences between the approved funding for the project and the funding that was spent. First, a total of \$116,451.54 was spent for construction of five livestock manure management structures. This total is \$8,548.46 less than the \$125,000 that was awarded specifically for manure management structure construction. The difference in the awarded funding and the funding spent is attributed to the cost variabilities among each specific structure that was built. The size of the livestock manure management structures that are built are dependant on the size and type of the cattle operation they are being built for. The total cost is dependent on the amount of materials and labor that is required. In this case, the five structures were able to be built with less of the originally allocated funding.

The second difference between the approved project funding and the actual funding spent is that \$56,960 was spent on streambank stabilization projects in the Yellow River, a total of \$2,960 more than the allocated \$54,000. The original streambank funding requested was based on a \$50 per foot cost estimate. The average cost for the actual 6,485 feet of streambank that was stabilized turned out to be approximately \$57 per foot, an estimated \$45,395 more than the total estimated cost. These increased rates prevented additional streambank projects from being completed.

Table A: WIRB budget for the Yellow River Watershed Project

Watershed Improvement Funds			
Grant Agreement Budget Line Item	Total Funds Approved (\$)	Total Funds Expended (\$)	Available Funds (\$)
Personnel	50,000	50,000	0
Streambank Stabilization	54,000	56,960.47	(2960.47)
Livestock Manure Mgt.	125,000	116,451.54	8,548.46
Totals	229,000	223,412.01	5,587.99
Difference			5,587.99

Total Project Funding

The total cost of the Yellow River Watershed Project came in at \$646,005, which is \$263,995 less than the original estimated cost of \$910,000. WIRB funding accounted for 35% of this total project cost. The approved application originally called for approximately 25% of WIRB funding, 24% from landowners, and 51% of the total project cost coming from federal dollars. However, the landowner’s site rankings and funding applications for the federal funding were unable to garner the 51% that was originally estimated and instead accounted for approximately 42% of the project cost. An increased percentage of WIRB funds were needed to reach the targeted 75% cost share for each of the participating landowners.

Table B: A pre-project and post-project breakdown of the funding sources for the entire project and the percentages of funding that each source contributed.

Funding Source	Cash		In-Kind Contributions		Total	
	Approved Application Budget (\$)	Actual (\$)	Approved Application Budget (\$)	Actual (\$)	Approved Application Budget (\$)	Actual (\$)
WIRB	229,000	223,412	0	0	229,000	223,412
WHIP	216,000	134,762	0	0	216,000	134,762
EQIP	250,000	134,279	0	0	250,000	134,279
IDNR	0	0	0	12,425	0	12,425
Landowners	215,000	141,127	0	0	215,000	141,127
Totals	910,000	633,580	0	12,425	910,000	646,005

**Watershed Improvement Fund contribution: Approved application budget: 25%
Actual: 35%**

Table C: A pre-project and post-project breakdown of the funding sources for each practice and the percentage that each contributed to the project.

Funding Source	Streambank Stabilization			Livestock Manure Management	
	Funding Used (\$)	In-Kind	Percentage of Projects (%)	Funding Used (\$)	Percentage of Projects (%)
WIRB	56,960	0	18	116,452	40
WHIP	134,762	0	43	0	0
EQIP	41,038	0	13	93,241	33
IDNR		12,425	4	0	0
Landowners	65,254	0	21	77,005	27
Totals	298,014	12,425	100	286,698	100

Environmental Accountability

Installed Practices

The goal of the Yellow River Watershed Project was to install five manure management facilities and to stabilize 9,000 feet of Yellow River streambank. A total of five manure management facilities were installed during this project. These structures will provide an area for the producers to store and manage livestock manure. A Certified Nutrient Management Plan (CNMP) has been written for each one of these facilities. These CNMPs will offer the producers proper rates for manure application on their crop fields and will identify any manure application setbacks such as streams and sinkholes.

A total of 6,485 feet of streambank was stabilized on the Yellow River during this project. Within these 6,485 feet of stabilized streambank, a total of 71 fish hides were installed. These fish hides will provide 568 linear feet of habitat for trout and smallmouth bass in the Yellow River. The rock that was used to armor the banks will also provide additional habitat for fish and other aquatic life.. The IDNR Fisheries

provided in-kind support to assemble and install these hides. The streambanks were stabilized by sloping the bank back to a 2:1 slope, installing a two foot layer of large rock, and then covering the rock with soil. The entire disturbed area was then seeded with grass. These streambank sections will now be resistant to active erosion, prevent sediment loading into the stream, and provide habitat for aquatic species.

Figure 1: This map shows the location of the Yellow River Watershed and the locations of the conservation practices that were installed during this project.

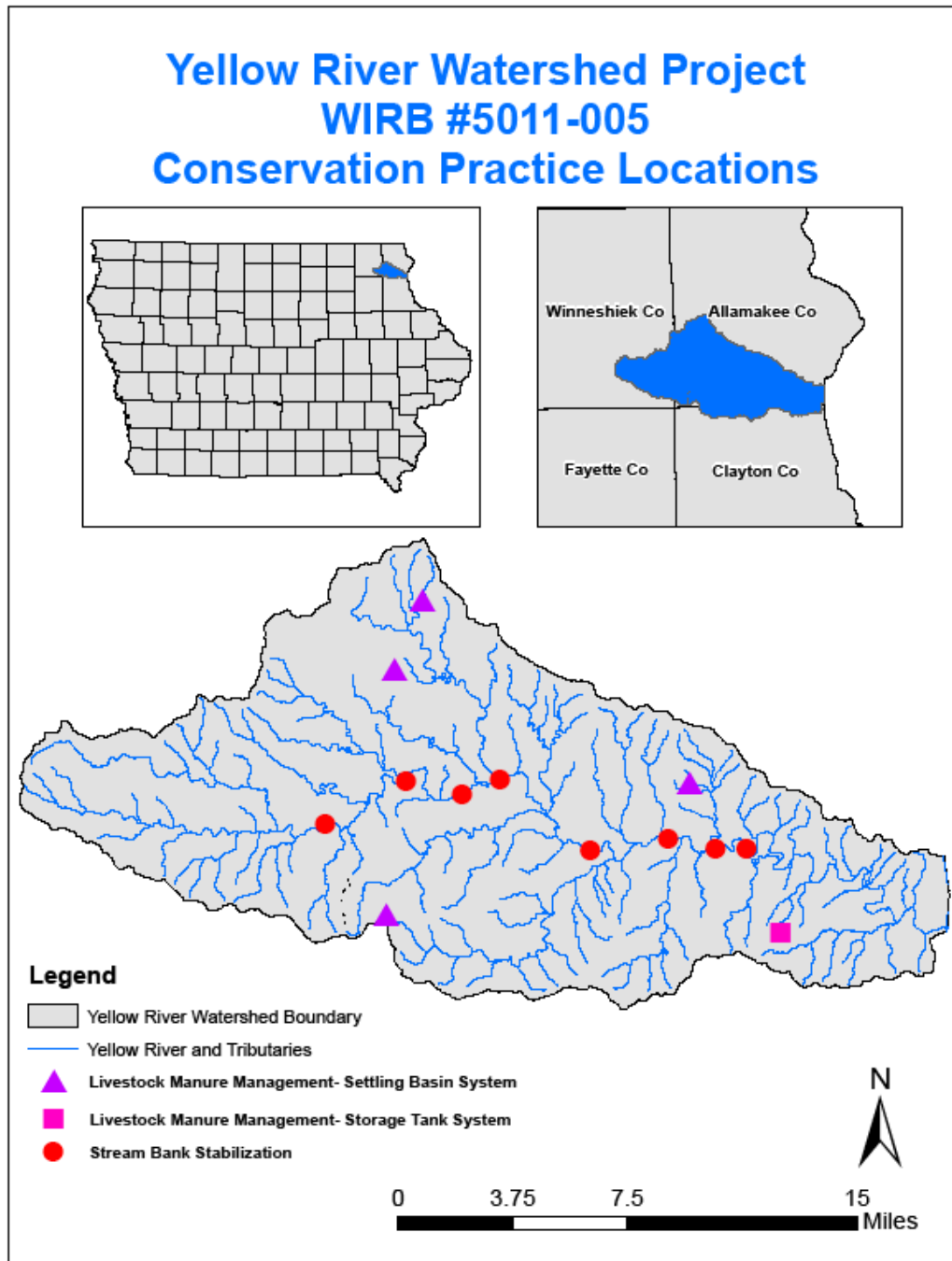


Table D: Conservation practice amounts installed and the percentage of completion.

Practice or Activity	Unit	Approved Application Goal	Accomplishments	Percent Completion
Streambank Stabilization	Ft.	9,000	6,485	72
Livestock Manure Mgt.	No.	5	5	100

In-Field Pollutant and Sediment Loading Reductions

Manure Management Facilities

Four of the five manure management facilities constructed during this project are settling basin structures. These structures allow manure solids to stay contained and settle onto a concrete pad while the liquid flows through an installed filter channel. According to figures from Iowa State University, these filter channels create a typical nutrient reduction of 90% (A.S. 1-2). The other manure management system that has been constructed is a tank storage system. This system provides a tank to store the manure which will completely contain all of the manure that it stores and will prevent any run-off from the manure. According to the nutrient loading reduction spreadsheet used by the Iowa DNR the total nitrogen loading reduction from these manure management systems is estimated at 15,927 lbs/year. The total phosphorus loading reduction is estimated at 1,630 lbs/year.

These facilities will also have an impact on nutrient loading reductions from manure spread on crop fields by giving landowners the proper rates of manure application. The CNMPs that are written for each facility will provide the landowner with information about stream and sinkhole spreading separation distances. This will prevent direct nutrient loading into the stream and sinkholes.

Table E: Breakdown of sediment loading reductions from manure management facilities.

Impairment	2006	2007	2008	Cumulative Loading Reductions
Nitrogen (lbs/year)	3,712	1,436	10,779	15,927
Phosphorus (lbs/year)	524	134	972	1,630

Streambank Stabilization

The 6,485 feet of streambank that was stabilized during this project will prevent approximately 2,283 tons of sediment from entering the Yellow River every year according to estimates from the sediment delivery calculator. The Iowa DNR’s nutrient loading spreadsheet estimates a nitrogen loading reduction of 4,566 lbs/year. The total predicted phosphorus loading reduction is 2,968 lbs/year.

Table F: Breakdown of sediment loading reductions from streambank stabilization projects.

Impairment	2006	2007	2008	Cumulative Loading Reductions
Sediment (tons/year)	824	953	506	2,283
Nitrogen (lbs/year)	1,648	1,906	1,012	4,566
Phosphorus (lbs/year)	1,071	1,239	658	2,968

Water Monitoring

Water monitoring was completed for most of the duration of this project from 2006 to 2008. Additional water monitoring is needed and is scheduled to continue in 2009. The IDNR is putting together a Total Maximum Daily Load (TMDL) plan for the Yellow River Watershed. They are planning to set up sampling sites on the main channel as well as the tributaries of the Yellow River. The data that is collected from this water monitoring should provide information about the reductions in the water quality impairments that were targeted by the conservation practices that were installed during this project.

Program Accountability

Although the Yellow River Watershed Project is now closed its initiative and impact is still continuing. This impact is evident from the addition interest that these manure management systems and streambank stabilization projects have created among landowners in the Yellow River Watershed. Landowners have taken notice of how pleased their neighbors are with these projects and how well these practices compliment their operations and they want to be a part of the conservation effort. This interest has allowed us to start the Ludlow Creek Watershed Project, a WIRB funded project for Ludlow Creek, a sub-watershed of the Yellow River.

The main challenge that was overcome during this project was the abundance of rainfall that occurred in the fall of 2007. There were four streambank stabilization projects that were scheduled for construction during this time but unfortunately heavy rainfall made the ground too wet for construction. The projects had to be postponed until the summer and fall of 2008. Fortunately the landowners were patient and the rain held off. All four of these projects were able to be constructed without a problem.

A lesson that can be carried on to future watershed projects is the importance of communicating well with landowners and doing our best to meet their needs. Water quality improvement is our ultimate goal but we must remember the landowners are the ones that are implementing these conservation practices at the ground level. We need to do our best to make sure these practices both complement their operations and work to improve water quality. It was very exciting and rewarding see that the landowners that participated in this project were very pleased with the results of implementing these conservation practices.

References

A.S. Leaflet R2435. (2009). *Evaluation of Vegetative Treatment System Performance of CAFO Beef Feedlot Runoff Control*. Retrieved from Iowa State University, Department of Animal Science. Web site: <http://www.ans.iastate.edu/report/air/2009pdf/R2435.pdf>

