CLEAN WATER ACT SECTION 319

NONPOINT POLLUTION CONTROL PROGRAM

FINAL REPORT

LEWIS & CLARK

WATERSHED IMPLEMENTATION PROJECT

SEGMENT 3

SPONSOR

RANDALL RESOURCE

CONSERVATION & DEVELOPMENT ASSOCIATION

Project Coordinators

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This project was conducted in cooperation with the State of South Dakota and the United States Environmental Protection Agency, Region VII

Grant: C998185-07, C998185-08, C998185-09, C998185-10, C998185-11, C998185-12, and C998185-13

EXECUTIVE SUMMARY

PROJECT TITLE: Lewis and Clark Watershed Project Segment 3

PROJECT START DATE: July 20, 2011

PROJECT COMPLETION DATE: September 30, 2014

FUNDING:

Funding Sources

U.S. EPA Section 319 Grants:

C998185-07	$ 21,518.24
C998185-08	$246,770.48
C998185-09	$277,741.80
C998185-10	$ 15,000.00
C998185-11	$492,000.00
C998185-12	$351,481.76
C998185-13	$ 82,258.20
Total 319	**$1,486,770.48**

	Original Budget	**Expended**
Section 319 Grants	$ 492,000	$1,486,770.48
Con. Com.	$ 100,000	$ 92,175.83
Consolidated	$ 475,000	$ 383,404.98
CWSRF	$ 200,000	$ 198,805.66
EQIP	$ 734,790	$1,291,488.58
GF&P-Non-Federal	$ 5,000	$ 0.00
Local cash	$1,407,991	$2,303,595.46
Local In-kind	$ 46,000	$ 5,372.50
US Dept of Agriculture	$ 167,500	$ 110,795.00
US Fish & Wildlife	$ 7,925	$ 0.00
Totals:	**$3,636,206**	**$5,872,408.49**

The project's goal was to restore the beneficial uses of the Lewis and Clark Watershed through the installation of Best Management Practices (BMPs) that target sources of sediment, nutrients, and fecal coliform bacteria. Sponsorship came from the Randall RC&D Council with excellent support from agricultural organizations, federal and state agencies, and local government entities.

Water quality data collections, taken from lake and watershed assessments started in January 2003, were the foundations for the project's objective. The basis for the total maximum daily loads

(TMDLs) was a combination of the Corsica Lake Watershed study and the study on the remainder of the east river portion of the Lewis and Clark drainage, completed in 2005 and 2006 respectively.

The west river portion of the Lewis and Clark, as well as the Lake Andes watershed, was added in 2008 due to producer and partner requests. Best management practices were implemented in these watersheds based on the water quality assessments and while TMDL development was in progress for the drainages, and were based on the water quality assessments previously mentioned. The addition of these watersheds brought the total acreage covered by the project to just over two and a half million acres.

Waterbodies and streams now incorporated in the project area include: Corsica Lake, Dante Lake, Burke Lake, Lake Andes, Geddes Lake, Academy Lake, Rahn Lake, Roosevelt Lake, Lake Platte, Choteau Creek, Emanuel Creek, Ponca Creek, Platte Creek, Pease Creek, Slaughter Creek and Keya Paha River.

The lists of selected BMPs for implementation were mainly associated with reducing pollution from degraded riparian areas and animal feeding operations. Earlier studies and assessments had identified 532 animal feeding operations in the east river portion of the Lewis and Clark project and were given a score based on size and proximity to receiving water. It was determined that the focus for animal feeding practices would focus on those within the top one fourth of this list. The US Department of Agriculture (USDA) Conservation Reserve and Environmental Quality Incentive (EQIP) Programs were determined to be the best source for funding to help implement practices in conjunction with the 319 dollars.

A steering committee was formed in 2007 to help give guidance and track the progress of the Lewis and Clark project. This committee was comprised of representatives from eleven conservation districts, USDA offices of the Farm Services Agency (FSA) and Natural Resource Conservation Service (NRCS), water development districts, county commissioners, and other local, state, and government organizations. This steering committee continued to meet twice a year during the course of this segment to give input on practices and progress.

Producer meetings, tours of completed projects, direct mailings, and print media were used to promote information and awareness on how producers might access BMP design and installation from the project. Equally as important was the connection with partner agencies and one on one producer visits to achieve the amount of practices installed.

A summary of the BMPs installed during the three project segments, as well as the load reductions realized from the installation, is shown below. The table includes a comparison of the planned versus accomplished milestones for each segment and a cumulative for the project to date.

BMP	Milestone							
	Segment 1		Segment 2		Segment 3		Totals	
	Planned	Installed	Planned	Installed	Planned	Installed	Planned	Installed
Cropland – 42,000 Acres	750	24,502	10,000	14,028	15,000	10,162	**25,750**	**48,692**
Grassland – 161,000 Acres	1,500	8,859	4,000	7,201	17,000	42,852	**22,500**	**58,912**
AWMS– 100 systems	8	18	16	12	16	8	**40**	**38**

The load reduction summary reflects the reductions calculated for the BMPs installed in the Lewis and Clark project area using the Step L load reduction calculator. Groupings show the breakdown for each segment and a column for the total reductions realized over the course of the project for each nutrient.

Best Management Practices	# of Projects	N (Pounds)				P (Pounds)				Sediment (Tons)			
		Seg. 1	Seg. 2	Seg. 3	Total	Seg. 1	Seg. 2	Seg. 3	Total	Seg. 1	Seg. 2	Seg. 3	Total
Cropland BMPs	**915**	**206,898**	**117,220**	**76,395**	**400,513**	**67,916**	**40,466**	**24,003**	**132,385**	**47,930**	**31,774**	**17,051**	**96,755**
Ag Waste Systems	**41**	**153,299**	**177,439**	**197,850**	**528,588**	**33,256**	**39,416**	**43,672**	**116,344**	**33**	**544**	**115**	**692**
Grazing Management	**200**	**27,878**	**36,608**	**99,262**	**163,748**	**6,037**	**9,310**	**23,434**	**38,781**	**4,043**	**4,758**	**16,877**	**25,678**
Total	**1156**	**388,075**	**331,267**	**373,507**	**1,092,849**	**107,209**	**89,192**	**91,109**	**287,510**	**52,006**	**37,076**	**34,043**	**123,125**

The individual practices and BMPs used to achieve these reductions are presented in detail in the Project Goals, Objectives and Activities, and Monitoring sections of this report respectively.

Data collected during monitoring activities and information from the tables above show that the project has attained the goals established for this segment. Cropland BMPs have achieved the goal set for the nine year strategy for implementation of the TMDLs. Grazing management acres and Ag waste systems are ahead of schedule as well.

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INTRODUCTION

The Lewis and Clark Watershed Project was initiated during January 2003 at the request of several local organizations that had expressed concerns relative to sediment loads being deposited in Lewis and Clark Lake. Studies place the estimated amount of sediment load deposited in the lake at approximately 2,600 acre feet each year (= one square mile of mud 4.06 feet deep). The sediment deposited has resulted in the formation of a delta (Figure 1) which is progressing down river from west of Springfield, South Dakota toward Gavin's Point Dam. At the estimated rate, the sediment loads are expected to significantly reduce the designed 75 – 135 year life span of the reservoir. Figure 2 shows the projected movement of the delta downstream over a 150 year time period if action is not taken.

Figure 1. Lewis and Clark Lake Delta near Springfield, South Dakota.

The original scope of the project included activities designed to identify sources of sediment entering the impoundment and begin developing remediation strategies to reduce the loading. The South Dakota Department of Environment and Natural Resources (DENR) partnered with the Nebraska Department of Environmental Quality (NEDEQ) to complete the actions. The partners agreed to share water quality data and consider remedial actions that may be indicated.

During the first year of the partnership, it was mutually agreed that the determination of remedial actions could best be accomplished by:

- inventorying and evaluating the animal feeding operations in the watershed,
- completing water quality assessments of the Lewis and Clarke Lake subwatersheds to determine the total nonpoint source (NPS) loads from the subwatersheds,
- develop total maximum daily loads (TMDLs) based on the data and
- then install best management practices (BMPs) to reduce the loads to levels that would support attainment of the designated beneficial uses of waterbodies in the subwatersheds.

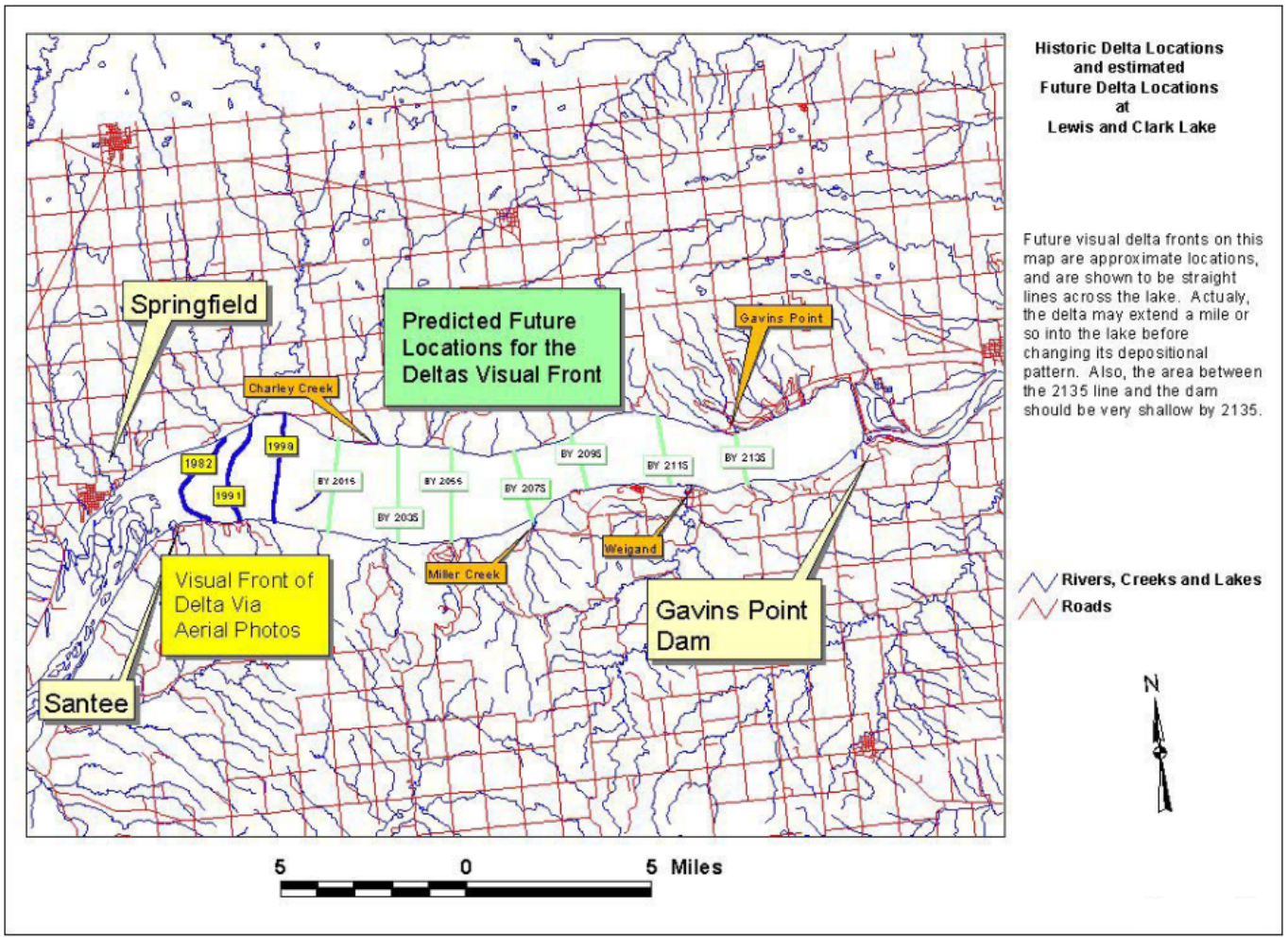

Figure 2. Delta Development at the Current Sediment Deposition Rate.

It was determined that the completion of activities outlined above will require a 10 – 15 year effort. Given the length of time required to complete the activities, the partners agreed that the project could best be completed using a segmented approach with each two to three year project segments building on the water quality data collected during and accomplishments of the previous

Watershed assessments were initiated during 2003 with the approval of the South Central Lakes Project. The South Central Project was designed to identify sources of water quality impairment and develop TMDLs for Corsica Lake, Dante Lake and Lake Andes. Segment 1 of the implementation phase of the Lewis and Clark Watershed Project, was initiated during 2006 to:

- begin implementing the TMDL approved for Corsica Lake during 2005,
- complete the water quality assessments of the waterbodies located in the South Central Lakes Project area and
- develop a strategy to guide the completion of the entire Lewis and Clark Project based on the:
  - Lewis and Clark Initial Watershed Assessment and
  - animal feeding area assessments completed using stakeholder input and the Annualized Agricultural Nonpoint Source Assessment Model (AnnAGNPS) stand-alone feedlot model.

The project area was expanded to include the Lake Andes watershed, Platte Creek, and west river portion of the Lewis and Clark Lake Watershed during 2008. The additions were made in response to requests from project area stakeholders and groups. Association members had concluded that addressing NPS pollution from livestock feeding areas and grazing lands was a key element in successfully providing for the sustained, profitable existence of the livestock industry in south central South Dakota.

More recent additions to the project area include the Geddes Lake, Platte Lake and Academy Lake sub-watersheds which were included in the South Central Lakes Project.

Information follows regarding the;

- waterbodies included in project area as it existed at the end of Project Segment 3
- status of water quality impairments to the waterbodies,
- TMDLs developed to address the impairments.
- activities completed to begin remediation of the impairments and
- actions necessary to prevent impairments from developing in the future.

Project Area

Lewis and Clark Lake is a man-made reservoir on the Missouri River created by the earthen Gavin's Point Dam. It has a pool length of 25 miles, a maximum depth of 45 feet, and has a surface area of 31,400 acres. Major drainages into the reservoir include Emanuel Creek, Choteau Creek, Snatch Creek, and the Niobrara River (Nebraska). The western portion includes the watersheds of the Keya Paha River and Ponca Creek, which are both tributaries of the Niobrara River. Included in the project area are the 303d listed waterbodies and sub-watersheds of the Corsica Lake, Dante Lake, Lake Andes, Rahn Dam, Roosevelt Dam, Academy Lake, Platte Lake, Geddes Lake, Platte Creek, Andes Creek and Pease Creek.

The project area includes the South Dakota portion of four Hydrologic Units (HUs). The HUs with the main waterbody associated with each the HU are listed below. An outline map showing boundaries of the major drainages in the project area is located in Figure 3.

- HU 1015006 - Keya Paha,
- HU 10170101 - Lewis and Clark Lake,
- HU 10150001, Ponca and
- HU 10140101 - Lake Andes

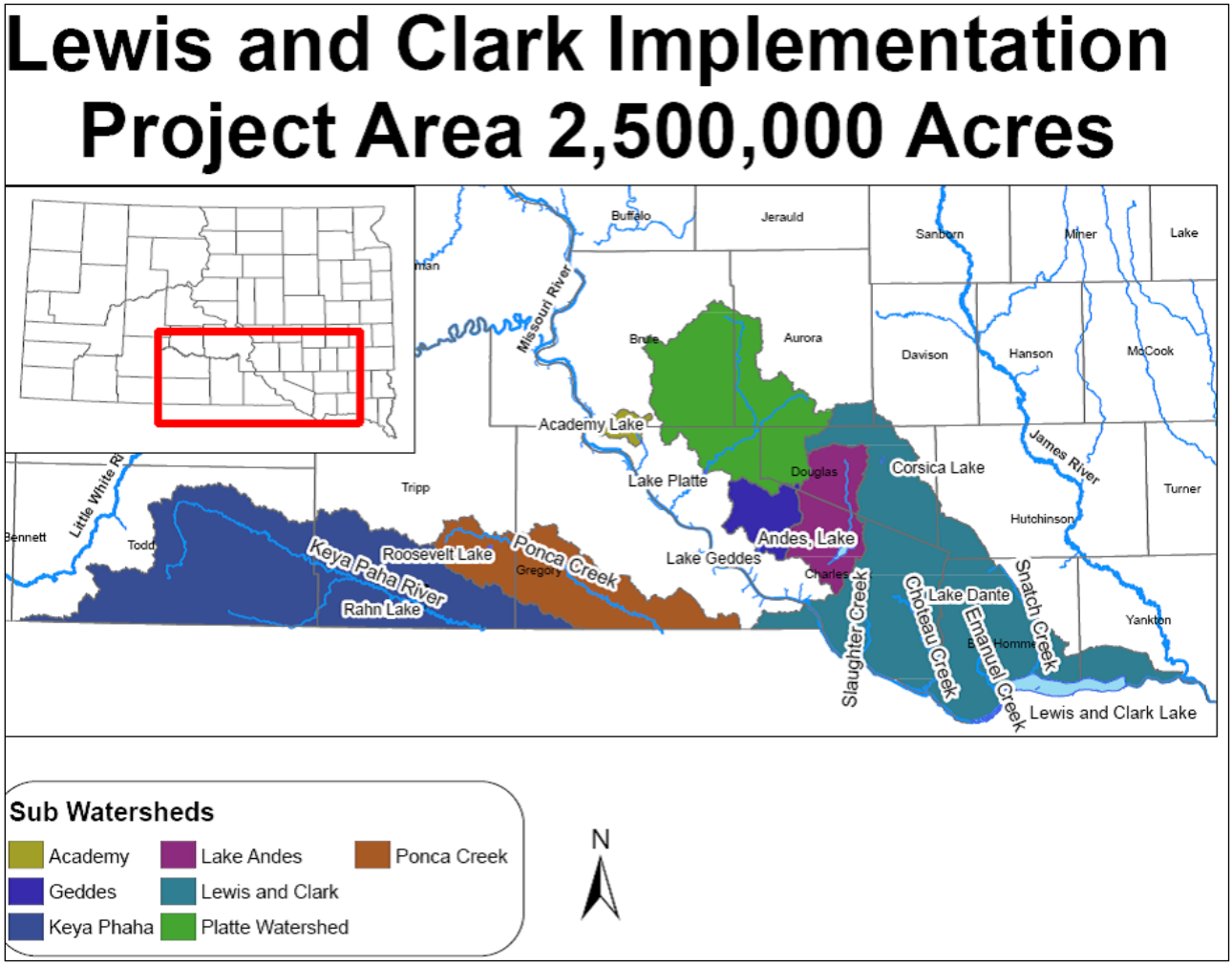

Figure 3: Lewis and Clark Project Area by Subwatersheds.

Lewis and Clark Lake has a drainage area of approximately 10,000,000 acres, with 1,900,000 acres of the total in South Dakota. Of the total, 750,000 acres are located within the portion of the project area located east of the Missouri River; 1,150,000 acres west of the Missouri River. The Lake Andes Watershed and the combined Geddes, Academy and Platte Lake watersheds added 95,000 and 465,000 acres respectively to the project area bringing the total project area to nearly 2.5 million acres.

Land use in the project area is primarily cropland and grazing. Row crops and hay are the main commodities produced on cultivated lands. Land use transitions from 70 percent cropland east of the Missouri River to 80 percent grasslands used primarily for livestock grazing and small grains west of the river.

Although the makeup of land within the boundaries of the Lewis and Clark Watershed are predominantly agricultural lands there are 20 urban sites located in the project area. The largest of these cities is Springfield (1980), Antelope (1220), Armour (700), Bonesteel (271), Burke (601), Colome (284), Corsica (594), Delmont (235), Fairfax (114), Geddes (209), Gregory (1272), Harrison (55), Herrick (104), Kimball (713), Lake Andes (831), Marty (459), Mission (1221), Tabor (417), Tyndall (1060), Tripp (625), and Wagner (population 1487).

Average annual precipitation in the project area varies from 18 inches in the west to 24 inches in the east. Approximately 75 percent of the total is from rainfall during the months of April through September. The remainder is from melt water from the 36 inches of snow that falls on the area each winter. Tornadoes and severe thunderstorms are localized events, of short duration and occasionally produce heavy rainfall events.

Waterbody Description

Corsica Lake

Corsica Lake is a man-made impoundment created by an earthen dam across the upper section of Choteau Creek. The 56,038 acre watershed is located in south eastern Aurora County, extreme south western Davidson County, and north central Douglas County, South Dakota. Agricultural lands compose the watershed with 70% being cropland and the remaining 30% being rangeland. A sediment survey for Corsica Lake was completed during the winter of 2000. Water and sediment depths were determined throughout the lake to estimate/calculate the total amount of deposited material in the lake. A mean sediment depth of 3 feet and a mean water depth of 5.7 feet were recorded during the assessment, with a maximum depth of 11 feet. Figure 4 shows the drainage area of the lake and it was the focus of the beginning of the Project Segment 1 implementation effort.

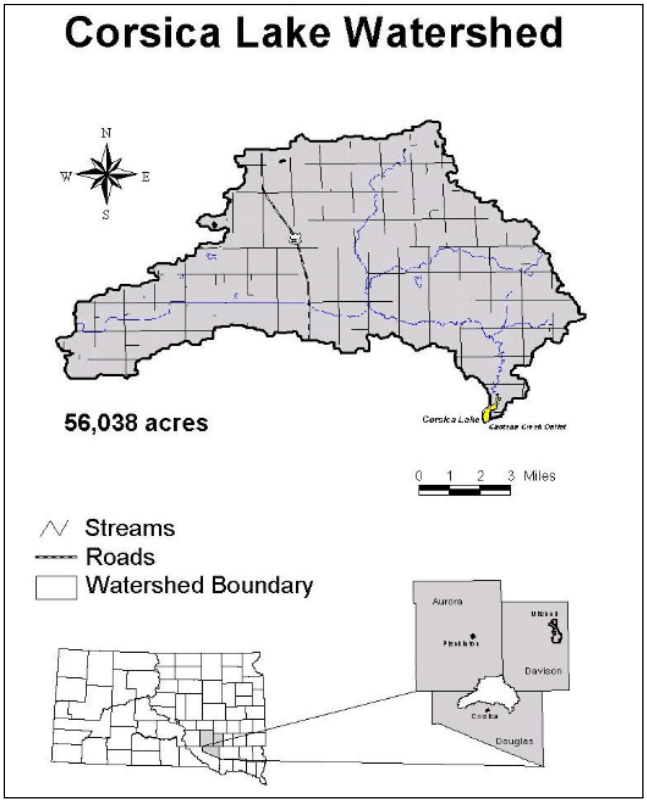

Figure 4: Corsica Lake Watershed.

Lake Andes

Lake Andes is a shallow prairie lake located in northern Charles Mix County; SD. Historically Lake Andes was a natural lake in a bedrock valley buried by mostly glacial till. The 141,000 acre watershed consists of mainly agricultural lands which 70% is cropland and 30% rangeland. Two county roadway dikes were constructed during 1938-39 that divide the lake into three units: North Unit, Center Unit, and South Unit. The North Unit receives most of its inflow from Andes Creek and an unnamed tributary. The North Unit has a maximum depth of approximately 7 ft. at which the North Unit spills into the Center Unit through a culvert in the roadway dike. The Center Unit receives a majority of is inflow from the North Unit and two of the monitored unnamed tributaries. The Center Unit has a maximum depth of approximately 8 foot at which the Center Unit spills into the South Unit through the second roadway dike culvert. A majority of the South Unit inflow originates from the Center Unit and three monitored drainages.

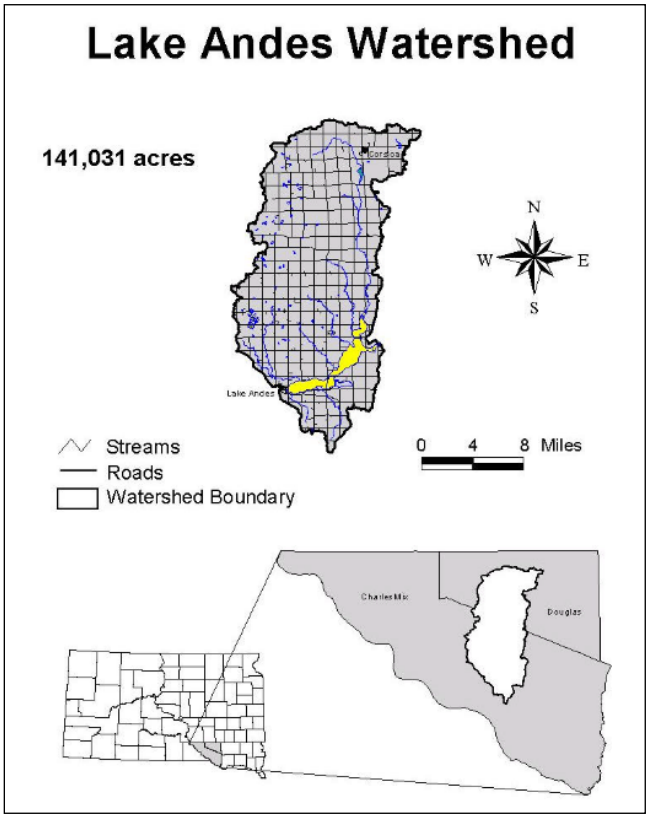

Figure 5: Lake Andes Watershed.

Keya Paha River

The Keya Paha River drains over 1 million acres in South Central South Dakota and discharges to the Niobrara River in Nebraska. The river receives runoff from agricultural operations. The river experiences periods of degraded water quality due to total suspended solids concentrations. The land use in the watershed is predominately agricultural consisting of cropland (42%) and grazing (57%), with the remaining 1% of the watershed composed of water and wetlands, roads and housing, and forested lands. These percentages are considered representative of both the watershed as a whole, as well as the drainage area immediately surrounding the listed segment. The contributing drainage area is composed of 17% Nebraska Lands, 50% Tripp County Lands, and 33% Todd County Lands.

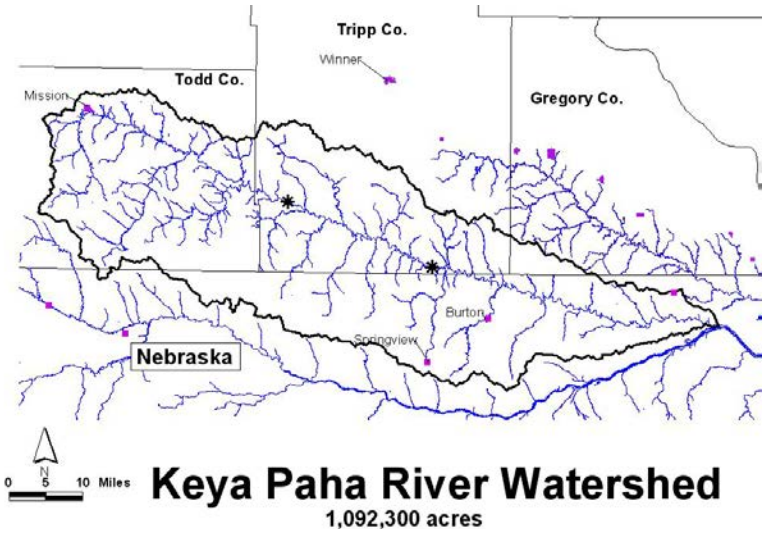

Figure 6: Keya Paha River Watershed.

Platte Creek

Platte Creek drains 370,000 acres in Central South Dakota and discharges into the Missouri River below Platte Lake. Its drainage includes portions of four different counties Aurora, Brule, Charles Mix, and Douglas. The land use in this watershed is mainly agricultural with 59% being cropland and 40% consisting of pasture and rangeland. Kimball and Platte are the two small communities included in the drainage area. Support from local groups and producers were the basis for adding the Platte Creek into the Lewis and Clark Implementation Project as a protective measure for the watershed.

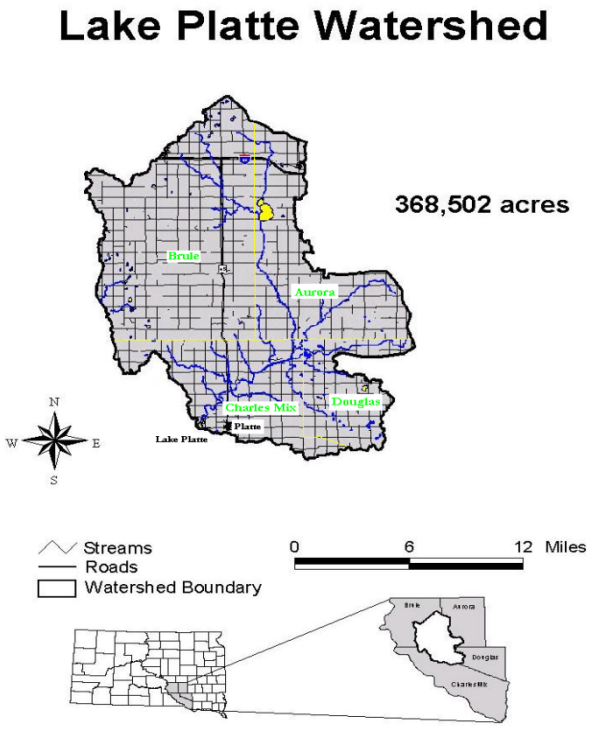

Figure 7: Platte Creek Watershed Map.

Choteau Creek

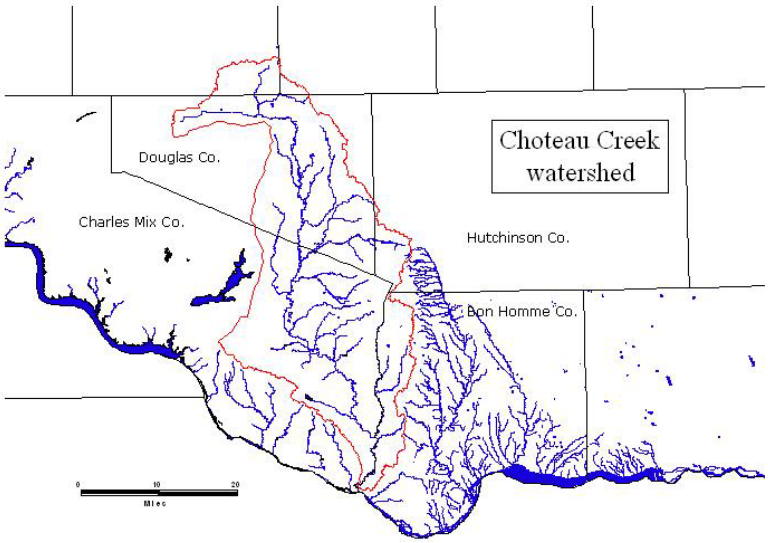

Figure 8: Choteau Creek Watershed.

Choteau Creek drains 375,000 acres in southeast South Dakota (Figure 8) and discharges to Lewis and Clark Lake on the Bon Homme and Charles Mix County line. The stream receives runoff from agricultural operations. During the assessment, data were collected indicating the creek experiences periods of degraded water quality as a result of TSS loads. The land use in the watershed is predominately agricultural consisting of 45% grass, 40% row crops, 7% small grains, 6% developed (including farmsteads, roads, and small communities), 1% forestland and wetlands.

There are four small communities within the watershed they include Wagner, Delmont, Avon and Armour. Corsica Lake is an impoundment on the upper reaches of this stream.

Emanuel Creek

Emanuel Creek drains 120,000 acres in South East South Dakota and discharges to Lewis and Clark Lake in Bon Homme County. The stream receives runoff from agricultural operations. During the Lewis and Clark Watershed Assessment, it was determined that the creek experiences periods of degraded water quality due to total suspended solids concentrations. The land use in the watershed is predominately agricultural consisting of cropland (61%) and grazing (32%), with the remaining portions of the watershed composed of water and wetlands (2%), roads and housing (4%), and forested lands (1%). These percentages are considered representative of both the watershed as a whole, as well as the drainage area immediately surrounding the listed segment.

Emanuel Creek was assessed as an individual portion of the larger Lewis and Clark Watershed Assessment which looked at individual streams such as Emanuel Creek as well as the entire drainage basin and the cumulative effects of the individual waterbodies. Feeding area analysis was conducted basin wide, with over 500 individual feeding areas examined. Ninety-seven of these feeding areas were located in the Emanuel Creek drainage.

Ponca Creek

The entire Ponca Creek watershed drains 520,000 acres in South Dakota and Nebraska and discharges to Lewis and Clark Lake near Verdel Nebraska. The 303(d) listed segment that this TMDL addresses drains approximately 240,000 acres of Gregory and Tripp Counties in south central South Dakota. The communities of Burke, Colome, Dallas, Gregory and Herrick all reside within the listed segments drainage. The population of the watershed is approximately 2,900 with nearly half residing in and around the community of Gregory

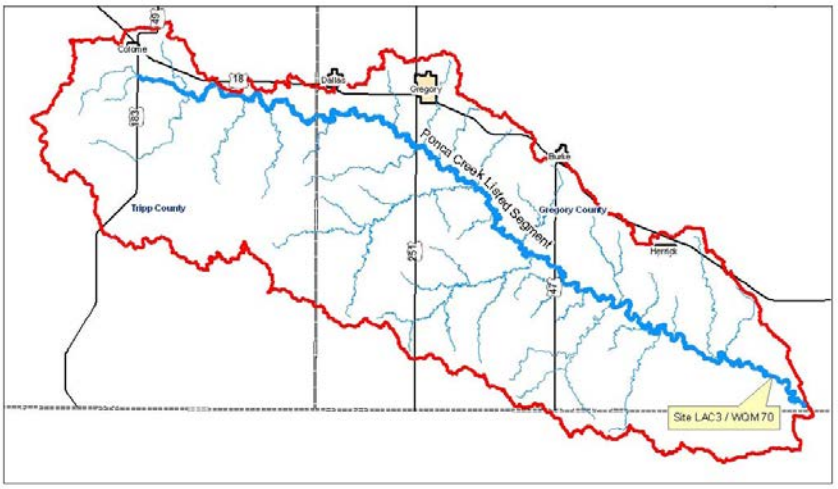

Figure 9: Ponca Creek Watershed Map.

Land use in the watershed is predominately agricultural in nature. Major landuse categories are 78% native rangelands, 8% row crops, 6% developed (this includes road right of ways), 3% small grains, 2% hay ground, 1% forested, and 1% water and wetlands.

Ponca Creek was assessed as an individual portion of the larger Lewis and Clark Watershed Assessment, which looked at individual streams such as Ponca Creek as well as the entire drainage basin and the cumulative effects of the individual waterbodies on Lewis and Clark Lake.

Dante Lake

Dante Lake is a small impoundment on Dante Creek, a tributary of Choteau Creek, near the south eastern boundary of Charles Mix County, South Dakota. The reservoir has an average depth of 11 feet and a maximum depth of 23 feet. Dante Creek is the primary tributary to Dante Lake which drains a small 2884-acre watershed of 80% cropland and 20% grazing lands. It was listed as a degraded waterbody during 2004.

Geddes Lake

Geddes Lake is a man-made impoundment located on Pease Creek in south-west Charles Mix County. The lake has an average depth of 3.2 feet and a maximum depth of 12 feet with drainage area of 76,000 acres.. The drainage consists of agricultural lands with 79% being cropland and 21% rangeland. The outlet drains into Pease Creek and eventually empties into the Missouri River. Approximately 47 feedlots have been identified in the watershed.

Platte Lake, Burke Lake, Roosevelt Lake, Rahn Dam, Antelope Creek, Slaughter Creek and Snatch Creek.

These streams and waterbodies are listed but do not have assessments or TMDL's completed at this time. They are being treated with the same BMPs that are used on the above listed water bodies. These BMPs deal with sedimentation and nutrient loading to protect the watersheds from further degradation from non-point sources.

For a detailed description of the waterbodies, water quality assessment reports, impairment status and TMDLs developed for the waterbodies, access the following web site.

http://denr.sd.gov/dfta/wp/tmdlpage.aspx

Non-point Source Pollutants

Fecal Bacteria

The Lewis and Clark assessment report identified approximately 500 animal feeding operations that contribute fecal contamination to the tributaries of the Lewis and Clark Lake. Of the total, 125 were determined to be priority operations requiring the construction of animal waste management systems (AWMS) with accompanying nutrient management plan to reduce the fecal load. Evidence also pointed to improper spreading of manure on fields to be responsible for the levels whether by excessive rates or by incorporating in high run off areas.

Sedimentation

Three primary sources of sediment loading identified included:

- sheet and rill erosion of cropland,
- degraded riparian areas and
- channel erosion.

1. Sheet and Rill Erosion

Modeling indicates that in western portion of the watershed cropland erosion is not critical to the sediment load, mainly due to lower percentages of cropping land in the watershed. Modeling indicated that many tributaries of the Keya Paha and Niobrara Rivers were found not to generate significant sediment loads. Some eastern South Dakota watershed areas, particularly in Bon Homme County, may benefit from activities aimed at cropping practices – such as reduced tillage, no till, and buffering systems. To a larger extent, managed grazing systems, which would improve range condition and reduce runoff, will benefit the reservoir.

2. Riparian Areas

   The AGNPS model indicated concerns regarding riparian conditions. Data indicated that degraded riparian areas and channel erosion were a significant source for sediment entering the reservoir. Complexities of some of the degraded areas will require additional site specific analysis before any BMP designs. Eroded channels appear to be the result of several different causes, and in some cases a combination of causes in various locations in the watershed. Causes of degradation are listed below:

   - Season long grazing, overstocking, and unmanaged grazing of stream banks may be one of the larger contributors to degraded channels.

   - Culvert sizing and placement has created some localized erosion problems downstream from their placement

   - Poor ecological range condition on some of the uplands has created increased runoff that has led to channel erosion.

3. Channel Erosion

   Data gained using the Annualized Agricultural Nonpoint Source (AnnAGNPS) Model and Rapid Geomorphic Assessments (RGAs) identified degraded riparian areas and channel erosion as significant sources for sediment entering the reservoir. Eroded channels appear to be related to management practices, and in some cases, a combination of practices. These include:

   - season long grazing, overstocking and grazing along streambanks appear to be associated with much of the degraded channels identified,
   - improper sizing and placement of culverts has resulted in channel erosion downstream from where water carried by the culvert empties into the stream and degraded ecological range.

A summary of designated use impairments identified using ambient water quality sampling and water quality assessments completed or in progress and TMDL status are shown in Table 1. In

addition to beneficial uses not supported, the parameter exceeded is identified and the TMDL(s) and TMDL implementation status are indicated. The beneficial uses are listed by number with:

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

A TMDL status of delisted indicates either that additional water quality sampling indicated the parameter to be within established standards or there was a change in listing criteria, i.e. use of trophic state index (TSI) as an indicator of nonsupport.

While delisting may have removed an impaired designation and identification as a priority waterbody which requires development of a TMDL, the data collected during water quality assessments will be used to target BMP installation to areas identified as sources of greater NPS loads. Doing so will:

- contribute to implementation of TMDLs of the entire Lewis and Clarke, Lake Andes and other subwatersheds in the project area that receive runoff from sources identified and
- protect water quality and thereby minimize instances of impairment and subsequent requirement to develop TMDLs in the future.

Table 1. Summary of Designated Use Impairment and TMDL Status.

Warterbody	Water Quality Support							
	Impaired Beneficial Use(s)*	Parameter(s) Exceeded	TMDL Status	Reductions Needed to Implement TMDL				
				N	P	Sediment	E.Coli	DO (mg/m_2.day)
Academy Lake	4	TSI	Delisted	**				
Lake Andes	6,7, 8	DO	Public Noticed		50% = 17.46 T/yr			
		TSI	Delisted					
Antelope Creek	5							
Burke Lake	5	DO, pH	Approved		88% = 54 lb/yr Chemical treatment			Aerate to compensate for O_2 deficient rate of 510 mg/m_2/day
		Phosphorous (TSI)	Approved					
Corsica Lake	6	DO/pH	Delisted					
		TSI	Delisted					
Choteau Creek (Wagner to Mouth)	5	DO	Delisted					
		TSS	Delisted					
Dante Lake	4	Temp.	Not Initiated	64% = 101 lb/yr (tributary) Inlake (TP) chemical trt = 30%				
		DO	Approved					
Emmanuel Creek Lewis and Clark Lake to S20,T94N,R6W	5,8	Fecal Coliform Bacteria/E.coli.	Approved			High flow 58% = 803T/day	By flow: High 99% Middle 23% Low 0%	
		TSS	Approved					
Geddes Lake	5	TSI, DO	Approved	30% = 615 lb/day Chemical trt during growing season				Aerate to compensate for O_2 deficient rate of 72.01 mg/m_2/day
		pH	Not initiated					
Keya Paha River: Keya Paha to Nebraska border	5,8	Fecal Coliform Bacteria	Approved				By flow High 64% Moist 57% Mid 38%	
		E.coli.	Approved					
		TSS	Delisted					
Lewis and Clark Lake	4,7,8	TSS	Delisted					
		Fecal Coliform Bacteria	Delisted					
Platte Lake	6	TSI	Delisted					
Ponca Creek: Gregory to St. Charles	5,8	Fecal Coliform Bacteria	Approved			By Zone 1 – 85%=935.1T/day 2 – 47%=15.55 T/day 3 – 0%	By flow High 19% Mid 11% Low 95%	
		TSS	Approved					
Rahn Lake	4	TSI – Chlorophyll - a	Assessment initiated					
Roosevelt Lake	4	Mercury	Assessment initiated					
		TSI	Delisted					
Sand Creek	9,10	Insufficient data						
Slaughter Creek Missouri River to Headwaters	9,10	TDS/Conductivity	Assessment initiated					

Project Segment 1 Accomplishments

Project Segment 1 was completed September 30, 2009 with the final report submitted during November of same year. Accomplishments realized in Segment 1 were as follows:

- A steering committee was formed made up of representatives from local, state, and Federal government agencies and organizations.
- project area was expanded to include the remainder of east river drainages into Lewis and Clark Lake and the west river portion of including the Keya Paha River and Ponca Creek watersheds.
- TMDL's were completed for the east river portion of the Lewis and Clark watershed.
- BMPs were installed on 25,500 acres of cropland, 8900 acres of grazing lands, and 18 animal waste systems were built.

The Randall Resource Conservation and Development Association (RC&D), the project sponsor accomplished the tasks included in the project PIP using the services of a project coordinator provided through an agreement with the South Dakota Association of Conservation Districts (SDACD).

The coordinator planned and installed BMPs through partnerships with local, state, and federal agencies. This conservation partnership helped facilitate:

- matching practices that realized the best load reduction results needed to implement the TMDL with each producer's operation and management capabilities.
- Targeting cost share funds from project partners to specific practices and activities.
- to establish more efficient use of project and partner resources.

USDA Farm Service Agency (FSA) Conservation Reserve Program (CRP) and Natural Resource Conservation Service (NRCS) Environmental Quality Incentive Program (EQIP) were determined the best source of funds with which to provide farmers and ranchers with cost share funds to install the BMPs. Other major sources of cost share funds included the US Environmental Agency Clean Water Act Section 319 and South Dakota Consolidated Water Construction Fund Grants provided through the SD Department of Environment and Natural Resources (DENR). These programs have been used throughout all of the segments in this project.

Figure 10 on page 14 illustrates the location of BMPs installed in Segment 1 of the project, practices are broken down into grazing, critical area planting, and ag waste systems. Load reductions for the Segment, using the Step L Modeling tool, can be found in Table 4 on page 44. A copy of the Segment 1 final report is available by accessing the following website.

http://denr.sd.gov/dfta/wp/wqprojects/tmdl_lewisandclark319final.pdf

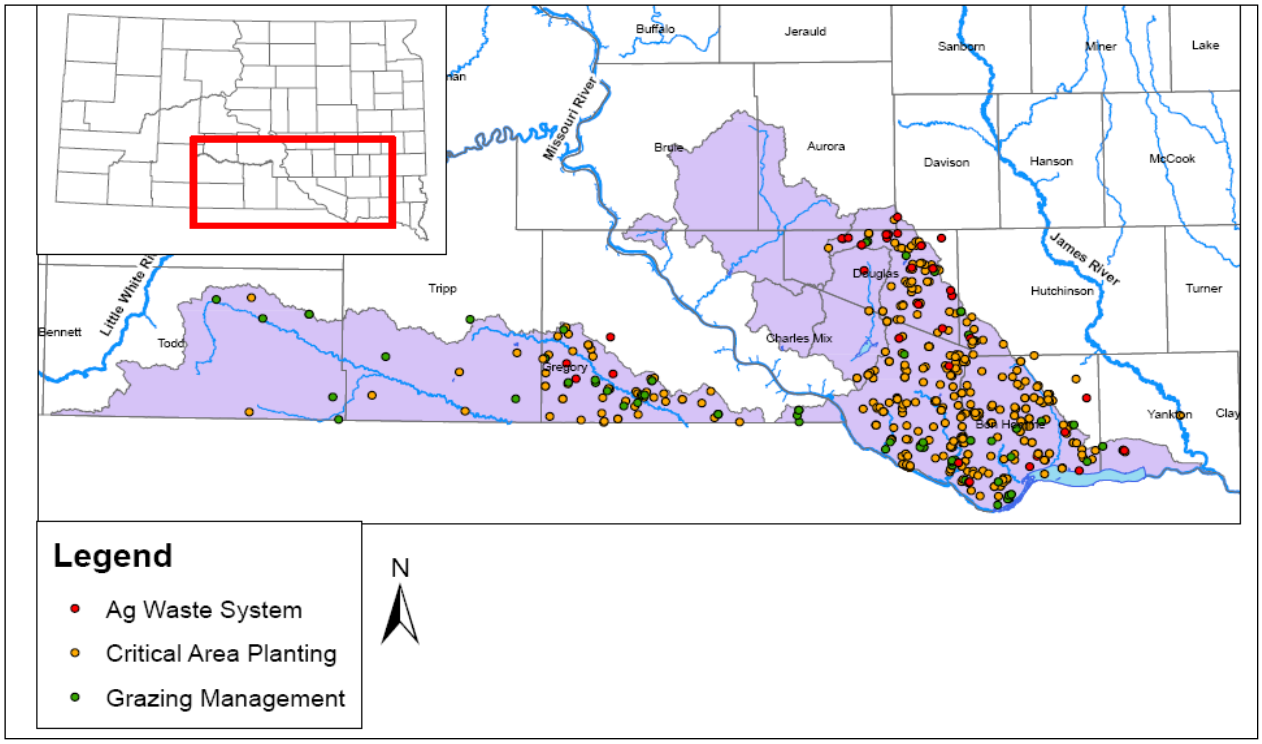

Figure 10: BMPs Installed During Project Segment 1.

Project Segment 2 Accomplishments

Project Segment 2 was initiated during June 2009 and ended during July 2011 and continued work started in the previous segment. The drainage area of Platte Lake was added during this segment, bringing the total coverage area of the project to just under 2.5 million acres, to accommodate the growing project a second coordinator position was created and filled. Goals of this segment were:

- continue BMP implementation in the Lewis and Clark project area with installation targeted towards priority BMPs identified in the watershed assessment
- conduct a public education and outreach campaign to inform landowners, stakeholders and area residents of the water quality issues and emphasize opportunities for participation in the project.

Information presented in the Segment 2 Final Report indicates that Segment 2 met or exceeded BMP milestones set by the project and its stakeholders. Table 4 shows the load reductions estimated by the Step L program for each type of practices installed. Figure 11 on the following page shows a map indicating where practices were completed in Segment 2. Several workshops and informational meetings were held to inform the public and stakeholders on how the project operates and on how to participate in the programs offered. Two tours were held to show producers how the finished practices function.

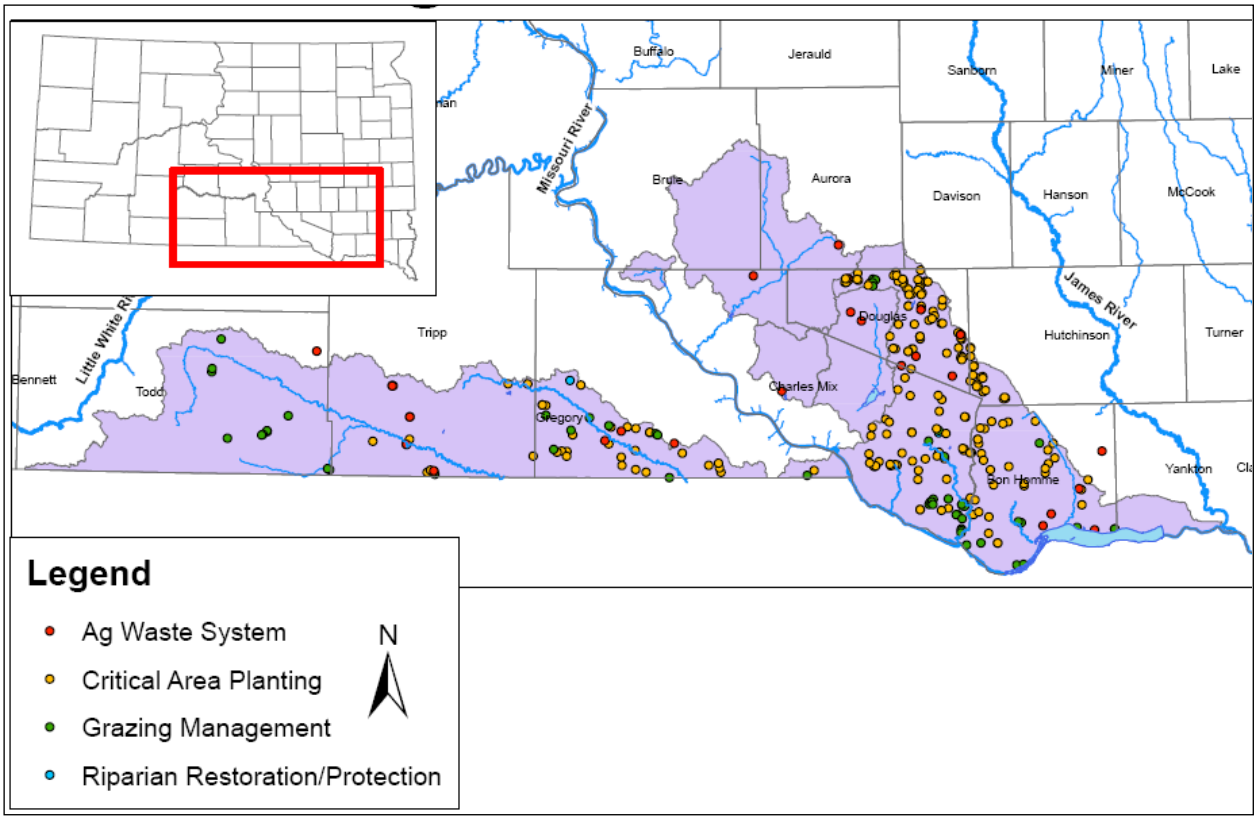

Figure 11: Location of BMPs Installed during Segment 2.

Randall RC&D Council remained an active sponsor for the project, hosting steering committee meetings and keeping stakeholders informed of project progress. Producer participation remained strong and BMPs were installed on 14,000 acres of cropland, 7,200 acres of rangeland, and 12 animal waste systems were built during Segment 2 of the project.

The Lewis and Clark Watershed Implementation project Segment 2 final report can be found at: (http://denr.sd.gov/dfta/wp/wqprojects/tmdl_lewisandclarkimpseg2.pdf)

Project Segment 3 Accomplishments

The Segment 3 of the project began during July, 2011 and ended during September, 2014. Goals to be realized in this segment were much the same as previous segments and producer participation for offered practices remained strong.

Data presented in this report indicate that most benchmarks established by the original Project Implementation Plan (PIP) were met for this Segment of the project. The tasks completed during this Segment to install BMPs that reduce NPS pollution from the watershed are described in the Project Goals, Objectives and Activities section of this report.

PROJECT GOALS, OBJECTIVES, AND ACCOMPLISHMENTS BY TASK

The goal of the Lewis and Clark Watershed Implementation Project is to restore the beneficial uses in Lewis and Clark Lake, and the watersheds of Lewis and Clark Lake, Geddes, Academy, Platte Lake and Lake Andes Lake. This will be accomplished through the installation of Best Management Practices (BMPs) in the watersheds that target sources of sediment, nutrients, and fecal coliform bacteria. This project, Segment 3, properly addressed and targeted BMP installation in the entire South Dakota portions of the Lewis and Clark Lake Watershed and also provided technical and financial assistance in the above mentioned sub-watersheds.

Project Segment 3 worked to achieve the following goals:

- Continue BMP implementation in the Lewis and Clark Watershed, Geddes, Academy, Platte Lake and Lake Andes Lake Watershed targeted towards installation of high priority BMPs identified in the Watershed Assessment.
- Conduct a public education and outreach campaign to educate and inform landowners, stakeholders, and area residents on water quality issues and BMPs associated with the Lewis and Clark Lake Watershed.

The practices that were installed were based on information from the South Central Lakes Watershed Assessment and the Lewis and Clark Watershed Assessment, and are summarized in Table 2.

Table 2. Estimated Best Management Practices Implementation by Project Segment - Shaded area is Segment 3.

Best Management Practices identified in the Watershed Assessments	Estimate of Acres/Practices to attain Project Goal (July 2006) Start	Segment 1 (Through 6/30/2009) Progress completed As of August 25, 2008	Estimate of Acres/Practices Segment 2 (2 years period) (end of year 5) (July 2011) Aug.26, 2008 to Sept. 30, 2011	Estimate of Acres/Practices Segment 3 (3 years period) (end of year 7) (September 2014) Segment 3
Cropland BMPs				
Filters/Buffer Strips, Grassed Waterways, Conservation Cover, Tree Planting	42,000 acres	750 acres	10,000 acres	15,000 acres
Grassland BMPs				
Planned Grazing Systems, Grass Seeding, Riparian Buffers, Grassed Waterways, Riparian Area Management	161,200 acres	1500 acres	4000 acres	17,000 acres
Animal Waste Management	100	8	15	14

Areas targeted for cropland and grassland BMP installation were identified and prioritized from data provided by the watershed assessment. Animal feeding operations were prioritized using data from the AnnAGNPS feedlot model and other factors such as proximity to a stream or receiving waters. A score was given to each feeding area and a list was compiled ranked from worst to least based on pollution probability. Feedlots for this project had to be on the top one fourth of the list to be eligible for cost share with 319 dollars.

Landowners and operators provided BMP assistance were required to sign an agreement that outlined the responsibilities of both the operator and sponsoring agency. A clause was in this agreement that spelled out the operation and maintenance which specified the life time of the practice and consequences of abandonment or transfer of property. The life of the practices were obtained from NRCS' list of Operation and Maintenance schedule.

As practices were installed they were also tracked on SD DENRs Tracker program. This system keeps track of expenses, load reductions, and geographic locations. A map of BMP locations for this segment can be found in Figure 49 on page 43. This figure displays the type of BMP installed along with the location.

Load reductions for BMP installation in this segment were determined by the Spreadsheet Tool for Estimating Pollutant Load (Step L). A list of load reductions for Project Segment 3 can be found in Table 5 on page 44.

Strategic Water Plans were written for the project during Project Segment 3. Due to different land uses they were broken down into an east river, where row cropping is the dominant land use, and a west river plan where grazing is the major land use. These reports were meant to be used as a guide to coordinate partner efforts for implementation of the TMDLs and included a dollar figure for installation of the selected practices over a five year period. Reports can be accessed at the following link:

http://denr.sd.gov/dfta/wp/wqprojects/lewisandclarkeastplan2012.pdf

http://denr.sd.gov/dfta/wp/wqprojects/lewisandclarkwestplan2013.pdf

One note of interest that occurred in this timeframe was the extreme weather swings that happened during the first two years of the segment, 2011 and 2012. 2011 saw the project area experience heavy spring and summer rainfall events in succession, combined with a rapid melt of the snowpack in the upper reaches of the Missouri River Basin, led to historic lake levels and discharges from the mainstem dams on the Missouri River system. A year later a large portion of the Lewis and Clark project area was in the grips of an exceptional drought, as illustrated in Figure 15 on page 20, both events had a large impact on producer's area wide and increased demands for services and practices offered by the project.

Objective 1: Reduce nutrient, sediment and fecal coliform loading in the Lewis and Clark Watershed and the Lake Andes Watershed through the installation of Best Management Practices.

Task 1: Plan and implement cropland and grassland best management practices (BMPs)

Figure 12. Grass Buffer on Rahn Lake, Tripp County.

Provide assistance to landowners with installation of BMPs on cultivated cropland and grassland BMPs in the watershed that reduce fecal coliform, nutrient, and sediment loadings from cultivated cropland and grasslands. BMPs will primarily be installed with landowner investments along with USDA programs (EQIP/CRP/WHIP), as well as Wildlife agency programs (US Fish and Wildlife, SD Game, Fish, and Parks, and Pheasants Forever). Project on grassland and/or cropland BMP implementation will be targeted towards critical cells in riparian area identified in the watershed assessment.

Product 1: 15,000 acres of cropland benefitted from BMP installation by landowners.

BMPs installed by landowners will include filter strips, riparian buffers, tree plantings, conservation cropping systems, and grassed waterways on 15,000 acres of cultivated cropland to reduce nutrient and sediment loading.

Figure 13. Grass Filter Strip Using CRP

Milestones: Cropland BMPs

Milestones:	**Planned:**	**Completed:**
Riparian Herbaceous Cover	15,000 acres	10,162 acres
Residue Management, No/Strip Till	0 acres	2,756 acres

Accomplishments:

USDAs programs of EQIP and CRP were used extensively for funding of these cropland practices. 2012 saw historic highs for cereal grain prices so producers were trying to keep as many acres as possible into production for the remainder of the project segment. The project was able to convince producers to incorporate practices into their operations that were not necessarily idle acres but would have sediment and nutrient reducing characteristics. Practices such as no-till/reduced tillage, conservation crop rotation, grass waterways, and programs that promoted a higher level of surface crop residue gaining popularity by the segment end.

Product 2: Grassland Management Systems Installed on 17,000 acres of grassland.

Grassland management systems will be designed and installed on 17,000 acres of grassland to reduce fecal coliform, nutrient, and sediment loading. Technical assistance for system planning will be requested from NRCS field offices. BMPs will be implemented using funds from state and federal programs (EQIP, continuous CRP, and wildlife programs). BMPs planned to be installed include: planned grazing systems, fencing, livestock exclusion, grass seeding, pipeline, tanks, rural water hook-ups, and riparian buffers. Use of 319 funds to implement grazing management systems will be for riparian grasslands along major tributaries that have been identified as critical cells, and where other sources of cost share is not available.

Milestones:	**Planned:**	**Completed:**
Grazing system acres	17,000 acres	44,098 acres
Pipelines	10,000 feet	262,609 feet
Fence	10,000 feet	145,300 feet
Tanks/Troughs	6	108
Alternative Water Sources	0	19
Stream Exclusion	0 feet	15,628 feet
Tree/Shrub Establishment	0 acres	188.5 acres

Accomplishments:
Weather played a factor in the grazing practices for this segment, as the map in Figure 15 shows, about 90% of the Lewis and Clark project area was in an "exceptional" drought category for the year of 2012. Livestock water sources were reaching critical situations during this time frame and producers were willing to make management decisions to adhere to the criteria for the project's BMP practices. The following year was just as critical for producers as the drought intensity had certain grass communities die out from the lack of moisture and severe heat.

Figure 24. Producer On-Site Visit.

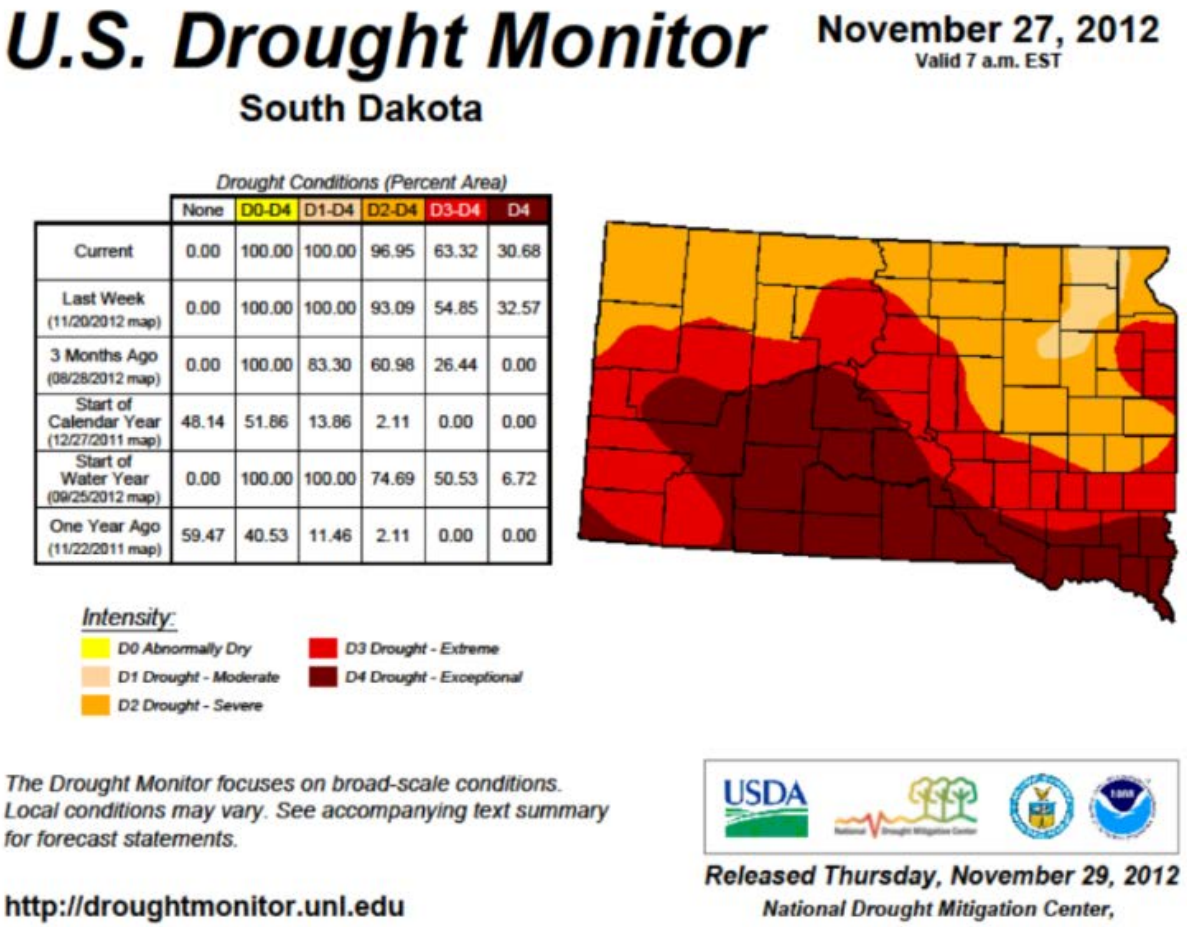

Figure 15. Drought Monitor Map for 2012.

Grazing plans (See Figure 17 for an example plan map) were written and installed to generate recovery time and rest cycles for the grasses remaining to fill in the impaired areas. These plans were especially crucial in the riparian areas (Figure 16) of the pasturelands most affected by the drought in order to get good vegetation cover on the soils to slow water erosion. Another drought appeared in the last year of this segment; this one encompassed a much smaller area and was centralized in the east river counties of Aurora, Brule, Charles Mix, and Douglas. Producer interests and requests were very high for the grazing BMPs offered by the Lewis and Clark and not all requests could be filled. The USDA's NRCS agency provided technical assistance in writing the grazing plans and installations were implemented through a combination of their EQIP program, US Fish and Wildlife programs, and the 319 dollars from this project.

Figure 16: Riparian Grazing Areas Prior to BMPs.

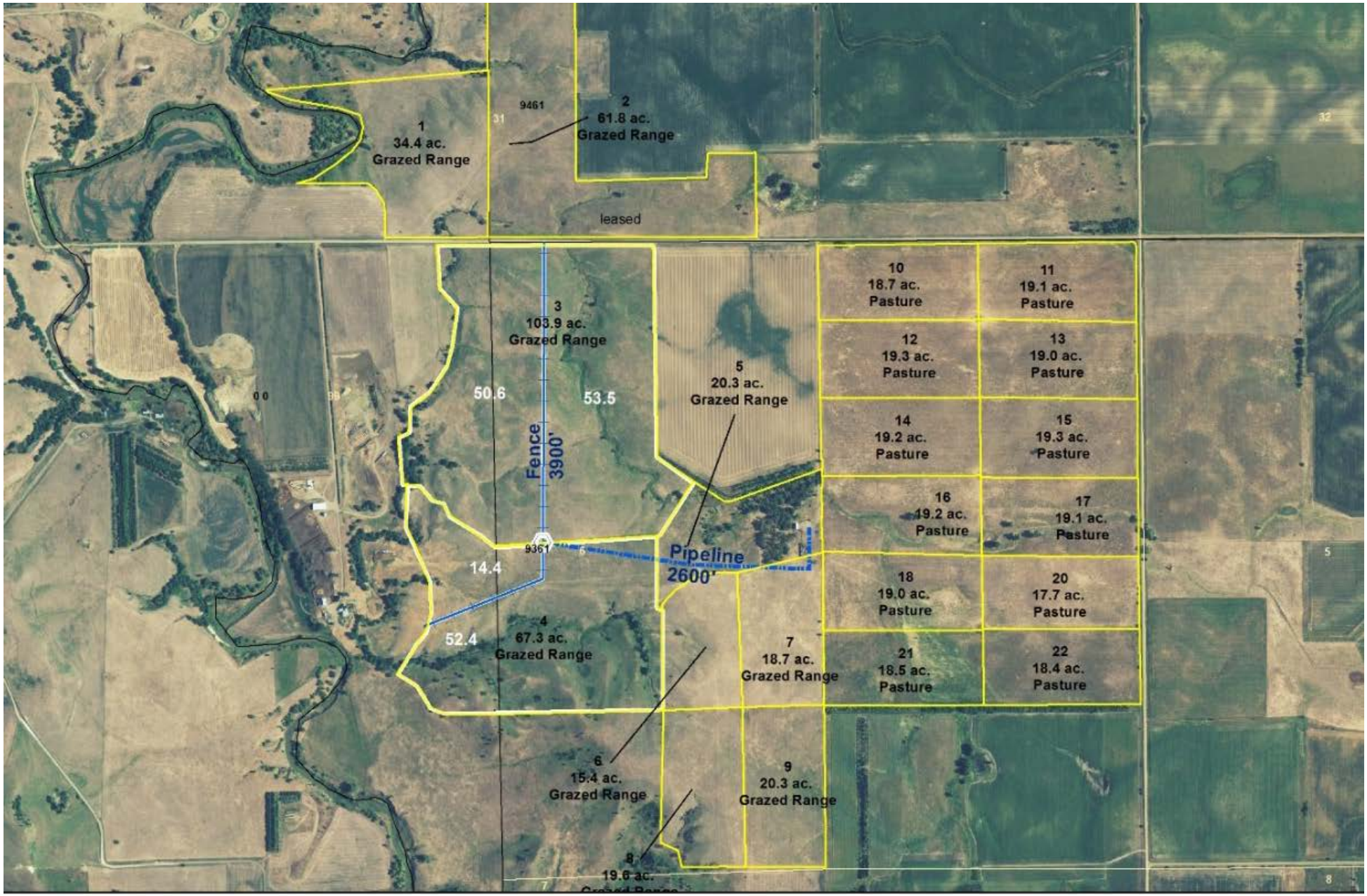

Figure 17. Grazing Plan Map along Choteau Creek in Bon Homme County 2014.

Figure 18: Water Development BMPs.

Water developments (Figure 18) were a critical part in implementing the grazing management. In a lot of cases a stream was their source water. Water sources were obtained from pasture taps to rural water systems and existing windmill wells. In many remote areas electricity was not available and pumping sources utilized wind and solar energy.

Livestock exclusion (Figure 19) was the main focus of the Grassland management BMP. This project protected over 15,000 feet of streams with this BMP.

Figure 19: Livestock Exclusion.

Product 3: Riparian Area Management (RAM) will be installed on 70 acres of riparian land.

The RAM Program is a livestock exclusion set aside type program for riparian land. It is designed to reduce phosphorus, suspended solids, and fecal coliform bacteria loading by ensuring that tracts of land not eligible for the USDA Continuous Conservation Reserve Program become protected as riparian buffers. This land must be located on or in close proximity to priority stream segments.

Milestones:

Milestones:	**Planned:**	**Completed:**
RAM	70 acres	0 acres
Continuous CRP	0 acres	189 acres

Accomplishments:

A total of 189 acres of riparian buffer were installed along streams using the Continuous CRP practice offered by USDA. No assistance from the RAM program was needed to complete these projects. In addition, another approximately 7500 feet of stream exclusion was voluntarily given up by producers by assisting them with the fencing practice. Goals were met for riparian livestock exclusion however; no dollars were spent out of the RAM practice and the dollars were shifted into the other grazing management practices offered by the project.

Figure 20. Livestock Exclusion using CRP Program.

Product 4: Fourteen Animal Waste Management Systems (AWMS) to be installed.

Figure 21. Feedlot before AWMS Installed.

Fourteen animal waste management systems, to include nutrient management plans, will be installed by livestock producers. Private consultants and NRCS will design the animal waste management systems and develop the nutrient plans. Funding for AWMS will be from this project's 319 funds, State Consolidated Funds, Landowners, and the NRCS EQIP program. Ten of the systems are anticipated to be full containment systems in feedlot situations, and four systems are anticipated to be relocation of cow/calf feeding area from critical stream/river riparian areas. The relocation of cow/calf feeding areas used seasonally will involve a contract with the landowner that includes a required grazing plan on days of use season of use for the riparian pasture. Practices utilized for the feeding area relocation will include required fencing, water development, and fabricated and /or tree windbreaks.

Milestones	Planned	Completed
Engineering Design	14	7
Nutrient Management Plans	14	8
Riparian Winter Feeding Areas	4	2
System Constructions	16	8
Livestock Feedlot Relocation	6	4
Winter Feeding Area	6	2
Waste Facility Cover	0	2

Figure 22. System Construction and Completed System of Open Lot System.

Accomplishments:

All AWMS' installed in this segment were on a prioritized list assembled during the original assessment phase. Qualification for the USDA's EQIP program was a major criteria for systems constructed during this segment. Costs have risen dramatically in the past few years for construction of the systems, mainly due to the rise in fossil fuels, and standards set by DENR for this practice required EQIP participation as a cost savings component for 319 dollars.

Figure 23. Monoslope Building.

Figure 24. Hoop Barn Building.

A total of two buildings for feeding (Figure 23 and 24) and six traditional outdoor feedlots (Figure 22) were built in this segment. Demand has remained consistent for these practices from producers but factors of rising land costs, increased use of buildings, and high grain prices have made them more understandably more thorough in the decision making process. Due to national economic conditions, EQIP funding was cut dramatically during this segment for the animal waste practice making it more difficult to get producers funded in each ranking period. Several producers are reapplying every year to get the necessary funding required for 319 participation. Feasibility studies are being done every year, to help producers determine cost effectiveness, and are used as an entry level tool to start work on total containment systems. Engineering design work was split between NRCS engineering staff and private consultant firms.

Objective 2: Provide project and BMP information to a minimum of 100 watershed landowners, 20 watershed organizations, and 2,500 area citizens to inform them of this project's need and progress, and the results and recommendations from the Phase I Watershed Assessment.

Product 5: Information and Education Campaign of informational meetings (2), tours (2), newsletters (4), steering committee meetings (2), and press releases (4) completed. The project coordinators will provide assistance to Randall RC&D to complete an information and education campaign that includes on-farm tours, news releases, presentations to area stakeholder organizations, and an annual meeting of the project steering committee. The cost of information activities including supplies and postage will be provided to this 319 project and Randall RC&D and their partners.

Figure 25. Coordinators Giving Presentation at Steering Committee Meeting.

Milestones	Planned	Completed
Tours	2	3
Informational Meetings	8	12
Steering Committee Meetings	3	7
News Releases	4	4
Newsletters	0	1

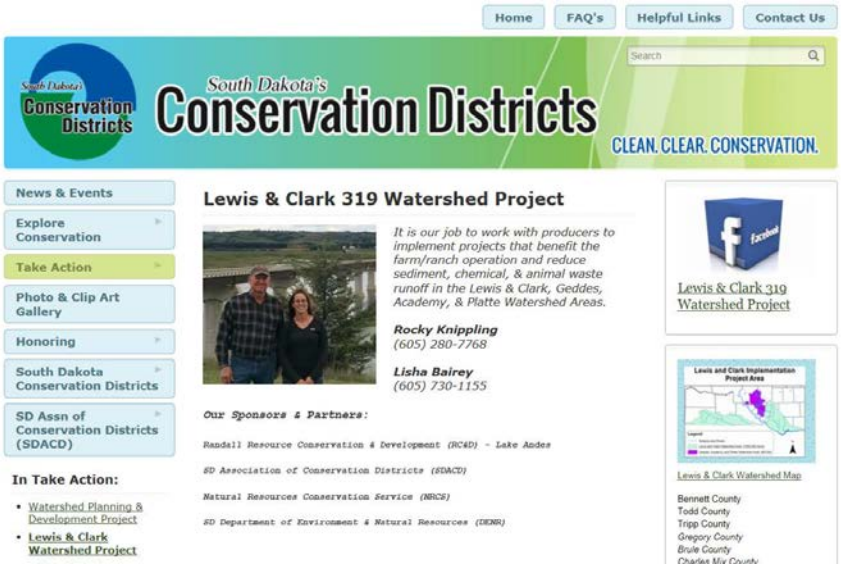

Figure 26. Lewis and Clark Website.

Accomplishments:

Lewis and Clark hosted three feedlot tours during this segment one in Bon Homme County during 2011, one in Brule and Charles Mix counties during 2012, and the third in Bon Homme County during 2013. The Steering Committee (Figure 25) was made up of

Conservation District Employees from across the entire watershed and all met together twice a year during this segment, with the exception being in December, 2013 when the group was broken up into an east/west river so that both could ratify the separate Strategic Water Plans.

Three feature articles were written and published in daily newspapers and monthly farm magazines emphasizing the projects works with producers accomplishing goals for both the project and the farm enterprise. A newsletter was sent out during 2014 to bring attention to the goals of the project and to highlight certain practices installed. It was mailed to stakeholders and individual producers in the project area and will be continued on a semi-annual basis. Some of these articles can be found in Appendix A of this Report. A website and a Facebook page were developed during the segment, trying to appeal to a broader scope of producers in the watershed. The website can be found at sdconservation.org and the Facebook page can be searched at Lewis and Clark 319 Watershed Project. A few informational activities can be seen in Figure 27 thru 30. Efforts to get information out to the public were very well attended during this project segment.

Figure 27. Speaking at Bon Homme Feedlot Tour 2011.

Figure 28. Feedlot Tour During 2013.

Figure 29. NRCS Staff Demonstrating Rainfall Simulator.

Figure 30. Coordinators with Booth Display at Informational Meeting.

Objective 3: Completion of water quality monitoring and complete project administration and management to document project progress towards objectives and meet grant guidelines.

Product 6. Water Quality Monitoring to monitor project impacts.

Milestones	Planned	Completed
Water Samples	30	0

Accomplishments:

Developing a Project sponsored water sampling regime has been an often discussed topic in this project, how to accurately implement a sampling schedule has been an elusive undertaking. During this Project Segment, no water samples were taken through the Project due to cost and staff work load. After much discussion with DENR staff, a sampling schedule will be implemented in through the next Project Segment on five major streams in the project area. Sampling will be done on a time basis and not necessarily related to storm events.

During this Segment, monitoring was completed through the DENR Ambient Water Quality Monitoring. Results of this monitoring can be found in the Monitoring section of this report.

Product 7. Annual (4), final (1) reports completed according to grant guidelines and requirements.

Milestones	Planned	Completed
Annual GRTS Reports	4	4
Final Report	1	1

Accomplishments:

All goals were achieved for this product and submitted to DENR.

SUMMARY of PROJECT GOALS and OBJECTIVES

Planned and completed milestones from all segments of the Lewis and Clark project can be found in Table 3 with this segment (Segment 3) bolded. Over all, the project has met or exceeded most BMPs planned for the project.

Table 3. Milestones Planned Versus Accomplished Comparison.

BMP/Practice	Milestones							
	Segment 1		Segment 2		**Segment 3**		Cumulative	
	Planned	Completed	Planned	Completed	**Planned**	**Completed**	Planned	Completed
Cropland BMPs								
Total Acres Benefited	750	24,502	10,000	14,028	**15,000**	**10,162**	25,750	48,692
Grazing Management								
Planned Grazing (acres)	1,500	8,859	4,000	7,201	**17,000**	**42,852**	22,500	58,912
Livestock Exclusion (feet)	0	0	0	87,547	**0**	**15,628**	0	103,175
Riparian Area Management (RAM) (acres)	0	0	50	0	**30**	**0**	80	0
Ag Waste Systems								
Engineering Design	8	22	15	15	**14**	**7**	37	44
Nutrient Management Plan	8	32	12	11	**14**	**8**	34	51
Riparian Winter Feeding Area	0	0	2	3	**6**	**2**	8	5
System Construction	8	18	16	12	**16**	**8**	40	38
Information and Education								
Informational Meetings	4	12	2	4	**8**	**4**	14	20
Press Releases	6	8	4	4	**4**	**0**	14	12
Newsletters	0	0	4	3	**0**	**0**	4	3
Steering Committee Meetings	0	0	2	2	**3**	**3**	5	5
Tours	3	4	2	1	**2**	**1**	7	6
Water Quality Monitoring (Samples)	0	0	24	0	**30**	**0**	54	0
STEPL Load Reduction/yr.								
Nitrogen (lbs)		389,754		325,604		**715,358**		1,430,716
Phosphorous (lbs)		107,834		87,924		**195,758**		391,516
Sediment (tons)		52,340		37,067		**89,407**		178,814

MONITORING AND EVALUATION

Monitoring

Financial information, milestones, and load reductions were monitored using SD DENR's Tracker system through the internet. Water quality monitoring was conducted on Choteau Creek, Keya Paha River, and Ponca Creek, and Emanuel Creek through the SD DENR's ambient water quality monitoring stations. Samples taken between 2003 and 2008 are considered as "Pre-Implementation" and those taken from 2009-2014 as "During Implementation" for comparing purposes in the following segment.

Keya Paha WQM:

Keya Paha was listed Impaired for Total Suspended Solids (TSS), Fecal Coliform, and E-coli in SD DENR's Integrated Report (IR). It is now only listed as threatened for Fecal Coliform and E-coli. Water quality monitoring samples for Keya Paha were taken at LEWCLARAC2 or ambient water quality monitoring site 460815 (same location) shown in Figure 31.

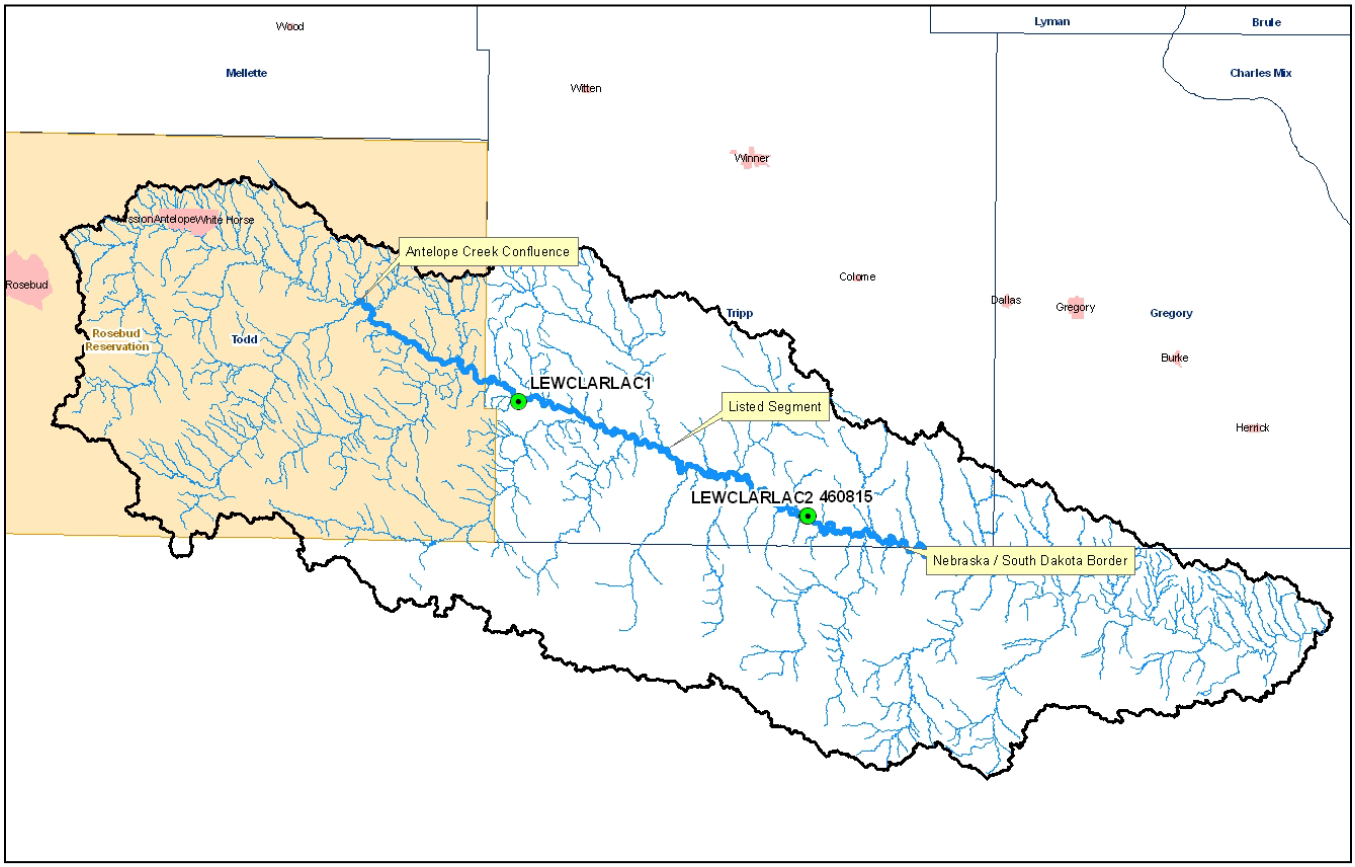

Figure 31: Keya Paha Water Quality Monitoring Site.

Results from Fecal Coliform sampling show that the meadian value went from 585 CFU to 120 CFU going from Pre-Implementaiton to During Implmentation. The standard for Fecal Colifom on the Keya Paha river is 2000 CFU.

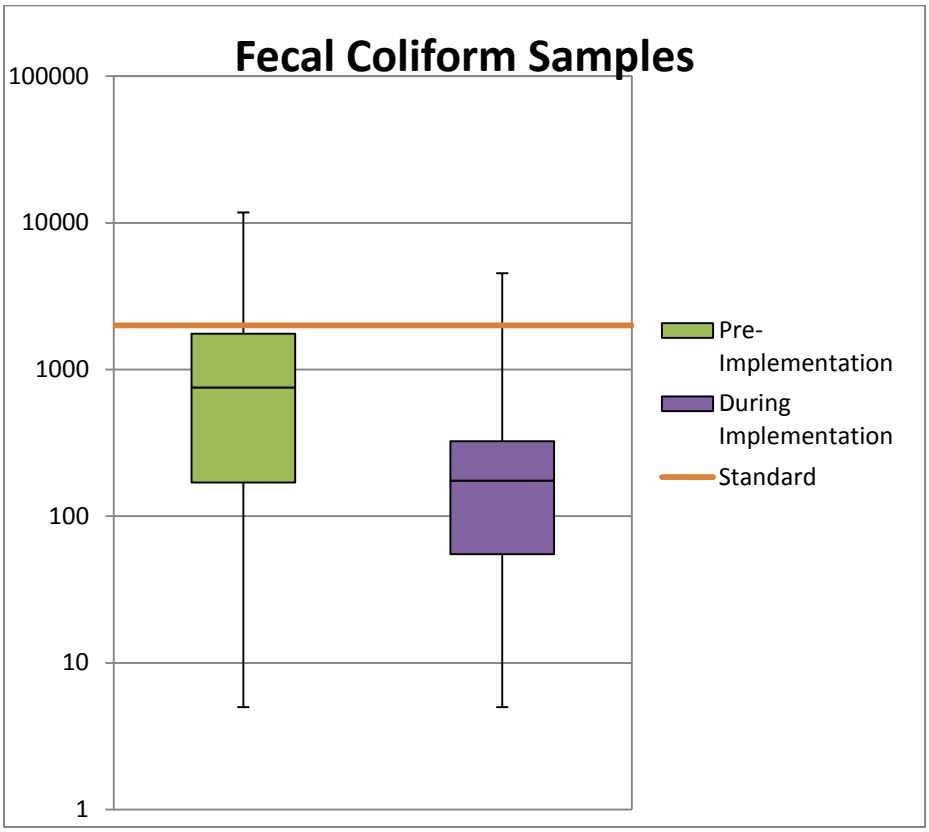

Figure 32: Keya Paha Fecal Coliform Box and Whisker Plot Pre vs During Implement.

All Fecal Coliform samples from 2003 through May of 2014 taken at the Keya Paha WQM site are displayed below in Figure 33.

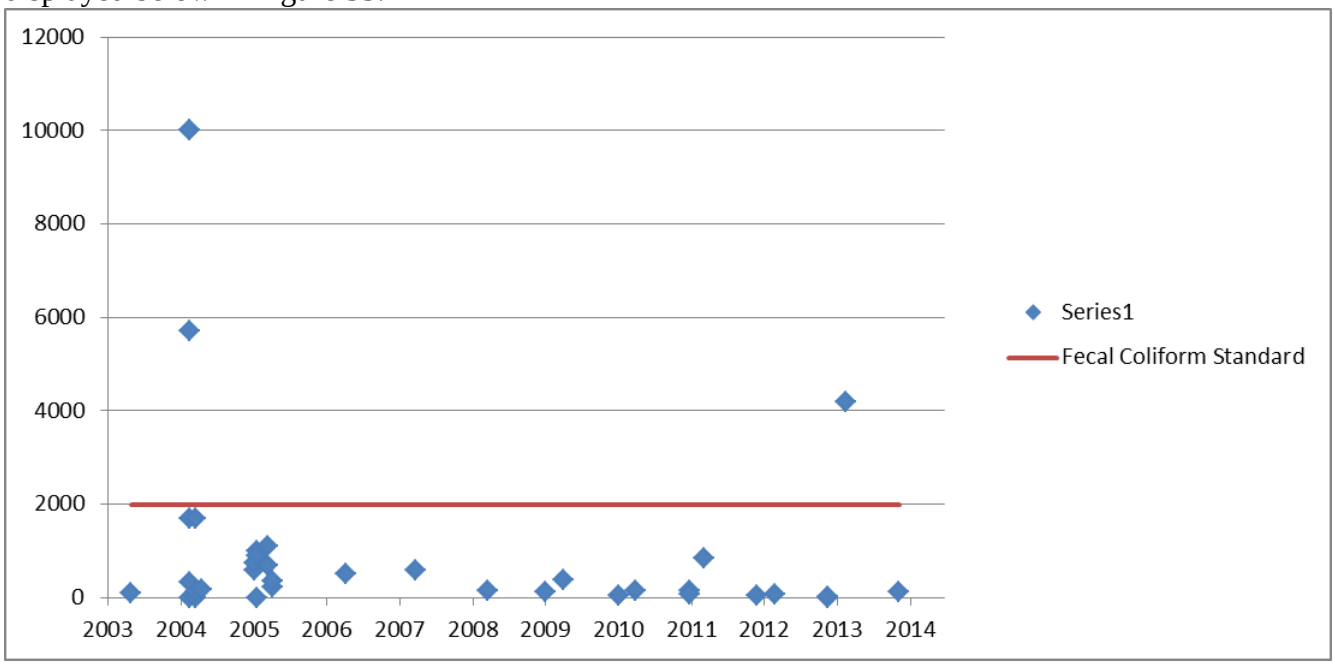

Figure 33: Keya Paha Fecal Coliform Samples.

There wasn't a lot of movement between the two time periods for Keya Paha with regard to E-coli sampling (Figure 34). Here the median value actually went up from 111 to 151.3. The standard for E-coli on the Keya Paha River is 1178 CFU.

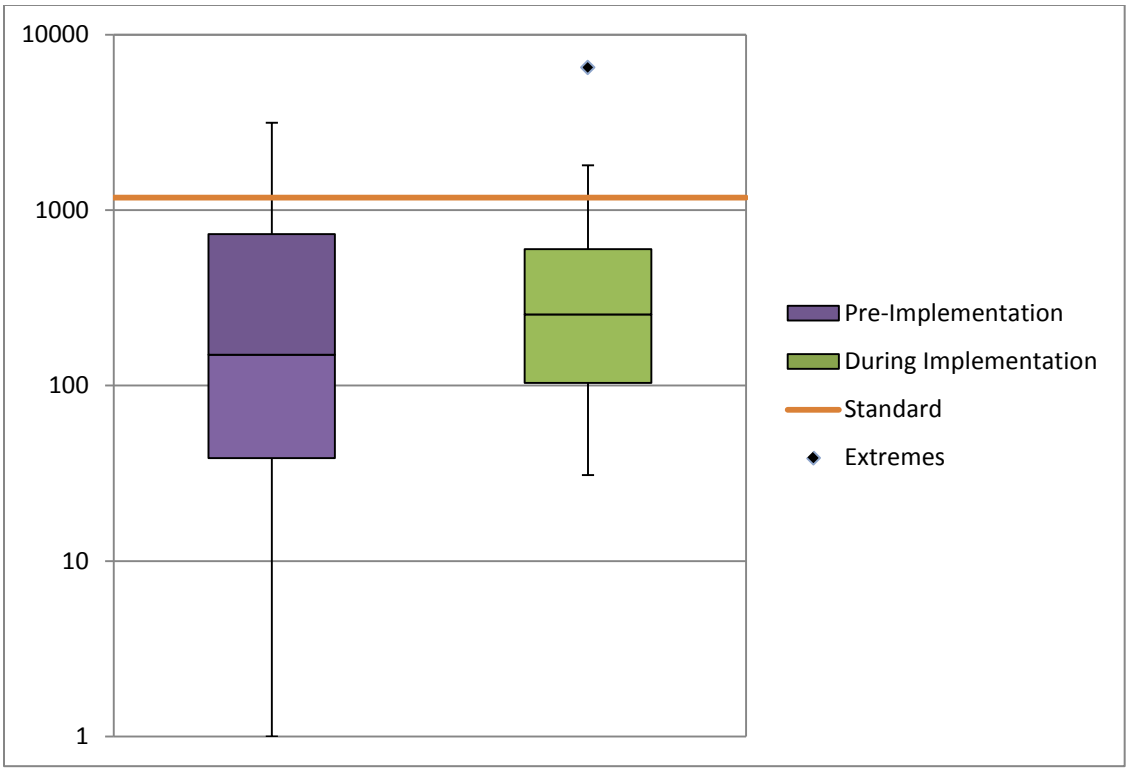

Figure 34: Keya Paha E-Coli Box and Whisker Plot Pre vs During Implementation.

All E-coli samples from 2003 through May of 2014 taken at the Keya Paha WQM site are displayed below in Figure 35.

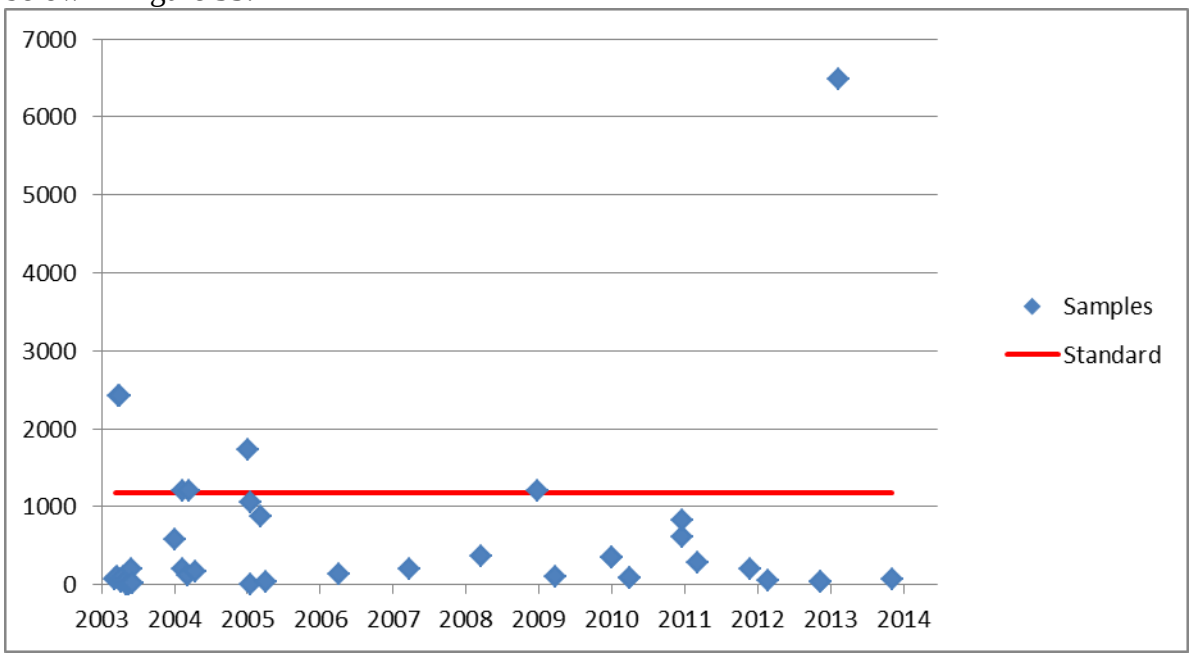

Figure 35: Keya Paha E-Coli Samples.

TSS samples show the meadian value went from 61.5 mg/l to 46 mg/l comparing Pre-Implementaiton to During Implmentation. The Fecal Coliform standard on Keya Paha River is 158 mg/l.

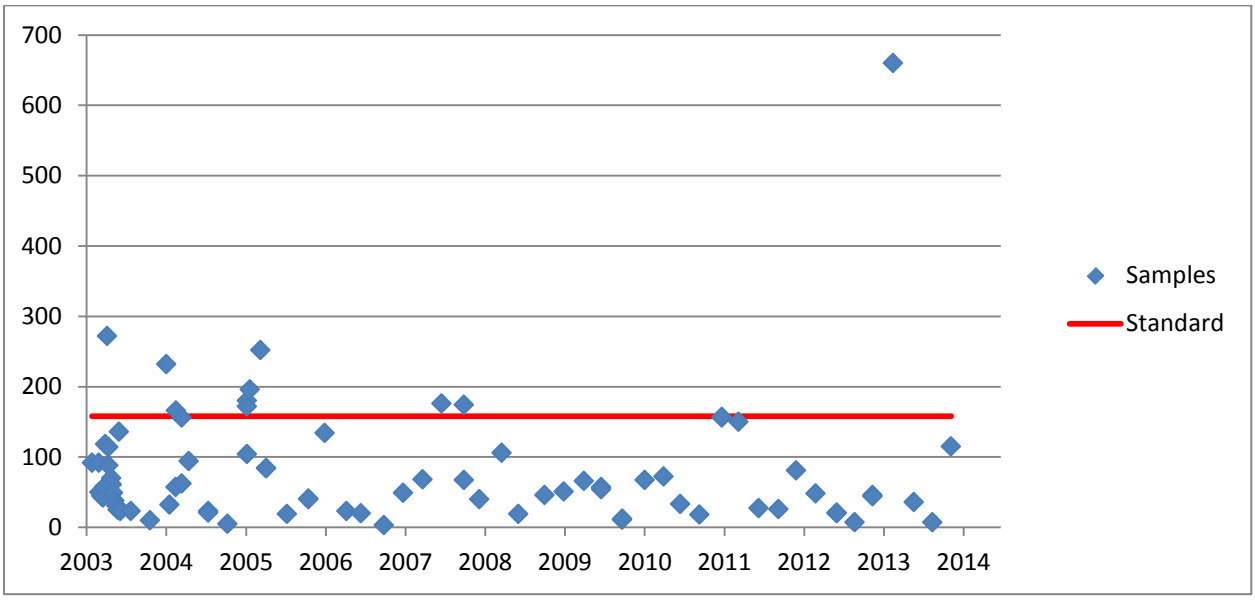

Figure 36: Keya Paha TSS Box and Whisker Plot Pre vs During Implementation.

All TSS samples from 2003 through May of 2014 taken at the Keya Paha WQM site are displayed below in Figure 37.

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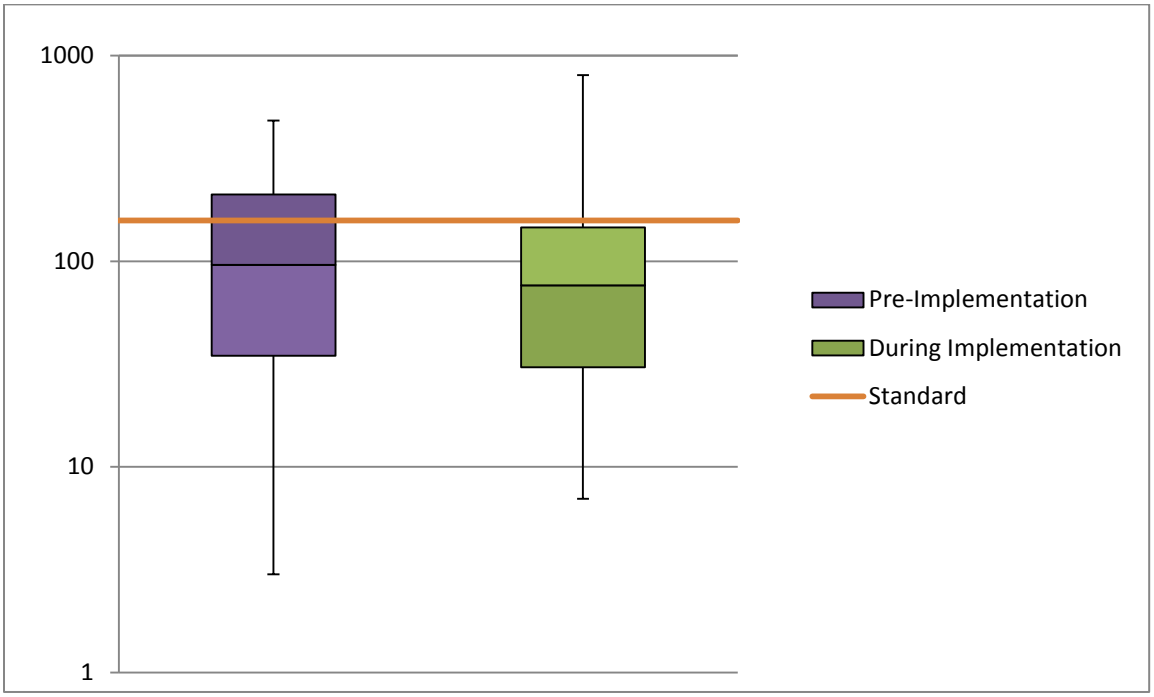

Figure 37: Keya Paha TSS Samples.

Choteau Creek WQM:
Choteau Creek was listed as threatened for Total Suspended Solids (TSS) in SD DENR's Integrated Report (IR). Water quality monitoring samples were taken at LAC5 on Choteau Creek near Avon, South Dakota (Figure 38). Results from the TSS samples are shown in Figure 39 and 40. Choteau Creek was taken off of the threatened list for TSS in the SD DENR 2012 IR during this project segment, and continues to remain in full support of beneficial uses as listed in the SD DENR 2014 IR.

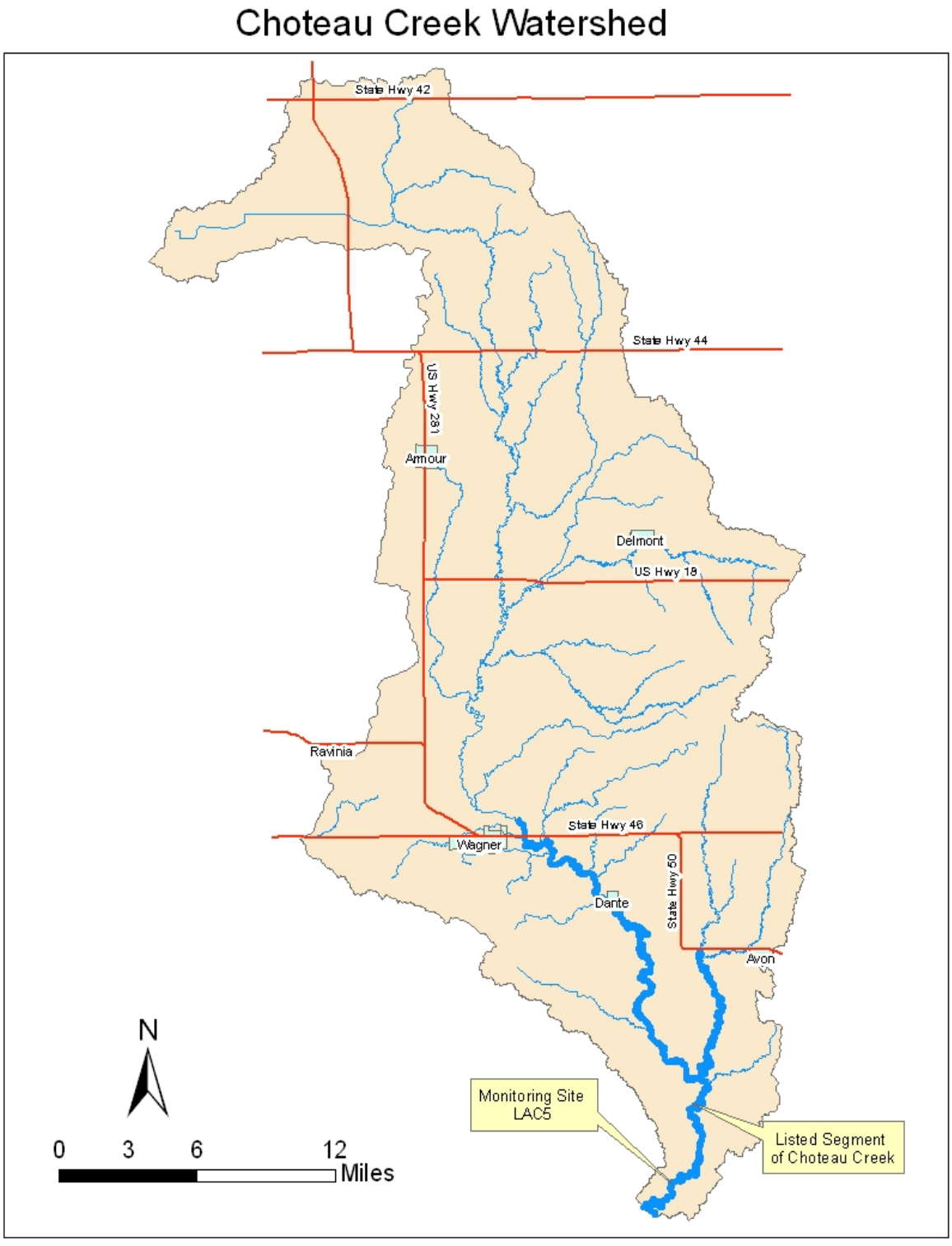

Figure 38: Choteau Creek Water Quality Monitoring Site.

Figure 39 shows that Choteau Creek's Total Suspended Solids (TSS) median value for the During Implementation drops slightly from 29.5 to 21 mg/l. The standard for TSS on Choteau Creek is 90 mg/l.

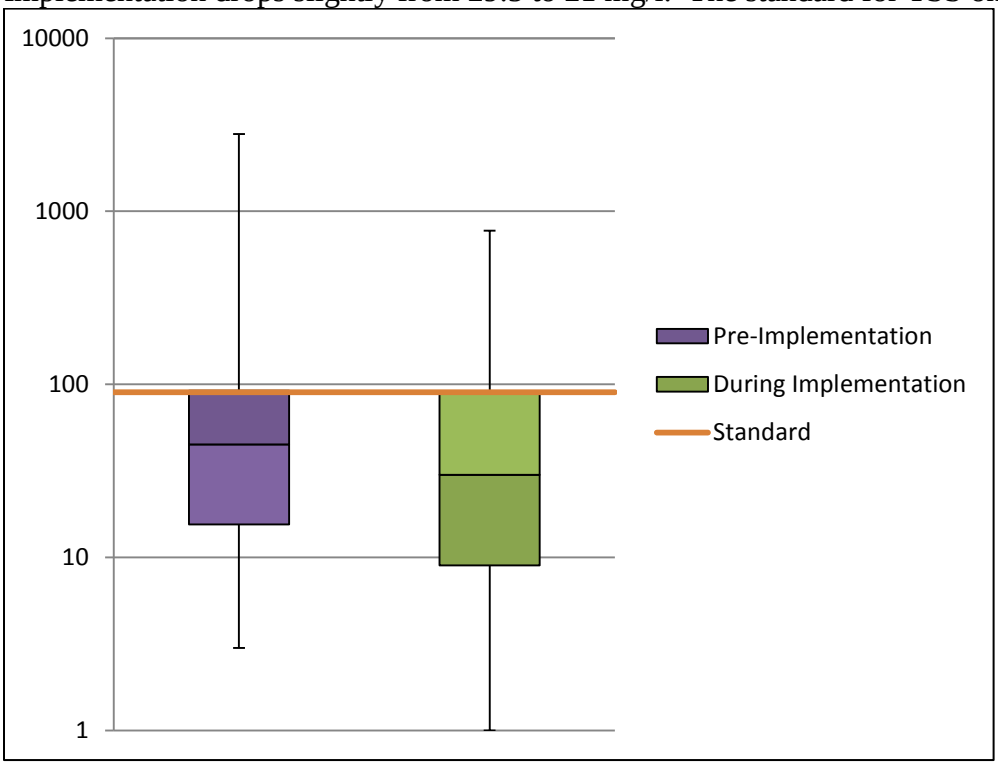

Figure 39: Choteau Creek TSS Box and Whisker Plot Pre vs During Implementation.

All TSS samples from 2003 through May of 2014 taken at the Choteau Creek WQM site are displayed below in Figure 40.

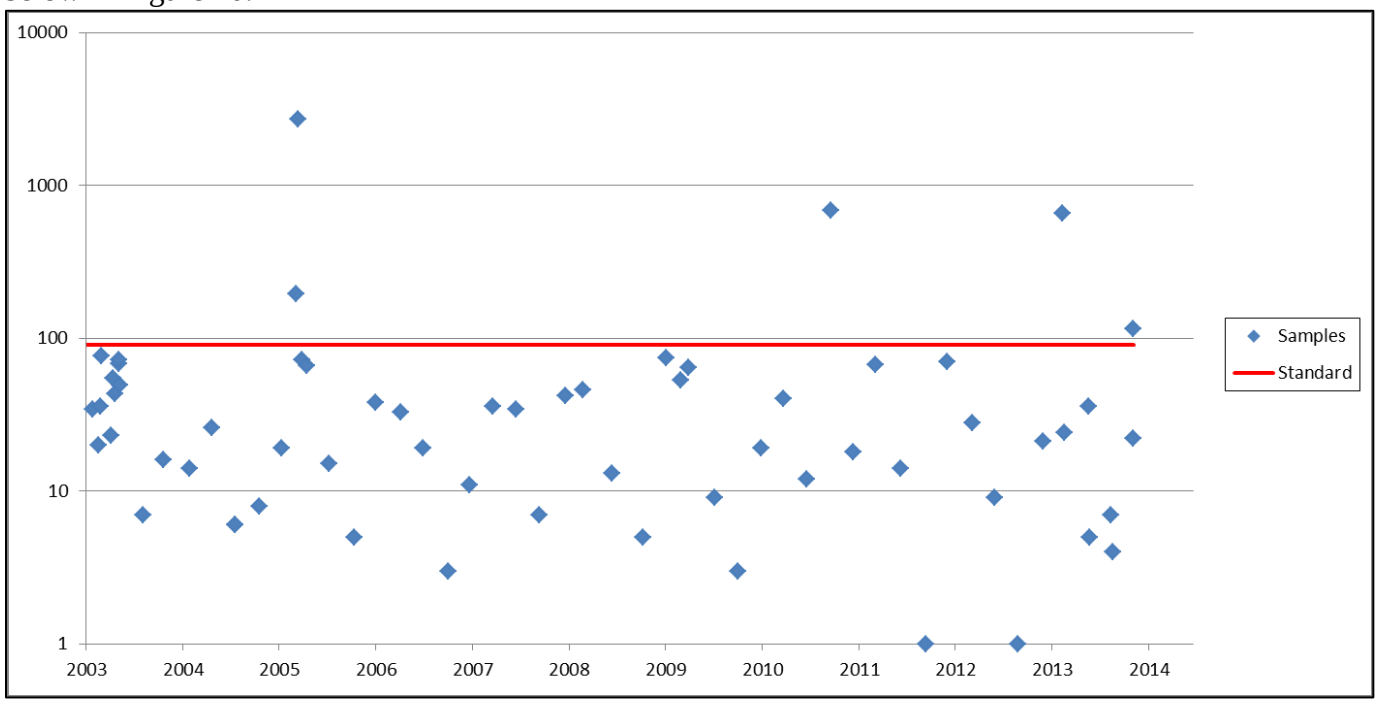

Figure 40: Choteau Creek TSS Samples.

Ponca Creek WQM:
Ponca Creek was listed as impaired for TSS and Fecal Coliform in SD DENR's IR. Water quality monitoring samples were taken at LAC3 or WQM 70 (the same location) on Ponca Creek (Figure 41). Results from the TSS, Fecal Coliform, and E-coli samples are shown in Figure 42 through 45. Ponca Creek is now listed as threatened for Fecal Coliform and TSS in the 2014 SD DENR IR.

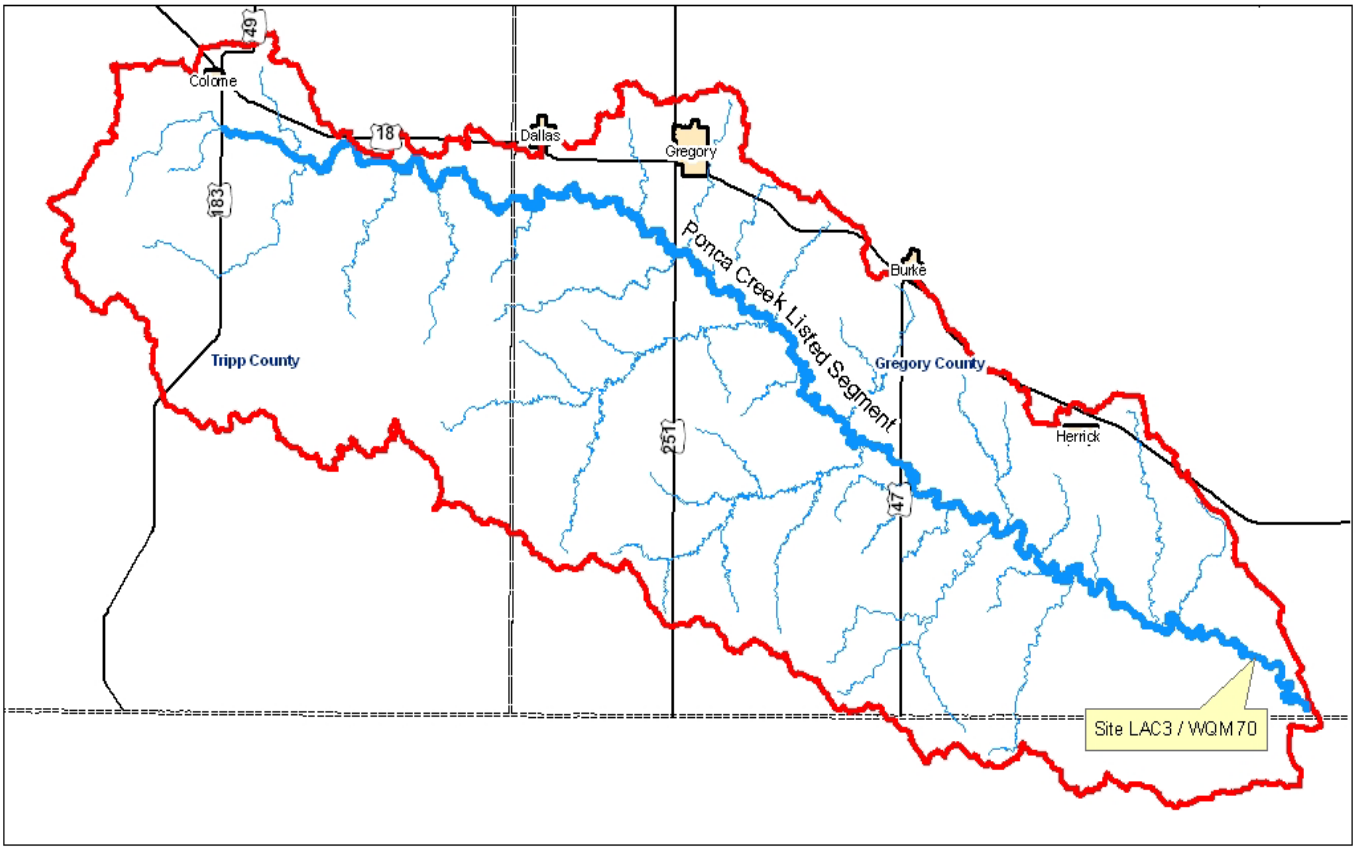

Figure 41: Ponca Creek Water Quality Monitoring Site.

Fecal Coliform samples show that the meadian value went from 695 CFU to 190 CFU comparing Pre-Implementaiton to During Implmentation. The Fecal Colifom standard on Ponca Creek is 1,000 CFU.

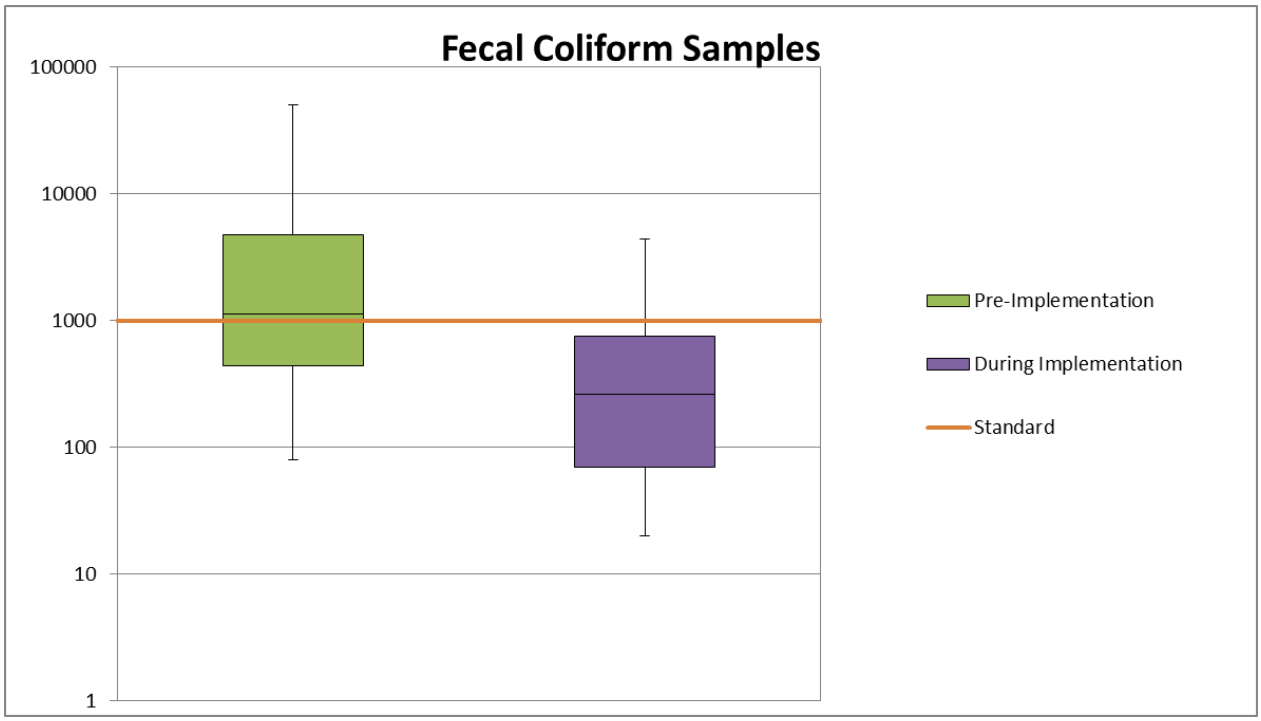

Figure 42: Ponca Creek Fecal Coliform Box and Whisker Plot Pre vs During Implementation.

All Fecal Coliform samples from 2003 through May of 2014 taken at the Ponca Creek WQM site are displayed below in Figure 43.

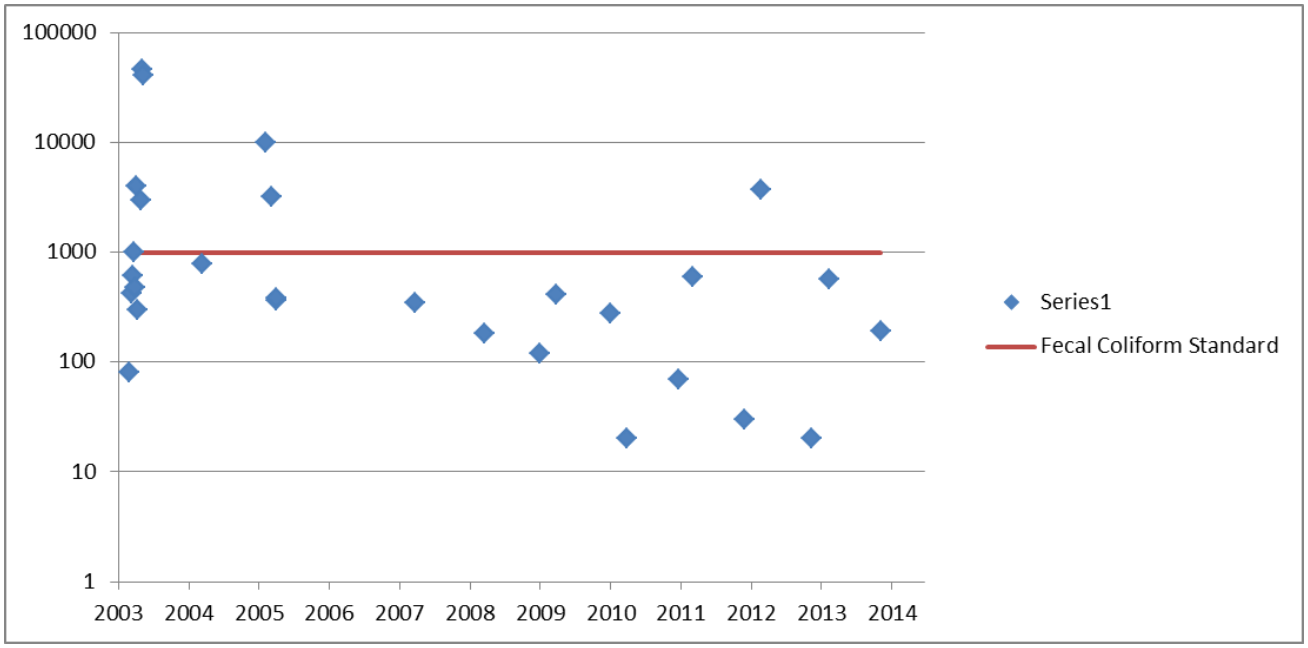

Figure 43: Ponca Creek Fecal Coliform Samples.

Figure 44 shows that Ponca Creek Total Suspended Solids (TSS) median value for the During Implementation increased slightly from 29 to 33.5 mg/l, but upper quartile and max samples drop slightly. The standard for TSS on Ponca Creek is 158 mg/l.

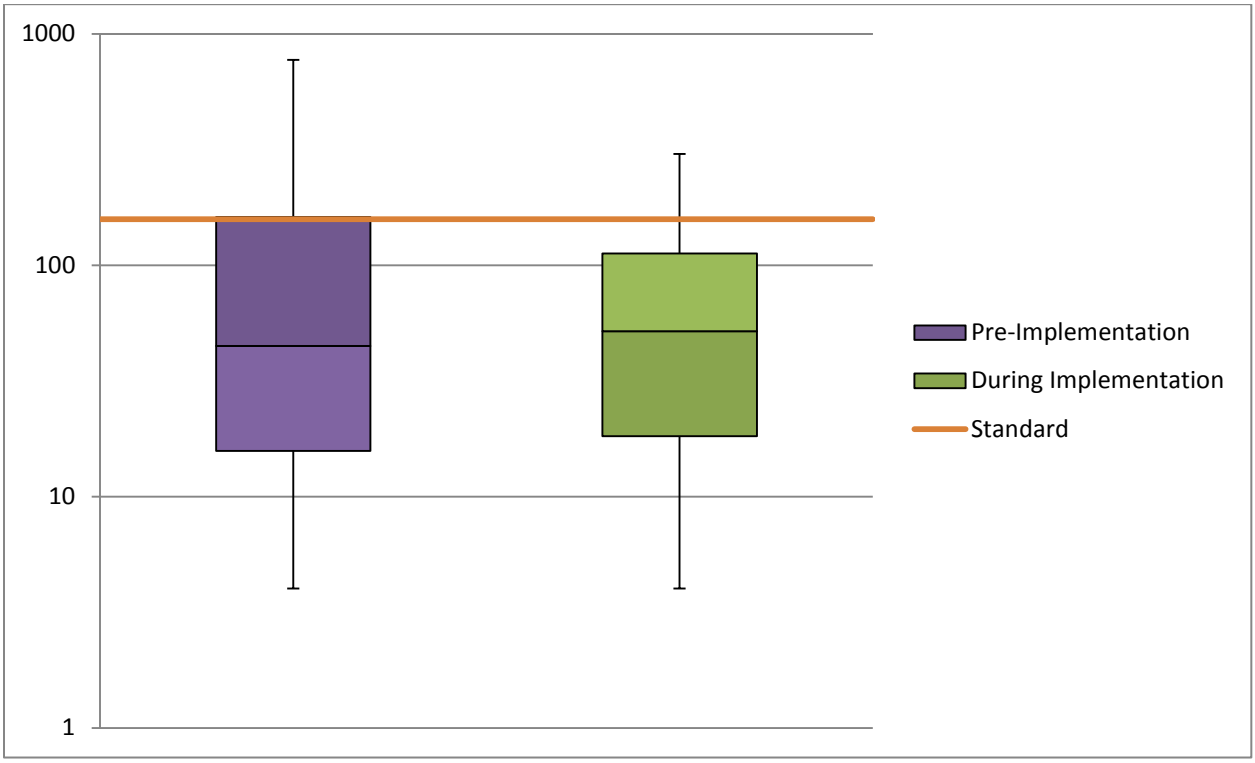

Figure 44: Ponca Creek TSS Box and Whisker Plot Pre vs During Implementation.

All TSS samples from 2003 through May of 2014 taken at the Ponca Creek WQM site are displayed below in Figure 45.

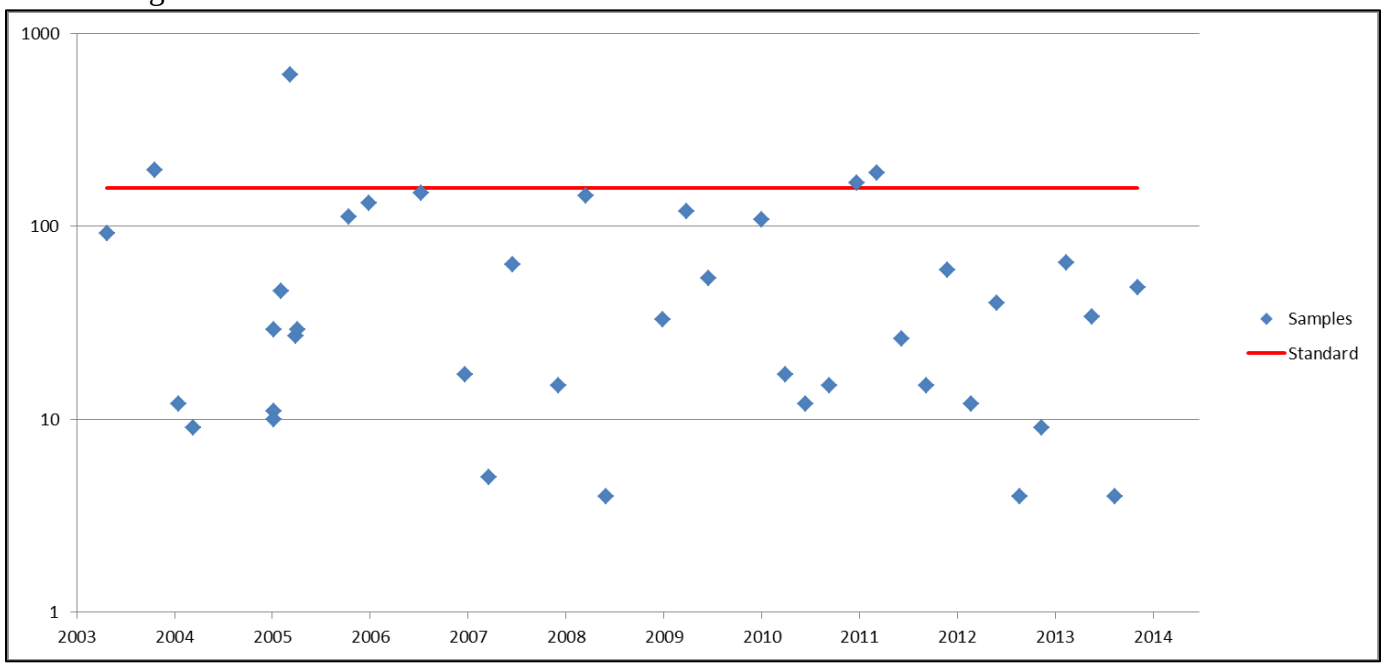

Figure 45: Ponca Creek TSS Samples.

Lake Andes:
Lake Andes was monitored by the volunteer monitoring group Dakota Water Watch for Secchi Depth and E-coli bacteria. Three sites have been monitored since 2008 with an additional site added starting in 2011. Locations monitored on Lake Andes are shown in Figure 46, with the average of each yeas samples in Figure 47 and 48. More information on Dakota Water Watch and their sampling can be found at: http://eastdakota.org/dakotawaterwatch/

Figure 46: Lake Andes Monitoring Sites.

Figure 47: Average of E. coli Samples (cfu/100ml) by Year at Lake Andes Monitoring Sites.

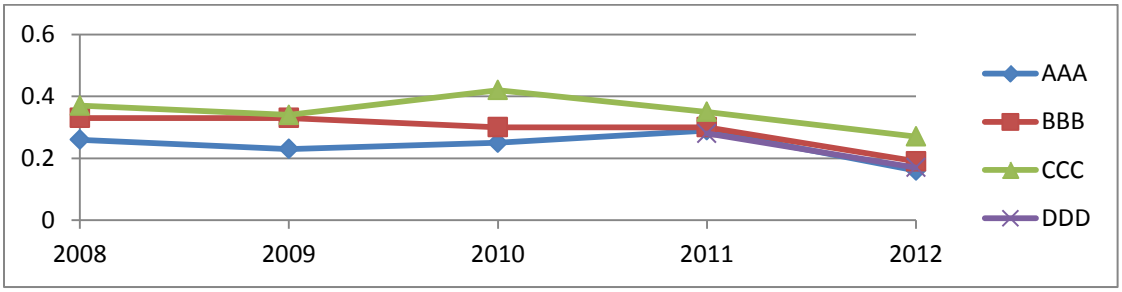

Figure 48: Average of Secchi Depth (meters) by Year at Lake Andes Monitoring Sites.

Evaluation

Locations were gathered for all BMPs installed in the project area through the DENR Tracker system. This was to assist in AnnAGNPs modeling and uploading information to the EPA GRTS website. Locations of BMPs installed during this project segment are shown in Figure 49 and BMPs installed throughout all the project segments are shown in Figure 50. Along with the type of BMP that was installed, these maps show that several BMPs were installed throughout the watersheds. With the frequency and location of the BMPs, the project was able to assist in improving condition of the stream reaches throughout the project area.

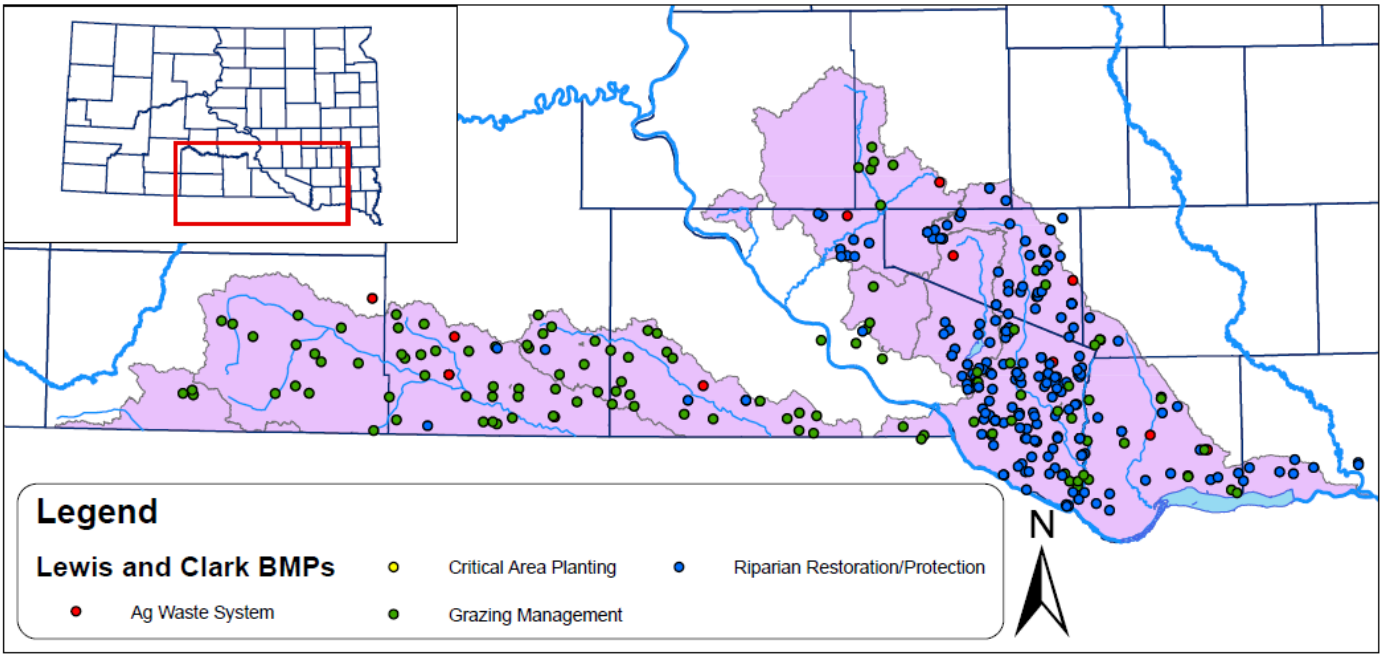

Figure 49: Locations of BMPs Installed During Project Segment 3.

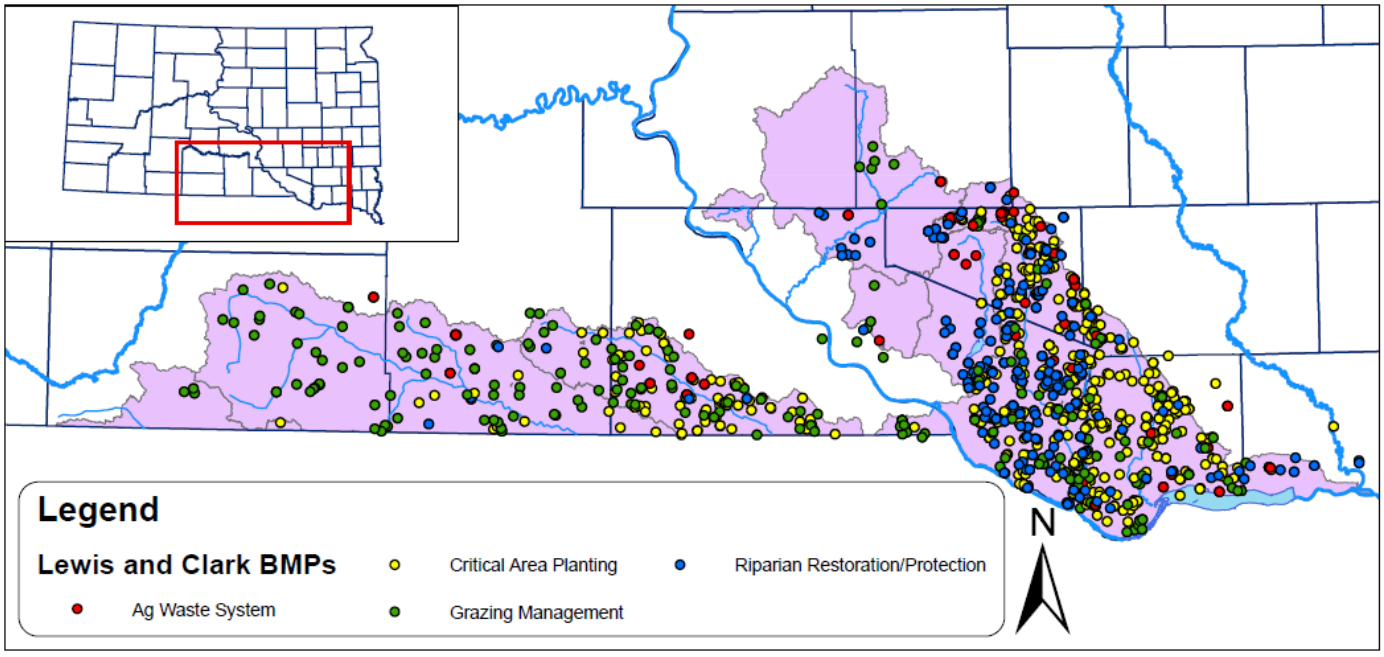

Figure 50: Locations of BMPs Installed During all Project Segments.

Annual Load Reductions

STEPL and FLGR4 Excel spreadsheets were used to calculate load reductions for all BMPs installed through all the project segments, with these reductions recorded in DENR's Tracker for each BMP. AnnAGNPS was used in some of the watersheds to get an estimated delivered reduction at monitoring sites of impaired reaches or lakes. Modeled reductions by watershed for all segments of this project can be seen in Table 4. As seen here, the "STEPL" load reductions are significantly larger than the "AGNPS" reductions. This is expected as STEPL load reductions were calculated as an on-site reduction and AnnAGNPS reductions were calculated as a delivered reduction. The "STEPL Delivered" reduction uses the STEPL on-site sediment reduction and estimates what the reduction would be at the monitoring site using AnnAGNPS cell delivery ratios.

Table 4: Combined Segments' Annual Load Reductions by River Segment/Lake.

Lewis and Clark Segments/Lakes	Sediment (Tons)			N (Pounds)		P (Pounds)	
	STEPL	STEPL Delivered	AGNPS	STEPL	AGNPS	STEPL	AGNPS
Keya Paha	15,613	2,156	1,309.0	119,517	17,095.0	31,280	1,375.0
Ponca	38,090	11,575	4,857.0	201,184	54,245	64,208	6,186.0
Plate	811	278		49,409		10,944	
Lake Andes	2,341	262		24,032		6,320	
Choteau	30,031	13,890	485.0	318,332		80,758	
Dante	206			940		291	
Geddes	140			14,084		3,146	
Emanuel	4,835			39,707		10,652	
Slaughter	2,470			10,886		3,331	
Other areas Of the Lewis and Clark Watershed	28,588			314,758		76,580	

Load reductions by segment of the project are shown in Table 5. STEPL load reductions for each segment can be compared with the different type of BMPs installed. The total number of projects completed across all project segments for each BMP are also shown here. This shows that the project has been steadily increasing in the projected load reductions realized for each segment.

Table 5: STEPL Load Reductions by Practice.

Best Management Practices	# of Projects	N (Pounds)				P (Pounds)				Sediment (Tons)			
		Seg. 1	Seg. 2	Seg. 3	Total	Seg. 1	Seg. 2	Seg. 3	Total	Seg. 1	Seg. 2	Seg. 3	Total
Cropland BMPs	915	206,898	117,220	76,395	400,513	67,916	40,466	24,003	132,385	47,930	31,774	17,051	96,755
Ag Waste Systems	41	153,299	177,439	197,850	528,588	33,256	39,416	43,672	116,344	33	544	115	692
Grazing Management	200	27,878	36,608	99,262	163,748	6,037	9,310	23,434	38,781	4,043	4,758	16,877	25,678
Total	1156	388,075	331,267	373,507	1,092,849	107,209	89,192	91,109	287,510	52,006	37,076	34,043	123,125

Monitoring results for most stream reaches (shown in the monitoring section of this report) and changes in the SD DENR IR listing (shown below) show progress and improvement throughout the project area. The load reductions here demonstrate that this project could be playing a part in those improvements, and thus the project is working to meet its goals.

SD DENR IR impaired reach status changes during the project:

Choteau Creek – Delisted for TSS
Ponca Creek – Change of non-support to full support but threatened for Fecal Coliform and TSS
Keya Paha River – Delisted for TSS and listing change of non-support to full support but threatened for Fecal Coliform and e-coli

PROJECT BUDGET

The project received funds from many different state and federal sources to attain what has been accomplished. The original project budget with estimated funds that were expected to be spent in the project is shown in Table 6.

Table 6: Original Segment 3 Project Budget

ITEM	319-EPA	Consolidated WFC Fund	USDA EQIP/CRP	US F&W	SD GF&P	Local	Total
Personnel Support							
Staff: Coordinator/Conservationist (2 FTE)	$115,080						$115,080
Travel	$31,430						$31,430
Office Space	$6,000						$6,000
Office Equipment/Supplies	$3,000						$3,000
Computer/Connection/Maintenance (NRCS contract)	$11,600						$11,600
Administration	$27,620					$3,000	$30,620
Subtotal: Personnel Support	**$194,730.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$3,000.00**	**$197,730.00**
Objective 1: BMP's Installation							
Task 1: Cropland/Grassland BMP installation							
Product 1: Cropland BMP's - 15,000 ac.	$18,750		$37,500			$18,750	$75,000
(Riparian Cropland BMPs)							
Product 2 : Grassland BMP's - 6,000 acres:	$116,700		$16,250	$7,925	$5,000	$48,625	$194,500
(Rotational grazing, fence, seeding, water development)							
Product 3: Riparian Area Mgt. (RAM Program) - 70 acres	$47,250					$15,750	$72,000
Task 2: Livestock Nutrient Management							
Product 4: 10 Ag Waste Systems							
Engineering Design Services - 8 @ $18,500 each	$51,800	$22,200	$37,000			$37,000	$148,000
System Construction - 8 @ $150,000 each	$32,210	$180,000	$687,790			$300,000	$1,200,000
Winter Feeding Area - 2 @ $20,000	$18,000	$6,000				$16,000	$40,000
(water, fencing, tanks, windbreaks)							
Nutrient Management Plans - 10 @ $2500	$7,000	$3,000	$10,000			$5,000	$20,000
Subtotal: BMP Installation	**$291,710**	**$211,200**	**$788,540**	**$7,925**	**$5,000**	**$441,125**	**$1,749,500**
Objective 2: Outreach:							
Task 3: Information Campaign	$4,000					$8,000	$12,000
Product 5: (Informational meetings (2), tours (2),							
press releases (4), newsletters (4), steering com. (2)							
Subtotal: Outreach	**$4,000**	**$0**	**$0**	**$0**	**$0**	**$8,000**	**$12,000**
Objective 3: Monitoring and Project Management							
Task 4: Water Quality Sampling/Evaluations							
Product 6: 24 water samples/testing/evaluation @ $65/ea.	$1,560						$1,560
Subtotal: Monitoring and Reports	**$1,560**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,560**
Total Project Cost:	**$492,000**	**$211,200**	**$788,540**	**$7,925**	**$5,000**	**$452,125**	**$1,960,790**
Match:							
Ineligible Match - Federal and/or Project Allocated			$788,540	$7,925			
Eligible Match - Local and State		$211,200			$5,000	$454,375	
Match Percentages:	**25%**	**11%**	**40%**	**0%**	**0%**	**23%**	**100%**

Several changes were made to the budget throughout the life of the project. The completion date for the project was also adjusted to better accomplish tasks set for the project. A summary of the amendments made the project are shown below.

Amendment 1:

August 29, 2011, the section 319 grant award was increased by $90,000 to increase funds available for AWMS.

Amendment 2

May 7, 2012, the section 319 grant was increased by $373,000 and $100,000 of CWSRF State funds were awarded to the project for additional interest in Grassland BMPs, AWMSs, and to cover expenses associated with hiring an additional employee to accomplish increased milestones.

Amendment 3:
March 14, 2013, section 319 grant was increased by $60,000 to increase funds available for AWMS and Grassland BMPs.

Amendment 4:
July 9, 2013, the section 319 grant was increased by $300,000 and CWSRF was increased by $100,000 to cover cost associated with extending the project one year to July 31, 2014.

Amendment 5:
August 8, 2013, the section 319 grant was increased by $171,770.48 to further increase funds available to AWMS and grassland BMPs. The project was also extended to September 30, 2014 to give more time to transition between project segments.

Funds expended throughout the project can be seen in Table 7 below. Some CWSRF and CWFC funds that were allocated to this segment of the project were moved to segment IV prior to the completion of this project segment. The remaining funds were used in segment 4 of this project. The project was very well received by producers, and in turn the producer share of the funds spent nearly reached 40% of this segments total funds spent.

Table 7: Funds Expended for Segment 3

ITEM	319-EPA	Consolidated WFC Fund	Clean Water SRF	USDA EQIP/CRP	Conservation Commission	Local	Total
Personnel Support							
Staff: Coordinator/Conservationist (2 FTE)	$76,868.47		**$45,090.06**				$121,958.53
Travel	$34,742.27		**$10,400.20**				$45,142.47
Office Space	$2,104.70		**$1,295.20**				$3,399.90
Office Equipment/Supplies	$1,624.52		**$428.09**				$2,052.61
Computer/Connection/Maintenance (NRCS contract)	$0.00						$0.00
Administration	$22,148.78		**$10,385.40**			$0.00	$32,534.18
Subtotal: Personnel Support	**$137,488.74**	**$0.00**	**$67,598.95**	**$0.00**	**$0.00**	**$0.00**	**$205,087.69**
Objective 1: BMP's Installation							
Task 1: Cropland/Grassland BMP installation							
Product 1: Cropland BMP's - 20,000 ac.	$21,350.67			$14,374.00		$11,908.22	$47,632.89
(Riparian Cropland BMPs)							
Product 2 : Grassland BMP's - 10,000 acres:	$719,453.99		$131,206.71	$96,421.00	$92,175.83	$318,213.95	$1,357,471.48
(Rotational grazing, fence, seeding, water development)							
Product 3: Riparian Area Mgt. (RAM Program) - 80 acres	$0.00					$0.00	$0.00
Task 2: Livestock Nutrient Management							
Product 4: 10 Ag Waste Systems							
Engineering Design Services - 8 @ $18,500 each	$59,415.76	$0.00		$0.00		$19,660.39	$79,076.15
System Construction - 8 @ $150,000 each	$515,910.06	$372,621.17		$1,291,488.58		$1,944,540.39	$4,124,560.20
Winter Feeding Area - 2 @ $20,000	$33,151.26	$10,783.81				$14,645.01	$58,580.08
(water, fencing, tanks, windbreaks)							
Nutrient Management Plans - 10 @ $2500	$0.00	$0.00		$0.00		$0.00	$0.00
Subtotal: BMP Installation	**$1,349,281.74**	**$383,404.98**	**$131,206.71**	**$1,402,283.58**	**$92,175.83**	**$2,308,967.96**	**$5,667,320.80**
Objective 2: Outreach:							
Task 3: Information Campaign	$0.00					$0.00	
Product 5: (Informational meetings (2), tours (2),							
press releases (4), newsletters (4), steering com. (2)							
Subtotal: Outreach	**$0.00**	**$0.00**	**$0.00**	**$0.00**		**$0.00**	$0.00
Objective 3: Monitoring and Project Management							
Task 4: Water Quality Sampling/Evaluations							
Product 6: 24 water samples/testing/evaluation @ $65/ea.	$0.00						
Subtotal: Monitoring and Reports	**$0.00**	**$0.00**	**$0.00**	**$0.00**		**$0.00**	$0.00
Total Project Cost:	**$1,486,770.48**	**$383,404.98**	**$198,805.66**	**$1,402,283.58**	**$92,175.83**	**$2,308,967.96**	**$5,872,408.49**
Match:							
Ineligible Match - Federal and/or Project Allocated				$1,402,284			
Eligible Match - Local and State		$383,405	$198,806		$92,176	$2,308,968	
Match Percentages:	**25%**	**7%**	**3%**	**24%**	**2%**	**39%**	**100%**

COORDINATION

In Table 8 below the contributions and their responsibilities are listed for the partners of the Lewis and Clark Project.

Table 8. Contributions and Partners

Agency/Organization	Contribution
Nongovernmental	
Charles Mix Lake Association	Volunteer water quality monitoring. Organize and host meetings.
Private sector technical assistance providers (TSPs)	BMP design services, especially AWMs.
Randall Resource Conservation and Development Association Council	Project sponsor through the Randall Resource Conservation and Development Association.
SD Association of Conservation Districts	Provided interim coordinators through contractual services, technical assistance for administration and BMP planning through the 319 funded 303(d) Watershed Planning and Assistance Project.
SD Discovery Center and Aquarium	Information and education activities and coordinated volunteer water quality monitoring program.
SD Grasslands Coalition	Design managed grazing systems through the 319 funded Grasslands Management and Planning Project.
Governmental	
Local	
Douglas, Aurora, Brule, Bon Homme, Hutchinson, Charles Mix, Gregory, Clearfield/Keya Paha, Todd , Yankton, Tripp, Clearfield, Douglas, Hutchinson, Yankton, Union , Gregory Conservation Districts	BMP planning, to include maps and installation, and provide a "conduit" through which cost share funds are distributed to producers installing BMPs. Cosponsor SD Soil and Water Conservation Grant applications. Monitor compliance with BMP O & M requirements.
State	
SD Department of Agriculture	Financial assistance for BMP installation and technical assistance to conservation districts through the Conservation Commission's Soil and Water Conservation Grants Program.
SD Dept. of Game, Fish and Parks	Presentations at meeting and grassland BMP installation through the Partners for Wildlife Program.
SD DENR	Technical assistance and training with water quality sampling and data interpretation, project management and BMP installation through the 319 Program. Consolidated Water Facilities Construction Fund grant for AWMs, Section 401 and 404 and storm water permits through Surface Water Program.
SD Historic Preservation Office	Cultural Resource clearance/surveys.
Federal	
Randall RC&D	Project sponsor and clerical and administration services
US EPA	Financial assistance through Clean Water Act Section 319 project grants.
USDA FSA	Financial assistance for BMP installation through the CRP Program.
USDA NRCS	Financial and technical assistance for BMP installation through the EQIP Program. AWMs design services through the NRCS Ag Waste Management Team.
USDA FWS	Technical assistance for grassland seeding, grazing systems, multiple purpose ponds and riparian fencing through the Partners for Fish and Wildlife Program and Annual appropriation for SD.

PUBLIC PARTICIPATION

Producers in the project area were notified of opportunities to be involved in the project by press releases, fact sheets, brochures, feature articles, newsletters and direct mailings, at partner agency offices, and other public events. Refer back to Objective 2, Product 5 on page 29 of the Project Goals, Objectives, and Accomplishments, and in Appendix section of this report for a more detailed listing of examples outreach items produced.

Feature articles were written and published in the Dakota Farmer magazine and other statewide publications, highlighting the achievements of several animal waste systems constructed in cooperation with this project and the Natural Resources and Conservation Service agency. These articles were released in conjunction with public tours held at these facilities.
Direct producer contacts were achieved by the project hosting booth space at many workshops, meetings, and schools throughout the project area. This proved to be successful and led to many BMP installations and continued the word of mouth advertising demonstrated during this segment.

In an effort to appeal to a broader range of producers, the project started a social media advertising campaign by adding a project page on Facebook and by initiating a website. Both sites are updated regularly and provide pictures, facts, and practices offered by this project.

The Charles Mix Lake Restoration Association remained a strong force in this segment by providing a volunteer water sampling and testing campaign to encourage involvement by local residents. A regular scheduled sampling program was provided by several organizations and groups from the community. Results of these tests were recorded on a public website so that data could be shared with other interested parties. Local high school students became involved through this program, and had hands on experience by doing water samples and actually running tests on the samples in their school lab.

A newsletter was sent out to producers in the watershed to inform them of upcoming activities and provided some short stories of individual BMP success stories. The newsletter was sent to producers in the watershed area from lists of past and present producer participants and suggested lists from partner Conservation Districts.

ASPECTS OF THE PROJECT THAT DIDN'T WORK WELL

Generally there were more positives than negatives with this project segment.

Goals established at the start of this segment were met through the course of the project. Coordination between agencies worked smoothly during this segment as everyone understood their roles and responsibilities. Engineering issues experienced in previous segments, with animal waste designs, were improved and the process flowed at a satisfactory rate. Producer participation remained excellent for practices offered by this project as most goals were met or exceeded.

Negatives encountered in this segment were largely uncontrollable events of nature. The year 2011 saw rapid snow melt and heavy rain events which led to record flooding along the Missouri River Basin and in many tributaries and lowlands. The next year we saw historic levels of drought with 95% of the project area being in the worst level of exceptional drought. This kept the project scrambling to meet producer requests for livestock water and riparian area protection practices.

Another drawback to the widespread drought showed up as a decrease in corn supplies which led to the price of corn doubling in a window of a few months. This coupled with a livestock market that was depressed from additional marketing of animals in the drought areas, left little room for profit among livestock feeding enterprises. The project saw a dip in requests for the ag waste practices in the middle years of the segment due to these factors. As the prices began to stabilize toward the end of the segment demand began to increase for this practice to pre-drought levels.

Hiring and retaining technical assistance staff needed to serve the large project area has remained a problem. When the staff has been trained and experienced it has been difficult to keep them in the project as other agencies and agricultural business operations have hired them away. A very large portion of this project relied on the services of one coordinator to run the large project area, including the time during the drought year previously mentioned.

FUTURE ACTIVITY RECOMMENDATIONS

Producers exhibited a willingness to participate in the animal waste and livestock riparian practices during this segment, just as in previous segments, and these should continue to be a focus for future segments. Workshops and tours of completed practices were held during this segment and were well attended. Producers were able to get good visuals and questions answered at these events by the qualified staff present. A series of grazing workshops are scheduled to be held at the start of the upcoming segment and would be recommended to continue throughout the remaining segment.

Acres of cropland BMPs remained to be ahead of schedule during this project segment. No-till, reduced tillage, and conservation cover practices were the basis for these BMP acreages. A workshop was held in Bon Homme County to demonstrate the effectiveness of these practices using the NRCS rainfall simulator. It is recommended to continue these workshops and to also include the effectiveness of the CRP riparian buffer practices.

A water sampling program will be started during the next segment of this project starting in April, 2015. It is planned to include random sampling of four major streams on an every third week schedule. This will a more consistent range of samples to demonstrate the effectiveness of BMP installation and justification for dollars spent on those installations. It will also lend creditability to the numbers generated by the AGNPS model and Step L spreadsheet programs being used to calculate load reductions.

Keeping the gains made in water quality during this segment will require a high level of awareness right to the end of the project. It is suggested that the information and educations programs started during this segment be continued to keep awareness in the fore front.

APPENDIX

Brochures, Facts Sheets, Press Releases, and Promotional Materials

Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
South Dakota

Implementing Best Management Practices Reduces Sediment Loading in Choteau Creek

Waterbody Improved

Nonpoint sources of pollution, including upland erosion from agricultural land uses, contributed to sediment loading entering South Dakota's Choteau Creek. Water quality monitoring demonstrated that elevated total suspended solids (TSS) levels and low dissolved oxygen (DO) concentrations were preventing the creek from supporting its warm-water semi-permanent fish life propagation designated use. As a result, in 2004 the South Dakota Department of Environment and Natural Resources (DENR) added a 42-mile-long segment of Choteau Creek to the state's Clean Water Act (CWA) section 303(d) list of impaired waters for TSS and DO impairment. The Randall Resource Conservation and Development Council (RC&D) led efforts to implement agricultural best management practices (BMPs) in the watershed. The restoration efforts contributed to water quality improvement, prompting the state to remove Choteau Creek from the impaired waters list for DO (2008) and TSS (2012).

Problem

Choteau Creek originates in Douglas and Aurora counties and flows south through Bon Homme, Charles Mix, and Hutchinson counties before discharging into Lewis and Clark Lake, an impoundment on the Missouri River near Yankton, South Dakota (Figure 1). The creek drains 375,000 acres of predominantly agricultural land (including 45 percent grass, 40 percent row crops and 7 percent small grains), 6 percent developed land, 1 percent forest, and 1 percent water and wetlands.

Water quality monitoring conducted in the late 1990s and early 2000s indicated that TSS and DO concentrations violated the criteria in place to support Choteau Creek's warm-water semi-permanent fish life propagation designated use. To meet the criteria, no TSS samples may exceed 158 milligrams per liter (mg/L) and a maximum monthly mean of 90 mg/L; no more than 10 percent of DO concentrations may fall below 4.0 mg/L. Water quality monitoring in the creek showed that more than 10 percent of samples exceeded the TSS criterion of 158 mg/L. In addition, more than 10 percent of samples fell below the DO criterion of 4.0 mg/L. Based on these data, in 2004 DENR added a 42-mile-long segment of Choteau Creek (from Lewis and Clark Lake to the City of Wagner) to South Dakota's CWA section 303(d) list of impaired waters because of TSS and DO impairment.

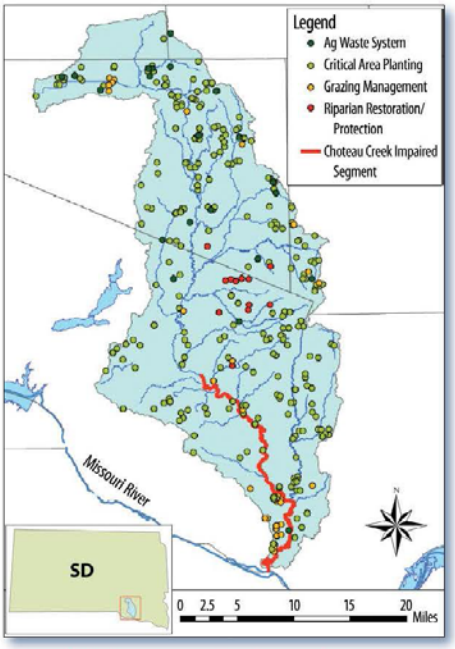

Figure 1. Project partners implemented numerous best management practices in South Dakota's Choteau Creek watershed.

Water quality assessments conducted in 2006 identified agricultural land uses as the major sources of pollutants in the watershed. DENR finalized a TSS total maximum daily load (TMDL) for Choteau Creek in 2010. The TMDL identified upland erosion, as well as streambed and stream bank erosion, as nonpoint sources contributing to TSS impairment. The TMDL noted that these and other factors, including poorly designed road crossings and agricultural pressures in and around the creek, likely contributed to degraded channel stability conditions in the lower portions of Choteau Creek.

Project Highlights

In 2006 the Randall RC&D led the first phase of the Lewis and Clark Lake Watershed Project to restore the beneficial uses of watersheds surrounding the lake (including Choteau Creek watershed) by implementing BMPs to address sediment, nutrients and fecal coliform bacteria. Project coordinators were managed through an agreement between the Randall RC&D and the South Dakota Association of Conservation Districts. The coordinators, who supervised the overall implementation of the multiyear project, were supported by CWA section 319 funds and worked out of the local U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) office. In 2007 project partners formed a steering committee, composed of representatives from 11 conservation districts and federal and state sponsoring agencies, to help target financial and technical assistance resources to guide BMP implementation.

Project partners organized local agricultural producer meetings and workshops, and they distributed educational materials to promote project awareness and to provide producers with information on resources available to support BMP design and installation. USDA NRCS staff partnered closely with local conservation districts to provide technical assistance for designing and installing BMPs.

Between 2006 and 2011, project partners worked with local producers in Choteau Creek watershed to implement a number of agricultural BMPs (see Figure 1), including four animal waste management systems, more than 1,500 acres of grazing management, and 3,200 linear feet of livestock exclusion and riparian restoration and protection (Figure 2). Landowners also implemented more than 8,000 acres of cropland BMPs that help reduce soil erosion, including critical area planting, cropland filter strips, cropland conversion to permanent grass cover, and grassed waterways (Figure 3).

Results

DO sampling conducted in Choteau Creek in 2006 and 2007 showed a high of 13.8 mg/L, a low of 7.6 mg/L, and an average of 10.2 mg/L, indicating that the creek now meets the DO criterion necessary to support its warmwater, semi-permanent fish life propagation designated use. TSS sampling collected from 2009 to 2011 showed a high of 684 mg/L, a low of 3 mg/L, and an average of 84 mg/L. Less than 10 percent of the TSS samples exceeded 158 mg/L, indicating that Choteau Creek also meets the TSS criterion to support its use. On the basis of these data, DENR removed the 42-mile-long segment of Choteau Creek from its impaired waters list for DO (2008) and TSS (2012).

Figure 2. Landowners restored riparian areas to filter runoff and prevent erosion.

Figure 3. Landowners installed grassed waterways to filter runoff.

Modeling results indicate that agricultural BMPs implemented in the watershed should yield the following annual loading reductions: 226,620 pounds of nitrogen, 37,407 pounds of phosphorus and 22,453 tons of sediment. In the next phase of the project, partners will continue implementing BMPs throughout the watershed.

Partners and Funding

The project's success is largely attributed to coordination between the local, state and federal agencies and organizations, including the Randall RC&D; Gregory, Hamill, Clearfield/Keyapaha, Todd, Aurora, Bon Homme, Charles Mix, Davison, Douglas, Hutchinson, and Yankton conservation districts; South Dakota Conservation Commission; South Dakota Department of Agriculture; South Dakota DENR; South Dakota Game, Fish and Parks; USDA NRCS; U.S. Fish and Wildlife Service; and U.S. Environmental Protection Agency.

A total of $1,699,800 in CWA section 319 funds supported technical assistance and training for water quality sampling, project management and BMP implementation. South Dakota, the State Conservation Commission, and watershed landowners provided cash and in-kind matching funds totaling $1,671,872. USDA provided technical and financial assistance (including $1,024,039 in Environmental Quality Incentives Program funds) to implement BMPs.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-13-001D
January 2013

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Water Headlines

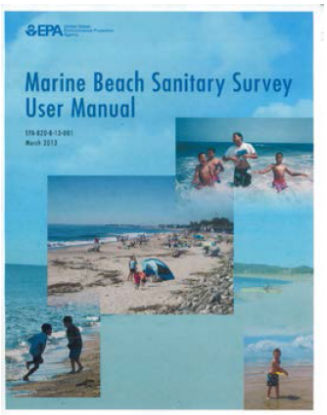
A Weekly Newsletter from the Office of Water at the U.S. Environmental Protection Agency

April 30, 2013

Send to a Colleague

Visit our website

EPA Releases Marine Beach Sanitary Survey Tools



EPA has made available a new sanitary survey to provide marine beach managers with a technically sound and consistent approach to identify pollution sources and share information. The survey helps marine beach managers synthesize water quality data, pollutant source data, and land use data so that they can improve beach water quality for swimming. It can also help managers set monitoring priorities, determine appropriate remediation, facilitate beach and watershed planning, and develop predictive models. The survey consists of a routine on-site sanitary survey, designed to be filled out each time water quality samples are taken, and an annual sanitary survey, which records more comprehensive information about factors in the surrounding watershed that might affect water quality at the beach. EPA will present a webinar on the new survey in spring 2013. Click here for more information.

Blog Spotlight: Getting an Up Close Look at Innovative Solutions in Seattle

Nancy Stoner, acting Assistant Administrator for EPA's Office of Water, blogs about her visit to the Pacific Northwest, where she visited a Seattle housing development that features natural stormwater drainage designs, toured Puget Sound restoration projects and visited a stormwater research laboratory at Washington State University. Read Nancy's blog.

Success Spotlight: Choteau Creek in South Dakota

EPA's Clean Water Act Section 319 Program provides funding for restoration of nonpoint source-impaired water bodies. This week's success spotlight shines on Choteau Creek in South Dakota. Erosion from agricultural land led to excess sedimentation in South Dakota's Choteau Creek, impairing water quality for aquatic life. As a result, in 2004 South Dakota added 42 miles of Choteau Creek to the state's list of impaired waters for total suspended solids and dissolved oxygen concentrations. Local, state and federal partners implemented agricultural best management practices, such as animal waste management systems, grazing management, and riparian restoration and protection. Landowners also utilized cropland filter strips, converted cropland to permanent grass cover, and used grassed waterways to reduce soil erosion. Water quality had since improved, prompting the state to remove Choteau Creek from the impaired waters list for dissolved oxygen and total suspended solids in 2008 and 2012. Click here for more information.

Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
South Dakota

Implementing Best Management Practices Restores Water Quality in the Keya Paha River

Waterbody Improved

Agricultural nonpoint source pollution contributed to elevated sediment and bacteria levels in South Dakota's Keya Paha River. As a result, the river was placed on South Dakota's 1998 Clean Water Act (CWA) section 303(d) list of impaired waters due to these pollutants. Through the Lewis and Clark Lake Implementation Project, the Randall Resource Conservation and Development (RC&D) Council worked with landowners to voluntarily implement best management practices (BMPs) to reduce sediment and bacteria levels in runoff. The river now meets the sediment standards and attains its warmwater semipermanent fish life designated use. As a result, South Dakota removed the Keya Paha River's sediment impairment from the state's list of impaired waters in 2014.

Problem

The Keya Paha River drains 1,092,300 acres in southern South Dakota before entering Nebraska and emptying into the Niobrara River (Figure 1). The watershed is comprised of 57 percent rangeland and 42 percent cropland. The Keya Paha River begins at the confluence of Antelope and Rock creeks near the Rosebud Indian reservation and flows 68 miles to the Nebraska border.

The Keya Paha River contributes sediment and bacteria to the Niobrara River, which in turn discharges these pollutants to Lewis and Clark Lake, a reservoir on the Missouri River near Yankton, South Dakota. The reservoir provides recreational opportunities and provides drinking water to South Dakota and Nebraska residents. Sediment and bacteria loading from the Keya Paha River threaten these beneficial uses.

To meet water quality standards for sediment, the 30-day average total suspended solids (TSS) concentration must be less than or equal to 90 milligrams per liter (mg/L) and the daily maximum must not exceed 158 mg/L more than 10 percent of the time. To meet standards for bacteria, fecal coliform must not exceed a geometric mean of 1,000 colony-forming units per 100 mL of water (cfu/100 mL) and no single sample may exceed 2,000 cfu/100 mL more than 10 percent of the time. In addition, *Escherichia coli* must not exceed a geometric mean of 630 cfu/100 mL and no single sample may exceed 1178 cfu/100 mL more than 10 percent of the time.

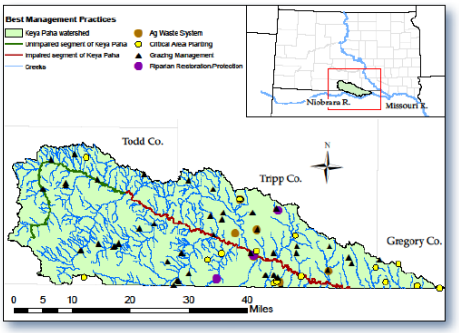


Figure 1. The Keya Paha River watershed is in south-central South Dakota. Partners installed numerous best management practices throughout the watershed.

Monitoring data indicated that the Keya Paha River failed to meet these water quality standards for TSS and bacteria (fecal coliform and *E. coli*). Therefore, the South Dakota Department of Environment and Natural Resources (DENR) placed the 68-mile-long Keya Paha River (segment SD-NI-R-KEYA _ PAHA _ 01) on the CWA section 303(d) list of impaired waters for TSS in 1998, fecal coliform in 2008, and *E. coli* in 2010. By failing to attain these water quality standards, the river was unable to support its beneficial uses for limited immersion recreation and warm water semipermanent fish life. DENR completed a TSS total maximum daily load for the Keya Paha River in 2009.

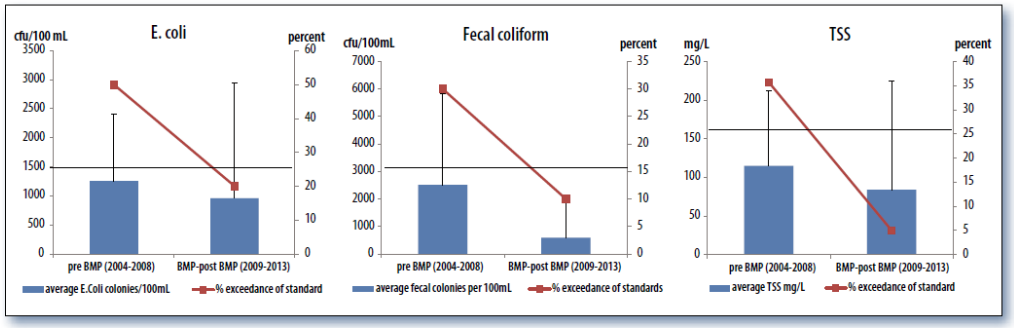


Figure 2. Pollution parameter means (left axes) and percent exceedances of beneficial use standards (right axes) before and during/after restoration. Error bars represent one standard deviation of the data. Percent exceedances of maximum allowable pollutant concentrations below 10 percent meet the standards.

Project Highlights

After a watershed assessment was conducted from 2003 to 2005, the Randall RC&D Council and its watershed partners launched the Lewis and Clark Watershed Implementation Project. The project's initial goal was to reduce the loads of sediment, nutrients and bacteria entering Lewis and Clark Lake by reducing loads in its tributaries, including the Keya Paha River. BMPs were installed from late 2008 to 2013, and additional BMPs will be installed in future years. BMPs installed in the Keya Paha watershed include agricultural waste systems, winter feeding areas, re-vegetation of critical areas, riparian restoration and protection projects, and implementation of grazing management plans that included fencing to keep cattle out of tributary creeks.

Results

After restoration, bacteria and sediment levels decreased. TSS values in the Keya Paha River are meeting water quality standards. This improvement can be seen in Figure 2, which shows the decreases in the percent exceedances of the daily maximum pollutant levels for TSS (from 35 percent in 2004–2008 down to 5 percent in 2009–2013), which meets the water quality standard. As a result, DENR removed TSS from the Keya Paha River's list of impairments in 2014.

As seen in Figure 2, data show that *E. coli* bacteria measurements are borderline, with two out of 10 samples (20 percent) exceeding the standard. Fecal coliform bacteria measurements just meet the standard (one out of 10 exceeding, or 10 percent). The Keya Paha will continue to be monitored for *E. coli* and fecal coliform to document improvements so that it can be fully evaluated for complete removal from the list of impaired waters.

Partners and Funding

Restoring the Keya Paha River was the result of hard work from committed landowners and local, state and federal agencies. The Randall RC&D Council administered the Lewis and Clark Watershed Implementation Project. Partners installing BMPs in the Keya Paha watershed included the Gregory County Conservation District (CD), Clearfield/Keya Paha CD and the Todd County CD. South Dakota DENR provided project oversight. The U.S. Department of Agriculture's Natural Resources Conservation Service, the U.S. Fish and Wildlife Service and the U.S. Environmental Protection Agency contributed funds and expertise. The Rosebud Cattlemen's Association, South Dakota Grassland Coalition, the South Dakota Association of Conservation Districts, South Dakota Pheasants Forever, and South Dakota Game, Fish and Parks assisted with BMP design and construction.

BMP installation and monitoring in the Keya Paha watershed was funded through the Lewis and Clark Implementation Project from 2006 to 2014. Partners spent $1,154,457 on six agricultural waste systems, 16 critical areas, 48 grazing management plans, and three riparian restoration projects. BMP funding sources included CWA section 319 funds ($323,247), other federal funds ($247,087), and state, local and in-kind sources ($584,123).

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-15-001N
March 2015

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The Daily Republic

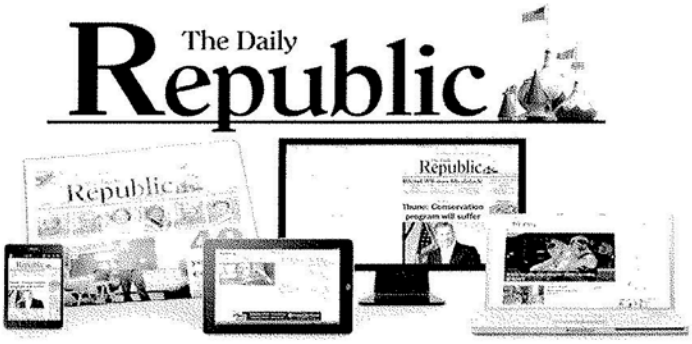
Feedlot waste-containment measures showcased near Pukwana, Platte

Charles Swanson, left, a cattle producer from rural Pukwana, talks with Rocky Knippling, project coordinator for the Lewis and Clark 319 Project, Wednesday at Swanson's feedlot. Swanson received funding through the project, which is a part of the Clean Water Act, and his waste-containment system was showcased Wednesday to the state Nonpoint Source Task Force. (Anna Jauhola/Republic)

By Anna Jauhola on Sep 15, 2011 at 5:50 a.m.

PUKWANA -- As state and national pollution standards get stricter, feedlot owners are continuing to upgrade the way they operate.

Members of the South Dakota Nonpoint Source Task Force got a close-up look at some of those upgrades Wednesday when they toured two self-contained feedlots in Brule and Charles Mix counties.



Livestock Production

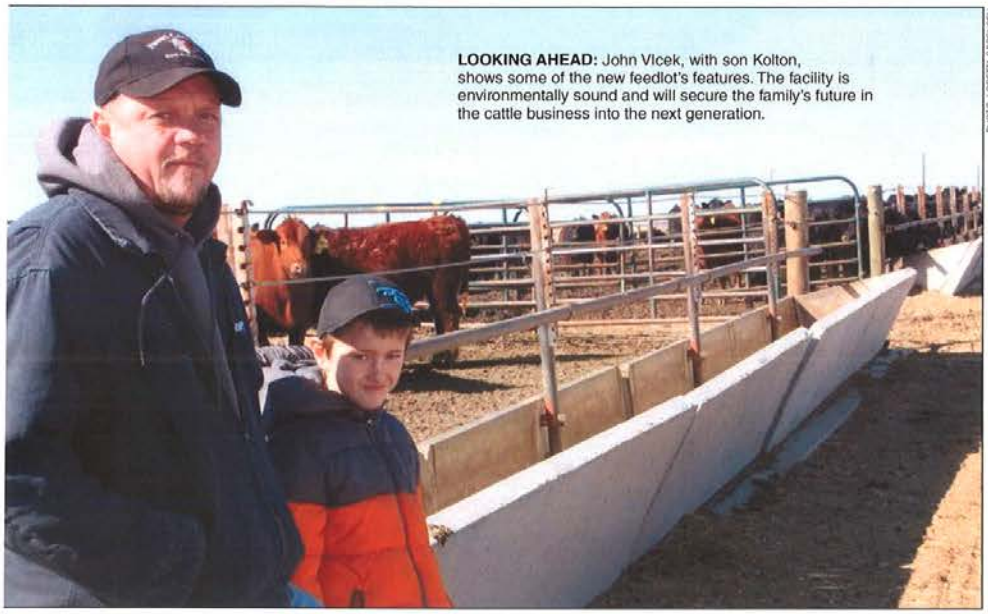


PHOTO: LORETTA SORENSEN

LOOKING AHEAD: John Vlcek, with son Kolton, shows some of the new feedlot's features. The facility is environmentally sound and will secure the family's future in the cattle business into the next generation.

Right time for new feedlot

By **LORETTA SORENSEN**

THE decision to install a new feedlot didn't come easy for John Vlcek. For several decades, John has raised crops and cattle in partnership with his late father, Joe, near Tabor, S.D. Joe retired shortly before he passed away in 2012.

John's father's illness and death, which happened in the midst of developing the feedlot, made it challenging to focus on the details of his new venture. However, with the feedlot up and running, he has no doubt that he made the right choice.

"My dad and I always raised livestock," he says. "For a while we had both beef and hogs. After hog prices crashed in 1998, I switched mainly to feeding cattle. I sold my sows and bought half a yard of calves with Dad. Over a period of time, I increased the number of calves I was feeding. When Dad retired I took over the feedlot, usually feeding about 550 calves at a time."

Vlcek's new feedlot is permitted for 999 head, and he typically carries 900 calves each year. "I don't like to crowd the pens, so I don't max out my numbers," he says. "I usually buy lighter-weight Angus-cross calves that are between 450 and 550 pounds, and take them to finish."

Key Points

- New feedlot sets up family to continue in cattle business.
- New feedlot meets environmental standards and contains runoff.
- Design reduces short- and long-term maintenance requirements.

He selected what he believes is best site on the farm for the feedlot.

"We had a seasonal waterway that used to go through one of our cattle yards," Vlcek says. "That was very typical of many older farmsteads in this area. The fact that government officials are monitoring wastewater issues more and more closely coupled with our farm's location, 1.5 miles from the Missouri River, I knew it was time to make some changes."

Two other factors — Vlcek's 17-year-old daughter and 7-year-old son, who both indicate they want to return to the farm following college — made it clear to John that he needed to modify his farming operation to accommodate future changes.

"I want to secure my children's future in the cattle-feeding business," he says. "That's what my father did for me. It's a good opportunity for family members to continue the family farm."

Vlcek's feedlot encompasses about 25 acres. The topography of the site is well-suited to feedlot use.

"The feedlot gently slopes to the south," Vlcek says. "That makes design of the waste system very basic. Rainwater that runs through the feedlot flows into a sediment basin, where solids have a chance to settle out before water flows into the lagoon."

Designing a feedlot with a south-facing slope isn't always an option for beef producers. Natural Resources Conservation Service (NRCS) District Conservationist Mark Rohlfing at Tyndall, S.D., says the southern slope Vlcek was able to work into his new feedlot will provide benefits for the life of the facility.

"The design, which includes a windbreak on the north, helps protect cattle from harsh winter winds," Rohlfing says. "South-facing slopes are generally drier and better for cattle gains. During hot, dry summers, John will use a sprinkler system to help cool cattle."

Joy Cordier Jensen, USDA NRCS civil engineer at Brookings, S.D., says Vlcek's southern slope works well for the system's gravity-flow waste storage system.

"The system didn't require any pumps to pump liquid into the holding pond," Cordier Jensen says. "John's waste management system consists of a sediment basin that settles out the manure solids with a pipe that conveys liquid from the sediment basin into the holding pond."

John Lentz, NRCS resource conservationist at Mitchell, S.D., says starting with a clean slate is often a plus for developing a new feedlot design.

"Selecting a new site for a feedlot often makes it much easier to design a highly functional system because the new design doesn't have to be retrofitted to an existing space," Lentz says.

The design of Vlcek's feedlot will simplify short-term and long-term maintenance activities.

"The more components in a waste management system, the more the producer has to check and ensure everything is operating correctly," Lentz says. "John will follow an NRCS-approved nutrient management plan to properly apply and utilize any manure hauled out of his feedlot. This is a win-win since research has clearly documented that nutrients such as N, P and K improve crop yields. If those nutrients are properly applied, there are no environmental issues such as phosphorus runoff into surface water or nitrate leaching into groundwater."

Vlcek installed fabricated windbreak panels to provide some immediate wind protection for his cattle, and planted a living windbreak. As the trees mature, they will add wind protection and help conceal the site from public view.

"There's a five- to seven-year wait for a shelterbelt to mature," Lentz says. "The artificial windbreaks are helpful, but the shelterbelt will also reduce odor, provide particulate filtering and improve landscape aesthetics."

Livestock Production

New feedlot gets bang for the buck

By LORETTA SORENSEN

GARY Dvoracek and his sons, of Lake Andes, S.D., built a new beef feedlot this past summer.

Permitted for 999 head, the feedlot is divided into six equal-sized pens, each holding up to 166 head. A lagoon next to the feedlot catches runoff and serves as a settling pond. Dry manure is stored and used as fertilizer. The collected water is used to irrigate crops.

Six different agencies helped design or provided financing for the feedlot.

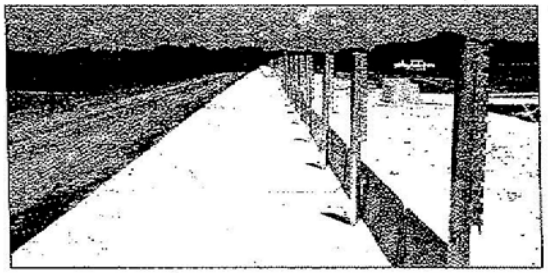
They included the Bon Homme County Extension Service and the Bon Homme County Conservation District, Natural Resources Conservation Service, Randall Resource Conservation and Development Association (RC&D), the South Dakota Department of Environment and Natural Resources, and the South Dakota Association of Conservation Districts.

Key Points

- New feedlot improves operation and protects environment.
- Six agencies were involved in design, construction and financing.
- Combining grants and cost sharing leverages project funds.

"Some farmers hesitate to work with government officials because of all the rules involved," Gary says. "The people who helped us were great. We had good dialogue, and we're happy with the results. In talking to other farmers it seems there's always something you'd do differently when you start working with the feedlot, but overall we did a good job of determining our needs."

The Dvorceks did some of construction work themselves and received two grants and cost-sharing money to build the feedlot.



TEAMWORK: A feed bunk and apron are built in a new feedlot that Gary Dvoracek built last summer. Six state and federal agencies collaborated with Dvoracek on the project, which will help protect the environment, improve the farm and aid the community's economy.

"By using these grants and programs, we're able to get more bang for the buck and leverage dollars better for the producer, the community and the region, versus relying only on one funding and technical resource source," says Jeff Stewart, coordinator of the Randall RC&D office.

Rocky Knippling, resource management specialist with the Lewis & Clark Watershed Implementation Project, says effective design is key to ensuring that water and other natural resources are protected and that the feedlot continues to be an operational asset for the farmer and the community.

"Farmers are true environmentalists," he says. "It's just as important to them as anyone else that their operation has the least possible environmental impact."

Sorensen writes from Yankton, S.D.

Hispanic markets get pork lessons

WHILE pork is a celebrated cultural staple within the Latin diet, Hispanic consumers have concerns about the nutritional value. To educate this market about pork's many benefits, the pork checkoff teamed up with renowned dietitian Sylvia Melendez-Klinger. "While providing high amounts of vitamins and minerals, many cuts of pork are similar to or as lean as chicken," says Melendez-Klinger. To spread the news about pork, Melendez-Klinger conducted media in-

Saturday, March 31, 2012
Article from The Daily Republic

AREA WATERSHED PROJECTS, CITIES GET FUNDS FOR WATER PROJECTS

PIERRE — The Lower James River watershed project and the Lewis & Clark watershed restoration project are among the projects to receive funding from the state Board of Water and Natural Resources, according to a news release issued Friday. Projects in the cities of Alpena, Winner and Ethan also received funding. The board approved a total of $43.4 million in grants and loans for drinking water, wastewater, storm water, watershed improvement, landfill and recycling projects. The board met Thursday and Friday in Pierre.
A $75,000 grant was awarded from the Consolidated Water Facilities Construction Program to the James River Water Development District for the Lower James River watershed project. A $275,000 grant was approved from the same program to the Randall Resource, Conservation and Development District (headquartered in Lake Andes) for the Lewis & Clark watershed restoration project. The grants will help provide cost-share funds for construction of several animal-waste management systems at livestock feeding operations in the watersheds. The James River project is the third phase of an effort to improve the James River's water quality and beneficial uses by targeting and reducing sources of fecal coliform bacteria and suspended solids in the watershed. The Lewis & Clark project has a similar aim. The estimated cost of the James River project is $1.23 million, and the estimated cost of the Lewis & Clark project is $2.79 million.
Other funding was awarded to the following area recipients. • South Eastern Council of Governments: $300,000 grant for regional solid-waste and recycling revolving loan fund. • Alpena: $1,465,000 loan for wastewater treatment facility upgrade and expansion. • Winner: $400,000 loan for wastewater collection system improvements. • Ethan: $550,000 grant and $500,000 loan for wastewater treatment improvements.

Lewis and Clark 319 Project

Purpose for 319 Project

Goal for the project is to reduce sediment and nutrient loading into the Lewis and Clark Lake. This is accomplished by doing grazing systems, cropland BMP's, and by installing Animal Waste Systems on feeding areas. Tributaries for the Lewis and Clark are the Niobrara River, Keyapaha River, and Ponca Creek drainages.

- Livestock pipeline/tank projects
- Fencing
- Planting trees on grass for livestock protection
- Developing grazing plans
- Projects are based on 75% cost share and can partner with NRCS and FSA programs
- Develop designs and financial assistance for Animal Waste Systems

Rocky Knippling 605 280-7768
Kyle Knippling 605 734 5413 ext 3

Lewis and Clark 319
Watershed Project

NEWS RELEASE – April 2012

Lewis & Clark Watershed Implementation Project a Successful Partnership

Lewis & Clark Watershed Implementation Project (LCWIP) was recently approved for $275,000.00 grant by the South Dakota Board of Water & Natural Resources. This grant was awarded from the Consolidated Water Facilities Construction Program to Randall Resource Conservation & Development (RC&D) Association, Inc., headquartered in Lake Andes, SD. The grant will provide cost-share funds for construction of several animal-waste management systems at livestock feeding operations.

LCWIP was initiated in 2006 as result of a watershed assessment project led by a partnership of 11 Conservation Districts, South Central Water Development District, South Central RC&D, Lower James RC&D, SD Department of Environment & Natural Resources (SDDENR), USDA Natural Resources Conservation Service (NRCS) and Randall RC&D. Randall RC&D was asked to administer LCWIP. This partnership developed the original LCWIP area of 1.7 million acres – all South Dakota drainage into the Missouri River from Fort Randall Dam downstream to Gavin's Point Dam including Lewis & Clark Lake. Growing public concern about negative impacts of sediment filling in Lewis & Clark Lake was a major driving force behind development of LCWIP.

The LCW Assessment Project documented serious stream bank and stream bed erosion taking place in 6 major streams (Keya Paha River (Todd & Tripp counties), Ponca Creek (Gregory county), Choteau Creek (Davison, Douglas, Hutchinson & Charles Mix counties), Slaughter Creek (Charles Mix county), Emanuel Creek (Hutchinson & Bon Homme counties), and Snatch Creek (Bon Homme county) plus Roosevelt Lake and Rahn Lake (Tripp county). High bacteria counts were found at several sites in these water bodies. Nutrient levels exceeded desired limits also. LCWIP provides Technical and Financial Assistance necessary to help producers plan and apply Best Management Practices to improve and protect these water resources. Several livestock feeding operations located close to water resources may be eligible for assistance, as well as Critical Area Plantings and Grazing Management practices. Many grazing livestock operations are voluntarily working with LCWIP to reduce negative livestock impacts on streams and lakes.

The addition of Lake Andes, Geddes Lake, Academy Lake, and Platte Lake watersheds expanded LCWIP to 2.5 million acres. Producers within LCWIP area may voluntarily participate in the project by contacting their local Conservation District for Technical and Financial Assistance.

Rocky Knippling, Project Coordinator (provided by SD Association of Conservation Districts) may be asked by the Conservation District to work with the producer. USDA Natural Resources Conservation Service field staffs serving the Conservation District also provide assistance. USDA Conservation Programs may provide Financial Assistance to leverage the producers' cash & in-kind contributions, plus other state and federal money designated for LCWIP.

Federal dollars from Section 319 Clean Water Act administered by EPA and SDDENR play an important part in providing cost-share assistance to producers as well as some of the cost for Technical Assistance. Randall RC&D at this time is utilizing $582,000.00 in 319 dollars from FY2011 Federal Budget plus $473,000.00 in 319 dollars from FY 2012 Federal Budget to help carry out LCWIP. These dollars are designated to be used by June 30, 2013, to complete Segment 3 of LCWIP.

Since 2006, over 14,000 acres of Critical Area Plantings, over 30 Animal Waste Management Systems, over 18,000 acres of Cropland Best Management Practices, over 4,000 acres Filter Strips (vegetation which protects adjacent water bodies), 66 acres Grassed Waterways, over 7,000 acres Planned Grazing Systems, plus numerous other Conservation Practices have been applied to the land as a result of LCWIP. Much remains to be done. The Lewis & Clark Watershed Implementation Project Partnership is continuing to assess the needs and available Technical and Financial resources. Their aim is to make a difference in reducing delivery of sediment and other pollutants to this area's water resources, especially the Missouri River and Lewis & Clark Lake. For more information, please contact your local Conservation District.

Available Conservation Practices

Livestock Feeding Operations

Lewis & Clark Watershed Implementation Project has funding available to assist with engineering design for animal waste systems plus developing nutrient management systems on a cost-sharing basis.

Cropland and Grassland Practices

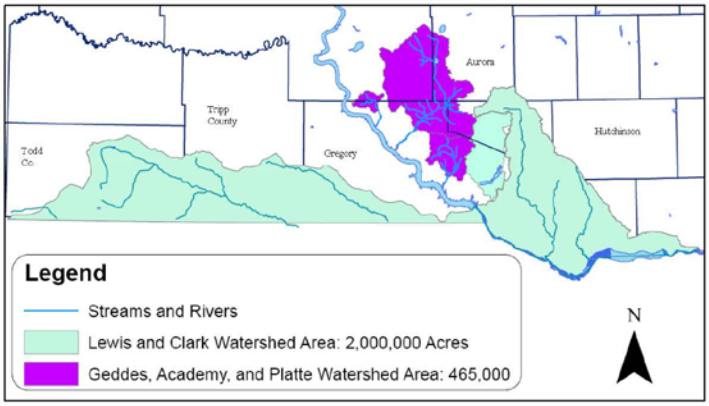
Technical and Financial Assistance to plan and apply filter Strips, Grassed Waterways, Tree Planting, Planned Grazing Systems, Fencing, Grass Seeding, Pipelines, Tanks, Ponds/Dugouts, Rural Water Hook-up, and Pasture/Grassland Buffers.

To Request Assistance or more information:

Contact Conservation Districts:

Brule-Buffalo (Chamberlain) 605-734-5413
Gregory County (Burke) 605-775-2770
Hamill (Winner) 605-842-0603
Clearfield/Keyapaha 605-842-0603
Todd County (Mission) 605-856-4440
Aurora (Plankinton) 605-942-7719
Bon Homme County (Tyndall) 605-589-3232
Charles Mix (Lake Andes) 605-487-7577
Davison (Mitchell) 605-996-1564
Douglas County (Armour) 605-724-2846
Hutchinson (Menno) 605-387-5539
Yankton County (Yankton) 605-665-6704

Lewis and Clark Implementation Project Area



Lewis & Clark Watershed Implementation Project

Sponsored by the Following:

Randall Resource Conservation and Development (RC&D); Lower James RC&D and South Central RC&D; Conservation Districts: Gregory County, Hamill, Clearfield/Keyapaha, Todd County, Brule-Buffalo, Aurora, Bon Homme County, Charles Mix, Davison, Douglas County, Hutchinson, and Yankton County Conservation District; South Central Water Development District (SCWDD); SD Association of Conservation Districts (SDACD); Natural Resources Conservation Service (NRCS); and SD Department of Environment and Natural Resources (DENR)

Why We're Here

A Joint Effort to Reduce Pollution ~

South Dakota portion of the Lewis & Clark Watershed consists of 2 million acres. A two-year Watershed Assessment was completed in 2005 which documented conservation practices needed to reduce runoff water--water that travels through agricultural land, picking up chemicals, animal waste and eroded soil--eventually depositing the material in our rivers, lakes and streams. Completed assessments for Geddes Lake, Academy Lake, Platte Lake and Andes Lake watershed increased LCWIP by 465,000 acres.

Because the risk of damage from these pollutants can be dramatically reduced through the application of proper land management practices, Randall RC&D, NRCS, SDACD, SD-DENR, SCWDD, 11 Conservation Districts and others have joined hands in the creation of the Lewis & Clark Watershed Implementation Project.

Focus: Impaired Water Bodies

This watershed project is focused on reducing sediment and pollution of all lakes and streams in the watershed. This includes Lewis and Clark Lake at the culmination of the tributaries.

How It Works

Lewis and Clark Watershed Landowners should contact the one of the Conservation Districts for an initial visit by the project's Resource Management Specialists.

The specialists provide the owners with information about watershed impairment, how improved management practices can improve their operation, what assistance is available and the voluntary nature of the project.

Selected landowners are offered assistance in developing a plan employing land management practices that will benefit their operation while improving water quality and reducing sediment. The plan will concentrate on Best Management Practices, some or all of which may qualify the landowner for financial assistance to implement those practices.

Program Neutral Planning Techniques

The Resource Management Specialists will utilize program neutral planning techniques. Program neutral planning is the development of a plan without regard to funding sources. This means that no specific fund source will be initially targeted. The result is a plan that better fits the needs of the landowner and the natural resource by not limiting opportunities to a single funding source whose qualification requirements may frequently change.

The Process

Planning assistance offered by the project includes:

- Conducting survey of soil, water, plants, animals, air and cultural resources
- Determining the landowner's needs and preferences
- Identifying land management alternatives
- Preparing a map of existing and planned management practices
- Developing the landowner's preferred plan
- Selecting appropriate financial assistance sources
- Completing financial assistance application forms

In summary, the project's Resource Management Specialists offer a comprehensive service that includes developing a qualified land management plan as well as help in locating and applying for financial assistance.

Once the practices are funded, the funding agency and the landowner will be responsible for implementation of the practices.

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This Watershed project is administered by the Randall RC&D Association, Incorporated. Major implementation funding is provided through the Clean Water Act, Section 319 Grant.

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LEWIS & CLARK WATERSHED IMPLEMENTATION PROJECT (LCWIP)
STEERING COMMITTEE MEETING
JANUARY 24, 2013
Randall Community Water Dev. District Meeting Room, Lake Andes, SD

Meeting was called to order at 1:00 PM by Les Labahn. Sign-up sheet attached. Kyle Knippling, new Watershed employee, was introduced. Kyle is located in the Chamberlain Field Office.

Progress LCWIP Segment 3 – report from Rocky. Application for $400,000.00 (319 funds) approved by SD Board Water & Natural Resources. Awaiting final approval by Region 8 EPA (possibly April or May this year). This is an "extension" for Segment 3. Will be applying for $300,000.00 State Water Quality Grants (Animal Waste Systems designs, engineering, etc.). Need to be on the State Water Plan. Les signed State Water Plan application today. Having excellent luck on livestock exclusions. EPA posted a "Success Story" about Choteau Creek to their website (also on SD-DENR website). EPA de-listed Choteau Creek as impaired. This summer—feedlots are planned but money is short. Need I&E projects (workshops, demos, etc.). There are funds for them. Call Les, Rocky or Kyle if you have an idea for I&E. Lots of solar pumps and pipelines installed this past summer. Feedlot costs are up to $500,000. Using EQIP dollars and Conservation Commission grants to help with the cost. Lots of dirt-moving this past summer. Brule County projects – pipelines this summer. Yankton County projects – possible project is a feedlot (western Yankton County). Would be a good I&E tour – it is along the highway.
East & West Strategic Plans – report from Chuck Lebda and Mike Kuck. Chuck was hired by SDACD to complete 5-Year Strategic Plans for East River and West River areas of Lewis & Clark Watershed Project. The East River Strategic Plan is completed. A draft of the West River side is being reviewed by Angela (Ehlers) and Pete (Jahraus). Chuck went over the draft "Plan" with the group. The figures were taken from NRCS Field Office Activity data.

USDA Conservation Program Funding – report from District Conservationists. Rod Voss and Brandon Walter reported Ag Waste Systems financial assistance is available through EQIP. Dollars need to get spent—get the project done within 2 years. Rainfall Simulator training is currently being given (NRCS and Conservation District employees and other partners). Training focuses on soil quality and water retention/storage. The simulator would be a good outreach tool.
Rod Voss said there will be a new District Conservationist hired for Lake Andes soon; will cover Charles Mix and Douglas counties.

Jeff Stewart suggested the Rainfall and Wind Simulators be utilized at events. Suggested more tours be set up (with the Districts). Rocky said another feedlot tour is planned with Bon Homme County Conservation District. Jeff asked where we are at on Water Testing in the Watershed. Rocky said testing was done on Choteau Creek last year (by someone other than Rocky). That is how EPA determined the Success Story.

Meeting adjourned at 2:15 PM.

Susan Schultz, Recording Secretary

Steering Committee Meeting
December 15, 2011
Lake Andes – 1:00 PM

Present: Rex Winter, George Sherrard, Kay Don Jons, Kerry Stiner, Rocky Knippling, Jeremy Schelhaas, Ted Braun, Nick Stotz, Sandy Korkow, Martin Drefs, Jeff Stewart, Les Labahn, Susan Schultz

LCWIP Progress: Rocky said Segment 2 was complete /closed-out in September 2011. Short on goals in Segment 2 (too wet to get Ag Waste Systems in). Rocky said there have been some grumblings, so he gave an overview of Segment 3. There is a $187,500.00-cap on systems; 319 plus EQIP. This is due to cuts in congressional budget. Segment 3 funding round did pick up some extra dollars; will know in June or July how much. Everything works together: FSA, NRCS, and DENR. Rocky handed out information showing where funds were spent by County in South Dakota. Ahead of goals (even though didn't meet goals in Segment 2). Rocky said landowners are getting interested in riparian exclusions in West River counties. There is also interest in planting trees and fencing out bottomlands along creeks. It's been a good project.

Jeff asked – regarding the budget – if there is any chance 319 dollars could go toward paying part of office space. Jeremy said yes, as long as there is an employee posted there. Rocky said Angela will be hiring 1-1/2 employees to cover 2 watershed areas.

Jeff asked about Council General Liability and Director's & Officers insurance not getting reimbursed in 2012. D&O is required for this big project. Jeremy said the council should make their case to Pete (Jahraus) about the D&O. Pete is open-minded.

Les mentioned that the RC&D office space does not currently have phone or Internet hooked up for an employee, if hired. Rocky and Jeremy said that DENR will pay for NRCS computer access if an employee is hired and located in Lake Andes.

Funding-Round for Consolidated Water Facility Construction Funds. Rocky will send in request for these funds before the January 1, 2012 deadline. Les will need to sign the letter.

LCWIP Outreach & Information: Rocky said he has been falling back on the Information & Education (Jeff used to do I&E). SDACD (Angela) bought I&E software to build a website. Each project will pay $500.00 to be on the website. Rocky said he will be attending Rancher Workshops this coming winter. The summer Nonpoint Source Task Force meeting included a tour of 319 feedlots.

Jeff said that SCWDD funds are available for I&E tours; $2,000.00 each year for 2-years. Also need to design a new brochure. Les said Kris & Sam took good pictures from their work on the Watershed Assessment. Those pictures are on a disk in the RC&D office. Rocky thought they might be too old to use. Rocky said he did his "drive-by" review for Tier I, II & III feedlots. Some were underwater due to flooding.

Future of LCWIP. Rocky presented a handout showing BMP's completed and a handout showing BMP's planned for Segment 3.

RAM (Riparian Area Management) is planned; can be combined with CRP funds. Requirements include: need to be on main tributaries, has to be paid out right away. The

Conservation Districts would be involved in RAM. CD's will contribute the local match (with drive-by of area).

Someone asked about adding sub-watersheds. Jeremy said there is the need to do more assessments, but it is expensive. Jeff said that RAM would be good for Randall Creek. Jeff asked if the Corps of Engineers would be amenable to a watershed tour; maybe next summer?

The TMDL Final Report is online (DENR webpage).

Sediment after Missouri River Flood 2011. Sandy Korkow didn't present her PowerPoint again, but asked Rocky and Jeremy if there are any reports on sediment flows into Lewis & Clark Lake. Rocky discussed AGNPS, STEP-L, etc. Talked about the need to show data of sediment flows in the watershed.

Sandy asked for an explanation on Table in the Segment 3 application (PIP). George said with all the tiling done this past year, there won't be any ponds to collect drainage; might see more sediment coming off the fields in 2012. Sandy said the USGS sediment assessment is now at a standstill due to federal funding cuts. Sandy said the MSAC annual meeting will be held in March 2012 in Wagner.

Input from Steering Committee Members. What's working? Improvements/needs? Jeff said more I&E is needed; toot your horn. DENR and CD's good to work with. Sandy said MSAC willing to work with entities on common ground. Nick said Rock & Jeremy are dedicated to the project. I&E needed. Ted said working together is the big thing. Jeremy referred to Sean Krueger's e-mail about getting something going on (water) sampling. Rocky wants some quantitative number on what we are accomplishing, continued cooperation between agencies involved with the project. Les said I&E on water sampling being done on Lake Andes is needed. Kay Don said good working relationship; get the stories out (new papers). Kerry said producers involved in the project—takes a long time to get their cost-share funds to them. George said payments get delayed because As-Built plans are needed. Engineer availability has growing pains; workload on Watershed Coordinator; potential projects. There are certain D/C's landowners don't want to sign up with. Rex mentioned Red Sparks feedlot open house; having dollars seems to be a problem.

Meeting adjourned at 2:55 PM.