Final Report

Rathbun Lake Special Project: BMPs for Priority Land in Targeted Sub-Watersheds 2006 6025-012

2007 - 2010

Table of Contents

FINANCIAL ACCOUNTABILITY

Expenditure of watershed improvement funds and total project funds

Iowa Watershed Improvement Review Board (WIRB) financial support enabled the Rathbun Land and Water Alliance to make significant progress toward the accomplishment of planned objectives for the *Rathbun Lake Special Project: BMPs for Priority Land in Targeted Sub-Watersheds.* Specifically, this WIRB funding helped the Alliance and its partners, including cooperating landowners, install best management practices (BMPs) in two targeted sub-watersheds of the Rathbun Lake watershed that will achieve more than 70% of the project's priority land treatment objective, resulting in close to 70% of the estimated reduction in annual sediment delivery and more than 80% of the estimated reduction in annual phosphorus delivery from this land to the lake and its tributaries.

The Alliance expended Watershed Improvement Funds for project activities in accordance with the amended grant agreement. Please refer to the Summary of Watershed Improvement Funds Approved, Expended, and Balance in Table 1. A complete financial ledger for the term of the grant agreement accompanies this report.

Table 1

Summary of Watershed Improvement Funds Approved, Expended, and Balance

Grant Agreement Budget Line Item	Total Funds Approved ($)	Total Funds Expended ($)	Available Funds ($) [a]
Contractual (Technical Assistance)	17,738.00	17,745.36	(7.36)
Terraces	356,662.00	308,130.75	48,531.25
Grade Stabilization Structures	61,950.00	63,618.93	(1,668.93)
Water and Sediment Control Basins	43,000.00	34,414.33	8,585.67
Grassed Waterway	13,200.00	1,548.75	11,651.25
Priority Land Conversion	4,550.00	549.00	4,001.00
Totals	497,100.00	426,007.12	71,092.88
Difference			71,092.88

[a] The Alliance, its partners, and cooperating landowners did not expend all of the available Watershed Improvement Funds. The principal factors that resulted in the expenditure of less funds than available were the impact of weather on practice application and the length of the project period. More information on these two factors will be presented in the Environmental Accountability section of this report.

FINANCIAL ACCOUNTABILITY contd.

Similar to the information presented above regarding the Iowa WIRB's Watershed Improvement Funds, funds and in-kind contributions provided by other partners were essential to the significant progress made by the Alliance toward the accomplishment of planned objectives for the *Rathbun Lake Special Project: BMPs for Priority Land in Targeted Sub-Watersheds.*

Alliance partners' financial and non-financial resources, including the Watershed Improvement Funds, were utilized for project activities as planned in the original application submitted to the Iowa WIRB and in accordance with the amended grant agreement. Please refer to the Summary of Total Project Funding in Table 2. A complete financial ledger for the term of the grant agreement accompanies this report.

Table 2

Summary of Total Project Funding

Funding Source	Cash		In-Kind Contributions		Total	
	Approved Application Budget ($)	Actual ($)	Approved Application Budget ($)	Actual ($)	Approved Application Budget ($)	Actual ($)[a, b]
WIRB	497,100.00	426,007.12	0.00	0.00	497,100.00	426,007.12
Landowners	233,550.00	368,529.65	0.00	0.00	233,550.00	368,529.65
DNR/DSC	0.00	509.81	104,050.00	105,548.00	104,050.00	106,057.81
NRCS	228,600.00	225,953.45	0.00	0.00	228,600.00	225,953.45
RRWA	42,900.00	17,745.38	55,350.00	53,850.00	98,250.00	71,595.38
Totals	1,002,150.00	1,038,745.41	159,400.00	159,398.00	1,161,550.00	1,198,143.41

Watershed Improvement Fund contribution: Approved application budget: 43%
Actual: 36%

[a] As indicated on page 2, all of the available Watershed Improvement Funds were not expended as planned. The impact of weather on practice application and length of project period were the principal factors which limited expenditure of these funds.

[b] The landowner share of the cost of applying practices was significantly greater than planned (37% actual compared with 25% budgeted). The principal factor which led to this greater amount of funds expended by landowners was the increase in cost of practice application. The construction cost for terraces, as an example, increased by more than 30% during the project period from an average of $5.10 per foot to $6.65 per foot.

ENVIRONMENTAL ACCOUNTABILITY

Water quality improvement practices applied and results achieved

The Alliance and its partners, with the financial support from the Iowa WIRB, assisted landowners to apply BMPs for priority land in the targeted sub-watersheds of Lower Chariton Creek and Chariton River #3 in the Rathbun Lake watershed. The original project objective was to assist landowners to apply BMPs for more than 2,200 acres, at least 1,100 acres of which would be priority land. The BMPs would reduce the annual amounts of sediment and associated phosphorus that are carried in runoff from priority land and impair water quality in the lake and its tributaries by 3,300 tons and 13,300 pounds respectively. Table 3 presents a summary of the BMPs planned and applied.

Table 3

Summary of Practices and Activities

Practice or Activity	Units	Approved Application Goal	Accomplishment	Percent Completion
Terraces	Ft.	139,870	103,966	74
Grade Stabilization Structures	No.	15	8	53
Water and Sediment Control Basins	No.	50	38	76
Grassed Waterway	Ac.	8	3.1	39
Priority Land Conversaion	Ac.	91	18	20
Contractual Technical Assistance	Hr.	1,290	1,290	100

The BMPs and activities completed resulted in the treatment of more than 1,400 acres, of which close to 800 acres were priority land. The practices will reduce the delivery of sediment and phosphorus to Rathbun Lake and tributaries in the lake's watershed by an estimated 2,296 tons and 10,820 pounds per year respectively. The BMPs installed have achieved a substantial portion of the project's priority land treatment objective and anticipated water quality benefits in terms of reduced annual sediment and phosphorus delivery to Rathbun Lake and the lake's tributaries. Table 4 presents a summary of planned and achieved land treatment and water quality benefits.

ENVIRONMENTAL ACCOUNTABILITY contd.

Table 4

Summary of Land Treatment and Water Quality Benefits

Land Treatment and Water Quality Benefit	Units	Approved Application Goal	Accomplishment	Percent Completion
Total Acres Treated with BMPs	Ac.	2,200	1,403	64
Priority Land Acres Treated with BMPs	Ac.	1,100	797	72
Reduced Annual Sediment Delivery	T.	3,300	2,296	70
Reduced Annual Phosphorus Delivery	Lb.	13,300	10,820	81

As indicated, the Alliance and partners, including cooperating landowners, made significant progress toward the accomplishment of, but did not achieve, anticipated levels of BMP application, acres treated, and sediment and phosphorus load reductions. The impact of weather and length of project period were the principal reasons that BMP application and associated water quality benefits achieved were less than planned. Relatively high precipitation amounts and wet soil conditions, particularly in the late fall and early winter, during the project period significantly impacted the planned installation of BMPs by cooperating landowners. In many cases, practice installation was prolonged, delayed, or canceled due to the unusually wetter than normal weather and soil conditions. The three-year project period associated with the earlier Iowa WIRB grant agreements was also a limitation with respect to BMP application, especially in combination with the impact of relatively wet weather and soil. It is important to note, however, that the Alliance and partners will continue to work with landowners on the planned application of BMPs for priority land in the targeted sub-watersheds beyond the end of this grant agreement's project period. Funds from sources other than this grant will be used to share the cost of apply these practices with landowners. The five-year project period which can now be allowed for more recent Iowa WIRB grant agreements should facilitate the application of planned BMPs in these projects. Mention should also be made of the impact that increased costs have had on the application of BMPs. As indicated above, the construction cost for terraces increased by more than 30% during the project period. Increased costs can limit landowners' ability to finance their portion of BMP installation and, of course, require a greater amount of cost share funds for practice application.

ENVIRONMENTAL ACCOUNTABILITY contd.

A set of geographic information system (GIS) generated maps accompany this report. These maps present the results of GIS analysis performed to determine the location of priority land in the two targeted sub-watersheds. The maps also identify the locations of BMPs that have been planned and applied for priority land in the two targeted sub-watersheds. In addition, the maps present the results of GIS analysis that evaluated the water quality benefits associated with the BMPs applied for priority land in the targeted sub-watersheds, that is, the estimated reductions in annual sediment and phosphorus delivery to Rathbun Lake and its tributaries.

The Alliance's and partners' comprehensive water quality monitoring program activities in Rathbun Lake and the lake's tributaries were carried out during the project period. The program consisted of monthly and event sample collection from 20 sites and analyses for sediment, nutrients, bacteria, and pesticides. Monitoring results have been used to help identify water bodies in the Rathbun Lake watershed that are on Iowa's Section 303(d) List of Impaired Waters and assess water bodies in the watershed as part of Iowa's 305(b) Water Quality Report. It is important to note that the water quality monitoring program is an ongoing effort that will continue after project completion. Similarly, the Alliance and partners will continue to use past and future monitoring results to assess water quality conditions in Rathbun Lake and its tributaries as well as to plan and evaluate, to the extent possible, the effectiveness of BMPs to protect and improve water quality.

PROGRAM ACCOUNTABILITY

Activities to support the application of water quality improvement practices

Alliance members and partners completed the following activities in support of the application of BMPs for priority land in the two targeted sub-watersheds and achievement of associated reductions in annual sediment and phosphorus delivery to Rathbun Lake and the lake's tributaries:

- Assembled a team of expert advisors and field staff with Alliance members and partner organizations who were responsible for planning, implementing, and assessing the completion and impact of project activities;

- Developed and utilized a GIS-based methodology to identify the location of priority land in the two targeted sub-watersheds and estimate the water quality benefits associated with the application of BMPs for this land;

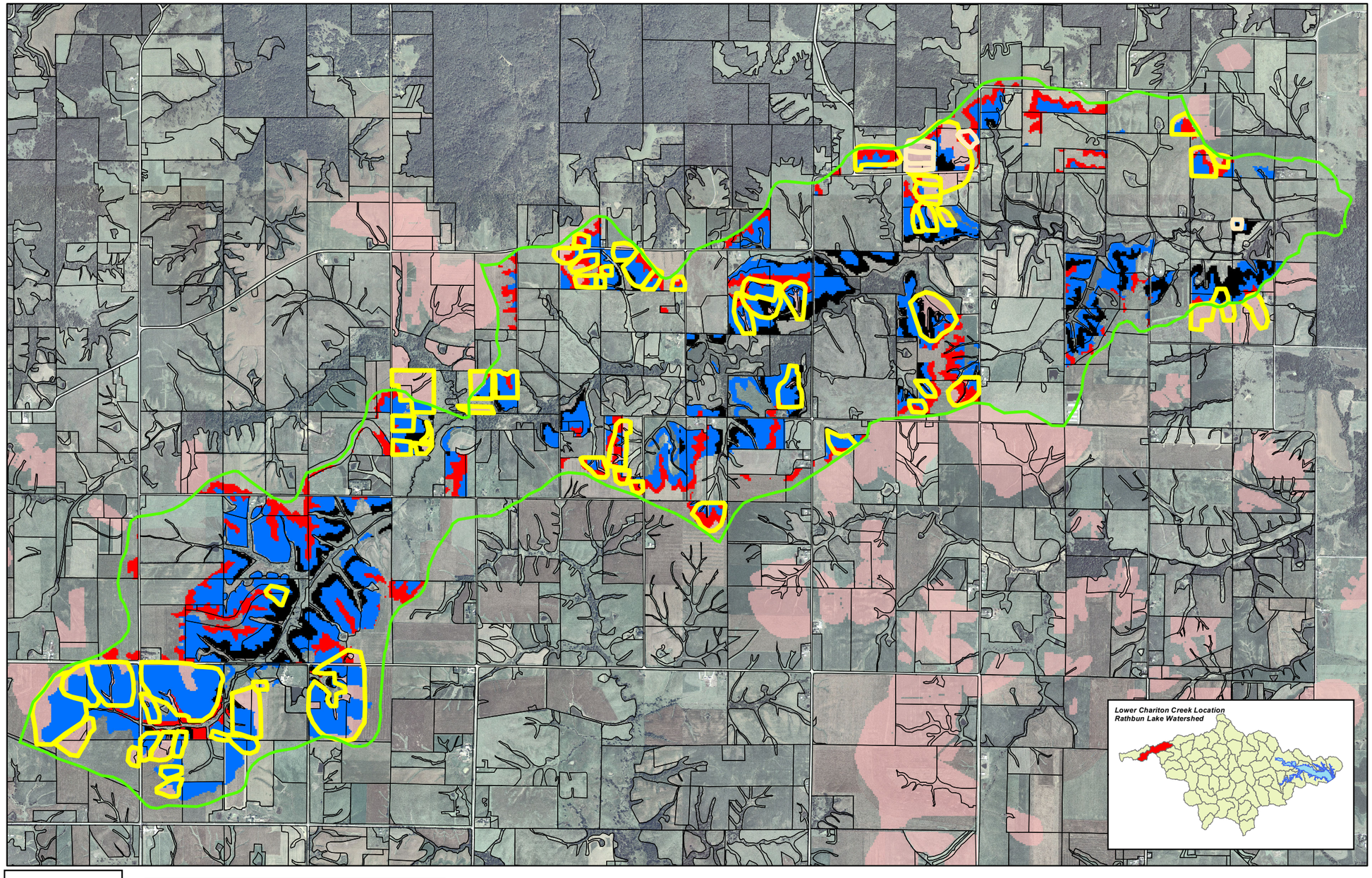
- Provided one-on-one, on-farm, technical assistance to 28 landowners who own and/or farm priority land in the targeted sub-watersheds which helped them evaluate, plan, and apply BMPs for this land.

PROGRAM ACCOUNTABILITY contd.

- Completed activities of the *Rathbun Lake Protectors* watershed outreach program which included: (a) recognition of landowners for their BMP application efforts as *Rathbun Lake Protectors* at the Alliance's annual *Protect Rathbun Lake* meeting; (b) coordinated interviews with landowners recognized as *Rathbun Lake Protectors* on WHO radio's daily farm show; (c) wrote feature articles that were published in Wallaces Farmer about landowners selected as *Rathbun Lake Protectors*; (d) installed *Rathbun Lake Protectors* on-farm signs and *Protect Rathbun Lake* roadside signs; (e) developed and exhibited project related displays at local and state events; (f) prepared and distributed a quarterly newsletter to Alliance members and partners; and (g) maintained the Alliance's Internet site at http://www.rlwa.org/ .

- Alliance's board of directors, partner representatives, and project team members regularly reviewed progress in the implementation of project activities and accomplishment of project objectives. The Alliance submitted the required project plan of work, narrative reports, and financial ledgers.

Lower Chariton Creek Sub-Watershed
Priority Land Work



Legend

- Watershed Boundary

Project Work Areas

Status

- Completed
- Planned
- Field Boundaries

Priority Area Identification

- No Priority
- Priority
- High Priority
- Highest Priority
- Associate Priority

	Applied SFY10	Applied Cumulative (FFY04-10)
Gross Erosion Before	594.2	2878.6 Tons/yr.
Gross Erosion After	382.0	2078.0 Tons/yr.
Gross Erosion Reduction	212.2	800.6 Tons/yr.
Sediment Delivery Before	304.0	1343.0 Tons/yr.
Sediment Delivery After	18.0	93.0 Tons/yr.
Sediment Delivery Reduction	286.0	1250.0 Tons/yr.
Phosphorus Delivery Before	1672.0	7380.1 lbs/year
Phosphorus Delivery After	99.0	509.9 lbs/year
Phosphorus Delivery Reduction	1573.0	6870.2 lbs/year
Total Acres Benefited	169.3	668.0 acres
Priority Acres Benefited	106	420 acres

Watershed Statistics (Completed + Planned)

Size: 7,150 Acres

Priority Acres: 2,020 Acres

Acres Benefiting: 887 Acres

Priority Acres Benefiting: 566 Acres

Approx. Sediment Del. Before Projects (Watershed): 8,938 Tons

Approx. Sediment Del. After Projects (Watershed): 7,292 Tons

Approx. Sediment Del. Reduction (Watershed): 1,646 Tons

Average Sediment Del. Reduction Per Acre: 1.86 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 49,186 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 40,128 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 9,058 Lbs.

Average Phosphorus Del. Reduction Per Acre: 10.21 Lbs./Acre

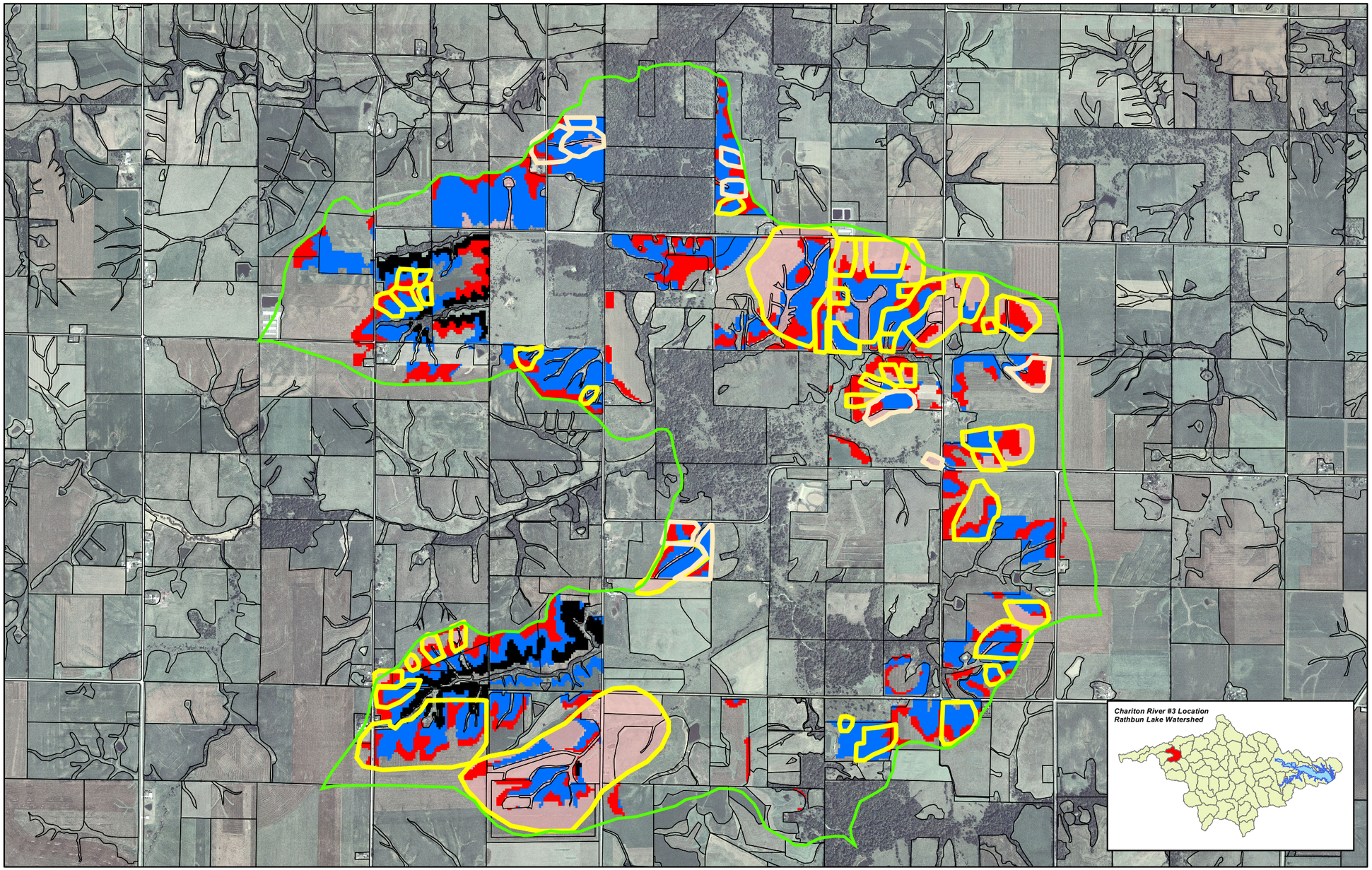
0 0.125 0.25 0.5 Miles

N

Source: Rathbun Land and Water Alliance
IDALS DSC
USDA FSA 2006 DOQQ, Clarke County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association

Chariton River #3 Sub-Watershed
Priority Land Work



Legend

- Watershed Boundary

Project Work Areas

Status

- Completed
- Planned
- Field Boundaries

Priority Area Identification

- No Priority
- Priority
- High Priority
- Highest Priority
- Associate Priority

	Applied SFY10	Applied Cumulative (FFY04-10)
Gross Erosion Before	808.4	2350.7 Tons/yr.
Gross Erosion After	484.0	1618.2 Tons/yr.
Gross Erosion Reduction	324.4	732.5 Tons/yr.
Sediment Delivery Before	424.0	1123.0 Tons/yr.
Sediment Delivery After	28.0	77.0 Tons/yr.
Sediment Delivery Reduction	396.0	1046.0 Tons/yr.
Phosphorus Delivery Before	1619.4	4240.4 lbs/year
Phosphorus Delivery After	106.9	289.9 lbs/year
Phosphorus Delivery Reduction	1512.5	3950.5 lbs/year
Total Acres Benefited	240.1	735.4 acres
Priority Acres Benefited	186	377 acres

Watershed Statistics (Completed + Planned)

Size: 4,473 Acres

Priority Acres: 1,104 Acres

Acres Benefiting: 783 Acres

Priority Acres Benefiting: 435 Acres

Approx. Sediment Del. Before Projects (Watershed): 6,218 Tons

Approx. Sediment Del. After Projects (Watershed): 5,108 Tons

Approx. Sediment Del. Reduction (Watershed): 1,110 Tons

Average Sediment Del. Reduction Per Acre: 1.42 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 23,392 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 19,216 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 4,176 Lbs.

Average Phosphorus Del. Reduction Per Acre: 5.33 Lbs./Acre

0 0.125 0.25 0.5 Miles

N

Source: Rathbun Land and Water Alliance
IDALS DSC
USDA FSA 2006 DOQQ, Lucas County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association