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Section 319 Nonpoint Source Control Program
Watershed Project Final Report

**Upper Bad River Watershed Water Quality Improvement
And Demonstration Project**

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.

Grant # C9998185-95 & C9998185-97

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Watershed Project Final Report

**Upper Bad River Watershed Water Quality Improvement
And Demonstration Project**

by
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On behalf of the
JACKSON COUNTY CONSERVATION DISTRICT
AMERICAN CREEK CONSERVATION DISTRICT
EAST PENNINGTON CONSERVATION DISTRICT
HAAKON COUNTY CONSERVATION DISTRICT
JONES COUNTY CONSERVATION DISTRICT

February 28, 2000

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EXECUTIVE SUMMARY

PROJECT TITLE: UPPER BAD RIVER WATERSHED WATER QUALITY IMPROVEMENT AND DEMONSTRATION PROJECT

GRANT NUMBER C9998185-95 **GRANT SOURCE** 319(h)

GRANT NUMBER C9998185-97

INITIATION DATE: MARCH 1, 1995

EXPIRATION DATE: FEBRUARY 28, 2000

FUNDING

TOTAL BUDGET \$1,997,197.00

TOTAL EPA GRANT \$614,100.00

TOTAL EXPENDITURES \$1,994,414.32

TOTAL EXPENDITURES OF EPA FUNDS \$453,030.92

REVISIONS _____

TOTAL SECTION 319 MATCH ACCRUED \$1,319,003.51

ACCOMPLISHMENTS

The Upper Bad River Watershed Water Quality Improvement and Demonstration Project was a Section 319 demonstration project designed to heighten awareness of water quality issues in the Bad River, Cheyenne River, White River and Missouri River watersheds in West Central South Dakota. The scope of the project was to demonstrate the benefits of using Best Management Practices to address water quality problems with landowners voluntarily undertaking these practices with incentives from the project.

The project worked with producers on over 5000 acres of cropland to demonstrate the benefits of the Best Management Practices of No Till and Mulch Till. The practices of Grassed Waterways and Terraces were used to demonstrate methods of controlling runoff from cropland. The project also worked with landowners on the management of a 145,000 acres of rangeland and used a wide array of Best Management Practices that would assist in the improvement of grazing management.

The project was a locally led effort sponsored by the local conservation districts of Jackson County, American Creek, East Pennington, Haakon County, and Jones County. The success of this locally lead effort has served as an example and guide for others on how to undertake a project of this magnitude.

OTHER ISSUES

During the project's life, the area experienced server winters and abnormally wet summers that adversely impacted the producer's ability to participate in the project. These weather conditions

Project Activities

INTRODUCTION:

In 1994, an EPA Non-point Source grant application was developed by the South Dakota Department of Environment and Natural Resources in cooperation with the sponsoring conservation districts of Jackson County, Jones County, Haakon County, American Creek, and East Pennington. The application for a water quality improvement and demonstration grant was submitted to the South Dakota Non-point Source Task Force for competitive grant funding in the fall of 1994. During the competitive grant process the overall grant application was approved but the funding was modified to make one half of the approved funds available in March of 1995 with the remaining funds to be requested after the project was up and running. On March 1 of 1995, the Jackson County Conservation District, acting as the lead sponsor, entered into the funding agreement on behalf of the five sponsoring conservation districts.

The approved plan for the demonstration project called for the implementation of numerous best management practices with landowners on a voluntary basis in the Bad, White and Cheyenne River Watersheds over a four year period. The primary goal was to promote and demonstrate the use of these best management practices and heighten the awareness of non-point source water quality problems in these watersheds. The project workplan targeted cropland using the practices of no-till, mulch till, strip cropping, terraces, and grassed waterways. Practices addressing grazing management included fencing, pipelines, tanks, nose pumps, stabilization structures, water spreading, ponds, tree plantings, grass seedings, fabricated windbreaks, grazing systems, range renovations, creek crossing and wells.

CONCERNS AND PROBLEMS:

Problem:

The Bad, White, and Cheyenne Rivers all appear on the State of South Dakota's 303d list as waters which are not supporting their assigned beneficial uses. Sediment is listed as one of the impairments that are preventing these rivers from supporting the assigned beneficial use. The sediment not only has immediate effects on these rivers but also on three of the Missouri River main stem reservoirs; Lake Oahe, Lake Sharpe, and Lake Francis Case.

GOAL AND OBJECTIVES:

Goal:

To heighten the awareness of the citizens of the Bad, White, and Cheyenne River Watersheds of the values of Best Management Practices to improve and maintain water quality, reduce runoff and sustain the resources of the area, and to develop interest of the local citizens in developing watershed projects to treat non-point water quality problems in the three major watersheds.

Objectives:

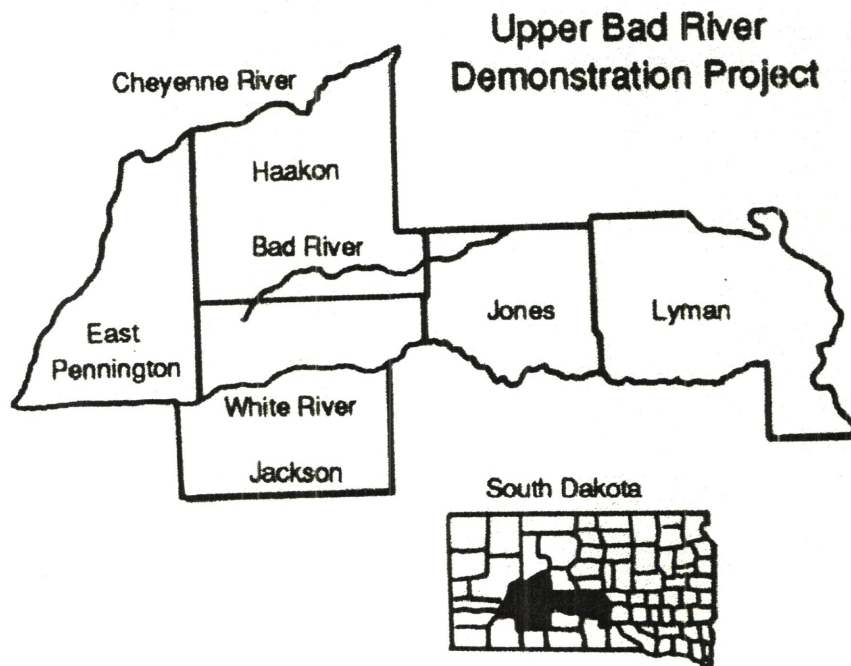
1. To develop or use existing sites within Jackson, Jones, Haakon, Lyman, and the eastern portion of Pennington counties on willing operator land, that demonstrate the techniques and values of cropland residue management, grazing system management, riparian restoration and riparian management.

2. To develop awareness and understanding of the people in the project area of the Bad, White, and Cheyenne River Watersheds on the values, benefits, and opportunities to use BMP's to protect and improve water quality and sustain the resources of the area.
3. To encourage the people in the Upper Bad River Watershed Water Quality Improvement and Demonstration Project to take ownership in this area and develop a team effort to implement and maintain the resources of the area.
4. Provide adequate staff to implement the project.

GENERAL PROJECT DATA:

Location:

The Upper Bad River Watershed Water Quality Improvement and Demonstration Project is located in west central South Dakota and includes portions of the Bad, White, Cheyenne and Missouri River Watersheds. The project area is approximately 4.8 million acres in the counties of Lyman, Jones, Jackson, Haakon, and that portion of Pennington County lying east of the Cheyenne River.



PROJECT ACRES by WATERSHED

County	Bad River	White River	Cheyenne River	Missouri River
Jackson	366,000	833,000		
Haakon	602,966		563,402	
East Pennington	173,064	129,064	508,715	
Jones	363,234	192,123		66,377
Lyman	6,289	253,185		832,891
Total	1,511,553	1,407,372	1,072,119	899,268

Land Ownership:

Land ownership is primarily private along with the federal government holding of the Buffalo Gap National Grasslands, the Fort Pierre National Grasslands and the Badlands National Park.

	Acres
Private Ownership	3,742,315
Federal Ownership	
BLM	17,928
Army Corps	47,730
Forest Service	349,142
National Park Service	114,464
State Ownership	
GF&P	6,759
School Land	38,930
Lower Brule Sioux Tribe	106,444
Oglala Sioux Tribe	417,293
TOTAL	4,841,005

Climate:

The climate for the area is mesic in the east and becomes semiarid as you move west across the project area. The areas average temperatures are around 72 degrees F. during the summer months with the average maximum highs reaching to near 90 degrees F. Winter average temperatures hover near 20 degree F. with the average minimum temperatures dipping into the single digits.

The average annual precipitation for the project area ranges from 15-17 inches with 80 percent falling during the period of April through September. The majority of the runoff comes with the spring melting of snow and ice, and thereafter during the summer months with the development of brief intense thunderstorms.

Project Area Physiography:

The project area physiography is dominantly the Pierre Hills region of the Missouri Plateau, which are generally gently to strongly sloping and moderately steep to very steep along the Bad, White and Cheyenne Rivers. In the western portion of the project the Pierre Hills are comprised of the Pierre and Fox Hills Formations. Along the eastern edge of the project is the Missouri Trench bordering Lake Sharpe and Lake Frances Case. The southwestern area is the Tertiary Table Lands consisting of the Brule and Chadron Formations which are characteristic of the steep walled Badlands and the gentle sloping alluvial fans.

Land Use:

The land use of the project area is 40% cropland and 60% rangeland. There is a larger percentage of land cropped in the eastern part of the project but livestock grazing continues to be the dominant land use throughout the project area. The major crops grown in the project area include winter wheat, spring wheat, corn, sorghum, sunflowers, millet and alfalfa. Rangeland has been historically used for cow /calf operations with sheep and buffalo also being found to a lesser extent. Areas of tame grass pastures are hayed or grazed in conjunction with native rangeland. Ranch and farm size varies typically from 3,000 to 35,000 acres with the largest being over 100,000 acres.

Conservation District	Rangeland acres	Cropland acres	Other acres	Total acres
American Creek	529,790	413,572	149,003	1,092,365
East Pennington	549,335	162,168	99,340	810,843
Haakon	731,701	421,765	12,902	1,166,368
Jackson	984,000	193,000	22,000	1,199,000
Jones	442,519	175,399	3,816	621,734
Total	3,237,345	1,365,904	287,061	4,890,310

PARTNERSHIPS AND FUNDING SOURCES:

PARTNERSHIPS:

The Upper Bad River Demonstration Project was a locally led effort in which landowners voluntarily undertook Best Management Practices that would demonstrate control or reduce runoff and erosion. The project partners who contributed financially or with technical expertise were:

1. Jackson County Conservation District
2. Haakon County Conservation District
3. Jones County Conservation District
4. East Pennington Conservation District
5. American Creek Conservation District
6. US Environmental Protection Agency
7. US Fish and Wildlife Service
8. USDA Natural Resources Conservation Service
9. USDA Forest Service
10. USDA Farm Services Agency
11. US Army Corps Engineers

12. US National Park Service
13. US Bureau of Reclamation
14. Lower Brule Sioux Tribe Wildlife & Recreation Department
15. SD Department of Environment And Natural Resources
16. SD Department of Game Fish and Parks
17. SD Department of Agriculture
18. SD Cooperative Extension Service
19. Badlands Resource Conservation and Development
20. North Central Resource Conservation and Development
21. South Central Resource Conservation And Development
22. Monsanto
23. Ducks Unlimited
24. National Association of Conservation Districts
25. East Pennington Gazing District
26. White River Grazing District
27. Dakota Lakes Research Farm
28. Local Businesses
29. Landowners/Producers

FUNDING:

The project partnerships have been very beneficial to securing funding from a number of sources. The Federal, State, and local programs used to provide financial funding for the project were:

US Environmental Protection Agency

- Section 319 Funding

US Department of Agriculture

- Environmental Quality Incentive Program (EQIP)
- Stewardship Incentive Program (SIP)
- Long Term Agreements (LTA)
- Great Plains Conservation Program (GPCP)
- Rancher to Rancher

US Fish and Wildlife Service

- Private Lands Program
- Riparian Fencing

SD Department of Environment and Natural Resources

- State Water Resources Management System

SD Department of Agriculture

- Conservation Commission Grants

SD Department of Game Fish & Parks

- Wetland Habitat
- Shelterbelt Maintenance
- Fencing

Ducks Unlimited

- Wetland Restoration

Monsanto

- Information & Education

National Association of Conservation Districts

- Information & Education

White River Grazing District

East Pennington Grazing District

- Information & Education

Local Businesses

- Information & Education

As the project progressed there was an identified need and interest to pursue additional funding from these funding sources. This interest has resulted in five EQIP priority areas being developed in the project area with four of these priority areas having been funded. These priority areas were used as well as the EQIP statewide funding in the project area. The EQIP priority and statewide funds were used in combination with project funds or as a stand-alone funding source used to assist landowners. The Fish and Wildlife Service and SD Game Fish and Parks amended the MOU with the project to expand the funding used to develop the practice of ponds. The State Conservation Commission approved a second grant in 1997 enhancing a number of the practices under the original work plan as well as addressing some new identified needs.

LANDOWNER/ OPERATOR PARTICIPATION:

During the project period there were 135 project agreements with 127 producers. Due to time and economic constraints; land sales and practice feasibility, six agreements were cancelled at the landowner's or operator's request.

Table 1

Task	Product	Practice	PIP	Planned	Amended	Implemented
1	1	No-till	2300 acres	2810.9	2762.9	2762.9
	1	Mulch till	1500 acres	2040.3	2040.3	2040.3
	2	Strip Cropping	1000 acres	451.7	451.7	326
	2	Ponds	15	20	18	17
	2	Fencing	158400 LF	262922	257642	167700
	2	Pipeline	42240 LF	226754	203662	167276
	2	Water Tanks	40	113	105	103
	2	Creek Crossings	1	6	4	1
	2	Stabilization Structures	20	17	10	7
	2	Well/Springs/Taps	4	9\2\6	8\1\6	8\1\6
	2	Water Spreading	100 acres	102	0	0
	2	Range Renovation	120 acres	80	20	0
	2	Seeding	400 acres	2759.7	2263	1152
	2	Tree Planting	4500 RR	5563	4977	4557
	2	Hand Plants	0	1308	1865	1262
	2	Waterways	3485 LF	30896	23165	22293
	2	Critical Seeding	100	66.9	40	34.5
	2	Grazing Systems	28000 acres	54441	49911	43319
	2	Riparian Deferment	4000 acres	1006	177	177
	2	Fabricated Windbreaks	6	21	20	20
	2	Fiber Mesh	0 RR	253.5	339.9	239.9
	2	Nose Pumps	0	2	2	2
	2	Terraces	0 LF	4000	1000	1915

In January 1997 the project implementation plan was revised. These revisions were undertaken to adjust for the ending of the Agriculture Conservation Program and the Great Plains Conservation Program, which were phased out in 1996.

The project work plan called for 23 no-till and 15 mulch till demonstration sites which were limited to incentive payments for 100 acres per practice per producer. There were 25 no-till sites developed on 2673 acres and 15 mulch till sites with 2040 acres with the additional acres being undertaken at the landowner's own expense. In a questionnaire done by the project over 90% of the participants indicated that they would continue to use a form of no-till or mulch till. There is a continued interest by new producers for assistance in this arena.

The practice of strip cropping was added during the revision of the work plan and based on interest a projection of 1000 acres was established. The cost share was set at \$3.00 an acre with a 160-acre limit per producer being established. Only two landowners undertook the practice of strip cropping.

Response to the practice of waterways was good with almost ten times the footage outlined in the work plan being projected in the initial producer plans. Through the design process which changed the practice or producers voluntarily canceling the practice due to time limitations and personal economics resulted in 22,293 feet being designed and constructed. Along these same lines there was some interest in cropland terraces resulting in 4000 feet being planned and 1915 feet developed.

The project plans were initially developed with landowner/operators using the holistic approach. The initial holistic planning approach was modified a less intense form of planning that was more of a landowners needs to improve the manage a specific tract of land. These two planning approaches resulted in plans being developed on 170,307 acres to enhance or improve the level of tame grass and range management through the undertaking of various Best Management Practices. It should be noted that the project sponsors recognized the timeline and the funds available to the project would prohibit the completion of all the practices in the plans and that the NRCS Resource Management System would not be achieved in many cases. Some of these producers have plans that have been approved for the Environmental Quality Improvement Program (EQIP). The EQIP funds were being used to bring the overall cost share to around 75 percent on some practices as well as addressing other planned practices. An adjustment in the acres and the cancellation plans resulted in 145,917 acres being planned with 43,496 acres being managed under grazing systems.

Water development practices were very high on the list of practices necessary to achieve good grass management. The practices included 17 ponds, which benefited livestock and wildlife, 167276 linear feet of pipeline, 103 water tanks, and 2 nose pumps. The pipelines and water tanks were served by previously developed water sources in many cases but 15 water sources were developed including wells, springs and rural water hook-ups.

Crossing and stabilization structures had a good response in the initial planning but what the producer had in mind and what was needed was a problem. Factors of practice cost, weather, contractor availability, and the agricultural economy resulted in delays or cancellation of some of the practices. Some of the stabilization structures completed included; diversions, a stream bank stabilization structure, a gabion structure, and a head-cut stabilization.

Rangeland Renovation had limited response, although the landowners recognized the benefits of this practice they also noticed that their cattle tend not to use the area for an extended period after treatment. Also, the practice tends to leave the area extremely rough, which was a problem for vehicles.

The interest in water spreading can only be indicated by the planned acres. In all cases, the practice was dropped or an alternative practice was used due to economics. Generally, this practice although effective was found to be too cost prohibitive for the producer.

Tree plantings were used to protect livestock, enhance wildlife habitat and improve riparian areas. There were 4557 rod rows of trees and 1262 hand plants planted through project. The trees planted as part of the fabricated windbreaks are not reflected as part of this practice.

The practice of fabricated windbreaks was added because of the number of landowners expressing an interest in them. It was necessary that the practice benefited a riparian area or a draw with the idea that landowners could move their livestock out of those areas and still provide protection for the livestock. The steering committee also made the planting of a minimum of two rows of tree part of the standard design.

Technical Assistance:

The technical assistance for these practices was provided through the Natural Resources Conservation Service, the local conservation district staff, the U.S. Fish and Wildlife Service, the South Dakota Department of Game Fish and Parks and the South Dakota Department of Agriculture.

Budget Break-Down Per Practice:

Table 2, on the following is a breakdown of the various funding sources by practice and the overall expenditures of the specific funding source. It is worthy of noting that the landowner cash and in-kind match is over 50% of the total expended on practices giving a strong indication of the vested interest of the participants.

The cost for the crop residue management, Best Management Practices were largely dependent on the crop, weed and pest management, weather and the level of management pursued by the producer. It was found that the small grain crops that were harvested for forage had the lowest input cost per acre. Crops such as corn, soybeans and sunflowers required a far greater input cost per acre. Input costs ranged from approximately fifty dollars an acre to over two hundred dollars per acre. It is worth noting that we did not consider land taxes and any for of land payments in establishing this input cost range.

Fencing costs increased over the four years of the project. The fencing contractors fee for the installation of a mile of fence was about \$12,500 plus materials in 1996. In 1999, fencing contractors were asking over \$2400 plus materials per mile. The price per foot of fencing ranged from \$0.47 to \$1.47. It was also found that when a landowner undertook the installation the costs were at the low end of the price range.

The construction of ponds, waterway, and similar forms of dirt work did not vary greatly during the project period. One could use the value of one dollar a yard to estimate a cost for the dirt work in undertaking a Best Manage Practice.

Construction of livestock watering systems using pipelines and water tanks was a widely used best management practice. Most of the pipe used to construct waterlines was 1.25inch plastic, which was estimated a \$1.02 per foot installed and range from \$0.90 to \$1.04. We also had some limited experience with 1.5 and 2 inch waterlines that ranged from \$1.10 to \$1.40 per foot installed. In these cases, it was at the steering committees discretion to adjust the cost share and was dependent on the design of the pipeline. Water tanks were cost shared at 50% not to exceed \$0.50 per gallon, based on the Natural Resources Conservation Service's value of one dollar per gallon for construction. In the cost sharing of over 90 tanks, it was found that the large capacity tanks provided economical. Tanks of 1000 gallons or less were more likely to exceed the dollar a gallon construction value. It was also noted that the location of the tank and if the contractor had no other work in the area tended to increase the cost of the water tank. Water tanks ranged from \$0.60 to \$2.36 per gallon.

In the course of the project there were far more stabilization structures designed than there were built. Some have been delayed because weather conditions and agricultural economy, and a number of them were too cost prohibitive. Each stabilization structure is unique and it is impossible to given a cost range for this Best Management Practice.

Dependable watering stores for livestock is a key issue to the producer of the project area. The project assisted producers with achieving this by providing cost share for wells, spring development, and rural water system hookups. The majority of the wells cost shared were very deep, with a construction cost range of \$34,000 to \$54,000. Where available a rural water system hookup offered the landowner a viable alternative for a dependable water source. The basic installation charges include a hookup fee of \$1500 and charges the pit and meter.

The Best Management Practices of seeding and critical seeding had very extreme variations in costs due to grass seed market. It was found that a planting of native grasses was costing over a \$120.00 per acre, just for the grass seed. While the seeding with a single grass specie and alfalfa was significantly less. The producers for economic reasons utilized the grass and alfalfa mix for the seeding with the cost ranging from \$24 to \$55 per acre. A critical seeding requires more grass seed and may be comprised of two grass species, which increased the cost per acre. The cost of critical seeding ranged from \$73 to \$175 per acre.

Table 2
BUDGET PER PRACTICE

Project Item	EPA 319	EQUI/LTA	USF&WS	Div	DENR	GF&P	Cash - L.	Inkind - L.	SIP	Cash - S.	Total
No-Till	42,339.20			54,384.00			191,774.36	82,092.06			370,589.62
Mulch Till	9,910.87			26,100.00			66,578.09	94,373.78			196,962.74
Strip Cropping				915.00			480.00	435.00			1,830.00
Terraces	766.00						766.00				1,532.00
Ponds	0.00	4,492.44	38,747.09	0.00	17,682.36	30,548.07	34,975.25	891.31		5,000.00	132,336.52
Fencing	7,512.29	15,608.32		5,210.00	10,181.65	11,836.94	27,566.90	17,674.95			95,591.05
Pipeline	33,496.36	15,400.34		3,719.01	35,376.26		89,400.35	37.50			177,429.82
Tanks	22,824.78	4,933.48	0.00	6,729.63	11,693.42		43,351.25	2,177.40			91,709.96
Creek Crossing					686.25		686.25				1,372.50
Structures	2,766.95	392.02			8,835.47		3,563.41	3,505.33			19,063.18
Well	19,983.71	44,662.00		8,000.00	42,656.52		110,144.88				225,447.11
Pasture Taps	3,000.00			1,500.00	1,250.00		4,520.71				8,770.71
Spring Development							1,500.00				3,000.00
Water Spreading											0.00
Range Renovation											0.00
Seeding	5,335.01				12,360.41		11,048.56	19,462.75			48,206.73
Trees	6,318.88			3,044.00			3,387.46	1,889.80	264.00		14,904.14
Waterways	2,384.04	4,333.42		7,498.18			5,387.46	890.00			20,493.10
Grazing Systems	9,569.63	3,089.50		13,996.87				62,524.00			89,180.00
Riparian Deferment	0.00	0.00	0.00	531.00	0.00	0.00	0.00	708.00	0.00	0.00	1,239.00
Fabricated Windbreaks	7,328.48			2,989.18	30,076.09		6,477.05	13,885.46			60,756.26
Tree Fabric	405.91						1,150.78	266.80	276.00		2,526.99
Critical Seeding	562.50	1,503.96					150.33	1,133.27			3,350.06
Nose Pump					551.57		551.57				1,103.14
Tubex							998.32				998.32
TOTAL	174,504.61	94,415.48	38,747.09	134,616.87	171,350.00	42,812.51	604,458.98	301,947.41	540.00	5,000.00	1,568,392.95

Tree plantings were done by two methods mechanically or by hand. The mechanically planted trees were preformed by the local conservation districts with charges per rod row based on the whether it was a tree or shrub. This form of planting ranged from \$2.25 to \$3.00 with each conservation district setting the rate for their area. The producer preformed hand plants after purchasing the trees from the local conservation district. The project set the cost of hand plants at \$2 base cost per tree and the labor.

Fabricated windbreaks have many short and long term benefits to the livestock grower and riparian areas. The cost of construction of a fabricated windbreak varied with design, size, and the materials used. The range for the construction costs ranged from \$14 to \$22 per linear foot of windbreak. It is worthy of noting that some of this variation relates to the producer reporting of labor and machinery use charges.

INFORMATION and EDUCATION:

The information and education efforts used by the project were very diverse in an attempt to create outreach activities that would encompass people from different walks of life. The scope of this effort was to highlight the Best Management Practice with respect to water quality along with the project being locally led. In many of the presentations and tours at the regional and national levels there was a great deal of interest in the successfulness of the project as a locally lead effort and its ability to bring so many partners to the table. Some the measures used included: producer workshops and field days, tours of the Foster Creek Project and the Dakota Lakes Research Farms, news releases, pamphlets and a 16-page project booklet, presentations and display boards at national and regional conferences, and a web page.

Steering Committee and Task Force Meetings:

The Steering Committee typically met monthly while the Task Force meetings where held annually. Both of these meetings provided interested parties the opportunity to observe how the project was functioning and its direction. It also provided a forum for the public and agencies to provide input and concerns relative to the project. Due to the size of the project area both the Steering Committee meetings and the Task Force meetings were held in different locations to provide a better opportunity for interested parties to attend meetings.

Field Days, Workshops and Tours:

There were 20 local workshops or field days held during the project period. These were dominantly no-till and mulch till tours because these were topics of key interest to producers. Workshop attendance was varied ranging from less than 5 to almost 30 producers. A number of these workshops and field days were joint efforts with the project partnering with other organizations or businesses i.e. the East Pennington and White River Grazing Districts and Monsanto.

The project sponsored two tours to the Dakota Lake Research Farm in 1995 and 1997. The research served as a valuable source of information and visual exposure to no till and crop rotations with the research farms staff providing presentations. In 1996, the project co-sponsored two tours to the Foster Creek Project on the Mortenson Ranch. This provided an excellent opportunity for those attending to see various practices as the Foster Creek Project was in its final year. During this same time period, the project also assisted with Rangeland Days, an annual event that provides information and education promoting proper range management. The project had a major tour occur in 1998 in cooperation with NACD as part of the Leadership Conference held in Rapid City. This tour required that five buses be chartered based on the pre-conference sign-up. The project also hosted a number of special tours by request.

Presentations and Displays:

Presentations and displays played a large role in the project's information and education efforts. Presentations and displays were used at the local, state, regional and national level conferences, conventions and meetings. The scope of these presentations and displays keyed on the success of the locally led voluntary approach and partnerships. Some of the larger efforts included the Peak to Prairies Conference, the NACD Regional and National Conventions, the 1997 Western States NPs Pollution Symposium, and the International Meeting for the Society of Range Management. In each of these cases the local sponsors or one of the partners in the project played a key role in the presentation or the display.

At the State and local levels the presentations and displays were used to inform and update individuals on the project. Presentations were periodically given to the State Board of Water and Natural Resources, the State Conservation Commission and the South Dakota Non-point Source Task Force because of a vested interest in natural resource management and as overseeing various funding sources. Presentations or displays were used at various state organization and local meetings not only to present the concepts and progress of the project but also to establish a basic understanding of water quality.

Web Page:

Late in 1996, the project's steering committee began discussing the potential of developing a web page highlighting activities relative to the project. A request was made to the South Dakota Department of Environment and Natural Resources to allow the project's web page to "hang-off" the Department's home page. It was with that approval that a web page was developed and up and running early in 1997. In the spring of 1999 the web page was revised.

Watershed Project Assistance:

The steering committee being aware of interest in investigating potential projects in similar watersheds in the demonstration project area utilized a portion of the I & E funds to promote informational and organizational meetings. Several of these watersheds, the White River and Medicine Creek have moved forward to the initial stages of the assessment process. There also have been some initial discussions concerning the Cheyenne River with limited interest in some of the sub-watersheds but the Cheyenne River has not moved forward as a whole.

The Upper Bad River Project's success as a locally led effort became a highly visible both in and out of state. Several of the steering Committee members and the project coordinator met with the representatives of the Belle Fourche River Project. The purpose of the meeting was to assist the Belle Fourche Project in addressing concerns and to provide insight on the Upper Bad River Project's infrastructure, which was working so well. There was also a great deal of interest seen at the NACD Leadership Tour from representatives from Montana, Washington, and Oregon. In some cases, the project received follow-up contacts in which additional information was requested.

Project Questionnaires:

In early 1999, the project developed two questionnaires for the project participants for the purposes of getting feedback, establishing areas of interest and the best method of getting meaningful information into the producers' hands. There was over a 60 percent response by the project participants to the questionnaires.

Conservation Trail:

The Conservation Trail located in Jackson County just outside the Badlands National Park is under development. The trail is a joint effort by the project, Natural Resources Conservation Service, SD Game Fish and Parks Foundation and the sponsoring conservation districts to provide the general public with the opportunity to see how the implementation of Best Management Practices have effected the area. Signs along the trails will depict the how area was managed in the past and why the changes have benefited water quality, natural resources, wildlife and livestock management. The trail is tentatively scheduled for completion in the year 2000.

MONITORING:**Information & Education**

Under the project work plan the information and education serves as a component of the project's monitoring activities.

Photo Points:

Three areas of photo points were established on rangeland in the project. Two photo point areas are located in the northern part of Jones and Jackson counties with the third located in eastern Pennington County. The producer in Pennington County is also active in Boots Straps and has conducted fecal sampling in 1999. This data could provide information that shows the benefits of the intensive grazing system for the livestock and range condition.

RELATED PROJECTS AND STUDIES:**GIS Work on watersheds:**

In December of 1998, the Upper Bad River Demonstration Project received direction to use a portion of its funding relative to the selection and targeting of watersheds for projects. The five conservation districts selected 12 watersheds in the project area as high priority. In an effort to compile some of the basic information on these watersheds the lead sponsor entered into an agreement with the South Dakota Department of Agriculture Division of Resource Conservation and Forestry to provide for limited GIS layer development. The GIS layers included: Topography, general land use, general soils and land ownership of selected watersheds. The watersheds where GIS layers were developed are Brave Bull Creek, White Clay Creek, Deep Creek, Wall Lake, Nail Creek and Grind Stone Creek.

Paired Watershed Study:

The East Pennington Conservation District is playing a key role in the Paired Watershed Study being conducted by the Department of Environment and Natural Resources in cooperation with the US Forest Service. The district employees have been conducting the baseline data collection for 1998 and 1999. The Conservation District will play a key roll in the administration of a grant from the US Forest Service and the implementation of practices in the treated watershed. This is an ongoing study that could potentially result in valuable information about the treatment of watersheds in western South Dakota.

Freeman Lake:

In 1997 at the request of the Department of Environment and Natural Resources, investigations and sampling was conducted to establish the source of the elevated nitrate levels found in the annual monitoring of a drinking water source. The initial investigation conducted cooperatively by Division of Drinking Water, the Department of Agriculture's Division of Agronomy Services and project personnel, established the source as geological and being discharged from seeps in the upper watershed. The samples from these investigations also revealed that the discharge from these seeps were high in selenium, sulfates, and strontium. The findings of these initial investigations prompted the Steering Committee to send letters to number of agencies on the need to address these water quality problems that were adversely effecting producers.

Freeman Lake is ranked as a priority 1 on the present 303(d) list for the State of South Dakota. Additional sampling of the seeps and relative investigations were undertaken in 1999 as part of the process to establish the TMDL.

Haakon County Tree Survival Study:

The project assisted with a portion of the information and educational aspects of the Haakon County Tree survival study. This multi-source-funded project was developed to address the aspects of tree survival in the harsh environment and soils of west central South Dakota. It is hoped that through the efforts of this study the best tree species select along with improved planting and care techniques a greater success in tree planting survivability and vigor can be achieve.

CONCLUSIONS:

The Upper Bad River Water Quality Improvement and Demonstration Project can be deemed a success, achieving an awareness how the Best Management Practices not only benefit landowners but aid in the maintenance and improvement of water quality. It should be noted that water quality problems, which do not immediately impact the landowner property, are not the driving mechanism for the selection of Best Management Practices. Landowners were found to be most receptive to the practices could be seen as having an effect on the immediate area and a long-term management or an economic benefit to their operations.

Points of success:

1. Foremost is that a project of this magnitude was a true a locally lead project which served as an example and provided the insight on the how to undertake similar projects.
2. The number of partnerships that were established through the efforts of the sponsors and the agencies, organizations and special interest groups embracing the concepts and infrastructure developed for the project.
3. The success of the voluntary approach used with the landowners asking how the project might help rather than the telling them what they needed to do on their land. Developing lines of communication and mutual trust of the locally driven project.
4. The approach of, landowners communicating with other producers at field days and workshops on what worked for them as well and what did not. This approach along with the use of other media methods including. news articles, presentations, special tours, booklets and web page resulted in a well-rounded information and education program for the project.
5. The development of landowner interest in Best Management Practices that benefited both the water quality and the landowner's objectives.
6. The offspring of investigations or development of projects in the White River, Cheyenne River, and Medicine Creek watersheds.

TABLE 3
Non- Federal Funding
Match

Source	Practice	Administration	I&E	Total
State Water Resources Systems	\$171,350.00			\$171,350.00
State Conservation Commission	\$68,800.00		\$4,000.00	\$72,800.00
	\$65,816.87	\$4,803.13		\$70,620.00
SD Game Fish and Parks	\$30,548.07			\$30,548.07
	\$11,836.94			\$11,836.94
Ducks Unlimited	\$5,000.00			\$5,000.00
Monsanto			\$1,330.14	\$1,330.14
Producer Cash	\$604,458.98			\$604,458.98
Producer Inkind	\$301,947.41			\$301,947.41
Conservation District Cash		\$19,939.99		\$19,939.99
Conservation District Inkind		\$28,198.23		\$28,198.23
Warne Chemical			\$973.75	\$973.75
Total	\$1,259,758.27	\$52,941.35	\$6,303.89	\$1,319,003.51

TABLE 3

UPPER BAD RIVER WATERSHED WATER QUALITY IMPROVEMENT AND DEMONSTRATION PROJECT

COMPLETE PROJECT BUDGET

FUNDING SOURCE TASK AND WORK ITEMS		319	319 ACTUAL	SCC	SCC ACTUAL	DENR	DENR ACTUAL	USF&W FA	USF&W ACTUAL	GEAP FA	GEAP ACTUAL
Best Management Practices Based on Table 2 in the report											
		\$206,600.00	\$174,504.61	\$133,000.00	\$134,616.67	\$106,000.00	\$171,350.00	\$35,000.00	\$36,747.09	\$30,000.00	\$42,612.51
		\$5,000.00	\$5,000.00	\$19,298.50	\$84,955.48	\$659,765.50	\$906,406.39	\$9,000.00	\$1,403,802.00	\$1,588,392.95	
OTHER		OTHER ACTUAL	OTHER ACTUAL	OTHER FEDERAL ACTUAL	OTHER FEDERAL ACTUAL	LAND OWNER CASH/IN/KIND	LAND OWNER CASH/IN/KIND ACTUAL	SPONSOR CASH/IN/KIND	SPONSOR CASH/IN/KIND ACTUAL	TOTAL ACTUAL	TOTAL ACTUAL

INFORMATION AND EDUCATION	319	319 ACTUAL	SCC	SCC ACTUAL	OTHER	OTHER ACTUAL	FEDERAL CASH/IN/KIND	FEDERAL ACTUAL	SPONSOR CASH/IN/KIND	SPONSOR CASH/IN/KIND ACTUAL	Landowner CASH/IN/KIND	Landowner Actual
	319	319 ACTUAL	SCC	SCC ACTUAL	OTHER	OTHER ACTUAL	FEDERAL CASH/IN/KIND	FEDERAL ACTUAL	SPONSOR CASH/IN/KIND	SPONSOR CASH/IN/KIND ACTUAL	Landowner CASH/IN/KIND	Landowner Actual
RADIO AND TELEVISION PROMOTION	\$20,000.00	\$10,444.00			\$20,000.00	\$1,500.00	\$800.00	\$800.00			\$2,000.00	\$6,000.00
RESIDUE MANAGEMENT	\$8,000.00	\$1,281.00	\$4,000.00	\$4,000.00	\$10,000.00	\$3,677.89	\$80.00	\$1,774.00	\$6,000.00	Reported under the Administrative Sponsor	\$2,000.00	\$2,000.00
FIELD DAYS (TOURS) 25 EACH	\$8,000.00	\$1,045.55			\$4,500.00			\$4,000.00	\$5,000.00		\$5,000.00	\$5,000.00
VISUALS DISPLAYS, NEWS ARTICLES, PHOTOS, WEB SITE	\$6,500.00	\$3,715.00			\$1,000.00	\$211.42	\$611.40	\$611.40	\$1,500.00		\$2,000.00	\$2,000.00
SIGNS 40	\$8,000.00	\$2,577.00			\$1,000.00		\$584.00	\$584.00	\$5,000.00		\$3,375.00	\$7,000.00
GRAZING & RIPARIAN MANAGEMENT & RIPARIAN RESTORATION	\$4,000.00	\$10,789.00							\$5,125.00			
RANGELAND & RIPARIAN FIELD DAYS (TOURS) 20 EACH	\$4,000.00	\$32,892.55	\$4,000.00	\$4,000.00	\$36,500.00	\$5,389.31	\$80.00	\$3,769.40	\$26,650.00		\$16,375.00	\$13,000.00
VISUALS DISPLAYS, NEWS ARTICLES, PHOTOS & WEB SITE												
SIGNS 25												
TOTAL	\$62,500.00	\$32,892.55	\$4,000.00	\$4,000.00	\$36,500.00	\$5,389.31	\$80.00	\$3,769.40	\$26,650.00		\$16,375.00	\$13,000.00

** Based on limited attendance's data attendees hours \$10.

PERSONNEL	319	319 ACTUAL	SCC	SCC ACTUAL	USF&WS	USF&WS ACTUAL	GEAP	GEAP ACTUAL	NRCS TA	NRCS TA ACTUAL	SPONSORS IN/KIND/CASH	SPONSORS ACTUAL	LANDOWNER CASH/IN/KIND	LANDOWNER ACTUAL
	319	319 ACTUAL	SCC	SCC ACTUAL	USF&WS	USF&WS ACTUAL	GEAP	GEAP ACTUAL	NRCS TA	NRCS TA ACTUAL	SPONSORS IN/KIND/CASH	SPONSORS ACTUAL	LANDOWNER CASH/IN/KIND	LANDOWNER ACTUAL
AGRONOMIST CONSULTANT	\$80,000.00	\$5,400.00												
RANGE CONSULTANT AND COORDINATOR	\$160,000.00	\$157,280.85	\$4,000.00	\$3,044.47	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00	\$750.00	\$8,370.00	\$16,000.00	\$46,134.37	\$10,000.00	Reported as part of the installation of BMPs
ADMINISTRATIVE	\$45,000.00	\$32,916.11									\$10,000.00	\$10,000.00		
ENGINEERING ASSISTANCE	\$30,000.00	\$3,586.00									\$2,000.00	\$2,000.00		
FIELD TECHNICAL ASSISTANCE	\$24,000.00	\$1,386.61	\$2,420.00	\$1,758.66							\$2,000.00	\$2,000.00		
TRAVEL TRAINING & WILDLIFE	\$2,500.00	\$14,076.00									\$8,500.00	\$8,500.00		
OFFICE EQUIPMENT AND HOUSING	\$2,500.00	\$12,573.99												
OFFICE SUPPLIES AND PHONE														
TOTAL	\$345,000.00	\$245,633.76	\$6,420.00	\$4,803.13	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00	\$3,580.00	\$46,370.00	\$47,500.00	\$46,138.22	\$10,000.00	

** The Conservation Districts reported all I&E and TA activities under Administrative.

APPENDIX

“A”

Upper Bad River Watershed Water Quality
Improvement and Demonstration Project
Pictorial



Grass management is a tradition handed down through the generations



A tranquil view of the Bad River in the fall of 1996 near Philip SD, (top picture). One can hardly believe the picture taken in the spring of 1997 (bottom picture). The rivers of west central South Dakota can and do change rapidly from peaceful to violent.

There was a great deal of interest in the crop residue Best Management Practices. Surprisingly there was an equally high interest in the conversion of land being cropped to alfalfa and grass.





No Till Milo.



Mulch Till



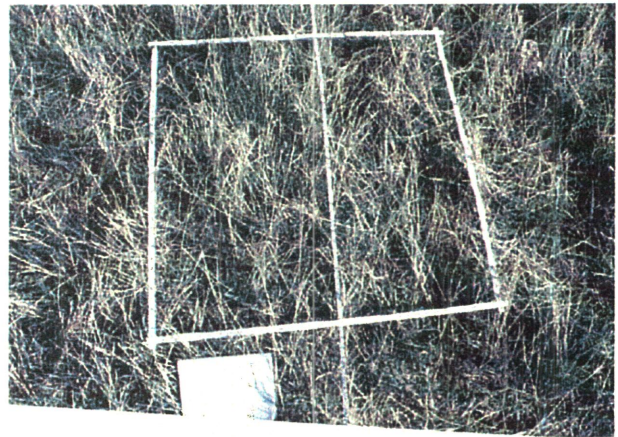
No Till Corn



Grazing management Big Blue Stem in the foreground.



Winter grazing under a grazing system.



Monitoring of rangeland is done by both the range specialists and many producers. They monitor grass species, grass height, stocking rates and season as well as length of time the pasture is used. The intensity of the grazing management increases the efforts of the producer.

Ponds were constructed with the scope of benefiting livestock and wildlife. The US Fish and Wildlife Service and the South Dakota Department of Game Fish and Parks were valued partners in establishing ponds.



A dam



A dugout

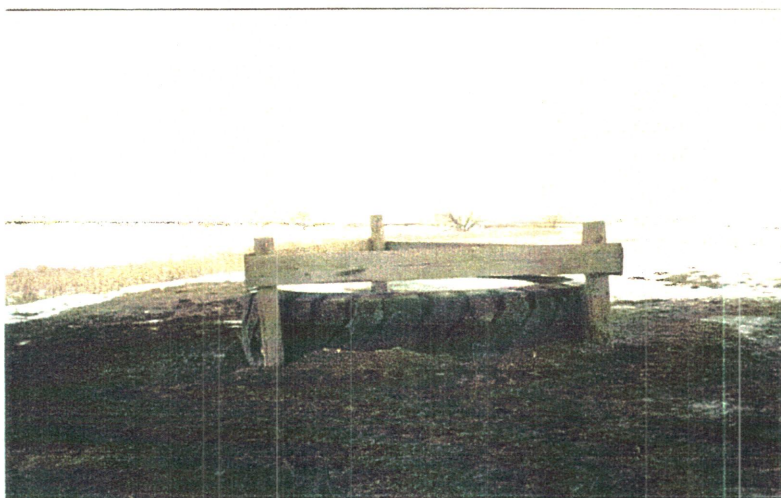


A drop structure under construction to restore a dam that had its spillway cut back and destroyed the pond. This structure was installed after determining that it was not possible to repair the dam using conventional methods.



Water tank placed in a fence line to serve two pastures

Water availability for livestock is of vital concern to the producer. Water tanks served by pipelines from a dependable water source such as wells and rural water systems address that concern. The positioning of water tanks is useful in achieving good grass management under proper grazing.



A single water tank with guards, which keep the livestock from entering the tank.



The repair of this head cut in the early stages of development was done by reshaping the cut and placing a coconut fiber erosion matt down and seeding the area down with grasses and willow cuttings.



A creek eats away at the stream bank towards a ranch headquarters.



A stream bank stabilization structure under construction using log cable anchors and erosion fabric. When completed the structure was vegetated with native woody plants.



Area before the design and installation of a structure to address the back and down cutting of the water.



The structure designed used gabion baskets filled with rock to serve as a drop structure. The photograph above is of the structure while under construction.



This is a photograph of an area where cattle would have gone for protection from this late spring storm had it not been for the fabricated windbreak being completed just weeks earlier.



Fabricated windbreak range in size and shape. Research on the designs indicates a semi-circle shape followed by the V-shaped provides the most cost effective protection. Also the length of the wings should not be more than 15 times the height of the wall.
The fabricated windbreak was used to protect riparian areas and draws.



Listening to a dream



Planning for that goal



The landowner wished to restore a riparian area on a creek that passed through his property. That effort began with planning that included exclusionary fencing and the planting of trees.

INFORMATION AND EDUCATION EFFORTS FOR THE PROJECT



Mortenson Ranch Tour



Dakota Lakes Research Farm Tour



Youth Project Tour



Producer Field Day



Producer Workshops



NACD Project Tour








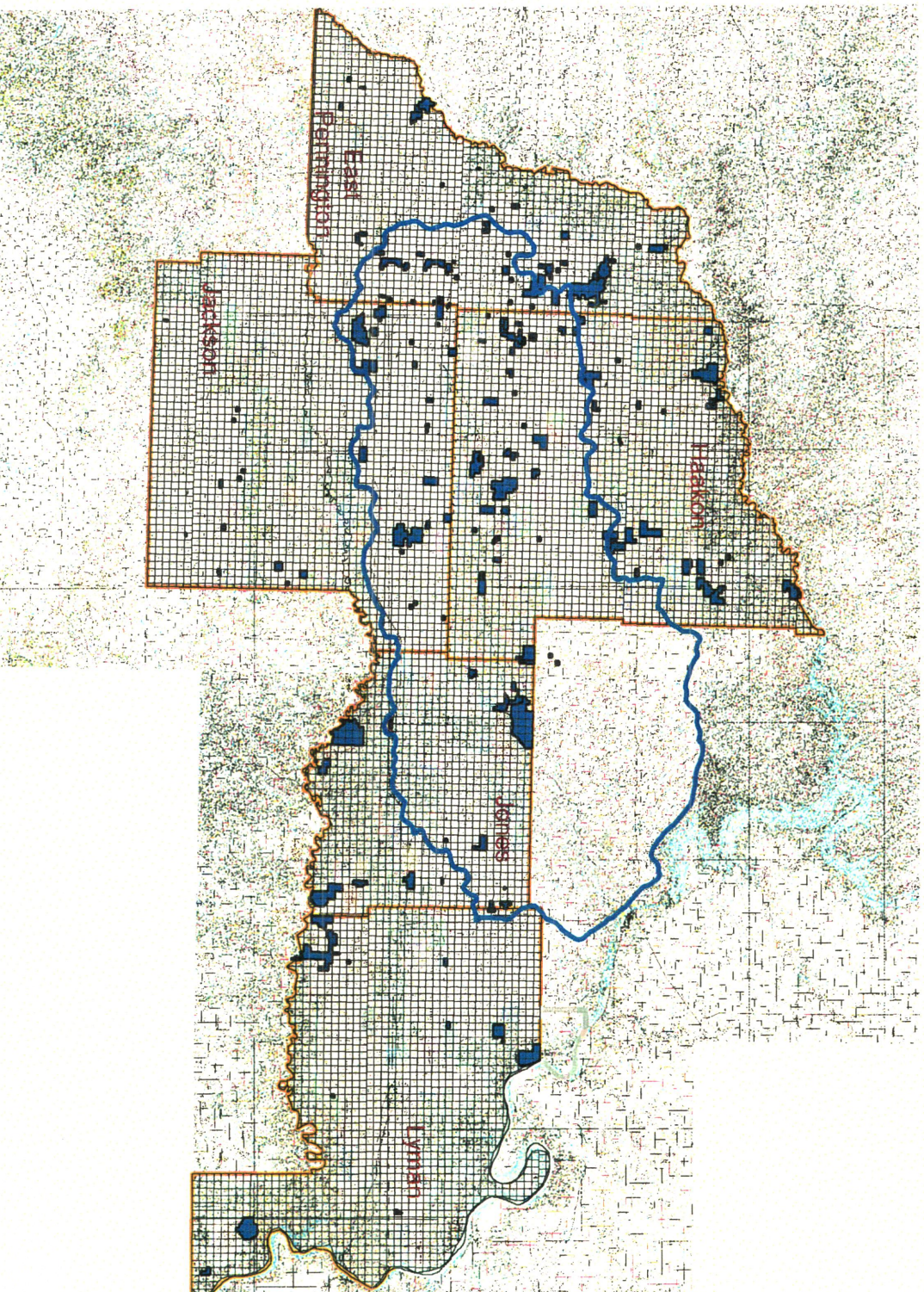
UBRDP Task Force Meetings

Those interests and efforts of the conservation districts drove the information and education effects, which were undertaken by the project. This approach resulted in the project having objective of providing information and education geared to the producer needs. It also became an avenue for other states and projects to be enlightened of the project success as a locally led project.

UPPER BAD RIVER WATER QUALITY PROJECT

LEGEND

-  Bad River Watershed
-  Upper Bad River WQP PLSS
-  Upper Bad River Project Plans
-  Lower Brule Indian Reservation
-  Upper Bad River Water Quality Project Bnd.



SCALE 1:1400000



Drawn By: Douglas Haugen

Revised: 02/04/2000

APPENDIX

“B”

1996 I&E REPORT

NEWS RELEASES:

- 1) UBRDP ONE YEAR OLD
- 2) UBRDP MEANS "OPPORTUNITY"
- 3) NO-TILL
- 4) MULCH TILL
- 5) RANGELAND PRIMARY SCOPE
- 6) FOSTER CREEK PROJECT TOUR
- 7) MOU FINALIZED
- 8) SIGNS
- 9) AD FOR FOSTER CREEK TOUR
- 10) RADIO SPOTS JONES CD NO-TILL
- 11) NEW COORDINATOR
- 12) FOOD FOR THOUGHT

TOURS:

- 1) MORTENSON RANCH
- 2) MORTENSON RANCH
- 3) JONES CD NO-TILL
- 4) HAAKON CD NO-TILL

DISPLAYS:

- 1) UBRDP DISPLAY FOR SDACD CONVENTION
- 2) SRM POSTER PAPER - BEING DEVELOPED

PRESENTATIONS:

- 1) SD SRM ANNUAL MEETING
- 2) SW CROP IMPROVEMENT
- 3) BELLE FOURCHE WATERSHED GROUP

WEB:

- 1) DEVELOPMENT CONTINUES

1997
Information & Education
For the
Upper Bad River Project

- 1) Poster paper for the International Meeting for the Society of Range Management.
- 2) Project Task Force meeting
- 3) Web Page
- 4) EPA tour
- 5) Haakon County Conservation District tillage tour.
- 6) Haakon County Conservation District tillage tour.
- 7) Jackson Conservation District tillage workshop/tour.
- 8) Dakota Lakes Research Farm tour.
- 9) Presentation at CRP meeting, Philip.
- 10) 1997 Western States NPS Pollution Symposium.
- 11) Haakon County Conservation District tillage tour.
- 12) Kadoka School project tour.
- 13) NPS Task Force update.
- 14) Demo Signs.
- 15) News Releases

1998
Information & Education
For the
Upper Bad River Project

- 1) Haakon County tillage workshop.
- 2) Jackson County tillage Workshop.
- 3) Project Task Force Meeting.
- 4) Project booklet development & release.
- 5) Lower Bad River Meeting presentation .
- 6) Medicine Creek organizational Meeting.
- 7) Fabricated windbreak location news release.
- 8) Workshop for interpretive interns for the Badlands National Park.
- 9) Presentation at the regional NACD meeting in North Dakota.
- 10) NACD Leadership Tour.
- 11) Peaks to Prairies poster paper.
- 12) White River Grazing District Tour.
- 13) Eastern Pennington County Grazing District Tour.
- 14) Jones County No Till Tour
- 15) Ralph and Maxine Jones Ranch Tour
- 16) SDACD Convention poster paper

1999
Information & Education
For the
Upper Bad River Project

- 1) Haakon County Display – Moody Implement.
- 2) Jackson County tillage field day- M. Jorgensens's farm.
- 3) AFO/CAFO Meeting Advertisement.
- 4) SDDOA display at the RC&D Regional Meeting Spearfish.
- 5) SDDOA display at the Stock Show Rapid City.
- 6) East Pennington Bootstraps Display, Pierre
- 7) Upper Bad River Task Force Meeting, Kadoka
- 8) Freeman Dam TMDL, Belvidere
- 9) Bad River TMDL, Pierre, Murdo, Midland.
- 10) Rangeland Questionnaire
- 11) Cropland Questionnaire
- 12) Soil Quality Workshop, Wall Area
- 13) Soil Quality Workshop, Dakota Lakes Research Farm
- 14) Soil Quality Workshop, Kadoka Grade School
- 15) OST Ag Day
- 16) News Article for Jackson and Haakon CCD project progress in district

APPENDIX

“C”

**FINAL REPORT
FOR THE
UPPER BAD RIVER WATERSHED WATER QUALITY
IMPROVEMENT AND DEMONSTRATION PROJECT**

CONTRACT NUMBER: # 0020-95

SPONSORS:

JACKSON COUNTY CONSERVATION DISTRICT, SPONSOR
AMERICAN CREEK CONSERVATION DISTRICT, CO- SPONSOR
EAST PENNINGTON CONSERVATION DISTRICT, CO-SPONSOR
HAAKON COUNTY CONSERVATION DISTRICT, CO-SPONSOR
JONES COUNTY CONSERVATION DISTRICT, CO-SPONSOR

FINAL REPORT
UPPER BAD RIVER WATERSHED WATER QUALITY IMPROVEMENT AND
DEMONSTRATION PROJECT

CONTRACT NUMBER: # 0020-95

JACKSON COUNTY CONSERVATION DISTRICT
AMERICAN CREEK CONSERVATION DISTRICT
EAST PENNINGTON CONSERVATION DISTRICT
HAAKON COUNTY CONSERVATION DISTRICT
JONES COUNTY CONSERVATION DISTRICT

The Upper Bad River Watershed Water Quality Improvement and Demonstration Project is an on-going multi-source funded project. As such this report reflects activities up to the completion of this grant.

1) Activities relative to the project.

The Upper Bad River Watershed Water Quality Improvement and Demonstration Project has the major goals of:

Heightening the awareness of local citizens on the values of Best Management Practices to improve and maintain water quality, restore riparian areas, reduce runoff and sustain the resources of the area and develop interest in watershed treatment of nonpoint source water quality problems in the Bad River and similar watersheds.

This is the final report for the State Conservation Commission Grant awarded to the Upper Bad River Watershed Water Quality Improvement and Demonstration Project in 1995. This grant was initially scheduled for three years, with a completion date of June 30, 1998. In May of 1998 the State Conservation Commission approved an extension period of one year.

The Upper Bad River Watershed Water Quality Improvement and Demonstration Project is in the approved one year extension period and all the funds under this grant have been encumbered and expended using the approved practices. Through the funds provided by this grant and other sources the project is currently working with 93 landowners to implement and demonstrate Best Management Practices (BMPs). These efforts have resulted in the treatment of 5234.4 acres of cropland using residue management and other practices. The project is also working with landowners to improve their range management on approximately 150,000 acres using a wide array of BMPs.

The Information and Education goal of this project has been undertaken using many different approaches. Some of the more conventional methods used included: news releases, workshops, and tours using project participants (neighbors talking to neighbors). We also used other information and education methods including poster papers at professional meetings, tours for groups from other states, assisting other projects in the State, the development of a web page and a 16 page color booklet.

Since its inception in 1995 the Upper Bad River Watershed Water Quality Improvement and Demonstration Project has evolved into a model watershed project for the State and the Nation. It is unique not only because of its size (4.8 million acres) and the three major watersheds but also because it is truly a locally led effort sponsored by five conservation districts. It is through the effort and active participation of the conservation districts' representatives on the projects' steering committee that the project remains a locally led project and the number of partners continues to grow.

Annual Activities Summary

1995

The project was undertaken in 1995, in these initial stages there were several public information meetings to field input, questions and concerns from local citizens relative to the project. There were a number of news releases developed about the project and various practices, and a tour of Dakota Lakes Research Farm. During this same period the infrastructure for the project was being developed including a steering committee, a task force, a docket, and the hiring of a project coordinator. The five conservation districts in cooperation with the project coordinator began to compile lists of perspective landowners that might participate in the project. It is worthy of noting that it was during this period it was established that the project would be locally led based on partnerships and that landowner participation would be voluntary.

1996

The year of 1996 began without a project coordinator but the steering committee continued to labor with the development of the docket and other infrastructure issues. In March, the first no-till and mulch till plans for the project were approved and the vacant coordinator position was filled. The project entered into Memorandums of Understanding with the US Fish & Wildlife Service and the SD Department of Game Fish & Parks for wildlife/livestock ponds and another with the US Natural Resources Conservation Service to pay for technical services. There was a good response to the practices of no-till and mulch till which resulted in the transferring of funds from other practices to meet these requested plans. The response to the range practices trailed behind the residue management but seemed to rebound late in the year. The weather started to become a factor with large amounts of precipitation.

In 1996, an outline that serves as a plan for the Information and Education portion of the project was developed and implemented. As part of this plan, there were a number of news releases on residue management and the project's interest in range practices. There were also two tours of the Foster Creek project and several presentations at professional and producer orientated meetings. The project demonstration site signs were designed and by fall the sign installation was started.

The project in partnership with the Lower Bad River Project worked to develop the first EQIP Priority Area proposal for the Bad River 1997 funding.

1997

1997 began with the rewriting of the PIP for the overall project and the development of a second State Conservation Grant proposal. It was also evident that weather condition for the year would be a significant factor slowing plan and practice design. Producers were faced with economic losses and found it difficult to secure contractors to undertake work that was ready for construction. Faced with this situation and knowing the various grant funds were subject to time lines the steering committee looked for ways to utilize each funding source. It was decided that the funds that were most likely to revert first would be top loaded whenever possible, project participants would be made aware of the potential of funding losses, and where and when necessary a grant extension would be requested. Producer interest in participating in the project continued to be high and by the end of 1997 non-encumbered funds were limited.

The Information and Education portion of the project went very well. The project got good exposure both locally and nationally. Many of the conservation districts held tours and workshop and the project held a tour of Dakota Lakes Research Farm in 1997. We also had poster papers at the Range Society International Convention and the Western States NPS Conference. The project was again highly involved in the development of the proposal for the 1998 Bad River EQIP priority area. Additional signs were ordered for demonstration sites.

During 1997 the initial studies of the White River Watershed were undertaken and discussions started on the Cheyenne River Watershed relative to the development of projects. There were also two additional EQIP priority areas approved for 1998 funding in the project area.

1998

The projects' activities for 1998 fall into three categories: implementation of practices, information and education and planning for the future. The majority of all available funds for BMPs have been committed in agreements with landowners so special attention was placed on getting the BMPs in place. There was also a need to assess the present direction of the project and to begin developing and planning for the future.

The Information and Education activities continued at the pace set in 1997. The projects' exposure at the Regional and National level seemed to be heightened with presentations at the NACD Regional in North Dakota, a tour of the project as part of the annual NACD Leadership Conference, the Peaks to Prairie Watershed Conference, and the Cattlemen Association tour. The 16-page color booklet was completed and has been an effective tool that resulted in a lot of attention and praise. We also have continued with the local tours teaming up with the two Grazing Associations and other local groups to maintain the all-important aspect of producers talking to producers.

2) Problems encountered during the project.

Perhaps the first and foremost obstacle was the comprehension of the magnitude and scope of the project that was undertaken. The project covers over 4.8 million acres in five counties and includes portions of three major watersheds in western South Dakota. This required the development of a detailed infrastructure, a docket, and the hiring of a coordinator. This process would take almost a year to complete delaying the development of agreements with producers.

There was a conflict over the coordinator position where the NRCS felt that a member of their staff should fill this position while the sponsoring districts felt otherwise. Although the approved overall 319 grant reflected a major contribution of technical assistance, it did not materialize because of budgetary reasons. The NRCS would not provide technical assistance without being compensated by the project. This compensation for technical assistance would be come an issue for other partners in the project. The sponsoring conservation districts held strong on the project coordinator position as a district employee under the direction of Jackson County Conservation District Board. The project entered into a Memorandum of Understanding for a period of two years that would pay the NRCS for technical assistance and where possible the project paid for the technical assistance provided to other partners to quiet the conflicts. In late 1998 the turmoil relative to the technical assistance was quieted with the NRCS's notification that there would not be a need to renew the Memorandum of Understanding.

The weather that occurred during 1996 and 1997 had many effects on the progress in the project. The wet conditions slowed the technical assistance necessary to do many practices. These same conditions seriously slowed practices requiring contractors. The weather conditions also had an adverse impact on producer economics, which would reach into 1998 when the low gain and livestock continued the economic impacts of the previous two years. These adverse economic conditions required altering the original plan, the rescheduling of practices and in some cases, the cancellation of the plan at the request of the producer.

The availability of contractors was a pressing issue throughout the grant period. Local contractors had more work than they could handle and they would pick and choose their jobs. We worked with the Land Improvement Contractors Association to provide landowners with a list of possible contractors.

The multiple funding sources presented its own set of challenges. The fact that each funding source operated differently and limitations on when and where each could be used made a simple decision difficult at times. It also made bookkeeping very difficult.

3) Status reports related to the ongoing work plan

- A) Budget Report by Fund.
- B) Practice/ Conservation District/ Producer Report
- C) Annual Information and Education Activity Reports

APPENDIX

“D”

**FINAL REPORT
FOR THE
UPPER BAD RIVER WATERSHED WATER QUALITY
IMPROVEMENT AND DEMONSTRATION PROJECT**

CONTRACT NUMBER: # 97-0009

SPONSORS:

JACKSON COUNTY CONSERVATION DISTRICT, SPONSOR
AMERICAN CREEK CONSERVATION DISTRICT, CO- SPONSOR
EAST PENNINGTON CONSERVATION DISTRICT, CO-SPONSOR
HAAKON COUNTY CONSERVATION DISTRICT, CO-SPONSOR
JONES COUNTY CONSERVATION DISTRICT, CO-SPONSOR

FINAL REPORT
UPPER BAD RIVER WATERSHED WATER QUALITY IMPROVEMENT AND
DEMONSTRATION PROJECT

CONTRACT NUMBER: # 97-0009

JACKSON COUNTY CONSERVATION DISTRICT
AMERICAN CREEK CONSERVATION DISTRICT
EAST PENNINGTON CONSERVATION DISTRICT
HAAKON COUNTY CONSERVATION DISTRICT
JONES COUNTY CONSERVATION DISTRICT

The Upper Bad River Watershed Water Quality Improvement and Demonstration Project is an on-going multi-source funded project. As such this report reflects activities includes those activities undertaken with the initial State Conservation Commission grant #0020-95 through the completion of this grant.

1) Activities relative to the project.

The Upper Bad River Watershed Water Quality Improvement and Demonstration Project has the major goals of:

Heightening the awareness of local citizens on the values of Best Management Practices to improve and maintain water quality, restore riparian areas, reduce runoff and sustain the resources of the area and develop interest in watershed treatment of nonpoint source water quality problems in the Bad River and similar watersheds.

This is the final report for the State Conservation Commission Grant awarded to the Upper Bad River Watershed Water Quality Improvement and Demonstration Project in January 1997. This grant is one of two State Conservation Commission Grants awarded to the project. The State Conservation Commission Grant # 0027-95 completion report is on file with the Division of Resource Conservation and Forestry. This grant was an extension of those efforts undertaken with the 1995 grant. The State Commission Conservation #97-0009 was scheduled for completion on December 31, 1999.

The Upper Bad River Watershed Water Quality Improvement and Demonstration Project has encumbered and expended using the approved practices. Through the funds provided by this grant and other sources the project is currently working with 117 landowners to implement and demonstrate Best Management Practices (BMPs). These efforts have resulted in the treatment of 5128 acres of cropland using residue management and other practices. The project is also working with landowners to improve their range management on approximately 168,000 acres using a wide array of BMPs.

The Information and Education goal of this project has been undertaken using many different approaches. Some of the more conventional methods used included: news releases, workshops, and tours using project participants (neighbors talking to neighbors). We also used other information and education methods including poster papers at professional meetings, tours for groups from other states, assisting other projects in the State, the development and revision of a web page and a 16-page color booklet. The project has also teamed up with the SD GF&P and EQIP Information & Education to develop a conservation trail to be completed in 2000.

Since its inception in 1995 the Upper Bad River Watershed Water Quality Improvement and Demonstration Project has evolved into a model watershed project for the State and the Nation. It is unique not only because of its size (4.8 million acres) and the three major watersheds but also because it is truly a locally led effort sponsored by five conservation districts. It is through the effort and active participation of the conservation districts' representatives on the projects' steering committee that the project remains a locally led project and the number of partners continues to grow.

Annual Activities Summary

1995

The project was undertaken in 1995, in these initial stages there were several public information meetings to field input, questions and concerns from local citizens relative to the project. There were a number of news releases developed about the project and various practices, and a tour of Dakota Lakes Research Farm. During this same period the infrastructure for the project was being developed including a steering committee, a task force, a docket, and the hiring of a project coordinator. The five conservation districts in cooperation with the project coordinator began to compile lists of perspective landowners that might participate in the project. It is worthy of noting that it was during this period it was established that the project would be locally led based on partnerships and that landowner participation would be voluntary.

1996

The year of 1996 began without a project coordinator but the steering committee continued to labor with the development of the docket and other infrastructure issues. In March, the first no-till and mulch till plans for the project were approved and the vacant coordinator position was filled. The project entered into Memorandums of Understanding with the US Fish & Wildlife Service and the SD Department of Game Fish & Parks for wildlife/livestock ponds and another with the US Natural Resources Conservation Service to pay for technical services. There was a good response to the practices of no-till and mulch till which resulted in the transferring of funds from other practices to meet these requested plans. The response to the range practices trailed behind the residue management but seemed to rebound late in the year. The weather started to become a factor with large amounts of precipitation.

In 1996, an outline that serves as a plan for the Information and Education portion of the project was developed and implemented. As part of this plan, there were a number of news releases on residue management and the project's interest in range practices. There were also two tours of the Foster Creek project and several presentations at professional and producer orientated meetings. The project demonstration site signs were designed and by fall the sign installation was started. The project in partnership with the Lower Bad River Project worked to develop the first EQIP Priority Area proposal for the Bad River 1997 funding.

1997

1997 began with the rewriting of the PIP for the overall project and the development of a second State Conservation Grant proposal. It was also evident that weather condition for the year would be a significant factor slowing plan and practice design. Producers were faced with economic losses and found it difficult to secure contractors to undertake work that was ready for construction. Faced with this situation and knowing the various grant funds were subject to time lines the steering committee looked for ways to utilize each funding source. It was decided that the funds that were most likely to revert first would be top loaded whenever possible, project participants would be made aware of the potential of funding losses, and where and when necessary a grant extension would be requested. Producer interest in participating in the project continued to be high and by the end of 1997 non-encumbered funds were limited.

The Information and Education portion of the project went very well. The project got good exposure both locally and nationally. Many of the conservation districts held tours and workshop and the project held a tour of Dakota Lakes Research Farm in 1997. We also had poster papers at the Range Society International Convention and the Western States NPS Conference. The project was again highly involved in the development of the proposal for the 1998 Bad River EQIP priority area. Additional signs were ordered for demonstration sites.

During 1997 the initial studies of the White River Watershed were undertaken and discussions started on the Cheyenne River Watershed relative to the development of projects. There were also two additional EQIP priority areas approved for 1998 funding in the project area.

1998

The projects' activities for 1998 fall into three categories: implementation of practices, information and education and planning for the future. The majority of all available funds for BMPs have been committed in agreements with landowners so special attention was placed on getting the BMPs in place. There was also a need to assess the present direction of the project and to begin developing and planning for the future.

The Information and Education activities continued at the pace set in 1997. The projects' exposure at the Regional and National level seemed to be heightened with presentations at the NACD Regional in North Dakota, a tour of the project as part of the annual NACD Leadership Conference, the Peaks to Prairie Watershed Conference, and the Cattlemen Association tour. The 16-page color booklet was completed and has been an effective tool that resulted in a lot of attention and praise. We also have continued with the local tours teaming up with the two Grazing Associations and other local groups to maintain the all-important aspect of producers talking to producers.

Late in 1998, during a presentation to Board of Water and Natural Resources the Upper Bad River Project was made aware that there would be no future Section 319 funding until the Total Daily Maximum Load (TMDL) was developed for the Bad River. This staff recommendation to the Board also directed the projects of the Bad River to select and prioritize sub-watersheds for treatment within each of the conservation districts. The staff of DENR assured the conservation districts of the Upper Bad River Project that the TMDL would be completed in a time frame that would allow for the development of an implementation project grant request for section 319.

1999

The direction set in 1998 for the projects activities continue with a far greater focus on getting the BPMs on the ground. This focus was driven by the fact that not only was the Commission Grant scheduled for completion but also the demonstration phase of the project was scheduled to be completed in February of the year 2000 by the Department of Environment and Natural Resources in February. DENR apparently was not recognizing the revised project time approved PIP drafted in 1997. The districts and the NRCS staff continued to see an ongoing influx of producers wishing to participate in the project. Due to the dynamics of the project some of the funding under this Conservation Commission Grant were transferred to other practices with the proper requests and approves.

The TMDL process became a pressing issue for the project sponsors with the closure of the demonstration phase of the project scheduled for the spring of 2000 and the need to develop an implementation project prior to August of 1999. The TMDL process was being delayed pending the release of the "Upper Bad River Basin Study Report", which did not occur until May 1999. To date the TMDL for the Bad River has not been completed.

The I&E efforts using tour, and workshops continued in 1999, there were a number of occasions were the project teamed up with another organization or agency by providing display materials. The project also developed two questionnaires for the project participants. Over 50% of the project participants responded providing insight on informational the needs and the preferred method of receiving that information.

2) Problems encountered during the project.

Perhaps the first and foremost obstacle was the comprehension of the magnitude and scope of the project that was undertaken. The project covers over 4.8 million acres in five counties and includes portions of three major watersheds in western South Dakota. This required the development of a detailed infrastructure, a docket, and the hiring of a coordinator. This process would take almost a year to complete delaying the development of agreements with producers.

There was a conflict over the coordinator position where the NRCS felt that a member of their staff should fill this position while the sponsoring districts felt otherwise. Although the approved overall 319 grant reflected a major contribution of technical assistance, it did not materialize because of budgetary reasons. The NRCS would not provide technical assistance without being compensated by the project. This compensation for technical assistance would be come an issue for other partners in the project. The sponsoring conservation districts held strong on the project coordinator position as a district employee under the direction of Jackson County Conservation District Board. The project entered into a Memorandum of Understanding for a period of two

years that would pay the NRCS for technical assistance and where possible the project paid for the technical assistance provided to other partners to quiet the conflicts. In late 1998 the turmoil relative to the technical assistance was quieted with the NRCS's notification that there would not be a need to renew the Memorandum of Understanding.

The weather that occurred during 1996 and 1997 had many effects on the progress in the project. The wet conditions slowed the technical assistance necessary to do many practices. These same conditions seriously slowed practices requiring contractors. The weather conditions also had an adverse impact on producer economics, which would reach into 1998 when the low gain and livestock continued the economic impacts of the previous two years. These adverse economic conditions required altering the original plan, the rescheduling of practices and in some cases, the cancellation of the plan at the request of the producer.

The availability of contractors was a pressing issue throughout the grant period. Local contractors had more work than they could handle and they would pick and choose their jobs. We worked with the Land Improvement Contractors Association to provide landowners with a list of possible contractors.

The multiple funding sources presented its own set of challenges. The fact that each funding source operated differently and limitations on when and where each could be used made a simple decision difficult at times. It also made bookkeeping very difficult.

In 1999, the process to set Total Maximum Daily Load (TMDL) was to be undertaken for the Bad River per 1998 South Dakota 303(d) Waterbody list. This was an urgent matter for the project sponsors due the Board of Water and Natural Resources adoption of the DENR's staff recommendation to not approve any future Section 319 funding until the TMDL for the Bad River was completed. The project sponsors were assured by DENR staff that the TMDL would be completed in time for an implementation project grant request to be developed for the August 1999 round of Section 319 grants. This process was delayed pending the completion of the "Upper Bad River Basin Study Report"; a report that was referred by the NRCS presenters as a best estimate during a review by the conservation districts. The DENR representative at this review assured the conservation districts that this study would be used recognizing the limitations of the basin study and that it would not effect future funding of the project.

The draft TMDL that was presented to the conservation districts in August was solely for Lake Sharpe and fails to recognize the impairments of the Bad River. Throughout the TMDL process the conservation districts have been misled and misinformed by DENR about the data and use of the Upper Basin Study. Comments, questions and concerns conveyed by the conservation districts during the initial meeting were ignored or avoided by those heading up the TMDL process. Due these activities and the failure to involve the conservation districts in the development process there is relatively strong opposition to the proposed TMDL, with a number of the conservation districts requesting that the lands in their district be excluded from the TMDL. As of the completion of this report this matter remains unresolved.

3) Status reports related to the ongoing work plan

- A) Budget Report by Fund.
- B) Practice/ Conservation District/ Producer Report
- C) Annual Information and Education Activity Reports