EPA SECTION 319 NON-POINT SOURCE POLLUTION WATERSHED IMPLEMENTATION PROJECT

FINAL REPORT

LOWER JAMES RIVER WATERSHED IMPLEMENTATION PROJECT SEGMENT 1

By

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And

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Grant #: 9998185-03
9998185-08

EXECUTIVE SUMMARY

PROJECT TITLE: Lower James River Watershed Implementation Project

GRANT #:

PROJECT START DATE: 1 June 2008

PROJECT COMPLETION DATE: 31 December 2010

FUNDING:

Funding Sources	Original Budget	Actual Expenditures
U.S. EPA Section Grant	$60,000.00	
Amended (Addition)	$50,000.00	
Total Grant	$110,000.00	$69,437.81
James River Water District	$30,748.00	$48,862.41

Summary of Accomplishments

The goal of the Lower James River Watershed Implementation Project Segment 1 was to restore and protect the water quality of the James River and numerous lakes located throughout the watershed through the installation of Best Management Practices (BMPs) that target sources of sediment, nutrients, and fecal coliform bacteria.

There were three streams that were identified during the lower James River watershed **assessment** project that were targeted with a public education and outreach campaign. In addition, meetings were held in Mitchell, Scotland and Parkston as well as meetings with each of the NRCS offices in the lower James River watershed to address the water quality issues of the James River as well as the many tributaries. The outcome from these meetings was to share the findings from the assessment, and to develop a long term plan for the lower James River watershed.

There was some interest in animal waste feasibility studies. There were three feasibility studies completed during this time period. None of those studies resulted in any type of construction activities.

The outreach campaign included speaking to several organizations about the project and posting news letters through the local Conservation District's monthly fliers to producers. Speaking to organizations and local groups was very productive and in turn created much interest in the project. Speaking and participating in monthly NRCS and Conservation District meetings brought many phone calls with questions and concerns about the project. No BMPs were installed during Segment 1 of the Lower James River Implementation Project. However, three animal waste feasibility studies were completed. Tours were given to project partners upon request.

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INTRODUCTION

The Lower James River Watershed Assessment Project was initiated at the request of local organizations, and citizens concerned about water quality problems in the James River. The lower James River was placed on the 303(d) list for suspended solids and fecal coliform. The lakes within the watershed were listed for TSI values higher than their ecoregion targets. The sources for these listings were determined during the assessment project. Most likely the sources are agricultural. Point sources in the area were also assessed and all results will be included in the final assessment report.

The final assessment report will include results for the following activities:

- in-lake, tributary, and outlet water quality sampling results during 2007 & 2008,
- watershed modeling using the Annualized Agricultural Nonpoint Source model (AnnAGNPS),
- review of previous water quality data collected for the lakes and watershed,
- biological monitoring ,
- aquatic macrophyte survey,
- sediment survey, and
- quality assurance/quality control.

The sources of impairment for the water bodies, as determined by the assessment, will be fully identified in the final report. Preliminary analysis of the data indicated that fecal coliform bacteria are exceeding the limits for beneficial use for limited contact recreation in the lower reaches of the James River. Fecal coliform bacteria concentrations may be associated with land applications of manure, livestock feeding areas, and/or cattle pastured in riparian areas adjacent to streams.

- Excessive total suspended solids (TSS) concentrations were present in the river during high flow storm events in the river's lower reaches. The source of high TSS may be associated with riparian livestock grazing, stream bank erosion, and soil erosion from uplands.

Assessment data on reservoir water quality in the watershed continues to be evaluated for Trophic State Indexes, and to identify sources of any impairment.

During the assessment, 2,000 plus animal feeding areas were surveyed in the project area. All will be evaluated and assigned a priority using the AnnAGNPS Feedlot Rating Model. The ratings are assigned from 0 (low impact) to 100+ (high impact). The animal feeding areas rating above 50 will require further evaluation. Higher rated feeding areas will need some type of animal waste management systems to reduce the fecal coliform bacteria impacts on the James River.

This project (Segment 1) initiated installation of BMPs and developed a PIP for the lower James River. Project priorities were the preliminary site assessments to address livestock feeding areas and the planning and implementation of grassland management system on riparian areas. Completion of this project supported attainment of the beneficial uses in the watershed, and allowed for continued use for agricultural production, swimming, boating, recreation, wildlife,

and residential living.

Project Area

The lower James River watershed has a sub-humid, continental climate characterized by pronounced seasonal differences in temperature, precipitation, and other climatic variables. Temperature varies from north to the south in the watershed. Annual temperatures are slightly cooler at the northern parts of the watershed. January is typically the coldest month; July the warmest. The average annual precipitation in the watershed is somewhat variable, both spatially and temporally, ranging from 22 to 26 inches. Generally, average annual precipitation decreases south to north.

There are approximately 30 communities within the project area. The population ranges from less than 100 in the community of Kaylor, SD to over 10,000 in Mitchell, SD. Some of these municipalities have point source discharge permits. The information from the point source discharges will also be included in the final assessment report.

The lower James River watershed includes drainage from approximately 16 counties in southeastern South Dakota. The watershed area is approximately 2.5 million acres or (10,350 km^2), see Figure 1. Beaver Lake and Lake Carthage are included in the lower James River basin, and are listed on the 303(d) for TSI values above their ecoregion target. The lower James River watershed lies entirely within the Level III Ecoregion of the Northern Glaciated Plains. Limited information is available on the land use of this project area. During the assessment, this information was gathered and will be included in the final assessment report. It is known that the watershed is dotted with small communities surrounded by primarily row crop agriculture. There is some pasture and hay land in areas not suitable for row crop farming. There are also a large number of animal feeding areas in the lower James River watershed. The watershed touches 16 counties and the soils range from well drained to poorly drained, and level to steep slopes. There is a large mix of uplands, swales, and wetland depressions. Erosion rates were determined in the assessment project and will be included in the final assessment report.

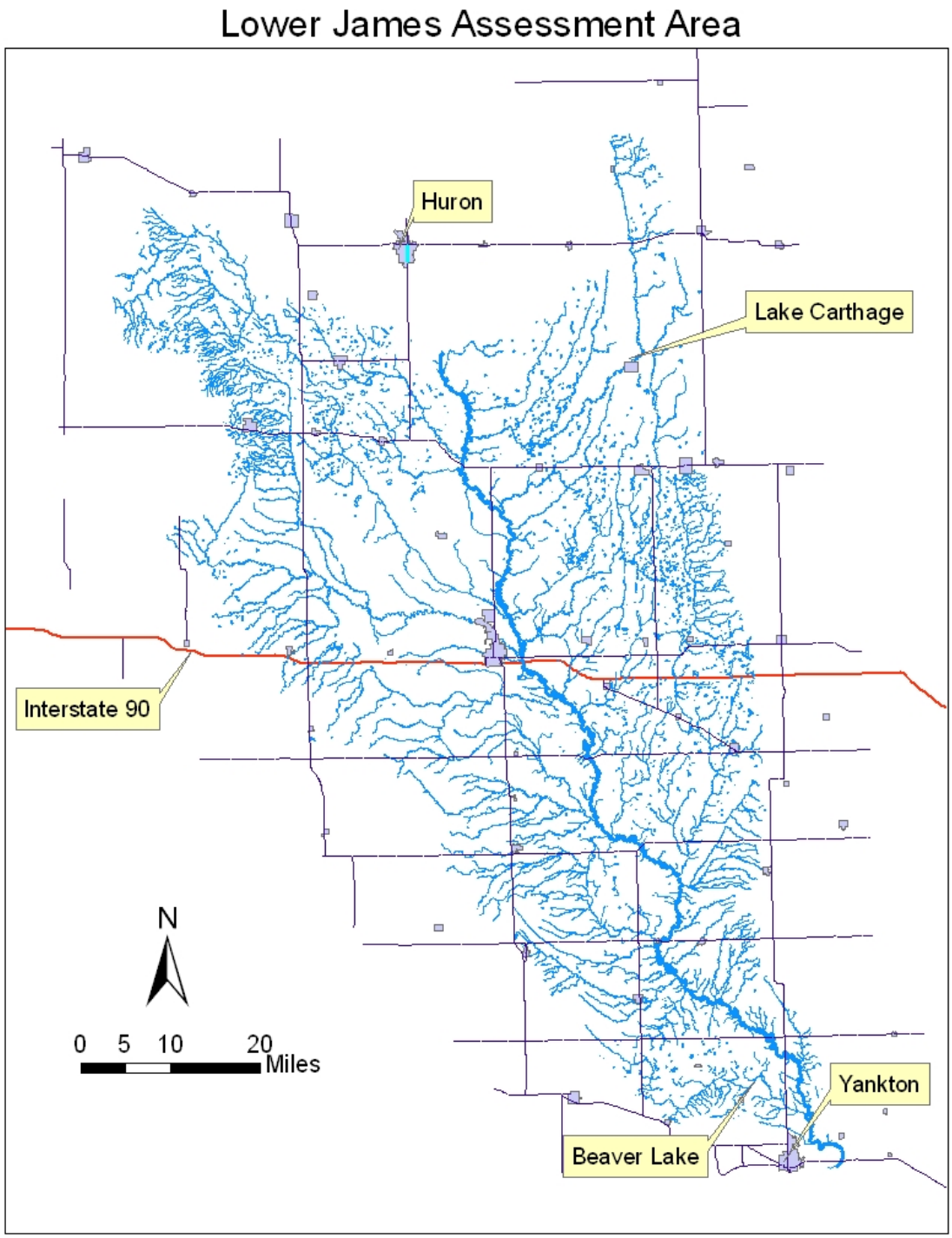

Figure 1. Lower James River Watershed

The Beneficial uses for the tributaries in the lower James River within the project area are listed in Table 1.

Table 1: Beneficial Uses For Targeted Project Water Bodies.

Water Body	From	To	Beneficial Uses	County
Beaver Creek	James River	Beaver Lake	6,8	Yankton
Dawson Creek	James River	Lake Henry	6,8	Bon Homme
Enemy Creek	James River	S18, T102N, R60W	6,8	Davison
North Fork Enemy Creek	Enemy Creek	S36, T103N, R61W	6,8	Davison
Firesteel Creek	James River	confluence with West Fork Firesteel Creek	1,4,8	Davison
Firesteel Creek	confluence West Fork Firesteel Creek	S.D. Highway 34	1,5,8	Jerauld
West Fork Firesteel Creek	Firesteel Creek	Wilmarth Lake	1,6,8	Aurora
Jim Creek	James River	S19, T106N, R59W	6,8	Sanborn
Johnson Creek	James River	Fulton Dam	6,8	Hanson
Lonetree Creek	James River	S31, T98N, R58W	6,8	Hutchinson
Dry Creek	James River	confluence with its north and south branches	6,8	Hutchinson
North Branch Dry Creek	Dry Creek	S27, T99N, R61W	6,8	Hutchinson
Morris Creek, also known as Dry Run Creek	James River	S10, T104N, R61W	6,8	Davison
Mud Creek (Yankton County)	James River	S.D. Highway 46	6,8	Yankton
Pearl Creek	James River	S8, T109N, R60W	6,8	Beadle
Pierre Creek	James River	S11, T102N, R58W	5,8	Hanson
Plum Creek	James River	S30, T100N, R58W	6,8	Hutchinson
Redstone Creek	James River	S14, T107N, R60W	6,8	Sanborn
Rock Creek	James River	S9, T103N, R59W	6,8	Hanson
Sand Creek	James River	S32, T110N, R66W	5,8	Hand
Twelve Mile Creek	James River	S11, T101N, R60W	6,8	Davison
South Fork Twelve Mile Creek	Twelve Mile Creek	S12, T100N, R61W	6,8	Hutchinson
Wolf Creek (Hutchinson, McCook, and Hanson Counties)	James River	S5, T103N, R56W	6,8	McCook

Numerical Key to Beneficial Uses listed in Table 1 and Table 2:

(1) Domestic water supply waters;
(2) Coldwater permanent fish life propagation waters;
(3) Coldwater marginal fish life propagation waters;
(4) Warm water permanent fish life propagation waters;
(5) Warm water semi-permanent fish life propagation waters;
(6) Warm water marginal fish life propagation waters;
(7) Immersion recreation waters;
(8) Limited contact recreation waters;
(9) Fish and wildlife propagation, recreation, and stock watering waters;
(10) Irrigation waters; and
(11) Commerce and industry waters

PROJECT GOAL

The goal of the Lower James River Watershed Implementation Project was to addresses nutrient, sediment and fecal coliform bacteria loadings to the James River and its watershed/tributaries to attain the goal of restoring and protecting the water quality of the James River and its watershed. Reducing non-point source pollutants in the watershed will improve water quality, improve habitat for upland and aquatic species, and improve the recreational uses of the water bodies located within the project area. Installing BMPs within the watershed will reduce erosion, fecal coliform bacteria, and provide buffers which will prevent nutrients and sediment from entering the lakes and river. In addition, properly installed BMPs will increase the aesthetic quality of the lakes and river and enhance the fisheries for each waterbody.

An estimate of BMPs needed to restore the waterbodies in the watershed to meet the beneficial uses is shown below in Table 2. The practices that needed to be installed were based on the findings from the Lower James River Assessment Project.

Table 2: Estimated Best Management Practices by Acres and Segment

		Segment		
BMP Estimate	Lower James Watershed Acres	Estimate of acres/practices completed	Estimate of acres/practices completed in	Estimate of acres/practices completed in
	2,557,541			
		Segment 1 (1yr)	Segment 2 (4yr.)	Segment 3 (4-10 yr.)
Cropland Management:	50,000 ac.	0	27,500 ac.	22,500 ac.
- Conservation Tillage	42,000 ac.	0	24,750 ac.	17,250 ac.
- Conversion of Cropland to Grassland (Seeding)	1,000 ac.	0	400 ac.	600 ac.
- Filter Strips	300 ac.	0	100 ac.	200 ac.
- Grassed Waterways	700 ac.	0	350 ac.	350 ac.
- Terraces	1,000 ac.	0	500 ac.	500 ac.
- Wetland Restoration	5,500 ac.	0	3,500 ac.	2,000 ac.
Grassland Management:	18,500 ac.	0	10,000 ac.	8,500 ac.
- Rotational Grazing Systems	13,500 ac.	0	6,500 ac.	7,000 ac.
- Riparian Management	5,000 ac.	0	2,500 ac.	2,500 ac.
Animal Nutrient Management Systems:	75	0	15	60
Animal Waste Facility Feasibility Study	100	2	25	72
Animal Waste Storage Facilities (Construction)	75	0	15	60
Animal Nutrient Management Plans	75	0	15	60

PROJECT OBJECTIVES & ACTIVITIES

Objective 1: Provide assistance to local stakeholders to complete a project implementation plan for the lower James River watershed that identifies, quantifies, and schedules needed BMP implementation to restore the James River to full support status of all its beneficial uses.

Task 1: Development of a project implementation plan for the lower James River watershed.

Accomplishments: A steering committee was formed to develop a strategic plan for future project segments, as well as to develop standards and procedures for BMP installations.

A Memorandum of Understanding (MOU) was developed to define the responsibilities and obligations of each district for support and execution of the project between the conservation districts and other project partners.

Objective 2: Install best management practices in critical areas to reduce sediment and fecal coli-form bacteria loadings to the James River.

Task 2: Provide assistance to landowners to complete two animal waste feasibility studies, construct one feedlot, and provide landowners with information for implementing systems to reduce fecal coli-form and nutrient loading.

Accomplishments: Three animal waste feasibility studies were completed during Segment 1. One study was completed on a feedlot on Pierre Creek above Lake Hanson, Davison County. Two studies were completed on feedlots near Twelve Mile Creek in Douglas and Davison Counties. After completion of the feasibility studies, two of the three producers declined to participate in construction of an animal waste system. One of the feedlots on Twelve Mile Creek has shown interest in constructing an animal waste system during Segment 2 of the Lower James River Implementation Project.

Objective 3: Provide BMP and project information to watershed residents, landowners, and members of stakeholder organizations to inform them on project activities and BMP installation, and maintain local support and involvement.

Task 3: Complete an outreach and information campaign.

Accomplishments: During Segment 1, meetings were held in Mitchell, Scotland, and Parkston, addressing the problems and possible solutions to the water quality impairments on the lower James River and its tributaries. Meetings at each of the county NRCS offices were held with producers and land owners present. Many farm operations were visited by the project coordinator and NRCS representatives. In addition, the coordinator spoke at several NRCS functions as well as several Conservation Reserve Enhancement Program (CREP) meetings held throughout the lower James River watershed.

Objective 4: Monitor, evaluate and report project progress.

Task 4: semi-annual and annual GRTS reports, monthly and final project reports.

Accomplishments: Semi-annual and annual GRTS reports have been summated to SD DENR in a timely matter. In addition, a project update is presented to the James River Water Development District Board of Directors at each of their monthly board meetings. James River Water Development District is the lead project sponsor.

PLANNED & ACTUAL MILESTONES

Table 3: Planned Versus Completed Project Activities

Goal/Objective/Task	Milestone		Completion Dates	
	Planned	Actual	Planned	Actual
Objective 1: Project Implementation Plan Development				
Task 1: PIP Development				
Product 1: Project PIP				
Steering Committee Meetings	2	2	Jan/09Mar09	Jan/09Mar09
Practice Manual	1	1	Feb09	Feb09
Memorandums of Understanding (MOU)	11	7	Jan09	Jan09
Project PIP	1	1	Jan08	Jan08
Project Segment 2 PIP	1	1	Sep08	Sep08
Objective 2: BMP Implementation				
Task 2: Animal Waste Management Systems				
Product 2: Feasibility Studies/Design	2	3	Oct08	Oct08
Feedlot Construction	1	0		
Objective 3: Informational Outreach				
Task 3: Information Campaign				
Product 3:				
Web Site Development	1	0		
Newsletter	2	3	Dec08/Feb09/Apr09	Dec08/Feb09/Apr09
Presentations	1	21	Jan09/Feb09	Jan09/Feb09
Press Releases	3	3	Dec08/Feb09/Apr09	Dec08/Feb09/Apr09
Objective 4: Project Reports				
Task 4: Semi-annual, annual, final, and monthly report				
Product 4: Reports Semi-annual, annual, & final reports				
Semi-annual reports	2	0		
Annual report	1	1	Oct09	Oct09
Final Report	1	1	Jun10	Aug10
Monthly reports	12	12		

SPONSORS AND OTHER SUPPORTING AGENCIES

James River Water Development District
- Project Sponsor
- Financial assistance

Environmental Protection Agency
- Financial assistance

South Dakota Department of Environmental and Natural Resources (SD DENR)
- Technical assistance and project administration
- Financial assistance

Davison, Hutchinson, and Yankton County Conservation Districts
- Technical assistance and producer mailings

Natural Resources Conservation Service (NRCS)
- Technical assistance BMP planning

Farm Service Agency (FSA)
- Technical assistance and producer mailings

South Dakota Game, Fish and Parks (GFP)
- Technical assistance

PUBLIC PARTICIPATION

The public was notified of opportunities to participate in the project through press releases, newsletters, public meetings, and facts sheets distributed by mail. Meetings and other public forums were likewise used to inform and educate the public about the project. Attendance at public meetings ranged from 15 to 30 attendees.

ASPECTS OF THE PROJECT THAT DID NOT WORK WELL

Producers with feedlots were not interested in installing animal waste systems. Though several feasibility studies were completed, once the final costs associated to construction were figured, they did not want to participate. It was noted that economic hard times along with a fluctuating livestock market put most producers at unrest.

FUTURE ACTIVITY RECOMMENDATIONS

Continue to work with NRCS and other partners to implement BMPs in the lower James River watershed as illustrated in the PIP for Segment 2. The project is ongoing under Segment 2.

The project sponsor, local conservation districts, and the NRCS should continue to educate and work with local landowners and producers to install BMPs in the lower James River watershed. Hopefully, through funding and information and education, producers and the general public will one day begin to understand that properly installed BMPs will help assure clean water in our lakes and streams, enhance wildlife, and restore/protect highly erodible properties.

APPENDIX A

LOWER JAMES RIVER WATERSHED IMPLEMENTATION PROJECT
SEGMENT 1
EXPENDITURES BREAK DOWN

Lower James River Watershed Implementation Seg. 1

Project Information

Project Officer:	Barry McLaury	Coordinator:	Dave Bartel
Coordinator:	James River WDD Personnel		
Project Type:	Implementation	Control Number:	2008-98
Start Date:	6/3/2008	End Date:	12/31/2010

Grants

Fund Name	Category	Year:	Amount:
319	Incremental	2008	$60,000.00
319	Base	2003	$9,437.81
Total			**$69,437.81**

Advances

Fund Name	Total	Amount Used	Amount Remaining
Total	**$0.00**	**$0.00**	**$0.00**

Funds Allocated

Fund Name	Source	Reimbursable	Matching	Total Amount	Amount Allocated	Amount Used
319	Federal	Y	N	$69,437.81	$110,000.00	$69,437.81
James River Water Development District	Special Districts	N	Y	$30,748.00	$30,260.00	$48,862.41
Local cash	Local	N	Y	$11,250.00	$11,250.00	$0.00
Local In-kind	Local	N	Y	$0.00	$0.00	$0.00
Total				**$111,435.81**	**$151,510.00**	**$118,300.22**

BMP Funding Information

BMP		Allocated	Used	Available
O2-T2 AWMS - Ag Waste System	319	$53,156.02	$14,584.73	$38,571.29
	James River Water Development District	$4,500.00	$0.00	$4,500.00
	Local cash	$11,250.00	$0.00	$11,250.00
O3-T3-Outreach - Information & Education	James River Water Development District	$650.00	$0.00	$650.00
Total For All BMP's		**$69,556.02**	**$14,584.73**	**$54,971.29**

BMP Milestone Information

BMP	Unit	Total Expected	Total Implemented
Ag Waste System	AWMS Constructed	1	0
Ag Waste System	AWMS Designs	2	0
Information & Education	News letters	2	0
Information & Education	Presentation	1	0
Information & Education	Press Releases	3	0
Information & Education	Web Site Development	1	0

Non-Salary Information

Category		Allocated	Used	Available
Administration	James River Water Development District	$6,250.00	$15,814.56	($9,564.56)
Cell Phone	James River Water Development District	$450.00	$0.00	$450.00
Computer	319	$2,000.00	$967.67	$1,032.33
	James River Water Development District	$240.00	$60.00	$180.00
Contingencies	319	$737.00	$16.98	$720.02
Office Space	James River Water Development District	$1,500.00	$2,250.00	($750.00)
Office Supplies	319	$1,093.98	$1,091.39	$2.59
Postage	319	$100.00	$100.00	$0.00
Travel: Vehicle/ Ins./Mileage/Lodging	319	$8,687.00	$8,687.00	$0.00
	James River Water Development District	$1,000.00	$1,453.12	($453.12)
Total		**$22,057.98**	**$30,440.72**	**($8,382.74)**

Salary Information

Category		Allocated	Used	Available
Coordinator	319	$44,226.00	$43,990.04	$235.96
	James River Water Development District	$15,670.00	$29,284.73	($13,614.73)
Total		**$59,896.00**	**$73,274.77**	**($13,378.77)**