303d WATERSHED PLANNING AND ASSISTANCE PROGRAM
SEGMENT 2 CONTINUATION FINAL REPORT

SECTION 319 NONPOINT SOURCE CONTROL PROGRAM

SPONSOR

SOUTH DAKOTA ASSOCIATION OF CONSERVATION DISTRICTS

December 2013

This project was conducted in cooperation with the South Dakota Department of Environment and Natural Resources and the United States Environmental Protection Agency, Region VIII
Grants C998185-03, C998185-07, C998185-08, and C998185-10

EXECUTIVE SUMMARY

Project Title: 303d Watershed Planning and Assistance Project – Continuation (Segment Two)

Grants: C998185-03, C998185-07, C998185-08, and C998185-10

Project Start Date: July 1, 2008 Project Completion Date: July 31, 2013

Funding:	Original Total Project Cost:		$ 2,021,986.00
	Section 319 Grants	FFY 2003	$68,561.00
		FFY 2007	$26,194.18
		FFY 2008	$522,982.49
		FFY 2010	$22,517.31
	Total Section 319 Grants		$ 640,254.98
	Section 319 Expenditures		$ 468,485.50
	Match Accrued		$ 190,456.00
	Other Federal funds		$ 419,418.22
	Total Expenditures		$ 1,078,359.72

SUMMARY OF ACCOMPLISHMENTS

The project goal was:

> "Continue to provide planning, design, and implementation of best management practices in selected 303d listed waterbodies in South Dakota."

The goal was attained by reaching objectives designed to provide information, and technical assistance landowners and local organizations need to implement BMPs using a local-state-federal partnership.

The assistance provided resulted in the design of BMPs that are expected to reduce nonpoint source pollution from animal feeding operations; and restored, protected or stabilized riparian areas and streambank. Since the 303 d project is a planning project with little or no implementation funding, load reductions were not calculated for the project.

OTHER ISSUES

Project outcomes in addition to NPS pollution control include development of a:

- seamless mechanism to move from TMDL development to implementation,
- pool of trained resource specialist to implement 319 projects in South Dakota, and
- a "stronger" local-state-federal water quality partnership in the state.

ACKNOWLEGEMENTS

The 303d Watershed Planning and Assistance Project was developed and completed by a partnership that included local, state and federal agencies and organizations. While the South Dakota Association of Conservation Districts (SDACD) was the most visible because of its role as the lead project partner, the Association could not have successfully completed the tasks included in the workplan and attained the project goal without the participation and support of the partners listed below.

Central Big Sioux Watershed Project – Segment 1&2
City of Sioux Falls
Dakota Central Resource Conservation and Development Council
Ducks Unlimited
East Dakota Water Development District
Lewis and Clark Watershed Implementation Project
Lower Big Sioux Watershed Project – Segment 1&2
Lower James Resource Conservation and Development Council
Lower James River Watershed Implementation Project
Randall Resource Conservation and Development Council
South Dakota's conservation districts
South Dakota Department of Agriculture
South Dakota Department of Environment and Natural Resources
South Dakota Department of Game, Fish and Parks
South Dakota Discovery Center and Aquarium
South Dakota Grasslands Coalition
South Dakota Pheasants Forever
South Dakota State University
Vermillion River Basin Implementation Project
USDA Farm Service Agency
USDA Natural Resources Conservation Service
US Environmental Protection Agency
US Department of the Interior, Fish and Wildlife Service
US Geological Survey

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INTRODUCTION

The completion of projects in Total Maximum Daily Load (TMDL) watersheds would be expected to progress seamlessly from the watershed assessment to development of the TMDL through the implementation of the TMDL. However, this is the exception rather than the norm. Often, a lag occurs between completion of the TMDL and a project to implement the TMDL. This results in a loss of momentum and interest at the local level when nothing seems to be happening to improve an impaired lake or stream. It was hypothesized that making the process more seamless would address the challenge.

Many of the sites that will require construction of best management (BMPs) to reduce nonpoint source (NPS) pollution are known before the watershed assessment is finished and subsequent TMDL drafted. The 303d Watershed Planning and Assistance Project was initiated to provide a mechanism that renders the progression more seamless and "accelerates" implementation of BMPs in areas in 303d watersheds. The project, initiated during July 2003, provided the technical assistance needed to plan, obtain funding for, and construct BMPs in priority areas in waterbodies on the South Dakota 303d list at the time the project was selected for funding.

During the life of the 303 d project, the number of waterbodies assisted was expanded:

- in response to requests from DENR to provide technical assistance in additional TMDL watersheds and needs for assistance identified and
- through assistance added in the continuation project workplan funded during 2010.

Additional workplan changes were made to:

- accommodate changes in assistance identified as the project progressed,
- extend the period for which assistance would be provided by the project, and
- hire consultants to help administer the day to day operations of the project, and
- develop five year strategic plans for priority implementation projects, and
- provide funding for the assistance included in the continuation project workplan.

The TMDL watersheds and other areas served by the project are listed by South Dakota Association of Conservation Districts (SDACD) area in Table 2. The SDACD areas are shown in Figure 2. The table also provides:

- a comparison of the TMDL watersheds and special concern operations identified in the PIP(s) or added at the request of DENR to those served,
- the result/status of TMDL implementation in the watershed and areas served, and
- identifies conservation districts that were provided assistance.

Technical Assistance was provided by project coordinators, private organizations, other state and federal agencies and private engineering firms. The engineering firms designed animal waste management systems in some of the project areas. Nine resource management specialists FTEs were authorized by the first grant award; in segment 2 this number was reduced to 2.5 FTE partial positions for five project coordinators and one administrative assistant. This number of FTEs was carried into the segment two

continuation but the agronomist position was dropped as the Natural Resources Conservation Service (NRCS) provided an agronomist to work with the NRCS Animal Waste Management Team. Also, two consultants were obtained, one to administer the day to day activities of the project as well as proposal and grant writing and a second to develop the five year Strategic plans for the implementation projects and to provide conservation planning technical assistance.

The service areas and specific duties of the specialists varied:

- with the number employed and assistance needs as outlined in the segment two continuation project implementation plans (PIPs) and
- as assistance needs changed during the project period.

The project coordinators worked closely with the conservation districts and other resource management agencies and organizations. The consultants work state wide with all active projects but their main effort was with the implementation projects east of the Missouri River with priority going to those projects associated with SDACD. The coordinators:

- provided technical assistance for the development of NPS strategies and TMDL implementation projects and
- contacted operators who managed sites identified as priorities for NPS pollution control to provide assistance with planning and installing BMPs and
- implementation of BMPs at sites identified as priority areas for NPS control and
- applying for cost share funds.

Assistance provided by the consultants included:

- providing day to day administration of the projects and development of proposals and,
- developing strategic five year plans for identified implementation projects.

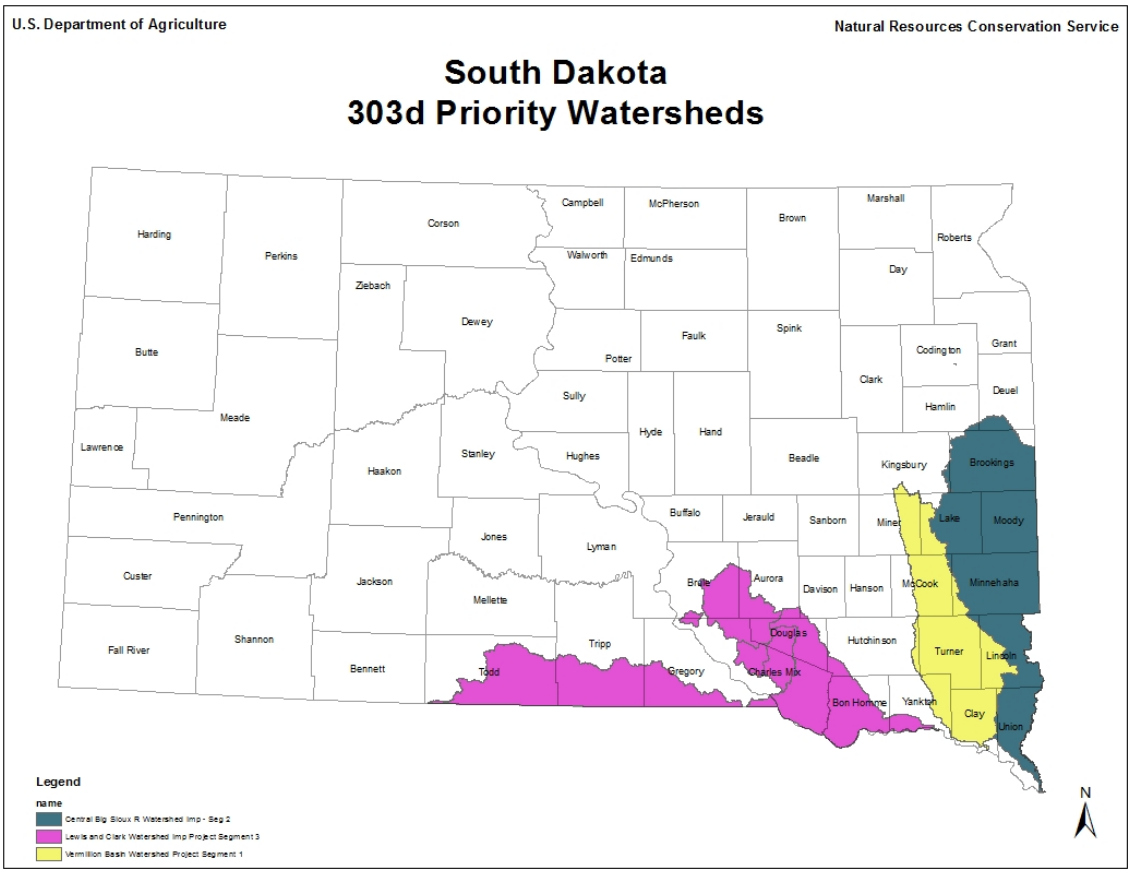
The Lewis and Clark Watershed, Lower Big Sioux River, Vermillion River, and Central Big Sioux River TMDL implementation projects were awarded Section 319 funding through DENR and SDACD to provide the NPS development assistance provided at the local area level. The four watersheds listed above are given priority through the 303d project. However, the 303d project is a statewide project and does work with all of the implementation projects in the state. Figure 1, shows a map of South Dakota with the four priority watersheds identified.

Assistance by the coordinators provided much of the data needed for the nutrient management plans developed for the AFOs assistance void that occurred after the completion of the 319 funded Animal Waste Management Team Project. The coordinators also provided nutrient management plan implementation assistance to operators of existing systems. The assistance included services such as review/revision of existing plans, promotion of soil and manure testing, application equipment calibration and rate calculations, and record keeping.

The principal source of cost share funds accessed for BMP installation was the United States Department of Agriculture (USDA) Farm Services Agency's (FSA) Conservation

Reserve Program (CRP), and Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Conservation Stewardship Program (CSP), and Wetlands Reserve Program (WRP). See Table 5 located in the Coordination and Public Participation section for other sources of cost share funds.

Figure 1: Map of 303d Priority Watersheds



Press releases, direct mailings, a project web site, presentations, displays and personal contacts were used to make and keep producers and the state's residents aware of the project and assistance available. The project web site is located at:

http://www.sdconservation.org

The total project grant increased by $30,000.00 to $640,254.98 with funding of the 2010 Segment 2 continuation project workplan. Required match also increased proportionately with the award of FFY 2010 funds.

During the Project period included in this report:

- $468,485.50 of the $640,254.98 allocated by the segment 2 continuation grant award was expended,
- local project partners and landowners/operators contributed $190,486.00 toward the cost of BMP design and construction and another $419,418.22 from other Federal sources was provided for BMP technical and financial assistance.

The segment 2 continuation grant award included funds from the FFY (federal fiscal year) 2003, 2007, 2008 and 2010 Section 319 Grants awarded to DENR by EPA. All funds from the 2003, 2007 and 2010 grants were expended with $169,744.58 of FFY 2008 funds transferred back to DENR. These funds were for engineering firms to design animal waste management systems which had been removed from the project PIP.

The $190,456.00 contribution (local match) by local project partners and landowners/operators was expended by livestock producers to pay construction costs and engineering fees associated with the construction of animal waste management systems outside of implementation project boundaries.

A comparison of planned versus actual expenditures appears in Table 6 in the Project Budget and Expenditures section of this report.

PROJECT GOAL and OBJECTIVES

Project Goal

The project goal was:

> "Continue to provide the planning, design, and implementation of agricultural best management practices in selected 303d listed watersheds in South Dakota."

The goal was attained by reaching objectives designed to provide the information and technical assistance landowners and local organizations need to implement the BMPs through a local-state-federal partnership. A description of the tasks completed to reach the objectives follows. The description includes a summary of the activities completed to accomplish the task and a comparison of milestones accomplished to planned.

Accomplishments by Task

The South Dakota Association of Conservation districts (SDACD) was awarded one Section 319 grant during the project period. The awards and project implementation plans (PIPs) are hereinafter referred to as segment two continuation project.

The tasks outlined in the segment two continuation project grant award PIP were essentially the same as those for the first grant award with some adjustments and changes. This action was taken because of changes needed in reference to state law, changing attitudes and the economic conditions that exist at this time. The task revisions are summarized in Table 1.

Table 1. PIP Changes – Segment Two Continuation Project.

Continuation Project PIP (FFY 2010)		Segment two (FFY 2008)	
Objective	**Task**	**Objective**	**Task**
1	1 & 2	1	1
2	3 & 4	2	2, 3 & 4
3	5	3	5
4	6, 7 & 8	4	6 & 7
5	9		
6	10 & 11		

Objective 1. Employ project coordinators to assist landowners with planning and installing agricultural BMPs that reduce nonpoint source loading reaching selected 303(d) waterbodies.

Task 1. Maintain a trained project staff.

Milestones: 2008 Grant Award - Six trained, NRCS Certified employees, With 1.5 319 funded full time equivalencies (FTEs) Agronomist and 1.0 319 FTE resource management specialist.

2010 Segment Two Continuation Grant Award – Six trained, NRCS Certified employees, with 0.75 FTE administrative assistant and 1.75 FTE project coordinators. Total = 2.5 FTEs 319 funded.

Accomplished: Project completed within the authorized number of FTE of 2.5. All staff members are trained, and have attended 319 project coordinator training.

The number of FTEs employed varied within the number of 319 funded FTEs authorized for each grant award. Nine were authorized by the first grant award and four in segment two. This was decreased to 2.5 for the segment two continuation. The service area (Figure 2) and specific duties of the FTEs varied with the number employed and assistance needs as outlined in the project PIPs that evolved during the project period.

Staff reductions to stay within the authorized number of FTEs was often possible through attrition. The most common reason an employee left was employment with other watershed projects or conservation agencies. For example, the Natural Resource Conservation Service (NRCS) found project staff members excellent candidates for full time employment because of the training and field experience received during their tenure with the project.

NRCS provided SDACD project employees with access to the agency's training programs, computer support and access to the USDA computer network which includes conservation planning tools. NRCS training included conservation planning, TOOLKIT, cultural resource assessment, nutrient management planning and refresher courses as needed or at least every three years.

Providing a watershed project coordinator was by contractual agreement between the watershed project sponsor and SDACD. In most instances, the staff member had a split appointment with:

- One-fourth to one-half of the FTE being funded by staffing agreements with a watershed project sponsor and
- the remainder through a combination of this project and NRCS Cooperative Agreement funds to provide assistance over a wider area and access to funding and practices not readily available through a watershed project.

The Lewis and Clark, Lower Big Sioux River, Vermillion River, and Central Big Sioux River Watershed projects entered staffing agreements with SDACD.

Project staff members also attended 319 project coordinator training sponsored by the Department of Environment and Natural Resources (DENR). The training included the agency's 319 program strategies, grant management, load reduction determination, and data entry into the tracker system.

Task 2. Hire a project Consultant

Milestone: Hire one consultant

Accomplished: A consultant was obtained to manage day to day operation of the project including work assignments, reports, accomplishments, working with project sponsors on proposals and grant requests. This consultant assisted with the development of the Central Big Sioux PIP when no project coordinator was available and also assisted in the development of two proposals; one for the Mississippi River Basin Initiative and one for the East Dakota Water Development District Wetlands Reserve Enhancement Program that provided an additional 4+ million dollars in water quality funding for eastern South Dakota.

Also, during this time period a second consultant was obtained through funding provided by NRCS to provide Conservation Technical Assistance (CTA) to watershed sponsors and producers. This consultant developed five year strategic plans for the Lower James River Water Quality Implementation project, Upper Minnesota River Watershed project, the Lewis and Clark East River project, the Lewis and Clark West River project and the Vermillion River Water Quality Implementation project. In addition the City of Sioux Falls developed a five year Master Plan for the Central Big Sioux River Watershed during this same period for a total of six five year Watershed Strategic Plans.

Objective 2. Plan/design and assist with arranging for the installation of BMPs in 303(d) Watershed areas.

Task 3. Develop BMP installation plans/designs in target areas identified by assessment projects and /or models.

Milestone: Landowner Contacts
1500 Tier 1 feedlots Contacts (This includes all projects in Eastern SD)

Accomplished: 901 Tier 1 feedlots were reviewed and documented. If additional follow-up was needed the producers were met with and discussions were held on the alternatives available to them if they were interested. The goal of 1500 was not reached since contacts were only counted within the watershed project areas and the watershed areas do not have 1500 Tier 1 feedlots within their boundaries.

Milestones: BMP designs/plans – 100 funding ready (50 will be riparian buffers)

Accomplished: 120 plans were completed for riparian area restoration or enhancements.

Milestones: AWMS designs – 10

Accomplished: Three animal waste storage facilities were designed for projects that were outside existing implementation project boundaries. Part way through this project, 319 funds for AWMS designs were restricted for the project, so additional designs were not completed.

The project coordinators identified sites for AFO design and installation using information provided by DENR and assessment project coordinators. The information provided the location of priority areas (cells) in TMDL watersheds and other service areas. The information was usually in the form of maps generated from the Annualized Agricultural Nonpoint Source (AnnAGNPS) modeling of the watershed. With this knowledge, the project coordinators were able to focus BMP development assistance on sites where maximum load reduction benefits would be realized.

Priority maps provided by DENR and identified priority areas for the following TMDL watersheds:

- Lewis and Clark Watershed Implementation Project East & West,
- Lower Big Sioux Watershed Project – Segment 2,
- Central Big Sioux Watershed Project Segment 2
- Vermillion River Watershed Project, and

Priority areas were also identified by other sources which included:

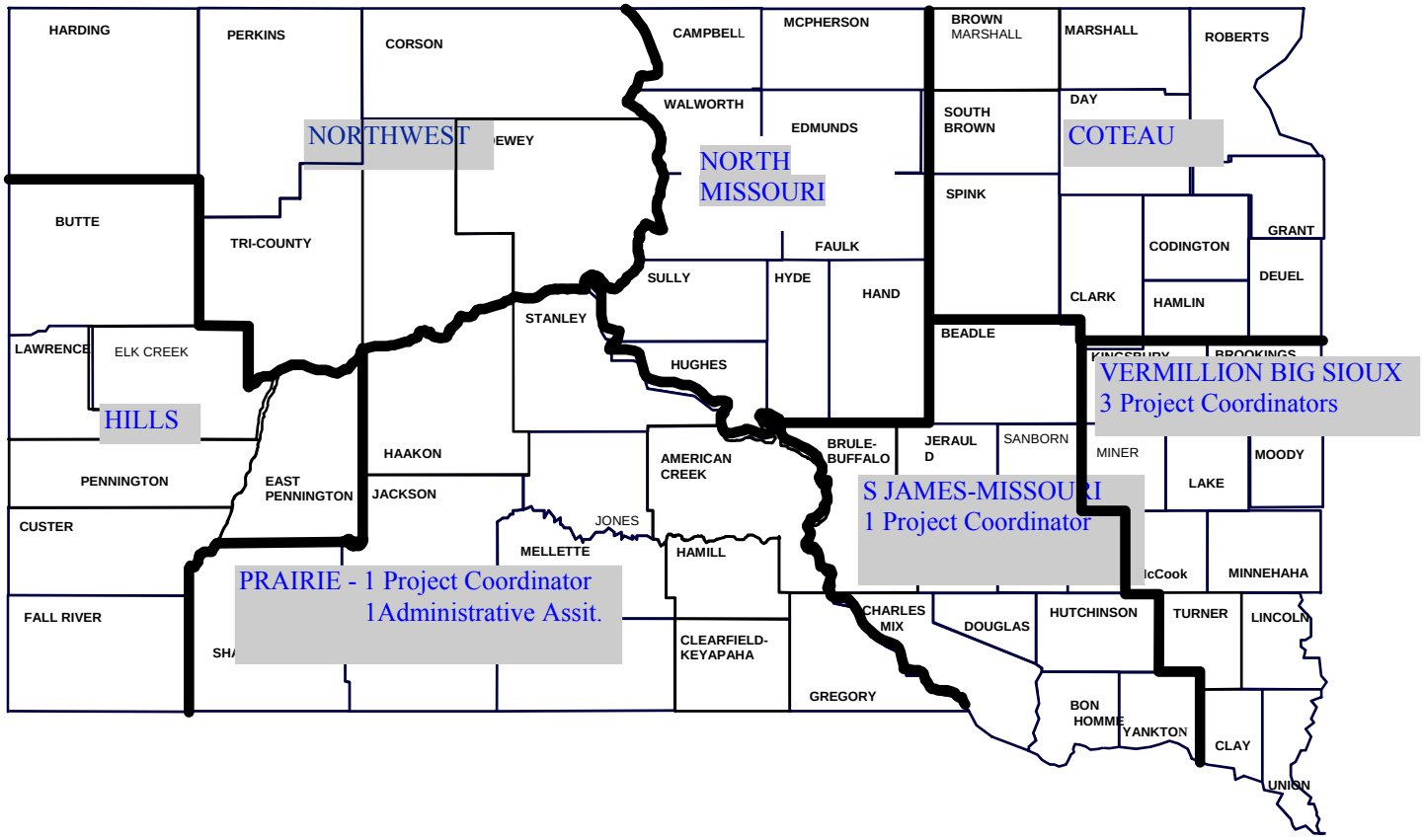
- the Grasslands Management and Planning Project,
- local conservation districts,
- the DENR Surface Water Quality Program, and
- NRCS district conservationists and specialists.

Table 2. TMDL Watersheds and Other Areas Served.

TMDL Watershed/Other Areas by SDACD Area		Included in Project by			Assistance Provided	
Watershed/Other Area	Conservation District	1st Award PIP	2nd Award PIP	DENR Request.	Y/N	Status/Result
Coteau Area						
NE Glacial Lakes Watersheds	Marshall, Roberts			X	Y	NE Glacial Lakes Watershed Improvement Project
AFOs Rosebud Cattlemen's Assoc.	Clearfield-Keyapaha, Gregory, Hamill			X	Y	Added to Lewis and Clark Watershed Imp. Project.
South James Area						
Academy Lake	Charles Mix	X			Y	Lewis & Clark Watershed Implementation Project developed
Lake Andes	Charles Mix	X				
Lewis & Clark Assessment Project	Charles Mix,		X	X		
Corsica Lake	Douglas	X				
Dante Lake	Charles Mix	X				
Geddes Lake	Charles Mix	X				
Lake Platte	Charles Mix	X				
Lower James River Watershed Project	Aurora, Hutchinson, Yankton		X	X		
Vermillion/Big Sioux						
Lake Preston	Kingsbury	X			Y	Turkey Ridge Creek/Vermillion River Basin Implementation Project developed.
Lake Thompson	Kingsbury	X				
Turkey Ridge Creek Watershed	Turner			X		
Vermillion River Watershed	Clay, McCook, Union			X		
Whitewood Lake	Kingsbury	X				Delisted
Central Big Sioux River Corridor						
AFOs – Watertown to Brandon	Brookings, Clark Codington, Deuel, Hamlin, Lincoln, Moody, Minnehaha	X			Y	Provided assistance to Central Big Sioux Watershed project.
Lower Big Sioux River	Union, Lincoln			X	Y	Lower Big Sioux Watershed Implementation Project developed.
Statewide						

* Referred by DENR for determination of complaint validity and to offer options for voluntary compliance.

Figure 2: TMDL Watershed Service Areas



The project coordinators and other specialists worked closely with the conservation districts and other resource management agencies and organizations to ensure priority projects were undertaken.

Practices used to develop the BMPs are listed in Table 3. Descriptions of the practices are found in the USDA FSA standards for the conservation practices and NRCS electronic Field Office Technical Guide (fotg). The guides are available by accessing fsa.usda.gov and nrcs.usda.gov respectively.

Table 3. Practices Used to Develop BMPs.

BMP	Conservation Practices
Ag Waste System	313[2], 342, 350, 362, 380, 382, 500, 590
Critical Area Planting	342, 380, 393, 412, 515, 595, 612
Grazing Management	314, 328, 380, 382, 472, 512, 516, 528, 595, 612, 614, 642
Wetland Restoration	327, 342, 382, 393, 472, 644, 657, 659
Wetlands Constructed	CP8[1]
Clean Water Diversion	342, 362
Nutrient Management	328, 595, 590
Sediment Trap	350
Riparian Restoration/Protection Includes Bank Stabilization	CP5A,CP8A,CP16,CP18B, CP21, CP23, CP23A,CP25, CP27, CP28,CP30, CP33, CP36, CP37,CP38E

1 See Appendix B for Key to Practices. All Conservation Practices funded by Conservation Reserve Program. = CP + 1 or 2 digits[1]. Conservation practices funded through NRCS = 3 digits[2].

Task 4. Project staff will assist with development of a funding package.

Milestones: Funded and installed 16 BMPs outside project areas
10 designs/funding applications for AFOs

Accomplished: 26 BMPs were installed and 2 AWMS were installed outside Implementation project boundaries prior to funding being restricted.

Milestones: AWMS (AFOs) 10 Funded and installed

Accomplished: Total – 2 funded and installed. While the goal for BMPs was met the goal for AWMS was not since 319 funding for this activity was restricted for the project part way through the funding period. Pictures of the two AFO systems that were installed in Gregory County are attached as Appendix D.

Examples of cost share fund sources accessed for all BMPs include:

- USDA Farm Services Agency's (FSA) Conservation Reserve Program (CRP)
- USDA Natural Resources Conservation Service's (NRCS) Environmental Quality Incentive Program(EQIP), Wetlands Reserve Program(WRP), Wildlife Habitat Incentive Program (WHIP), and Grasslands Reserve Program (GRP)
- South Dakota Natural Resources Conservation Grants
- Section 319 Implementation Project Grants
- SD Pheasants Forever
- US Department of Interior (USDI) Fish & Wildlife Service Wildlife Programs (North American Wetland Conservation Act and Partners for Wildlife)
- SD Dept. of Game, Fish & Parks (GFP) wildlife programs
- Ducks Unlimited
- East Dakota Water Development District
- City of Sioux Falls

Objective 3: By June 30, 2012 Develop 5 year strategic plans for five 319 watershed project areas (Lower Big Sioux, Upper Minnesota River, Lewis & Clark, East & West River, Central Big Sioux River, and Vermillion River Basin

Task 5. Develop 5 Strategic Watershed Plans

Milestones: Watershed Strategic Plans - 5
Steering committee/planning group meetings – 15
Practice Manuals – 5
Future Segment Workplans - 5

Accomplished: Six five year watershed strategic plans were developed.

Five strategic plans following EPAs steps of planning were developed for the Lower James River Watershed, The Upper Minnesota River, The Lewis & Clark Watershed East River and the Lewis & Clark Watershed West River, Vermillion River Watershed and a Five Year Master Plan was developed for the Central Big Sioux Watershed in cooperation with the city of Sioux Falls. The Central Big Sioux Watershed Project is also working with the city of Sioux Falls to develop a water quality trading project. The Water Quality Trading project has been funded through the NRCS National Conservation Innovative Grants (CIG) program. Each plan contains a list of BMPs that can be used to improve water quality in the watershed and to provide needs for future segment workplans. Steering committee/planning group meetings were conducted as needed while the plans were being developed. The number of meetings by watershed are as follows: Lower James River -3, Upper Minnesota River -2, Lewis and Clark East and West River -2, Vermillion River -0, and Central Big Sioux Master Plan -8 for a total of 15. Additional meetings are scheduled for the watershed plans that were completed shortly before this segment of the project ended.

Objective 4. Implement a Public Outreach Program

Task 6. Create an awareness of project goals and objectives through media presentations using local news sources, mailings, and web based information.

Milestones: Workgroup meetings - 6
News articles - 8

Accomplished: Workgroup meetings – 8
News articles - 2

While the workgroup meetings were accomplished, the use of news articles was not. In future segments additional emphasis will be put on using the news media to provide outreach to the public. An outreach program was used to inform producers and the state's residents of the project and assistance available. Outreach activities included: a project web site, presentations, displays, workgroups meetings and personal contacts. The activities are described below:

Two articles were the result of interviews initiated by the Sioux Falls Argus Leader. The Argus has the largest circulation of papers in SD, reaching readers across the state. The articles were about water quality and health of Big Sioux River Watershed. An example of a news article from the Tri State Neighbor for the Central Big Sioux River project is attached as Appendix C.

Displays or presentations were set-up or given at several events sponsored by resource management agencies, conservation districts, resource conservation and development councils, and commodity groups and at universities, technical institutes, range clinics and farm shows.

Cold calls were found to be more effective than direct mailings in creating awareness that resulted in BMP installation. Direct contacts made using a referral from a conservation district, producer group or USDA agency increased the likelihood the contact would result in a BMP being planned and installed.

During the project period, staff attended meetings sponsored by workgroups, and organizations to assist with planning activities and provide information about how to access assistance available through the project. Workgroup planning sessions were most often held to assist conservation districts and watershed project steering/advisory committees with project development and implementation. Project staff provided presentations or displays at the SDACD area meetings, producer group meetings, USDA State Technical Committee and subcommittees, SD NPS Task Force, and range clinics.

A project web site was developed and periodically updated during the project period. Site design and maintenance was completed by SDACD's web master. The web site is located at:
http://www.sdconservation.org

Persons accessing the site were able to learn about the project, technical and financial assistance available, how to request assistance, and other sources of resource management information.

The site was:

- activated September 9, 2001,
- available except for brief periods when offline for maintenance.

While data is not available to assess how effective a tool the web site was relative to project success, project staff reported that producers have told them that they learned about the project and requested assistance with BMP planning and installation after accessing the web site.

Task 7: Develop a "Zero Phosphorous" program targeting urban property owners.

Milestones: Review existing legislation to determine if statewide regulation is a possibility under current law. Develop educational materials, news articles, mailing targeting city government, urban and lake property owner and update the web page.

Accomplished: The legislation was reviewed but upon review of current state law and legislation it was determined that the state of South Dakota cannot regulate nutrient use therefore this item was put on hold for the remainder of the Segment Two Continuation Project.

Task 8: Develop Riparian Buffer Zone overlays from stream beneficial uses defined in South Dakota Administrative Rule 74:51:03:02.

Milestones: Develop 28 maps with county overlays for (Todd, Tripp, Gregory, Charles Mix, Bon Homme, Yankton, Clay, Union, Lincoln, Turner, Hutchinson, Douglas, Aurora, Davison, Hanson, McCook, Minnehaha, Moody, Lake, Miner, Sanborn, Jerauld, Kingsbury, Brookings, Deuel, Hamlin, Grant, and Codington).

Accomplished: The 28 maps were completed and distributed by DENR to the identified counties to be used to help prioritize projects in the highest priority areas.. The maps have just recently been distributed so at this time we are not able to identify the effect it has had on helping implement the highest priority projects.

Objective 5: Develop a Standard Operation Procedure (SOP) for water quality monitoring during implementation projects.

Task 9: Establish local level baseline data (impairment parameter) before BMP installation, determine success of BMP implementation on water quality goals/reductions, determine if the overall water quality goal (TMDL) was achieved based on initial assessment, train project officers and coordinators and incorporate into workplans for all active implementation projects.

Milestone: Develop a Standard Operating Procedure (SOP) for water quality monitoring during implementation projects.

Accomplishments: Due to the lack of trained water quality monitoring staff and lack of funding this task was not accomplished. Future projects will look at alternatives to implement this activity into all implementation projects.

Objective 6: Document and report project progress and success in attaining project goals.

Task 10: Monitor project progress and evaluate project. Project progress will be monitored to determine the water quality impact of the project and to provide information to DENR to plan future watershed activities. The location of BMPs designed and installed will be mapped and provided to DENR.

Milestones: BMP location maps
Load reductions
Annual and mid-year GRTS reports
Final report

Accomplished: BMP location maps were developed for the 3 AWMS that were designed outside implementation project boundaries. No load reductions were identified since load reductions were removed from the PIP early in the segment two continuation. Load reductions for these projects were reported with the implementation projects loads for that project area. All required reports were submitted.

Information was collected to monitor progress toward meeting workplan milestones, prepare reports and build partnerships; and evaluate success in attaining the project goal. Information collected is included with the related task or report section indicated below unless otherwise indicated elsewhere in this report.

Project activities monitored included:

- On-farm visits and landowner/operator contacts (Task 3),
- News releases and other media contacts (Task 6),
- Project expenditures (Budget Section),
- Local cash match and in-kind contributions (Budget Section),

Reports prepared using the information included mid-year and annual GRTS reports, progress reports for SDACD's project partners and a final report. The mid-year and annual reports were prepared using a format provided by DENR.

Maps showing the location of the BMPs installed as a result of assistance provided by project staff and Tier 1 contacts for all the implementation projects are shown in Figures 3 & 4.

Task 11: Prepare a final report using guidance provided by DENR.

Milestone: Final Report submitted by October 1, 2013

Accomplished: Final report for the Segment Two Continuation Project period as amended submitted

The report was completed and submitted on schedule using guidance provided by DENR. The submission included both a print and an electronic copy.

The association's project partners were notified that the report is available by accessing the DENR web site using the association's communications network. The network includes electronic messages to the conservation districts and organization and agency partners and reports.

Figure 3: Non-federally Funded BMPs

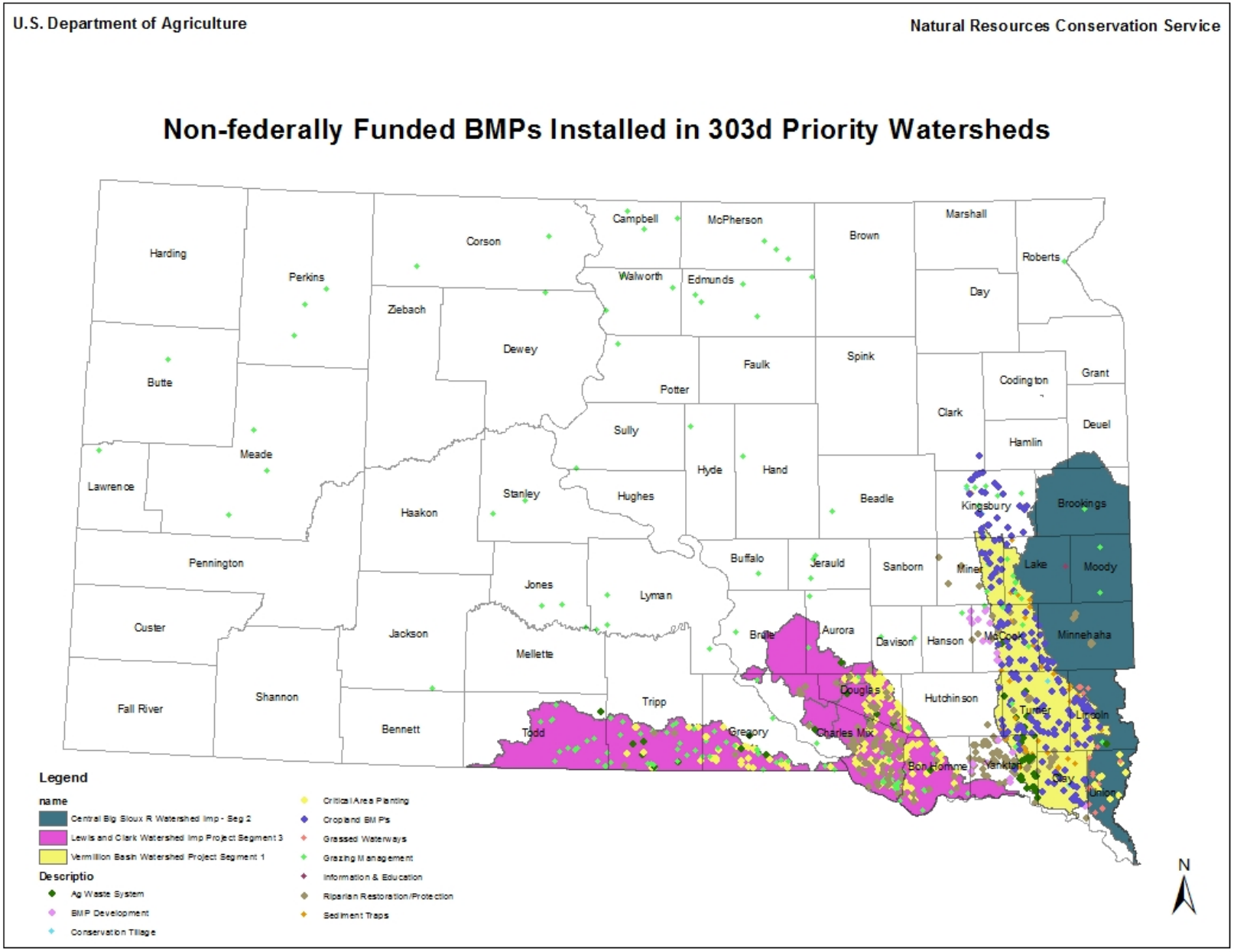
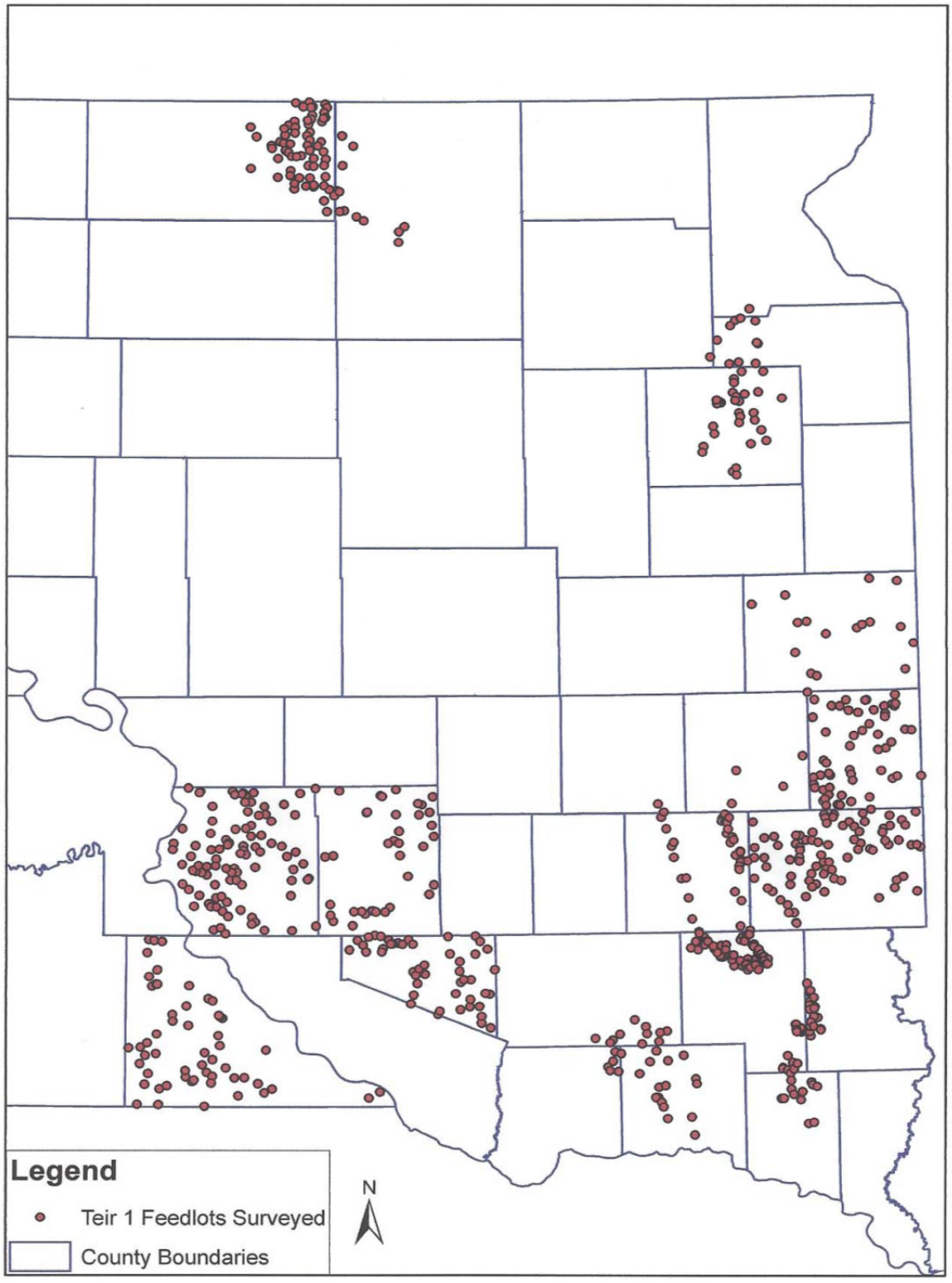


Figure 4: Tier 1 Contacts in Eastern South Dakota Implementation Projects



EVALUATION AND RELATIONSHIP TO NPS MANAGEMENT PLAN

Evaluation

As shown in Table 4, the milestones established to evaluate project progress and success were met or exceeded for all tasks with the exception of Tier 1 contacts, design and construction of AWMS, development of the Zero Phosphorus program and development of the SOP for monitoring. See the written text for descriptions of any milestones.

Table 4. Planned Versus Accomplished Milestone Comparison.

Milestones by Task	Goal	Accomplished
Objective 1		
Task 1- NRCS certified staff		
319 funded FTEs	2.5	2.5
Number of FTEs	6	NA
Task 2- Hire a Project Consultant		
Funded by 319	1	1
Funded by other sources	1	1
Objective 2		
Task 3- Develop BMP installation plans/designs		
Tier 1 Contacts	1500	901
BMP designs/plans	100	120
Task 4- Develop AWMS Designs & Plans Installed		
Designs/Plans	10	3
AWMS Constructed	10	2
Objective 3		
Task 5- Develop 5 Yr. Strategic Plans		
5 yr. Strategic Plans	5	6
Practice lists	5	6
Future Segment Workplans	5	6
Steering Committee/planning mtgs.	15	15
Objective 4		
Task 6- Implement Public Outreach		
Work group meetings	6	8
News Articles	8	2
Web page update	1	1
Task 7- Develop Zero Phosphorus Program		
Review existing legislation	1	1
Task 8- Develop Riparian Zone Overlays		
County overlay Maps	28	28
Objective 5		
Task 9- Develop SOP for Monitoring		
SOP	1	0
Objective 6		
Task 10- GRTS and Final Reports		
GRTS Reports	6	6
Task 11- Final Report	1	1

Relationship to the SD NPS Management Plan

Activities completed during the project period supported attaining the goal of the SD NPS Program as outlined in the SD NPS Management plan. Examples of support provided by the Watershed Planning and Assistance Project include but are not limited to the following SD NPS Management Tasks:

- Tasks 1 and 7 - Use monitoring data gathered to complete a TMDL for a 303(d) listed waterbody.

- Task 4 – Implement TMDLs within two years of completion.
  Providing the assistance to install BMPs at identified locations prior to funding of implementation projects facilitated the seamless transition from TMDL development to implementation. Doing so supported DENR reaching this management plan milestone.

- Tasks 5 and 14. –Annual GRTS reports with load reduction data.
  GRTS reports were provided to DENR for use in meeting 319 Program reporting requirements.

- Task 8 – Implement clusters of TMDLs on a 12 or 8 digit Hydrologic Unit Codes (HUCs). Assistance provided to local project partners encouraged the development and implementation of TMDLs in clusters using approved BMPs. Several implementation projects for clusters of TMDLs were awarded Section 319 funding during the project period. These included: the Lewis & Clark, Lower Big Sioux River, Central Big Sioux River and Vermillion River projects.

- Task 10 – Implement multiple TMDLs for several waterbodies across county and conservation district boundaries using financial and technical assistance from federal, state and local project partners sources to expand the TMDL implementation capabilities of the SD NPS Program.

BEST MANAGEMENT PRACTICES DEVELOPED OR REVISED

The project was designed to facilitate the implementation of BMPs in TMDL watersheds. Therefore, development of BMPs was not a planned product or an outcome of the project. However, an effective method of using a state/local/federal project partnership to implement BMPs more efficiently was developed and field tested.

The mechanism provides a template for how a local – state - federal water quality improvement partnership can be moved to a “higher level”. While DENR, the SD Conservation Commission, SDACD and NRCS have a record of cooperation that maximizes BMP installation, the training, certification, access to TOOLKIT and PROTRACTS, and computer support NRCS provided accelerated installation of the BMPs in priority watersheds. Accelerated installation of the BMPs supports progress toward attaining water

quality and other environmental goals for the partnership's respective programs. Among these are the:

- SD NPS Management Plan and TMDL implementation,
- USDA Clean Water Action Plan, and
- Vision for conservation outlined in *Today and Tomorrow: A Vision to Conserve South Dakota" Natural Resources* developed by SDACD and the SD Conservation Commission.

MONITORING RESULTS

Monitoring Activities

Monitoring activities outlined in the project PIPs centered on documentation of activities completed and calculation of load reductions from the BMPs installed. The monitoring activities completed are described in Objective 6, Task 10, in the Project Goal and Objectives section of this report.

Load Reductions

Responsibility for calculating load reductions shifted from DENR to the project sponsor with the award of the continuation project grant. As designated by DENR, STEPL was used by the implementation projects to calculate the load reductions. To facilitate use of STEPL, information was entered in the DENR project management program (Tracker) for the BMPs planned/installed.

Load reduction reports were not submitted for this project. Factors associated with this non-submittal included:

- staff turnover during the early portion of the project period,
- changes in responsibility for calculating the reductions, and
- challenges related to transferring BMP location information.
- absence of implementation funding in the PIP

Water Quality

While water quality monitoring was not a component of the PIP, it is assumed that the 303 d project will help to improve BMP implementation in the active watershed projects. This assumption is based on two factors that BMPs:

- were installed at locations identified as sources of NPS pollution and
- are practices known to reduce NPS loading.

The locations of the BMPs installed were reported to 319 project sponsors and DENR for use in determining water quality improvements in TMDL watersheds and other areas served by the project.

Landowners/operators receiving cost share funds to install BMP are required to maintain the practice for the life of the practice as defined by the program providing the funds. To assist with maintaining the BMP, project staff continued contact with the cooperators after the BMP was installed. Post BMP installation assistance was found to be essential to ensuring the proper functioning, of AWMS and grazing management systems. Both systems require the operator to learn and implement management practices to which they often have had little prior exposure. It has been determined from previous experience that acquiring and putting the skills into action occurs most frequently when onsite assistance is readily available.

COORDINATION AND PUBLIC PARTICIPATION

Coordination

SDACD was the lead project partner. The Association's executive director, with oversight from the SDACD board of directors:

- hired and supervised project staff and contracted with consultants,
- directed implementation of the project workplan, and
- coordinated participation with local, state and federal project partners.

The Association coordinated activities with its project using one-on-one contacts, reports and presentations at meetings sponsored or hosted by:

- Local workgroups
- Agricultural commodity groups
- Conservation districts
- SD Association of Conservation Districts
- Water development districts
- South Dakota State University Cooperative Extension Service
- SD Vocational/Technical Institutes
- SD Nonpoint Source Task Force
- SD Conservation Commission
- SD Board of Water and Natural Resources
- Resource Conservation and Development Councils
- USDA Farm Service Agency
- USDA NRCS and the NRCS State Technical Committee and subcommittees

The project partners and contributions to project success are summarized in Table 5.

Public Participation

Objective 4, Task 6 outlines the activities completed to provide opportunities for the:

- residents of South Dakota to learn about the project,
- informing project partners of the services offered, and
- notifying landowners and operators of the assistance available to install BMPs.

The activities completed to provide opportunities for participation were effective as indicated by:

- the requests for services from projects staff,
- technical and financial assistance partnerships developed with other resource management agencies and organizations, and

Table 5. Project Partner Contributions to Success

Agency/Organization	Contribution
Nongovernmental/Local	
SD Pheasants Forever	Financial and technical assistance for BMP installation.
Ducks Unlimited	Technical assistance for BMP installation
Local	
City of Sioux Falls	Financial and technical assistance for BMP planning and construction in the Central Big Sioux River Watershed.
Conservation Districts	Technical assistance for BMP prioritization, and installation; coordinate with local workgroups, host meetings; provide office space and clerical support; Develop SD WBM on Google Earth.
State	
SD Department of Agriculture	Financial assistance through the SD Resource Conservation Grants
SD Department of Environment and Natural Resources	Financial and technical assistance through the NPS Program, project oversight and training.
SD Department of Game, Fish and Parks	Financial and technical assistance for BMP installation and coordinate with SD Pheasants Forever.
Federal	
USDA-Farm Service Agency	Financial assistance for BMP installation through the CRP Program.
USDA-Natural Resources Conservation Service	Financial assistance for BMP installation through Environmental Quality Incentives Program (EQIP), Grasslands Reserve Program (GRP), Wildlife Habitat Incentives Program (WHIP), and Wetlands Reserve Program (WRP) Technical assistance and training for installation of USDA programs, office space and support, access to computer network and programs such as TOOLKIT and PROTRACTS and Cooperative Agreements to provide technical assistance to producers.
USDI Fish and Wildlife Service	Financial and technical assistance for BMP installation through the North American Wetlands Conservation Act and Partners for Wildlife programs.
US Geologic survey	SD WBM on Google Earth Project.
US EPA	319 funding through SD DENR.

RESULTS AND RECOMMENDATIONS

Results

The results of activities completed during the project are:

- presented in previous sections of this report and
- quantified in data tables that summarize the result of project activities.

Anecdotal information and data indicate that:

- A cadre of specialists trained to install water quality BMPs was developed.
- Installation of BMPs in priority cells was accelerated.
- Seven to eight contacts with a producer are the norm needed to development and implement a BMP.
- Based on calculations, the BMPs reduced nonpoint source pollution.
- Seamlessly moving from TMDL development (assessment) to implementation results in maintaining momentum/local support for a TMDL project.
- BMPs installed supported implementation of the project partner's environmental and water quality management plans and policies.
- The milestones used to measure accomplishment were appropriate benchmarks against which to gauge project progress and identify need workplan amendments.
- Tasks completed supported reaching the project objectives.
- The project goal was attained.

During the project period, it was also confirmed, as suggested by results of the 319 funded Animal Waste Management Team Project, that intensive post construction follow -up with owners of a nutrient management systems is essential to the success of the system.

Recommendations

The assistance provided by this project should be continued. The assistance delivery mechanism developed provides project sponsors and resource management agencies with:

- a seamless mechanism to move from TMDL development to implementation,
- specialized assistance such as from the grasslands team and nutrient planners,
- access to trained coordinators for the duration of a watershed project,
- coordination of programs that cost share water quality improvement BMPs, and
- expertise that can be used to mentor other watershed projects.

The benefits outlined above support implementation of the SD NPS Management Plan, the USDA Water Quality Policy and the water quality goals in the South Dakota Conservation Commission's vision for conservation outlined in *Today and Tomorrow: A Vision to Conserve South Dakota's Natural Resources*.

PROJECT BUDGET AND EXPENDITURES

The budget comparison in Table 6 includes only those funds associated with several grant awards. Unexpended funds from prior awards were used during the segment two continuation of the project. All changes to the budget were made with approval by DENR. During the project period:

- Landowners/operators contributed $190,456.00 toward the cost of BMP implementation
- Other federal programs provided financial support for the project. For example, an NRCS Cooperative Agreement provided $203,685.22 for BMP development plans and installation technical support. Also, EQIP funding provided $215,733.00 in funding for installation of AWMS.

Table 6. Project Budget Summary with Planned/Expended Comparison.

Item	BUDGET		EXPENDED	
	319	Other Funds	319	Other Funds
PERSONNEL	**$232,170.00**		**$260,608.85**	**$175,376.42**
Salary	$195,000.00		$219,464.77	$145,103.00
Payroll taxes	$16,069.00		$21,000.04	$16,453.35
Employee Benefits & expenses	$21,101.00		$20,144.04	$13,820.07
TRAVEL	**$39,911.00**		**$21,164.41**	**$13,685.64**
Vehicle Lease	$15,500.00		$15,400.00	$8,122.33
Fuel/Oil/Repairs	$15,500.00		$4,434.66	$1,956.50
Vehicle & Liability Ins.	$5,911.00		$1,329.75	$3,606.81
Lodging/Meals/expenses	$3,000.00		$0.00	$0.00
ADMINISTRATION	**$49,329.00**		**$39,345.44**	**$14,623.16**
Office supplies/Phone/Postage	$5,451.00		$10,034.35	$150.62
Office space w/furniture	$9,000.00		$0.00	$0.00
Administrative assistant/Audit	$34,878.00		$29,311.09	$14,472.54
COMPUTER SUPPORT	**$5,000.00**		**$0.00**	**$0.00**
Computer lease & Maintenance	$5,000.00		$0.00	$0.00
Software & ARC View upgrade	$0.00		$0.00	$0.00
CONSULTANT SERVICES	**$128,756.00**		**$147,366.80**	**$0.00**
Consultants & expenses	$128,756.00		$147,366.80	$0.00
Strategic Plans	$0.00		$0.00	$0.00
Public Outreach	$0.00		$0.00	$0.00
PRACTICE IMPLEMENTATION	**$3,320.00**		**$0.00**	**$406,189.00**
Cultural Resource Assessments	$0.00		$0.00	$0.00
Engineering	$3,320.00	$37,500.00	$0.00	$0.00
Nutrient Management Plans	$0.00		$0.00	$0.00
AWMS/BMPs	$0.00	$760,000.00	$0.00	$215,733.00
BMPs Outside Project	$0.00	$736,000.00	$0.00	$190,456.00
TRAINING	**$10,000.00**	**$20,000.00**	**$0.00**	**$0.00**
TOTAL	**$468,486.00**	**$1,553,500.00**	**$468,485.50**	**$609,874.22**
			Total	**$1,078,359.72**

CONCLUSIONS

The data collected using monitoring activities and anecdotal information recorded support the conclusion that the workplan activities, as amended, resulted in

> "Accelerated planning, design, and implementation of best management practices in selected 303d listed waterbodies in South Dakota."

The project goal was attained.

Attaining the goal facilitated moving a local - state - federal partnership to a "higher" level which:

- better coordinates and supports the implementation of local, state, and federal resource management organizations' and agencies' water quality management plans and policies,
- provides a mechanism to seamlessly move from TMDL development to implementation, and
- develops a pool of trained resources specialists to:
    1. sustain the accelerated implementation of BMPs in TMDL watersheds and
    2. coordinate projects for local sponsors.

APPENDIX A

First Grant Award PIP Objectives and Tasks

Objective 1. Recruit, hire and train a cadre of eight resource management specialists and their supervisor to assist landowners with planning and implementation of agricultural practices to reduce nonpoint source loadings to selected 303(d) listed water bodies

Task 1 Recruit, interview, hire and employ nine staff for this project.

Task 2 Train project staff in NRCS planning techniques and documentation practices so that plans prepared will be certifiable by NRCS for USDA funding.

Objective 2. Implement progressive targeting to abate nonpoint sources of pollution in watersheds of selected 303(d) water bodies.

Task 3. Set initial target areas for agricultural BMPs in each watershed based on current DENR assessment information, expected practice funding and priority rankings, and local conservation district and USDA staff knowledge of sources.

Task 4. Refine BMP targeting in project watersheds as DENR provides results of ANNAGNPS computer modeling and TMDLs.

Objective 3. Accelerate the planning, design, and implementation of agricultural BMPs in watersheds with selected 303(d) waterbodies.

Task 5. Create an awareness of project goals and objectives through media presentations in local news sources and mailings, and web based information. Staff will also attend and make presentations at meetings of local work groups, USDA State Technical Committee, NPS Task Force, Conservation Commission , etc.

Task 6. SDACD will Contract with one or more engineering firms to provide engineering design, including comprehensive nutrient management plans for 90 animal feeding operations (AFOs).

Task 7. Contact owners and operators of lands targeted in Objective 2 to explain the project mission, services available, and funding opportunities as well as the potential of their operation to contribute pollutants to the impaired waterbody.

Task 8. Provide planning of BMPs, excluding the 60 AFO designs in the vermillion – Big Sioux resource area, in the six regions to reduce nonpoint source pollution which will meet landowner/operators needs and meet USDA standards. Assistance will include help in providing adequate documentation to apply for USDA funding.

Task 9. Funding and installation of approximately 90 percent of the plans developed in Task 8.

Task 10. In the Central Big Sioux River Corridor, design through consulting engineering firms, sixty animal waste systems and comprehensive nutrient management plans for AFOs and prepare funding applications. This project will provide 85% of the cost share of design.

Task 11. Funding and installation of approximately 90% of the plans developed in Task 10.

Objective 4. Document project progress and success in meeting TMDL goals.

Task 12. Produce a map of the location of all BMPs that have been funded through the specialists efforts and, if possible, installed through other efforts using ARC View and TOOLKIT and provide this information to DENR for load reduction analysis.

Task 13. Provide Semiannual project status reports to DENR for GRTS input and to SDACD areas. The reports shall quantify the results that have been achieved by each of the seven SDACD areas as well as the overall achievements of the project.

Task 14. Produce a project final report meeting the Region VIII final report guidance.

Objective 5. Assist conservation districts in preparing strategies to abate nonpoint source problems in other 303(d) listed water bodies.

Task 15. As requested by individual conservation districts, resource management specialists may assist the district in formulating strategies, finding resources and drafting applications for projects to abate nonpoint source water pollution in 303(d) water bodies not addressed specifically elsewhere in this project work plan.

APPENDIX B

Key to FSA Conservation Practices

CP5A	Field Windbreak
CP8	Grass Waterway
CP8A	Grass Waterways
CP16	Shelter Belt
CP18B	Establish Permanent Vegetation to Reduce Salinity
CP21	Filter Strips
CP23	Wetland Restoration
CP23A	Wetland Restoration - Nonflood plain
CP25	Rare Declining Habitat (Prairie Ecosystem – Tall Grass)
CP 27	Farmable Wetlands – Pilot Wetland
CP28	Farmable Wetland Buffer
CP30	Marginal Pastureland Wetland Buffer
CP33	Upland Bird Habitat Buffer – Bob White Quail
CP36	Prairie Pothole Duck Habitat Initiative
CP37	Duck Nesting Habitat Initiative
CP38E	Habitat for Upland Birds (CRP SAFE)

Key to NRCS Conservation Practices

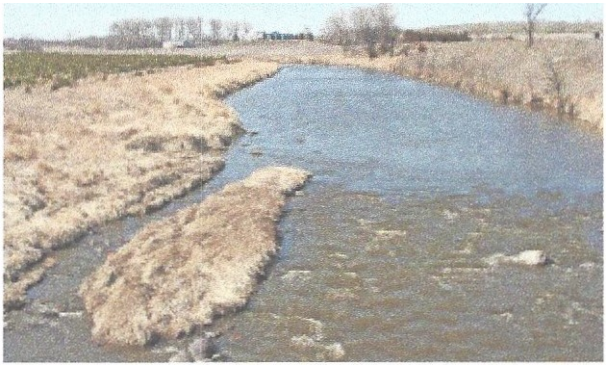
313	Waste Storage Facility
314	Brush Management
327	Conservation Cover
328	Conservation Crop Cover
342	Critical Area Planting
350	Sediment Basin
362	Diversion
378	Pond
380	Windbreak or Shelterbelt Establishment or Renovation
382	Fence
393	Filter Strip
412	Grassed Waterway
472	Access Control
500	Obstruction Removal
512	Pasture and Haying
516	Pipeline
528	Prescribed Grazing
590	Nutrient Management
595	Integrated Pest Management
612	Tree/Shrub Establishment
614	Watering Facility
642	Water Well
644	Wetland Wildlife Habitat Management
657	Wetland Restoration
659	Wetland Enhancement

APPENDIX C

Tri-State NEIGHBOR

Small S.D. creek targeted for big Improvement

MAY 31, 2013 9:57 AM • BY BARRY AMUNDSON, REPORTER



Skunk Creek, which starts at Brant Lake in South Dakota's Lake County, meanders through Minnehaha County and feeds into the Big Sioux River in Sioux Falls, is a focus for water quality programs.

Noted in water monitoring studies for high levels of bacteria and suspended solids that put it in an impaired waterway category, the Natural Resource and Conservation Service (NRCS) has put the creek and its watershed on its national list to improve water quality.

"This area is getting national attention," said Barry Berg, who is coordinator for a major effort to help clean up the Big Sioux River and its tributaries from the northern Brookings County line down to where the river dumps into the Missouri River in North Sioux City.

"Washington (D.C.) is looking at it, and we're looking at it," he said of the effort involving local, state and federal officials and funding from those sources.

The effort is part of what NRCS calls its National Water Quality Initiative, and it's the only such project being funded in the state.

What it means to farmers in the watershed is that targeted financial and technical assistance is available if they want to participate voluntarily in the effort to improve water quality and aquatic habitat. Other agencies also are helping in financing, which could boost aid levels.

The aim is to "de-list" the creek from the impaired category and place it back in the "limited contact" listing under which the creek could be used more for recreational activities and the drinking water for thousands in the Sioux Falls area would be improved.

Meanwhile, the Big Sioux River from Dell Rapids to Brandon also is impaired and listed for a higher "immersion" standard under which it can be used for more recreational activities such as swimming.

So the questions are many about Skunk Creek: Is it a success story building? How bad is its water? What can be done to help?

The answers lie in large part in whether the goal of de-listing the creek can be reached.

Success ahead?

So is success ahead? Jared Oswald, an engineer for the RESPEC consulting firm from Rapid City, S.D., who has completed and continues to do extensive research on the Big Sioux and its tributaries, said that question might not be answered for a few more years, maybe longer.

"It's a relatively good stream, but there's work to do on it," said Oswald, who – like many officials involved in the project – is from a farm and still has family involved in farming operations. That means he understands the agricultural side of the equation and the problems that exist there.

Oswald is helping wrap up another study of the creek and river watershed that is due out in the next few months – one that will be more specific about where problems exist and what can be done to improve the water quality.

Deron Ruesch, NRCS district conservationist for Minnehaha and Lincoln counties, said he "definitely" thinks the creek is a success story in the making.

He said the national initiative being used to fund extra work along the creek just got started last year, so "time will tell."

Last year, NRCS approved 11 applications for projects in the Skunk Creek watershed for $1.3 million in funding. Work on those efforts is just starting this year.

This year, because of budget cuts floating down from Washington, D.C., 14 projects are pending final approval for about $497,000, a reflection of how tight federal dollars are at this time.

Berg, another main player in implementing projects along the creek and river, is excited about the effort and thinks success will come eventually.

He not only is thinking "outside the box" on ways to implement practices but also is thrilled with how all the agencies – both urban and agricultural – are working together and pooling resources to get things done.

"You can get a lot of work done when everybody comes together to utilize funding from all different sources," Berg said.

Why was it chosen?

Many may wonder why Skunk Creek was chosen for national attention. Jeremy Schelhaas, a watershed protection engineer for the South Dakota Department of Environment and Natural Resources, said there are several reasons.

"It was one of those areas where we thought, if we really hit it hard, can we see a change? Also, it's a big water source for the Big Sioux and city of Sioux Falls. Studies from RESPEC have also shown it's a big contributor to fecal standards being violated and is a main source of contamination," he said.

Berg said the number of people in the creek's area of the state was a contributing factor as far as drinking water concerns, and the intense row cropping in this watershed was another factor.

Jay Gilbertson, executive director of the East Dakota Water Development District in Brookings, said Skunk Creek moved to the "front of the line to address problems it had and problems it was passing along to the Big Sioux River."

How bad is the water?

New numbers will come out soon in the new RESPEC study on the "fecal coliform bacteria" load in the creek, and Gilbertson said testing from the creek area is resuming this spring.

To get on the impaired water list, Oswald said 10 percent of water quality samples over a five-year period have to exceed standards.

The high amounts of fecal coliform and suspended solids limit contact recreation and affect fish and wildlife habitat.

Although data from the state on levels are difficult to interpret in many reports, Oswald said that as far as the bacteria level flowing into the Big Sioux in Sioux Falls, it's about 50-50 between the agricultural-dominated Skunk Creek watershed and the city's storm sewers. A diversion channel takes most of the other water around the city.

The bacteria in the creek obviously comes from warm-blooded animals and possibly from some septic tank systems from humans.

It's hard to determine how much comes from where, Oswald said.

However, both Gilbertson and Oswald said wildlife plays a role in the bacteria levels, including such animals as deer, raccoons and rabbits.

In South Dakota, however, livestock play a major role in the levels because in many areas it's the only game in town. "In a state where ag. is huge, it's not really a big surprise," Gilbertson said.

As for urban runoff, it's largely from pet waste and wildlife, Oswald said.

Farther downstream in the Big Sioux, the effects from the Sioux Falls wastewater treatment plant play a role in contamination of the water.

What's being done?

In urban areas, detention ponds can be a benefit for controlling runoff into the river.

In the countryside, Berg, in following his outside-the-box mode, has helped develop a program called the Seasonal Riparian Area Management (SRAM). The pilot program keeps cattle from grazing along the creek in enrolled land from April 1 to Sept. 30 but lets producers harvest the grass along the creek mechanically and do whatever they want with the hay.

If the grass is at a sufficient level by Sept. 30, the cattle can be put back on the creek pasture to graze until a 4-inch to 6-inch vegetative level is reached. Then cattle must be moved to allow the remaining vegetation to protect the riparian area until the next growing season. Producers are paid $30 an acre per year in a one-time payment for the land enrolled in 10- or 15-year contracts.

Berg compares the program to a customized Conservation Reserve Program (CRP). He said he expects contracts with two producers on 200 acres along Skunk Creek to be completed this spring. He hopes to recruit more producers to join in the effort, which is similar to having a grass strip buffer zone along the water to prevent runoff into the creek.

Cost-share is also available to do fencing and rotational grazing to keep cattle out of the creek buffer strip and provide alternative water sources for livestock.

Most producers opt for rural water hook-ups, which can be the most cost effective, although digging wells is also an option.

Ruesch, meanwhile, outlined the variety of projects that about 16 producers are planning through the NRCS initiative. They include cover crops, converting from conventional to no-till practices on cropland, integrated pest management plans, nutrient management and abandoning a feedlot close to the creek and sharing in costs for a new monoslope barn to contain waste runoff and manage nutrients.

The pest management projects include using new technology and working with a crop consultant to determine more precisely when and how much spraying is necessary as well as automatically shutting off nozzles when spraying along water.

The nutrient management program being funded through the project also involves technology , including soil sampling fields to determine where nutrients are needed most and using variable rate applications.

The monoslope barn cost-share is one of the more costly projects along Skunk Creek, although the payoff also can be huge, Ruesch said. For smaller operations, he said a less expensive alternative is routing runoff across vegetation to catch nutrients and filter releases into water.

Berg noted there are many other options – or "best management practices," as officials call them – in the effort. Although buffer strips along the water are seen as the best way to filter runoff, there are CRP options, permanent and long-term land easements, terraces, no-till or strip tilling, grassed waterways, stream bank protection and waste storage facilities.

Ruesch said he hopes that once they install practices, producers will see such benefits as lower input costs, enhanced productivity and improved soil health of working lands.

Ruesch, whose family farms in Minnesota, knows that finding a "happy balance" between the environment and ag. production is a goal worthy of pursuing, and he believes there are ways to do that.

"Helping people help the land" is the NRCS motto that Ruesch likes to use.

He said one-on-one conversations with producers in the office or at their farm is a good way to discuss options, although NRCS has held educational meetings with Skunk Creek watershed producers. About 65 attended a first meeting in Colton and another 35 showed up at a second meeting.

Statewide last year, NRCS worked on 4,700 plans affecting 1.7 million acres.

With the effort along Skunk Creek, there's a chance to do extra work and perhaps a few years down the road have a model for what can be done to help producers and the public alike with water preservation and quality.

Ruesch noted that even livestock can benefit from better water as it can lead to better health and increased rate of weight gain.

Appendix D:

Photos of AFO Manure Management Systems constructed outside Lewis & Clark Project boundaries (Gregory County)

Johnson system fence line bunks

Johnson Holding Pond

Sperl system debris basin

Sperl holding pond