Exhibit A

September 2009

PROJECT SUMMARY SHEET

PROJECT TITLE NAME: LOWER BIG SIOUX RIVER WATERSHED IMPLEMENTATION PROJECT - Segment II

NAME AND ADDRESS OF LEAD PROJECT SPONSOR:

Lincoln County Conservation District
801 E. 5th St. Suite 2
Canton, SD 57013
PHONE: 605-987-2624 FAX: 605-987-2760

STATE CONTACT PERSON: Jeremy Schelhaas **TITLE:** Natural Resource Project Engineer

PHONE: 605-362-3548 **FAX**: 605-362-2768

STATE: South Dakota **WATERSHED:** Lower Big Sioux River & Lake Alvin

HYRDOLOGIC UNIT CODE (HUC): 10170203 & 10170203

PROJECT TYPES: [ ] BASE [X] WATERSHED [ ] GROUNDWATER [ ] I&E

PROJECT TYPES	WATERBODY TYPES	NPS CATEGORY
[ ] STAFFING & SUPPORT	**[ ] GROUNDWATER**	**[X] AGRICULTURE**
[X] WATERSHED	**[X] LAKES/RESERVOIRS**	**[ ] URBAN RUNOFF**
[ ] GROUNDWATER	**[X] RIVERS**	**[ ] SILVICULTURE**
[X] I&E	**[X] STREAMS**	**[ ] CONSTRUCTION**
	[ ] WETLANDS	**[ ] RESOURCE**
		[ ] OTHER

EXTRACTION
[ ] STORAGE/ LAND DISPOSAL
[ ] HYDROLOGIC MODIFICATION
[ ] OTHER

SUMMARY OF MAJOR GOALS: The Lower Big Sioux River Watershed Implementation Project, Segment II, will continue efforts to reduce nutrient, sediment and fecal coliform bacteria loadings to the Lower Big Sioux River and its watershed and continue providing assistance with BMP installation in the watershed to address TMDL's established for the Lower Big Sioux River and also target specific project activities for Lake Alvin and the Nine Mile Creek watershed. Reducing non-point source pollutants in the watershed through installation of best management practices (BMPs) will improve water quality to meet designated beneficial uses to include improving habitat for upland and aquatic species, and improving the recreational uses of the water bodies located within the project area.

PROJECT DESCRIPTION: The Lower Big Sioux River Watershed Implementation Project (Segment II) will target the reduction of nutrient, sediment, and bacteria loading to the Lower Big Sioux River, Lake Alvin and the tributaries within the watershed. During this proposed two year project (Segment II), the project coordinator and Lincoln Conservation District will implement BMPs in the watershed and provide education and information to the public. Activities planned will focus on BMP installation (animal waste management systems, cropland and grassland BMPs), water quality monitoring, bank stability testing and completion of an information and education program.

FY-2010 SD 319 FUNDS:	$325,000.00	CONSERVATION COMM:	$ 8,117.00
CONSOLIDATED FUNDS:	$ 86,000.00	LOCAL:	$ 191,833.00
FEDERAL FUNDS:	$285,400.00	SD GF&P:	$ 20,000.00
319 FUNDED FTE'S: .75			

TOTAL PROJECT COST: $916,350.00

STATEMENT OF NEED

2.1 The Lower Big Sioux River Watershed Project is a multi-year implementation project designed to restore and protect water quality of the Lower Big Sioux River in order to support the designated uses and achieve the TMDL's established.

Segment I of the watershed project is currently underway providing landowners with assistance, technical support and funding to implement BMPs throughout the watershed. This proposed project (Segment II) will continue providing assistance with BMP installation in the watershed to address TMDL's established for the Lower Big Sioux River and also target specific project activities for Lake Alvin and the Nine Mile Creek watershed.

The Lake Alvin watershed assessment was conducted from 1999 to 2000. A final report and subsequent TMDL were completed for the watershed in 2001 but have yet to be implemented. Since Lake Alvin and Nine Mile Creek are part of the Lower Big Sioux River Watershed, BMP and implementation strategies to address the water quality impairments will be added to Segment II of this Project Implementation Plan (PIP).

Since the start of the Lower Big Sioux Implementation Project in July 2008, two TMDL reports have been written. The first report addressed the fecal coliform impairments to the five segments of the Lower Big Sioux River and was approved in January 2008. The second report addressing Total Suspended Solids (TSS) to the last three segments of the Lower Big Sioux River has been public noticed and is slated to be completed this fall of 2009.

The Lower Big Sioux River Watershed Project (Segment II) includes the five South Dakota segments of the Lower Big Sioux River and the Lake Alvin Watershed (See Figure 1: Watershed Map).

Information from watershed assessments, stakeholder input and TMDL reports will be used to prioritize BMP installation throughout the watershed in order to achieve TMDL goals. The BMPs planned will reduce nutrient, sediment, and fecal coliform bacteria loads entering the Lower Big Sioux River and Lake Alvin thereby;

- protecting and supporting the designated beneficial uses,
- addressing water quality impairments identified during watershed assessments, and
- supporting the TMDL's resulting from these studies.

A list of beneficial uses for water bodies in the Lower Big Sioux River basin in South Dakota is shown in (Table 1). The list of beneficial uses and specific impairments of each segment, reason for the impairment and status of the TMDL reports is outlined in (Table 2).

This proposal is Segment II of several planned implementation project segments designed to implement the TMDL's and, therefore, restore and protect the water quality of the Lower Big Sioux River and Lake Alvin. Load reductions have been established in the three TMDL's and will be used to target specific areas in the watershed for BMP implementation. Since the watershed receives a large portion of its drainage from Iowa and Minnesota though, load reductions will require the cooperative efforts of the three states in order to achieve TMDL goals. Coordination of producer contacts, education, awareness and local organizations will be

necessary to facilitate ongoing implementation projects in the Lower Big Sioux River Basin by all three states.

Table 1: Beneficial Uses for Targeted Project Waterbodies (5 TMDL Segments and Lake Alvin).

Lower Big Sioux River Segments and Beneficial Use: **(X denotes the beneficial use listed for the Waterbody)**	**Above Brandon to Nine Mile Creek (BSRTMDL-1)**	**Nine Mile Creek to Near Fairview (BSRTMDL-2)**	**Near Fairview to Near Alcester (BSRTMDL-3)**	**Near Alcester to Indian Creek (BSRTMDL-4)**	**Indian Creek to Mouth (BSRTMDL-5)**	**Lake Alvin**
(1) Domestic water supply	**X**	**X**	**X**	**X**	**X**	
(2) Coldwater permanent fish life propagation						
(3) Coldwater marginal fish life propagation						
(4) Warmwater permanent fish life propagation						**X**
(5) Warmwater semipermanent fish life propagation	**X**	**X**	**X**	**X**	**X**	
(6) Warmwater marginal fish life propagation waters	**X**	**X**	**X**	**X**	**X**	
(7) Immersion recreation	**X**	**X**	**X**	**X**	**X**	**X**
(8) Limited contact recreation	**X**	**X**	**X**	**X**	**X**	**X**
(9) Fish & wildlife propagation, Recreation and stock watering	**X**	**X**	**X**	**X**	**X**	**X**
(10) Irrigation waters	**X**	**X**	**X**	**X**	**X**	
(11) Commerce and industry waters						

Table 2: Water Quality Data and Impaired Beneficial Uses for Targeted Water Bodies.

Waterbody Segment	**TMDL Report**	**303 (d) Listed**	**Impaired Beneficial Use and Cause***							
			1	**4**	**5**	**6**	**7**	**8**	**9**	**10**
BSRTMDL – 1 (SD-BS-R-BIG_SIOUX_13)	2008 fecal	Yes	Full	Not Listed	Full	Full	Non (Fecal Coliform)	Full	Full	Full
BSRTMDL – 2 (SD-BS-R-BIG_SIOUX_14)	2008 fecal	Yes	Full	Not Listed	Full	Full	Non (Fecal Coliform)	Full	Full	Full
BSRTMDL – 3 (SD-BS-R-BIG_SIOUX_15)	2008 fecal 2009 TSS	Yes	Full	Not Listed	Non (TSS)	Full	Non (Fecal Coliform)	Full	Full	Full
BSRTMDL – 4 (SD-BS-R-BIG_SIOUX_16)	2008 fecal 2009 TSS	Yes	Full	Not Listed	Non (TSS)	Full	Non (Fecal Coliform)	Non (Fecal Coliform)	Full	Full
BSRTMDL – 5 (SD-BS-R-BIG_SIOUX_17)	2008 fecal 2009 TSS	Yes	Full	Not Listed	Non (TSS)	Full	Non (Fecal Coliform)	Non (Fecal Coliform)	Full	Full
Lake Alvin (SD-BS-L-ALVIN_01)	2001 fecal, TSI	Yes	Not Listed	Full	Not Listed	Not Listed	Non (Fecal Coliform)	Full	Full	Not Listed

* Number corresponds to beneficial uses listed in Table 1

Source - Tables 4 & 5 Lower Big Sioux River Total Maximum Daily Load (TMDL) segments (1-5) *(TMDL For Pathogen Indicators Big Sioux River, Iowa and South Dakota 2008 Report)*

2.2 Description of Waterbody and Segments

The Lower Big Sioux River basin is located in northwest Iowa, southeastern South Dakota, and southwest Minnesota. The Lower Big Sioux River forms the border between Iowa and South Dakota from the Iowa/Minnesota border to the Missouri River (Figure 1). Lake Alvin is located in the northwestern corner of the Lower Big Sioux watershed in Lincoln County. It will be included in this segment 2 for implementation as well. Since a major portion of the Lower Big Sioux River Watershed is located in both Minnesota and Iowa, the fecal coliform TMDL is based in part on data from those portions of the watershed that have been collected by the respective states. This project will focus on the South Dakota portion of the watershed, but future segments of the implementation project will address reductions needed from all three states and apply BMPs based on respective loadings.

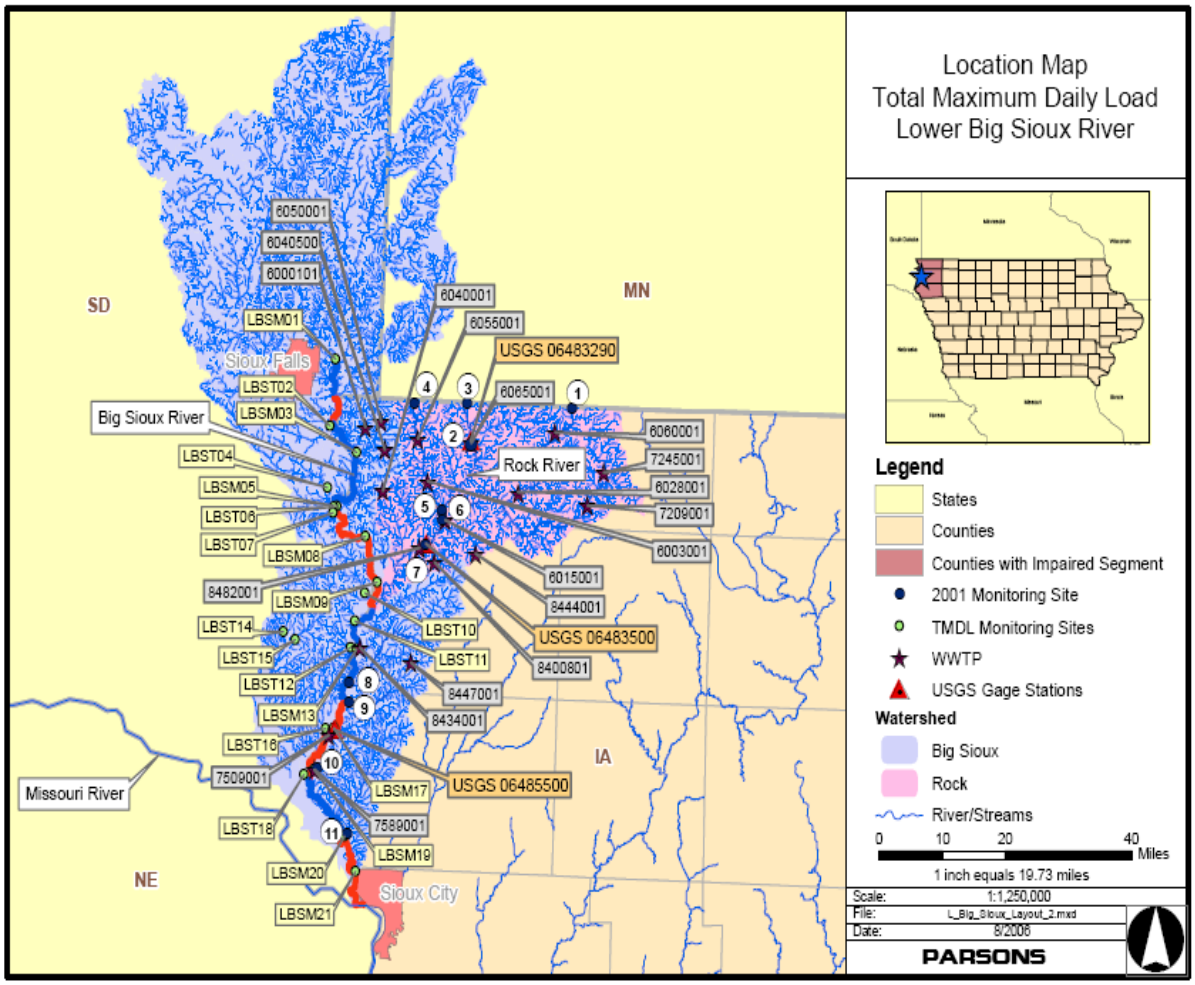


Figure 1: Lower Big Sioux River Watershed.

The Big Sioux River, which originates north of Watertown, South Dakota, flows generally south for 420 miles to its confluence with the Missouri River near Sioux City, Iowa. The Lower Big Sioux River forms the boundary between South Dakota and Iowa from near Sioux Falls, SD to Sioux City, IA. Major tributaries to the Big Sioux in the Iowa reach include the Rock River, drainage area 1,688 square miles, and Indian Creek with a drainage area of 63 square miles. Major tributaries to the Big Sioux in the South Dakota portion of the reach include Split Rock Creek, Brule Creek, Beaver Creek, Ninemile Creek, and Pattee Creek which have drainage areas of 464, 214, 99, 44, and 41 square miles, respectively. The river meanders between Sioux Falls and Sioux City (linear distance 75 miles; river distance 125 miles). The meandering nature of the river creates a diversity of aquatic habitats. Agriculture, specifically row crops and livestock feeding operations with mostly open feedlots, is the main land use in the watershed (Table 3).

Table 3: Lower Big Sioux River and its Basin Features.

Waterbody Name:	Big Sioux River, seven and five impaired segments in IA and SD, respectively
Hydrologic Unit Code:	Big Sioux River – 10170203;Rock River – 10170204
SD DENR Waterbody ID:	SD-BS-R-BIG_SIOUX_14-17
Location:	S33, T92N, R49W to S25, T100N, R49W
Water Quality Standards and Designated Uses:	See Table 1 and Table 2
Major Tributaries (Iowa):	Rock River, Indian Creek
Major Tributaries (South Dakota):	Beaver Creek, Brule Creek
Receiving Waterbody:	Missouri River
Stream Segment Length (Iowa):	125 miles
Stream Segment Length (South Dakota):	130 miles
Watershed Area: **Total** **Iowa** **South Dakota** **Minnesota**	 4,000 square miles 1,436 square miles 1,033 square miles 1,531 square miles

Lake Alvin is a reservoir owned and managed by South Dakota Game Fish and Parks (SD GF&P). The Lake was formed from the construction of a dam on Nine Mile Creek 600 feet wide and 36 feet tall in 1954. The damming of Nine Mile Creek resulted in a 1,002 acre feet Lake with a maximum depth of 23 feet. The lake is continually replenished by Nine Mile Creek watershed which meanders through primarily agricultural land. The watershed is comprised of approximately 85 percent agricultural land and 15 percent pasture land. Row crops, animal feeding operations, and pastured livestock are the primary land use in the watershed. Since the TMDL report was completed in 2001, urban sprawl from the two major municipalities (Tea, SD and Harrisburg, SD) has accelerated resulting in the conversion of a portion of the pasture land into residential areas. Nine Mile Creek begins north of Tea, SD and meanders south of the city of Harrisburg before entering the west end of Lake Alvin. The creek exits Lake Alvin at its east end and continues 0.5 miles before emptying into the Big Sioux River approximately 5 miles east of Harrisburg (Table 4).

Table 4: Lake Alvin TMDL Descriptions.

Waterbody Name:	Lake Alvin
Waterbody Type:	Lake (Impounded)
Hydrologic Unit Code:	10170203
SD DENR Waterbody ID:	SD-BS-L-ALVIN_01
Location:	SE, NE, SEC. 43-T100N-R49W
Water Quality Standards and Designated Uses:	See Table 1 and Table 2
Major Tributary:	Nine Mile Creek
Size of Waterbody:	107 acres
Size of Watershed	28,013 acres
Water Quality Standards:	Narrative and Numeric
Indicators:	Average TSI, Beach Closures
TMDL Goal: Total Phosphorus **Fecal Coliform (Swimming Beach)**	67% reduction in total Phosphorus (768 Kg/yr.) 25% reduction in fecal coliform
TMDL Target: Total Phosphorus **Fecal Coliform (Swimming Beach)**	64.95 mean TSI (379 Kg/yr.) 3.36×10^{10} fecal coliform/day or (200 fecal coliform/100 ml

BSRTMDL-1 (Segment R13) is a 29.2 mile river segment which drains 350,833 acres in South Dakota from Brandon to Nine Mile Creek. Load duration curves included in the January 2008 TMDL report indicate bacteria targets are exceeded at mid to high flow conditions and contribute to the impairment of the Lower Big Sioux River Segment at the monitoring site near Nine Mile Creek. This segment retains full support for 6 of the 7 beneficial uses but does not support immersion recreation because of fecal coliform levels (Figure 2).

BSRTMDL-2 (Segment R14) is a 25.3 mile river segment which drains 47,206 acres of South Dakota from Nine Mile Creek to near Fairview. Bacterial targets are exceeded at mid to high flow conditions in the mainstem river and high and low flows in the tributaries. This segment has full support for 6 of the 7 beneficial uses, but does not support immersion recreation because of fecal coliform levels.

BSRTMDL-3 (Segment R15) is a 21.4 mile river segment which drains 37,254 acres of South Dakota from near Fairview to near Alcester. Bacterial targets are exceeded at mid to high flow conditions with Total Suspended Solids (TSS) exceeded at moist flow conditions. This segment is in full support for 5 of the 7 beneficial uses, but does not support immersion recreation and warm water semi permanent fish life propagation due to fecal coliform and total suspended solid levels (Figures 2&3).

BSRTMDL-4 (Segment R16) is a 26.6 mile river segment which drains 72,641 acres of South Dakota from near Alcester to Indian Creek. Bacterial targets are exceeded at mid to high flow conditions with Total Suspended Solids (TSS) exceeded at moist to high flow conditions. This segment is in full support for 4 of the 7 listed beneficial uses, but does not support immersion recreation, limited contact recreation and warm water semi permanent fish life propagation because of fecal coliform and total suspended solid levels.

BSRTMDL-5 (Segment R17) is a 34.7 mile river segment which drains 198,802 acres of Union County from Indian Creek to the mouth at the Missouri River. Bacterial targets are exceeded at high flow conditions with Total Suspended Solids (TSS) exceeded at all flow zone conditions: dry, mid, moist and high flow. This segment is in full support for 4 of the 7 listed beneficial uses, but does not support immersion recreation, limited contact recreation and warm water semi permanent fish life propagation due to fecal coliform and total suspended solid levels.

Lake Alvin is a 107 acre man-mad impoundment located in northeastern Lincoln County. It has an average depth of 11 feet and maximum depth of 23 feet. The dam was constructed in 1954 and repaired and renovated in 1994 due to deterioration and collapse of the primary spillway. The Lake outlet (spillway) empties back into Nine Mile Creek and reaches the Big Sioux River 0.5 miles downstream. Lake Alvin has a watershed of 28,013 acres and it includes the City of Harrisburg and eastern portion of Tea, South Dakota. Lake Alvin itself is listed for fecal coliform bacteria violations for the swimming beach and increasing Trophic State Index (TSI). The Lake is in full support for 3 of the 4 listed beneficial uses, but does not fully support immersion recreation due to fecal coliform levels. Beneficial uses listed for the portion of Nine Mile Creek west (upstream) of Lake Alvin include: irrigation, fish and wildlife propagation, recreation and stock watering. Although Nine Mile Creek watershed upstream of Lake Alvin did not exceed the water quality standards for its listed beneficial uses, it did have fecal coliform counts in excess of the lake standards for limited contact recreation and immersion recreation. Beneficial uses for the watershed portion from the dam to the Big Sioux River include: warmwater marginal fish life propagation, limited contact recreation, irrigation, fish and wildlife propagation, recreation and stock watering. Water quality standards were not exceeded for this portion of the watershed. Even though this short leg of Nine Mile Creek receives the discharge from Lake Alvin and the entire upstream watershed, hydrologic residence time and dilution seemed to be mitigating factors to its water quality (Figure 4).

2.3 The Watershed

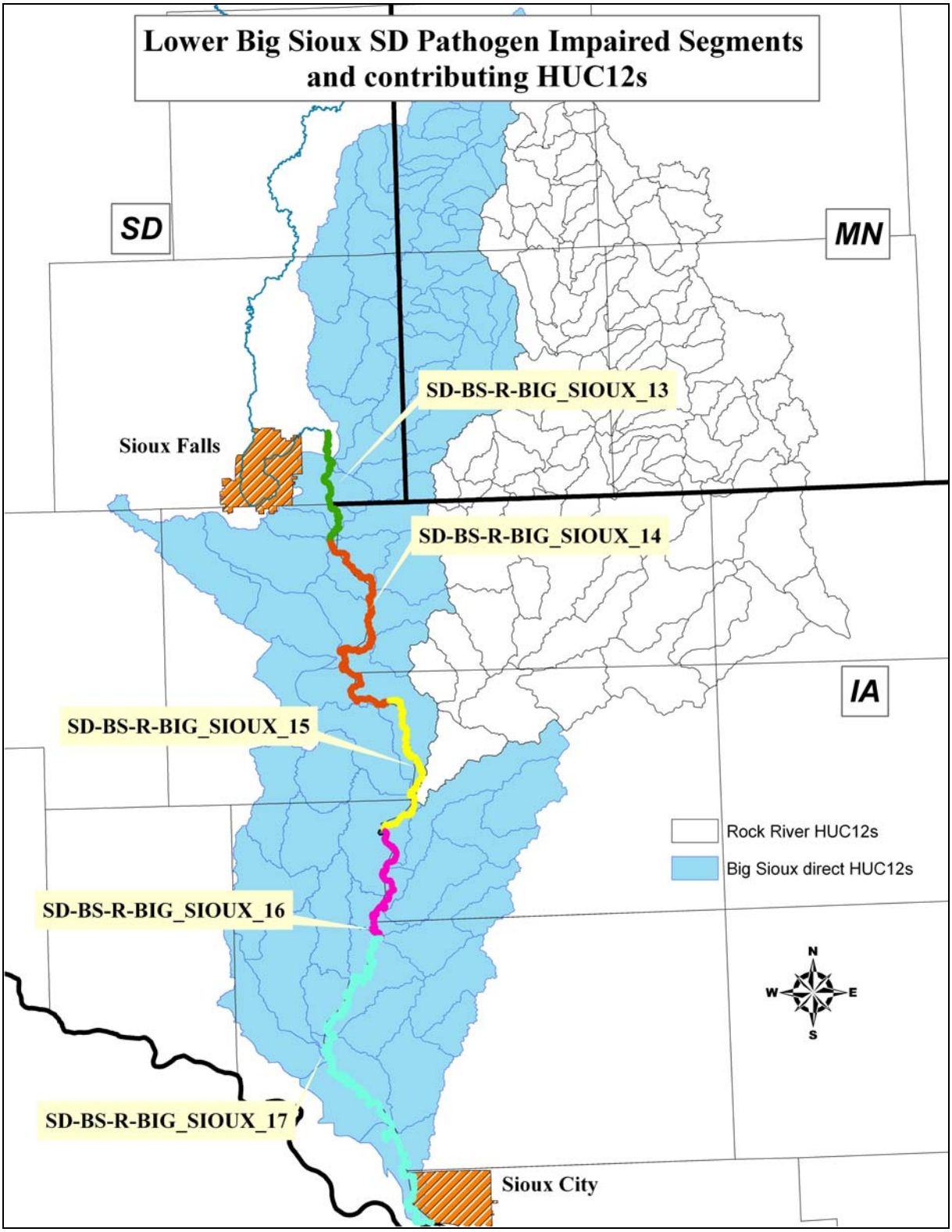


Figure 2: Lower Big Sioux River Fecal Coliform/Pathogen TMDL Segments.

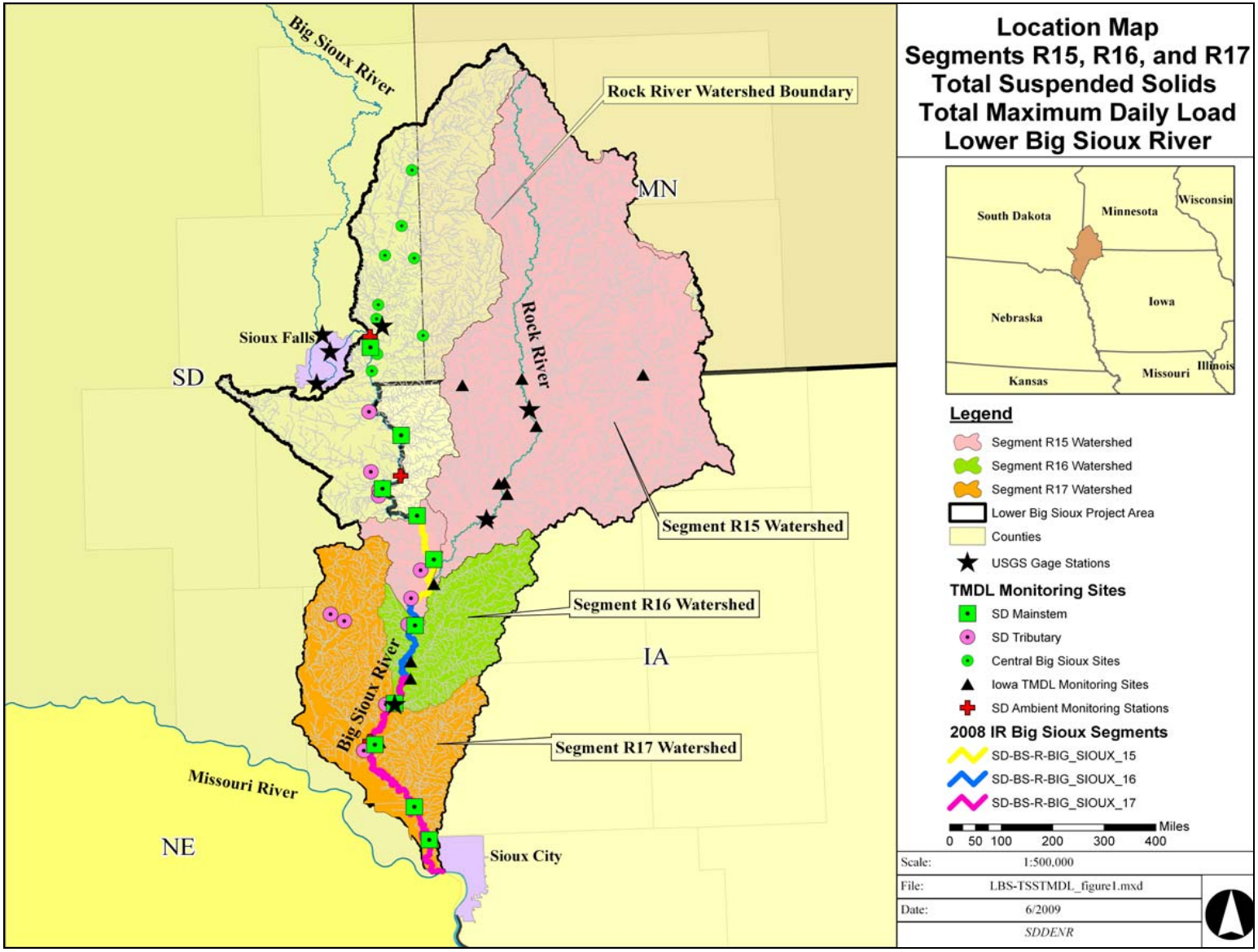


Figure 3: Lower Big Sioux River TSS TMDL Segments R-15, R-16, R-17.

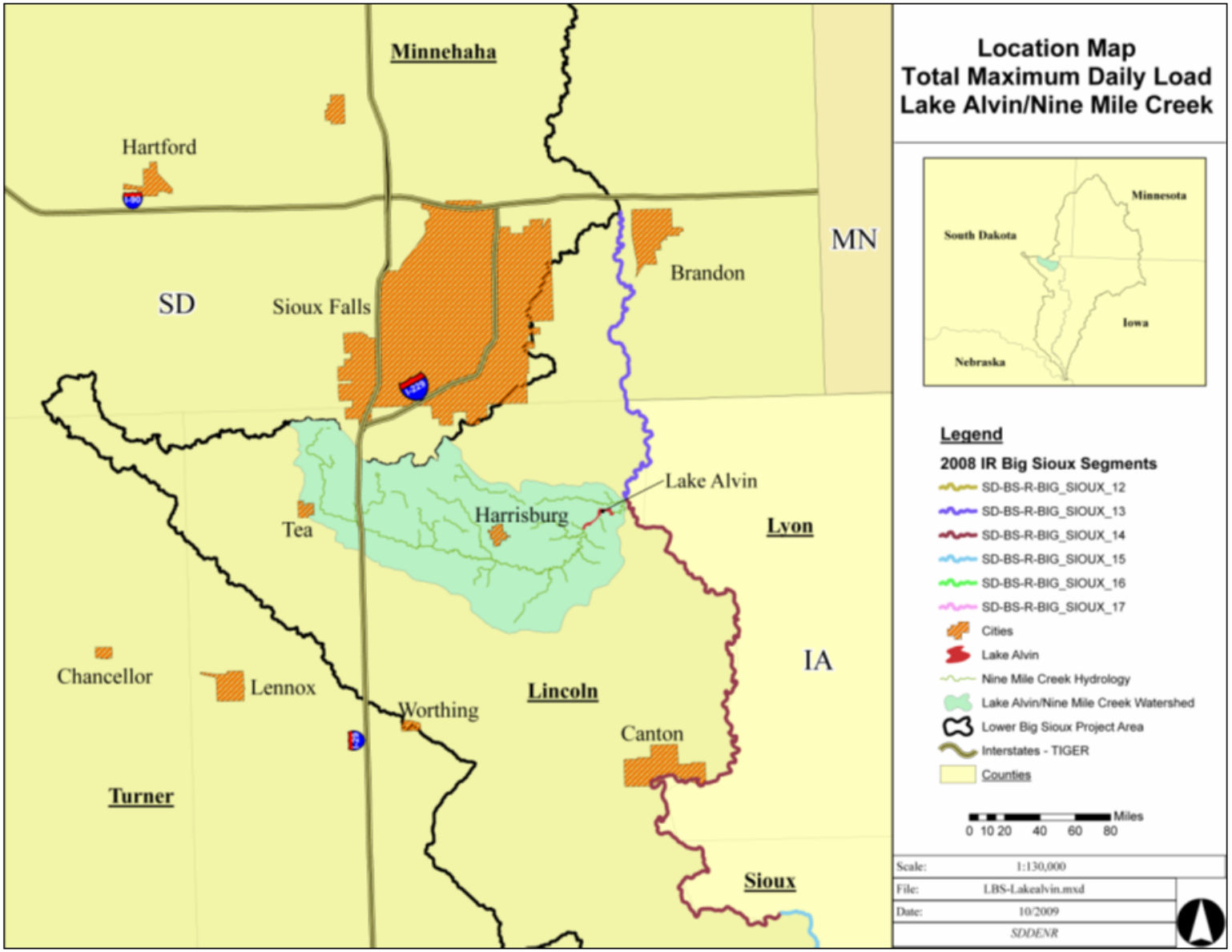
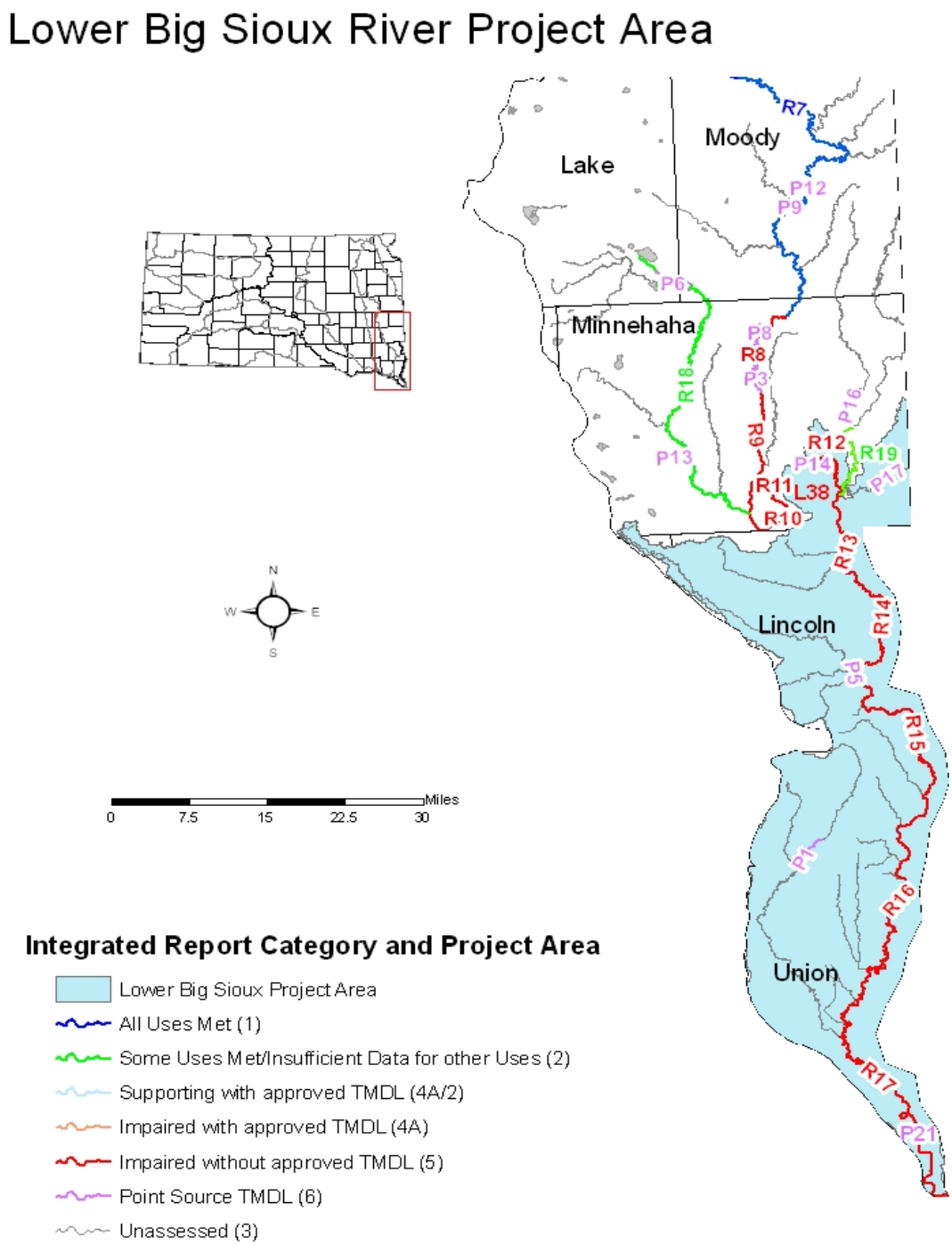


Figure 4: Lake Alvin and Nine Mile Creek Watershed.

Figure 5: Lower Big Sioux River Watershed Map showing County Boundaries and Water Body Impairment Status (*2006 South Dakota Integrated Report For Surface Water Quality Assessment***).**



2.4 Watershed Characteristics

The TMDL watershed and project area is shown in Figure 5. The Lower Big Sioux River drains approximately 661,418 acres (1,033 miles^2) and 919,040 acres (1,436 miles^2) in South Dakota and Iowa, respectively. The watershed is located in the Northern Glaciated Plains and Western Corn Belt Plains ecoregions. The Northern Glaciated Plains ecoregion is characterized by a flat to gently rolling landscape composed of glacial drift. The Western Corn Belt Plains ecoregion is level to gently rolling glacial till plains with areas of moraine hills and loess deposits.

Wildlife that inhabit the area include whitetail deer, red fox, beavers, raccoons, ring-necked pheasants, mourning doves, and numerous other species of songbirds, waterfowl, reptiles and amphibians.

The average rainfall in the lower Big Sioux Watershed is approximately 25 inches per year with 78 percent falling during the growing season. The average annual snowfall is approximately 34 inches but varies widely from year to year. In South Dakota, the portion of the river that extends from the City of Brandon to the mouth of the Missouri river is divided into five impaired segments as shown on Figure 1. There are 10 South Dakota monitoring stations located along the main stem segments (LBSM). This same reach of river is divided into seven river segments in the Iowa 303(d) list. The relationship of the South Dakota and Iowa listed segments with the five TMDL assessment segments is summarized in Tables 5 and 6.

Table 5: Relationship of Five TMDL Segments and Iowa Impaired Segments.

Big Sioux Impaired Segment	Segment description	Segment length	Iowa Counties
IA 06-BSR-0020-segments 2 and 3 (BSRTMDL-1)	Minnesota/Iowa border to Beaver Creek	29.23 miles	Lyon
IA 06-BSR-0020-segment 1 (BSRTMDL-2)	Beaver Creek to Rock River	25.26 miles	Lyon and Sioux
IA 06-BSR-0010-segment 4 (BSRTMDL-3)	Rock River to Indian Creek	21.35 miles	Sioux, Osceola, and Plymouth
IA 06-BSR-0010-segment 3 (BSRTMDL-4)	Indian Creek to Brule Creek	26.58 miles	Plymouth
IA 06-BSR-0010- segments 1 and 2 (BSRTMDL-5)	Brule Creek to Missouri River confluence	34.72 miles	Plymouth and Woodbury

Land Use

Table 7 contains a summary of the general land use categories in the Lower Big Sioux River drainage area in South Dakota. The source of the information is the USGS Earth Resources Observation and Science database (USGS, 2005). Specifically, the table lists the area of land uses within each segment drainage area by twelve-digit HUC numbers (HUC 12s). The total acreage of each drainage area by HUC 12s is included as well. Ungrazed pastureland/forest land use category includes ungrazed pasture and cropland, and forest lands. It is assumed that there is no manure application in these lands. Developed land use category includes roads, commercial, industrial, and residential land uses. Land uses in the various HUC 12 drainage areas within Iowa are generally similar. There are generally limited developed land uses within the HUC 12 areas draining into both the LBS River and the Rock River.

Table 6: Relationship of South Dakota TMDL, Impaired Segments and Monitoring Stations.

IA Impaired Segment	SD Impaired Segment	Monitoring Station ID	Monitoring Station Name
Minnesota/Iowa Border to Beaver Creek (BSRTMDL-1) (R-13)	Lower Big Sioux River Above Brandon to Nine Mile Creek	LBSM01	Big Sioux at Recreation Area (Brandon)
	Lower Big Sioux River Nine Mile Creek to near Fairview	LBSM03	Klondike Dam
	Lower Big Sioux River Nine Mile Creek to near Fairview	LBSM05	Big Sioux at Canton, SD
Beaver Creek to Rock River (BSRTMDL-2) (R-14)	Lower Big Sioux River Nine Mile Creek to near Fairview	LBSM08	Big Sioux at Fairview, SD
	Lower Big Sioux River Near Fairview to near Alcester	LBSM09	Big Sioux at Hudson, SD
Rock River to Indian Creek (BSRTMDL-3) (R-15)	Lower Big Sioux River Near Alcester to Indian Creek	LBSM13	Big Sioux River at Hawarden, IA
Indian Creek to Brule Creek (BSRTMDL-4) (R-16)	Lower Big Sioux River Indian Creek to mouth	LBSM17	USGS gauge station Akron, IA
	Lower Big Sioux River Indian Creek to mouth	LBSM19	Lower Big Sioux near Richland, SD
Brule Creek to Missouri River Confluence (BSRTMDL-5) (R-17)	Lower Big Sioux River Indian Creek to mouth	LBSM20	Lower Big Sioux near Broken Kettle Creek
	Lower Big Sioux River Indian Creek to mouth	LBSM21	Lower Big Sioux at North Sioux City, SD

Land uses in the 12 digit HUC drainage areas in South Dakota are generally similar. The majority of these areas are dominated by a combination of grassland, hay, pasture, corn, and soybeans land uses, followed by high intensity commercial and industrial land uses. There is relatively limited residential area within these drainage areas and therefore impacts from these land uses are expected to be minimal.

Livestock feeding operations and livestock pastured along riparian areas with access to the water courses can deliver substantial quantities of fecal coliform, nutrient and organic matter to the watershed. During the assessment phase of the Lower Big Sioux River Watershed, 572 Livestock operations were located and analyzed using the Agricultural Non-Point Source (AGNPS) pollution feedlot model. Of the 572 operation assessed, 180 operations were rated at or above 50 on a scale of 0 -100. Seventy -three of the 180 operations rated at or above 50 were located in Lincoln County and the remaining 107 were located in Union County.

Table 7: Lower Big Sioux River Watershed Land Use Summary.

Big Sioux River Fecal Coliform Estimate (less the Rock River)

THIS SPREADSHEET ESTIMATES THE FECAL COLIFORM BACTERIA CONTRIBUTION FROM MULTIPLE SOURCES.

It is based on a modeling study of 25 subwatersheds, composed of four landuses (Cropland, Forest, Built-up, and Pastureland).

BLUE text found throughout the spreadsheet presents valuable information and assumptions.

RED text designates values which should be specified by the user.

BLACK text generally presents information which is calculated by the spreadsheet or that should not be changed.

There are 36 subwatersheds in this study.

The modeled landuses are derived from the original landuses by reassigning the original categories to the corresponding model categories.
Note: The ungrazed pastureland/forest landuse category includes ungrazed pasture, CRP lands, and forest. It is assumed that manure is not applied to these lands.

Modeled landuses

Areas are listed in acres.

HUC 12 model no.	HU_12_NAME	CROPLAND	PASTURELAND	FOREST	Developed	TOTAL
101702031503	Middle Pipestone Creek	14684.0	2840.8	247.1	653.6	18425
101702031601	Upper-West Pipestone Creek	25295.0	4463.3	260.2	1180.4	31199
101702031504	Lower Pipestone Creek	20760.7	3502.1	132.1	1024.8	25420
101702031401	Upper Split Rock Creek	170.6	16.5	1.3	3.6	192
101702031602	Lower West Pipestone Creek	18388.3	4809.3	98.5	944.7	24241
101702031402	Middle Split Rock Creek	16307.6	5388.4	105.9	1141.3	22943
101702031702	Lower Beaver Creek- Split Rock Creek	14556.1	4715.0	145.4	1095.0	20512
101702031403	Lower Split Rock Creek	6041.8	3885.1	81.4	938.3	10947
101702031703	Springwater Creek	179.9	30.5	0.0	50.9	261
101702031704	Four Mile Creek	5974.6	2021.9	181.2	320.5	8498
101702031303	Blood Run	1482.0	166.6	18.0	50.7	1717
101702031901	Upper Beaver Creek	24295.8	8756.9	78.5	1685.7	34817
101702031304	Spring Creek	6602.2	2110.0	46.7	421.4	9180
101702031305	Ninemile Creek	24538.8	7177.5	192.6	1973.2	33882
101702031801	Big Sioux River- Klondike Creek	5134.5	1832.5	258.4	258.2	7484
101702031902	Lower Beaver Creek	21569.1	4617.6	382.7	1500.9	28070
101702031802	Big Sioux River Peterson Creek	12686.1	2319.1	134.8	1024.3	16164
101702031903	South Fork Beaver Creek	13460.4	2212.5	91.0	697.0	16461
101702031803	Big Sioux River- Little Beaver Creek	7838.9	3009.8	1775.8	449.7	13074
101702031804	Big Sioux River- Pattee Creek	4165.5	2132.2	1156.9	392.3	7847
101702032002	Pattee Creek	20334.0	4227.8	313.6	921.8	25797
101702032401	Upper East Brule Creek	18470.8	2533.2	17.8	852.6	21874
101702032403	West Brule Creek	20972.4	2840.8	11.1	925.8	24750
101702032001	Big Sioux River- Dry Creek	22771.1	5733.8	477.2	969.2	29951
101702032402	Lower East Brule Creek	18075.6	3253.7	198.1	1091.3	22619
101702032404	Upper Brule Creek	26762.7	5364.2	215.3	1660.6	34003
101702032202	Union Creek	18969.8	3234.2	108.1	868.9	23181
101702032405	Lower Brule Creek	25869.2	5489.4	960.0	1185.1	33504
101702032206	Big Ditch	25197.6	3134.5	172.1	1739.5	30244
101702032203	Big Sioux River- Union Creek	7854.9	4804.9	951.4	394.7	14006
101702032207	Mouth of the Big Sioux River	6914.5	1735.7	100.3	1159.1	9910
101702031301	Big Sioux River- Slip-Up Creek	10427.1	7705.3	727.9	2000.4	20861
101702032201	Big Sioux River- Indian Creek	4223.8	2101.7	272.1	229.9	6828
101702032201	Big Sioux River- Indian Creek	4223.8	2101.7	272.1	229.9	6828
101702032205	Big Sioux River- Rock Creek	15114.6	2375.6	275.4	1114.6	18880
101702032205	Big Sioux River- Rock Creek	1679.4	264.0	30.6	123.8	2098

Soils

In general, the soils in the Iowa portion of the Lower Big Sioux River watershed are alluvial in the river valleys, deep loess further from the river, then change to shallow loess over glacial till. Soils maps shows three soil regions in the Iowa portion of the watershed:

- Semi arid area of loess over glacial till, Moody-Trent Association; most of Lyon County and northwest Sioux County.
- Loess over till, Galva-Primghar-Steinaur Association; eastern Lyon County and most of Sioux County.
- Thin loess over Tazewell till, Sac-Everly-Wilmonton Association; far eastern Lyon County into Osceola County.
- Loess over till, Ida-Galva Association, northwest Plymouth County; Ida-Hamburg southwest Plymouth County; Galva-Ida to Ida-Monona north central to south central Plymouth County.

Bottomland and bench soils are nearly level to gently sloping silty soils formed in loess and alluvium. From south to north in the three counties along the Iowa portion of the watershed, the descriptions of the major soil groups are:

1. Plymouth County – gently sloping to very steep well drained silt; level to strongly sloping well drained silt.
2. Sioux County - gently sloping to strongly sloping well drained silty soils formed in loess; nearly level to moderately sloping well to somewhat poorly drained silt formed in loess and alluvium; nearly level to strongly sloping well drained silty soils formed in loess.
3. Lyon County - nearly level to strongly sloping well drained silty soils formed in loess; nearly level to moderately sloping well drained to somewhat poorly drained moderately fine textured soil.

The soils in the South Dakota portion of the watershed were formed in one of the four ways:

1. mostly in glacial drift and glacial till; on uplands,
2. mostly in loess; on uplands,
3. in alluvium; on bottomlands, or
4. in alluvium overlying gravelly sand; on stream terraces.

Upland soils are relatively fine-grained, and developed over glacial till or eolian (loess) deposits. Coarse-grained soils are found along present or former water courses, and are derived from glacial outwash or alluvial sediments. The soil associations generally present in glacial drift and glacial till on the uplands are: Wentworth-Chancellor, Egan-Shindler-Worthing, Egan-Chancellor, Chancellor-Wakonda-Tetonka, Shindler-Steinauer-Renner, Wentworth-Shindler-Worthing and Wakonda-Worthing-Chancellor. These associations make up approximately 79 and 14 percent of Lincoln and Union Counties respectively.

Soil associations formed in Loess on the uplands generally consist of: Moody-Nora-Alcester and Crofton-Nora-Alcester. These associations make up approximately 14 and 38 percent of Lincoln and Union Counties respectively.

Soil associations formed in alluvium on the bottomlands generally consist of: Lamo-Bon-Clamo, Sarpy-Grable-Haynie, Calco-Kennebec, Kennebec-Fluvaquents-Benclare, Albaton-Haynie-Onawa, Forney-Luton and Modale-Blyburg-Benclare. These associations make up approximately 3 percent of Lincoln County; 46 percent of Union.

Soil associations formed in Alluvium overlying gravelly sand on stream terraces consist of: Graceville-Dempster and Delmont-Graceville-Talmo. These associations account for approximately 3 percent of land in both Lincoln and Union Counties.

2.5 Water Quality Impairments

Lake Alvin

The Lake Alvin Watershed Assessment was initiated in 1999. The long term goal of the assessment project was to locate and document sources of non-point source pollution in the watershed and produce feasible restoration alternatives in order to provide adequate background information needed to drive a watershed implementation project (Phase I Watershed Assessment Final Report Lake Alvin 2001).

Lake Alvin was listed on the 1998 303d waterbody list as a priority 1 watershed. It was listed for fecal coliform bacteria water quality standard violations at the swimming beach and increasing Trophic State Index (TSI trend). Reports of most beach closures occurred after heavy rains suggesting runoff from the watershed as a major factor in increased fecal coliform levels. The increasing TSI trend observed in Lake Alvin was the result of increased nutrients by inlake and delivered loads. Based on the assessment, 10 livestock feeding operations were documented within the watershed. Implementing select BMPs to reduce fecal contamination from the livestock within the Nine Mile Creek and immediate watershed around the lake would result in a reduction of beach closures, while decreasing sediment erosion and nutrient inputs from Nine Mile Creek and the immediate watershed around the lake should improve TSI levels.

Fecal Coliform

Recommendations based on the calculated fecal coliform watershed loading data indicate that a reduction of 25 percent or 140 animals from Nine Mile Creek and the immediate watershed around Lake Alvin should improve water quality and restore the swimming beach to fully supporting the beneficial use. Data from the Lake Alvin Watershed Assessment completed in 2001 and Lower Big Sioux Watershed Assessment completed in 2004 will be used to implement BMPs to address sources of fecal coliform to restore the water quality of Lake Alvin and its watershed. It has been a number of years since the completion of the Lake Alvin assessment though, so reassessment of the animal feeding operations may prove to be a more efficient means of addressing operations having high loading potentials with better results.

Trophic State Index

Findings from the Lake Alvin Watershed Assessment in 2001 resulted in a mean TSI of 79.57, which is indicative of high levels of productivity. Monitoring suggested that the cause of high productivity and elevated TSI were phosphorus loads delivered from the watershed. Lake Alvin has experienced nuisance algal blooms from nutrient enrichment which are typical signs of the eutrophication process. The TMDL numeric target established to improve the eutrophic status of Lake Alvin is a mean TSI of 64.95 (assessment final report, pages 121-124). Recommendations based on the calculated mean TSI level indicate that a reduction of 67 percent with a margin of

safety of 14 percent should improve water quality to fully support the beneficial uses. Watershed BMPs (riparian buffers, filter-strips, riparian management and stream bank stabilization) are needed to reach the TMDL goals. It was also calculated that additional in-lake treatments (aerator/circulator and aluminum sulfate treatment) may be needed to achieve TMDL goals set for Lake Alvin. Implementation of watershed practices may require future water quality monitoring to gauge success of the BMP activities and provide direction for continued restoration.

Lower Big Sioux River Watershed

The Lower Big Sioux River watershed assessment was initiated in 2002 to document impairments and collect water quality criteria from Brandon South Dakota to the Missouri River confluence. Point source and non-point source pollution contributions were documented and analyzed in order to provide adequate background information needed to drive a watershed implementation project and produce feasible restoration alternatives. Since the assessment, 2 separate TMDL's have been written. The first TMDL was completed in January 2008 for fecal coliform and pathogen indicators on all five segments of the Lower Big Sioux River. The second TMDL is slated to be completed in 2009 for total suspended solids (TSS) on the last three segments of the River.

The Lower Big Sioux River was placed on the 303d waterbody list as impaired in 2004. All five reaches, R-13 through R-17, of The Lower Big Sioux River are listed in the 2008 Integrated Report for Surface Water Quality Assessment. R-13 and R-14 are listed as priority 2 watersheds while R-15, R16 and R-17 are listed as priority 1 watersheds. Two of the major tributaries of the Lower Big Sioux River on the South Dakota side of the watershed are Brule Creek and Union Creek. Brule Creek splits into East and West Brule Creek in Section 2 of Township 94 North, Range 50 West. East Brule Creek and the portion of Brule Creek from the convergence of its east and west forks to the Lower Big Sioux River were put on the 303d waterbody list in 2008 and listed in the 2008 Integrated Report as priority 1 watersheds. Union Creek was placed on the 303d waterbody list in 2004 as well, but listed in the 2008 Integrated Report as a priority 2 watershed.

Fecal Coliform

Reductions based on the calculated fecal coliform watershed load needed to improve water quality to fully supporting the beneficial uses from R13 to R17 are listed in Table 8. The fecal coliform TMDL assumed no exceedance in point source discharge from the Waste Water Treatment Facilities (WWTF) and permitted concentrated animal feeding operations (CAFO's) in the Lower Big Sioux River Watershed.

During the assessment phase of the Lower Big Sioux River Watershed, 572 Livestock operations were located and analyzed using the Agricultural Non-Point Source (AGNPS) pollution feedlot model. Of the 572 operation assessed, 180 operations were rated at or above 50 on a scale of 0 - 100. Seventy -three of the 180 operations rated at or above 50 were located in Lincoln County and the remaining 107 were located in Union County. Prioritization of animal feeding operations with AGNPS ratings over 50 in all reaches of the watershed, through the use of mapping tools, will be used to accomplish goals set out in the TMDL. Implementation of animal waste management systems will help achieve the project goals and reduce levels of fecal coliform bacteria in the watershed.

Table 8: Fecal Coliform TMDL Reductions.

TMDL River Reach	Fecal Coliform % Reduction Needed High Flow	Fecal Coliform % Reduction Needed Moist Flow	Fecal Coliform % Reduction Needed Low Flow	Fecal Coliform % Reduction Needed Very Low Flow
R-13	27.5	No Reduction	No Reduction	No Reduction
R-14	48.3	No Reduction	No Reduction	No Reduction
R-15	87.6	66.0	No Reduction	No Reduction
R-16	73.0	38.7	No Reduction	No Reduction
R-17	94.6	No Reduction	No Reduction	No Reduction

Total Suspended Solids (TSS)

Findings in the 2009 Total Suspended Solids TMDL draft report for the last 3 segments of the Lower Big Sioux River indicate that excessive loading occurs typically during spring and summer storm events. Storm events combined with a peak in tillage for intense agricultural cropping during these periods produce a significant amount of sheet and rill erosion while high flows and changing channel dynamics increase the bed and bank erosion along the tributaries and mainstem of the river (*Total Suspended Solids Total Maximum Daily Load (TMDL) for Three Segments of the Lower Big Sioux River South Dakota and Iowa July 2009 Draft Report*).

A number of concerns have been identified in the draft TMDL that will need to be addressed in order to achieve the reductions to support the beneficial uses of the Lower Big Sioux River. Table 9 shows the total suspended solids reductions for the last three segments of the river. Segments R-15 through R-17 have a history of exceedence of the total suspended solids (TSS) water quality criterion. These three segments have consistently been listed in 2002, 2004, 2006 and 2008 for this same impairment. The results of the FLUX model loadings from the total suspended solids 2009 draft TMDL indicate that an estimated 25% or greater of the TSS load originates from bank erosion in the varying flowzones.

Table 9: Total Suspended Solids TMDL Reductions.

TMDL River Reach	Total Suspended Solids % Reduction Needed High 0-25% Flow	Total Suspended Solids % Reduction Needed Moist 25-50% Flow	Total Suspended Solids % Reduction Needed Mid 50-75% Flow	Total Suspended Solids % Reduction Needed Dry 75-100% Flow
R-15	No Reduction	85.0%	No Reduction	No Reduction
R-16	10.0%	50.0%	No Reduction	No Reduction
R-17	79.0%	24.0%	7.0%	15.0%

Several types of BMPs that reduce sediment transportation and translocation will need to be implemented in order to accomplish the goals of the TMDL. The BMPs that are recommended to address sources of sediment delivery are listed below.

- Reduction of Livestock access to streams and alternative sources of water.
- Filter strips installed along streams bordering cropland and pastureland.
- Implementation of a terrace maintenance program to repair or replace failing systems.
- Construction of animal waste management systems for proper waste storage and handling.
- Protection of unstable stream banks by enhancement of riparian vegetation that provides erosion control and filters runoff of pollutants.
- Assessment of the effects of tiling on peak flows and bank erosion for the tributaries of the three segments of the Big Sioux River.

Water Quality monitoring and additional testing will continue during segment II of the watershed project. Sheer testing and analysis of bank stability will be included in this segment as well. The South Dakota Department of Environment and Natural Resources (SDDENR) will be responsible for:

1. Determining locations and conducting geotechnical testing on the strategic portions of the Lower Big Sioux River Basin and
2. Modeling the data with the Bank Stability and Toe-Erosion Model (BSTEM).

3.0. PROJECT DESCRIPTION

3.1. Project Goal: The goal of the Lower Big Sioux Watershed Project is:

> "Improve the water quality and restore the recreational health of the Lower Big Sioux River and Lake Alvin by implementing the Total Maximum Daily Loads (TMDLs) developed".

To attain the goal the following actions will be taken during this project segment:

- installation of BMPs targeted towards identified high priority sub-watersheds,
- working with local citizens and organizations to develop a TMDL implementation strategy based on the watershed assessment and TMDLs to guide future project segments,
- quantifying sediment loadings from stream bank erosion using sheer testing and Bank Stability and Toe-Erosion Modeling (BSTEM), and
- initiate a public education and outreach campaign to inform landowners, stakeholders, and area residents on water quality issues and BMPs important to the Lower Big Sioux River Basin Watershed and Lake Alvin

This two year project will be the second of several locally lead project segments planned to implement BMPs in the watershed that will help restore the Lower Big Sioux River and Lake Alvin's water quality to a level where it meets its designated beneficial uses. Additional watershed testing and monitoring during this segment may provide valuable information needed for future segments and BMP strategies. The BMPs and milestone for each will be revised as additional information and experience in project participation becomes available.

Information in Table 10 indicates that the construction of 75 waste storage facilities; implementation of 40,000 acres of cropland management BMPs; 18,500 acres of grassland management BMPs and 5,000 acres of riparian area BMPs may be required to reduce loading to the watershed and restore the water quality of the Lower Big Sioux River. Reassessment and analysis during future segments of the project are expected to change the estimates as more information becomes available. For example: Stream Bank Sheer Testing may prove that certain reaches of the Lower Big Sioux River and its tributaries are sensitive to storm based events and contribute a major source of sediment due to their bank instability. Testing, documenting and targeting of these areas may lead to bank stabilization practices that could mitigate in-stream sediment loading more effectively. Through the use of Geographic Information System's Arc-Map along with various watershed models, feedlot and grazing locations in close proximity to tributaries and the Lower Big Sioux River itself could be analyzed more closely as well to maximize time, travel and cost-share dollars spent with greater results.

Table 10: Lower Big Sioux Watershed Project Needs by Implementation Segments to Meet the Long Term TMDL's Established.

3.2 Objectives and Tasks:

BMP or Activity	**Estimated Long Term Needs**	**Segment I (July 1, 2008 - June 30, 2010)**	**Segment I Progress (As of 7/1/2009)**	**Segment II July 1, 2010 -June 30, 2012**
Project PIP	6	1	1	1
BMP Implementation:				
Cropland BMPs	43,000 ac.	2,500 ac.	1,621 ac.	4,380 ac.
Grassland BMPs	18,500 ac.	1,500 ac.	500 ac.	500 ac.
Riparian Area BMPs	5,000 ac.	500 ac	100 ac.	500 ac.
Animal Waste Facility Feasibility Study	75	4	2	4
Animal Waste Facility Designs	75	4	2	4
Animal Nutrient Management Plans	75	4	2	4
Animal Waste Facility Constructed	75	4	0	4

Objective 1: Application of BMPs in critical areas to reduce sediment, nutrient and fecal coliform bacteria loading of the Lower Big Sioux River and Lake Alvin.

Task 1: Plan and Provide assistance for the installation of cropland management BMPs. Assistance to install BMPs on 4,380 acres of cropland will be provided to landowners/operators to reduce sediment and nutrient loads originating from identified critical areas. The BMPs that are planned to be installed include but are not limited to filter strips, grassed waterways, conservation tillage, CRP grass seeding, terrace, and wetland restorations.

Product 1: Terrace restoration on 20,000 linear feet of failing terrace systems.
Provide assistance to landowners with terrace systems that have exceeded their lifespan or have filled in over time to restore capacity and functionality reducing sediment delivery to watershed. Terraces that have filled in over time that need capacity restored will be cleaned out and graded to their original design specifications. The project will also work with landowners to repair terrace systems damaged by large rain events and wildlife to restore them back to their original state. New terrace systems will be directed towards utilization of the existing EQIP program for funding before consideration of 319 funds. Over the two years of the implementation project, the terrace restoration project will restore and repair 20,000 linear feet of failing and damaged terraces that may not be a good fit for the EQIP program reducing nutrient and sediment transport on 800 acres in the watershed. RUSLE2 calculations indicate an 8,000 ton sediment reduction per year can be accomplished from properly restored terrace systems and conservation tillage. Technical assistance will be provided by the project coordinator and NRCS to determine eligibility of terrace restoration projects. Federal 319 funding and landowner matching funds will be used for implementation of the following activity.

BMP	Cost/Unit	Quantity	Total Cost
Terrace Restoration	$1.05/LF.	20,000 LF.	$21,000

Milestone: (See Milestone Table)
Terrace Restoration on cropland – 20,000 LF. (800 acres)

Product 1 Cost: $21,000 **319 Cost: $15,750**

Product 2: Conservation tillage on 2,800 acres of cropland.
Technical assistance will be provided to landowners/operators to encourage the adoption of conservation tillage (no-till, reduced-till, etc.) through educational outreach activities. Technical assistance will be provided by the project coordinator in partnership with NRCS, the SDSU Cooperative Extension Service, area conservation tillage farmers, and conservation district staff. The BMPs planned include:

BMP	Cost/Unit	Quantity	Total Cost
Conservation Tillage	$ 0.00	2,800 ac.	$0.00
Fertilizer Application Workshops	$ 0.00	2	$0.00

Milestone: (See Milestone Table)
Conservation tillage adopted on cropland – 2,800 acres

Product 2 Cost: Included in Project Personnel Cost:

Product 3: Perennial vegetation on 700 acres of cropland.
Technical and financial assistance will be provided to landowners/operators to plant erodible cropland to a grass/alfalfa, native, or a native and introduced grass and forbs seed mix. Funds for BMP installation will be provided by state and federal wildlife conservation agency programs, state conservation programs, and USDA conservation programs (EQIP, WHIP, etc.) BMPs planned include:

BMP	Cost/Unit	Quantity	Total Cost
Grass seeding	$100/ac.	700 ac.	$70,000

Milestone: (See Milestone Table)

Cropland seeded to perennial vegetation – 700 acres

Product 3 Cost: $70,000 **319 Cost: $0.00**

Product 4: Forty acres of filter strips and 27,500 linear feet of grassed waterways on cropland.

BMPs installed will be funded by the landowner/operator, USDA conservation programs (EQIP and CCRP) and by state conservation programs. BMPs planned for installation are listed below:

BMP	Cost/Unit	Quantity	Total Cost
Filter Strips	$ 100/ac.	40 ac.	$ 4,000
Grassed Waterways	$ 1.70/LF.	27,500 LF.	$46,750

Milestone: (See Milestone Table)

Filter Strips – 40 acres
Grassed Waterways – 27,500 LF.

Product 4 Cost: $50,750 **319 Cost: $ 0.00**

Responsible Agencies:

Technical Assistance Coordination:
- Lincoln Conservation District
- Partnering Conservation Districts
- Project Coordinator

Implementation:
- Project Coordinator
- Farmers and Ranchers
- Lincoln Conservation District
- Extension Service
- USDA – Natural Resources Conservation Service (NRCS)

Financial Assistance:
- USDA – NRCS/Farm Service Agency
- Water Quality 319 Funds
- USDA – NRCS EQIP program
- SD Department of Agriculture – Conservation Commission
- US Fish and Wildlife Service

Monitoring Assistance:
- Project Coordinator
- USDA – NRCS/Farm Service Agency
- SD Department of Environment and Natural Resources

Task 1 Total Cost: $141,750 **319 Cost: $15,750**

Task 2: Provide assistance to landowners to install BMPs on 1,000 acres of grassland

Grassland BMPs will be installed to reduce fecal coliform bacteria, nutrient, and sediment loading by reducing runoff, and improving streambanks and riparian area vegetation. The BMPs may include but are not limited to: rotational grazing systems, riparian management, riparian buffers, riparian land use agreements, and streambank/shoreline stabilization.

Product 5: Grassland Management on 500 acres of pasture.
The implementation of rotational grazing systems on grasslands will require the installation of practices that support the landowners change in grazing management, and include: livestock water developments (pipelines, tanks, rural water hook-ups, wells, ponds, dugouts, etc.) and fencing. Technical assistance for grassland BMP installation will be requested from the SD Grassland Planning and Implementation Project, Cooperative Extension Service and NRCS Field Offices. Practices installed will be funded by the landowner with assistance from South Dakota and Federal conservation and wildlife programs (Game Fish and Parks, U.S. Fish and Wildlife Service Private Land Programs, etc.) and USDA conservation programs (EQIP). Practices scheduled for installation include:

BMP	Cost/Unit	Quantity	Total Cost
Rotational Grazing Systems	$ 0.00/ac.	500 ac.	$ 0
Fencing	$ 1.00/LF	2,500 LF	$2,500
Water Developments:			
Pipelines	$ 2.50/LF	2,500 LF	$6,250
Tanks	$ 1,000 each	2	$2,000
Rural Water Hook-ups	$ 1,550 each	1	$1,550

Milestone: (See Milestone Table)
Rotational grazing systems - 500 acres

Product 5 Cost: $12,300 **319 Cost: $0.00**

Product 6: BMPs on 500 acres of riparian grasslands.
Assistance will be provides to install BMPs that reduce sediment and nutrient loadings to water bodies on 500 acres of riparian grasslands to. The implementation of the grassland management systems on grasslands will require the installation of practices that support the landowners change in grazing management, and include: stream bank stabilization, livestock water developments (pipelines, tanks, rural water hook-ups, wells, ponds, dugouts, etc.), stream crossing, livestock exclusion, and fencing. Technical assistance for grassland BMP installation will be requested from the SD Grassland Planning and Implementation Project, Cooperative Extension Service and NRCS Field Offices. Practices installed will be funded by the landowner with assistance from South Dakota and federal conservation and wildlife programs (Game Fish and Parks, U.S. Fish and Wildlife Service Private Land Programs and USDA conservation programs such as EQIP. Practices scheduled for installation are listed below:

BMP	Cost/Unit	Quantity	Total Cost
Rotational Grazing System	$ 0.00/ac.	500 ac.	$ 0
Fencing	$ 1.00/LF.	2,500 LF.	$2,500
Water Developments:			
Pipelines	$ 2.50/LF.	2,000 LF.	$5,000
Tanks	$ 1,000 each	2	$2,000
Rural Water Hook-ups	$ 1,550 each	1	$1,550

Milestone: (See Milestone Table)
Rotational grazing systems in riparian grasslands - 500 acres

Product 6 Cost: $11,050 **319 Cost: $0.00**

Responsible Agencies:

Technical Assistance Coordination:

Lincoln Conservation District
Partnering Conservation Districts
Project Coordinator

Implementation:

Project Coordinator
US Fish and Wildlife Service
Farmers and Ranchers
SD Game, Fish and Parks
Lincoln Conservation District
Extension Service
USDA – Natural Resources Conservation Service

Financial Assistance:

USDA – NRCS/Farm Service Agency
Water Quality 319 Funds
SD Department of Agriculture – Conservation Commission
US Fish and Wildlife Service
SD Game Fish and Parks

Monitoring Assistance:

Project Coordinator
SD Department of Environment and Natural Resources

Task 2: Total Cost: $23,350 **319 Cost: $0.00**

Task 3: Provide assistance to landowners to implement (4) animal waste management systems that meet their business needs and reduce fecal coliform and nutrient transfer to water bodies.

Product 7: Four (4) AWMS feasibility studies, system designs, nutrient management plans and archeological/cultural resource searches.

Assistance will be provided through the project coordinator, private consultants and/or the Animal Nutrient Management Team to complete feasibility studies, nutrient management plans and designs based on a priority evaluation and ranking by the project steering committee. Funding for cultural resource studies will be available to the landowner to satisfy requirements of federal cost-share regulations. Funding for nutrient management plans, feasibility studies and cultural resource/archeological searches will be provided by DENR 319 funds, Consolidated Water Facilities Construction program funds and landowners.

BMP	Cost/Unit	Quantity	Total Cost
Feasibility Study and designs	$20,000	4	$80,000
Nutrient Management Plans	$2,500	4	$10,000
Archeological/Cultural Res. Search	$500	4	$ 2,000

Milestone: (See Milestone Table)

Four animal waste system feasibility studies, designs, nutrient management plans and archeological/cultural resource inventory searches.

Product 7 Cost: $92,000 **319 Cost: $55,200**

Product 8: Construction of (4) animal waste management systems.
Installation of (4) animal waste management systems (AWMS) will be constructed by livestock producers. Funding for the AWMS will be from this project's 319 funds, State Consolidated Funds, Landowners and the NRCS EQIP program. Three of the AWMS are anticipated to be conventional full containment systems and one is anticipated to be an Alternative Technology Vegetative Treatment System (VTS). The VTS will involve an agreement with the owner/operator that includes a nutrient management plan and will follow NRCS and SDSU guidelines and recommendations.

BMP	Cost/Unit	Quantity	Total Cost
Conventional AWMS	$140,000	3	$420,000
Alternative Technology VTS	$60,000	1	$ 60,000

Milestone: (See Milestone Table)
Three (3) conventional animal waste management systems and (1) alternative technology vegetative treatment system.

Product 8 Cost: $480,000 **319 Cost: $77,800**

Responsible Agencies:
Technical Assistance Coordination:
Lincoln Conservation District
Partnering Conservation Districts
Project Coordinator
Implementation:
Project Coordinator
Farmers and Ranchers
Lincoln Conservation District
Extension Service
USDA – Natural Resources Conservation Service
Private Engineering Firms
Financial Assistance:
USDA – NRCS/Farm Service Agency
Water Quality 319 Funds
Monitoring Assistance:
Project Coordinator
SD Department of Environment and Natural Resources

Task 3 Total Cost: $572,000 **319 Funds: $133,000**

Objective 2: Provide BMP and project information to 300 watershed residents, landowners, and members of stakeholder organizations to inform them on project activities and BMP installation, and to maintain local support and involvement.

Task 4: Implement an Information and Education campaign to inform landowners and stakeholders on project need and progress, results and recommendations of the TMDL Reports.

Product 9: Information and Education through SDACD website, newsletters (2), presentations (2), and press releases (2) for watershed residents.

The Lincoln Conservation District and its project partners will produce two newsletters and two press releases, establish and maintain a project web site, and make two presentations that inform project area residents of the Lower Big Sioux River watershed. Activities will be lead by the project coordinator and are listed below:

Activity	**Activity Cost:**
Web Site:	
Development: (Utilize the SDACD web site)	$0.00
Maintenance	$2,000 ($1000/yr/2yr.).
2 Newsletters @ $500.00 each	$1,000.00
2 Project informational presentations @ $200 each	(Personnel cost)
2 Project Media Outreach @ $50 each	(Personnel cost)

Milestones: (See Milestone Table)

Web Site developed and maintained for two years.
Newsletters -2
Project information presentations - 2
News releases to local/area media - 2

Product 9 Cost: $3,500 **319 Cost: $3,000**

Responsible Agencies:

- Technical Assistance:
  - Project Coordinator
  - Lincoln Conservation District
  - Partnering Conservation Districts.
- Implementation:
  - Project Coordinator
- Financial Assistance:
  - Water Quality 319 Project
  - Lincoln Conservation District

Task 4 Total Cost: $3,500 **319 Funds: $3,000**

Objective 3: Continued Watershed Monitoring Activities.

Task 5: Bank Erosion Sheer Testing Equipment and Analysis.

Product 10: Purchase of Sheer Testers (2), Jet Testers (2), Auger/Rods/Case (2), Data Collection and Sample Analysis.

Equipment/Activity	Cost/Unit	Quantity	Total Cost
Sheer Tester	$13,500	2	$27,000
Jet Tester	$2,000	1	$ 2,000
Auger/Rods/Case	$500	1	$ 500
Sample Analysis	$500	10	$ 500
Sample/Data Collection (Responsibility of SDDENR Personnel)			$ 0

Milestones: (See Milestone Table)
Sheer testing, data collection and sample analysis to document stream bank erosion potential and evaluate potential critical areas prone to degradation in order to make recommendations for future stream bank stabilization projects.

Product 10 Cost: $30,000 **319 Cost: $30,000**

Responsible Agencies:

Implementation:
- SD Department of Environment and Natural Resources
- Project Coordinator

Financial Assistance:
- Water Quality 319 Funds

Technical Assistance
- SD Department of Environment and Natural Resources

Task 4 Total Cost: $30,000 **319 Funds: $30,000**

Objective 4: Monitor, Evaluate and Report Project Progress.

Task 6: Complete activities required to monitor, evaluate and report project progress and success.
Reports describing project activities as required by the South Dakota Department of Environment and Natural Resources; and participating agencies and associations will be prepared and submitted.

Product 11: Semiannual, annual, monthly and final project reports and Segment 3 PIP development.

Semiannual (2) April of each year:
Annual (2) October of each year:

The Semiannual and annual reports will be submitted to DENR in a format that meets the GRTS reporting requirements. The reports will include information on:

- Estimated load reductions for BMPs installed using annualized AGNPS, RUSLE2 and STEPL; and
- Location and land use where BMPs have been installed and/or utilizing a GIS layered land use location mapping system (BMP Tracker).

Monthly progress reports will be submitted to the project sponsor and co-sponsors. These will be submitted electronically or written form by the Project Coordinator at sponsor meetings.

Final Report:
The final project report will be drafted using a format provided by DENR and include a comparison of planned versus accomplished milestones and planned versus actual project budget, pictures of project activities, and maps showing the locations of completed BMPs, load reductions, and other information as may be required to fulfill reporting requirements.

Segment 3 PIP:
The Project Implementation Proposal for Segment 3 will be the responsibility of the Project Coordinator and Lincoln Conservation District. A proposal for continued watershed implementation will be submitted October 1, 2011 (during Segment 2) to the SDDENR for review and consideration for future funding.

Milestones: (See Milestone Table)

Two Semiannual reports	(2)
Two Annual reports	(2)
24 monthly reports	(24)
One Final Report	(1)
Segment 3 PIP	(1)

Product Cost: (Costs are included in personnel costs)

Responsibility:

Implementation:	Project Coordinator Steering Committee
Technical Assistance:	SD DENR
Financial Assistance:	319 Funds Conservation Districts

Task 6 Total Cost: (Costs are included in personnel costs)

3.3 Milestone Table (See attached Milestone Table)

3.4 Permits

Lincoln County Conservation District will secure all necessary permits including 401, 404, and stormwater construction permits prior to implementation of any grant fund activity that may fall under applicable federal, state, or local laws. The sponsor will comply with cultural resource and threatened and endangered species clearance requirements. Cultural resource clearances will be conducted using guidance provided by the DENR. Practices with potential to affect listed threatened and endangered species in the area will follow procedures provided through USFWS.

3.5 Lead Project Sponsor

The Lincoln County Conservation District is the project sponsor. The Lower Big Sioux River Basin Watershed lies in Lincoln and Union Counties. The Conservation Districts have a working relationship with both landowners and community organizations and citizens.

3.6 Operation and Maintenance Responsibilities

Responsibilities for operation and maintenance of 319 funded BMPs will be provided for through conservation district/landowner contracts. Contracts for BMP installation will specify operation and maintenance needs, procedures for BMP failure or abandonment, and the life span. BMPs will be maintained for the terms agreed upon in the contract. The Lincoln Conservation District will be responsible for completing operation and maintenance scheduling, on-site evaluations, and follow-up with landowners when actions need to be taken to ensure BMP operation for its designated life span.

4.0 COORDINATION PLAN

4.1 Lead Project Sponsor

The lead sponsor for this project is the Lincoln Conservation District. The Lincoln County Conservation District will document cash and in-kind match to this project. A steering committee will be responsible for completion of project goals, objectives, and tasks. The Union Conservation District has entered into a cooperative agreement with the Lincoln County Conservation District to co-sponsor the Lower Big Sioux River Project. The co-sponsors will share staff and administrative costs for project implementation from both Lincoln and Union County Conservation Districts.

The steering committee with representatives from the resource agencies, co-sponsors and organizations listed below will advise the project sponsor, and develop priorities, practice manuals, work plans and strategies for this and future project segments.

- **Lincoln County Conservation District** – Lead project sponsor will administer the project and document cash and in-kind match to the project.

- **Lincoln and Union Conservation Districts** – Project partners by MOU providing technical assistance and local support.

- **US Fish & Wildlife** – Through the Partners for Fish and Wildlife Program, the F&W Service will contribute technical services towards the field implementation of this ambitious project. Specifically, the F&W Service will lend technical support to implement grassland seeding, grazing systems, multiple purpose ponds and riparian fencing projects in accordance with the goals and objectives of the grant.

- **USDA Farm Service Agency** – Cost-share and program support for continuous and regular CRP.

- **Natural Resources Conservation Service** – Technical assistance and cost-share funds to landowners for BMP installation (CRP/buffer strips/grass waterways/waste storage facilities/grazing systems/etc).

- **South Dakota Department of Environment and Natural Resources** – Technical assistance for water quality issues, sampling, and project management. Provide administrative oversight of 319 and Consolidated Water Facility Construction grant funds and providing technical assistance to the Lincoln Conservation District on grant administration procedures and standards.

- **South Dakota Game, Fish, and Parks (GFP)** – Technical assistance advice and cost-share funds through the Department's "Private Lands Programs" for grazing improvements, wetland restoration, and grass seeding.

- **South Dakota Department of Agriculture** – Funding through the South Dakota Coordinated Soil and Water Conservation Commission Grant for technical assistance and conservation practice implementation of BMPs and animal waste storage facilities.

- **South Dakota Association of Conservation Districts (SDACD)** – Technical assistance, administrative support, staff support and website hosting.

- **Cooperative Extension Service** – Technical assistance to plan and implement BMPs and the Information Campaign.

4.2 Local Support

The Lower Big Sioux River is an important economic and social asset to the communities in the project area as well as rural residents and landowners. The Lincoln Conservation District and the Union Conservation District will provide leadership for this project. Through community support the Lower Big Sioux River Basin Watershed Assessment project was initiated during 2004 and completed during 2007. During the assessment, the Department of Environment and Natural Resources, in partnership with the South Dakota Association of Conservation Districts documented livestock feeding operations and water quality issues in the watershed to guide implementation of potential BMPs. This EPA Clean Water Act Section 319 project proposal was developed by representatives from the Lincoln and Union Conservation Districts, Natural Resources Conservation Service (NRCS), South Dakota Department of Environment and Natural Resources (DENR) and the South Dakota Association of Conservation Districts (SDACD) as a project work group. The Lower Big Sioux River Basin Watershed Project will be implemented with guidance from a steering committee of Conservation Districts and partners formed to advise on matters of project coordination and management.

4.3 Coordination with Other Programs

The Lower Big Sioux River Basin Watershed Project will be coordinated by a steering committee made up of local, state, and federal partners (see section 4.1) to maximize technical assistance and funding for successful project implementation.

In addition, this project will access training and other technical assistance available such as:

- Rapid Watershed Assessment Program (USDA NRCS)
- Conservation Reserve Program (USDA FSA)
- Partners for Fish and Wildlife (USF&WS)
- Project Coordinator training workshops (SD DENR)
- Technical training (USDA NRCS)
- South Dakota Nonpoint Source Information and Education Program
- Technical assistance for grassland management through the Grassland Management Team and 303(d) Watershed Planning and Assistance Projects
- Technical and administrative training provided by the SD Association of Conservation Districts (SDACD), SD DENR, and NRCS.

The Minnesota and Iowa Departments of Natural Resources and respective Conservation Districts will be informed of implementation projects being installed in the watershed as well. The annual report will be sent to representatives of both states as a means to update them with progress on implementation taking place in the Lower Big Sioux River on the South Dakota portion of the watershed.

4.4 Similar Activities in the Watershed

This project will be implemented through coordination and partnership with other organizations' programs to create complementary activities. The projects and programs that complement those planned for this project include:

- Lower Big Sioux River Watershed TMDL Reports: The Lake Alvin TMDL report was completed in January of 20001. The Fecal Coliform/Pathogen TMDL report was completed January 2008. The Total Suspended Solids (TSS) TMDL report is scheduled for completion at the end of calendar year 2009. The project steering committee will use these reports and public input to develop a long-term water quality implementation plan for the Lower Big Sioux River Basin and Lake Alvin.

- BMP implementation: The installation of BMPs on cropland and grassland are supported in this proposal by 319 and CCRP funds, wildlife habitat programs, and SD Soil and Water Conservation Grant funds. The implementation of BMPs in the watershed is proposed to be cost-shared by 319 funds (with the exception noted below) to provide their timely planning, design, and implementation under current funding expectations for other funding options. Exception to 319 BMP funding - the establishment of riparian buffers which may include tree planting, grass seeding, managed grazing and/or fencing and alternative water development provide greater cost-share and land rental payments to landowners through CCRP versus 319.

- Technical assistance for BMP implementation will be provided through a coordinated effort to include delivery by the project coordinator, NRCS field office staff, Conservation District staff, existing 319 Grassland Project, 303(d) Watershed

Planning and Assistance project staff, and other state and federal service providers. Technical assistance resources will be invited to participate in the local project work group for coordination of services.

5.0 EVALUATION AND MONITORING

5.1 Monitoring Strategy

Monitoring and evaluation efforts will involve:

1. Monitoring all project tasks relative to meeting project milestones.
2. Evaluating effectiveness of BMPs installed utilizing available tools such as AGNPS, Rusle2 and STEPL.

The Lincoln Conservation District, with technical support from the SD Department of Environment and Natural Resources, will develop a project-specific sampling and analysis plan (SAP) for this project utilizing existing state standard operating procedures.

The Lincoln Conservation District will monitor project progress based on project milestones and include progress in a semi-annual project report. Progress to meet milestones will include a financial accounting of funds, and the source of funds expended on each milestone or project task.

The effectiveness of BMPs installed relative to improvement in water quality will be evaluated using tools available from project partners such as:

1. Feedlot assessments of loading before and after installation of the waste storage facilities.
2. Sheet, rill, and gully erosion modeling for soil loss and transport.
3. Buffer and riparian vegetation establishment reductions in fecal coli-form bacteria, sediment and nutrient loading.
4. AnnAGNPS, STEPL and watershed models as agreed upon with DENR for changes in loadings due to BMP installation.

5.2 Data

The Lincoln Conservation District and project coordinator will be responsible for collecting, storing, and managing data collected during implementation of this project. South Dakota DENR will provide technical assistance and guidance to assist the Conservation District to set-up the appropriate record systems and computer software for project data collected. Data collected will be forwarded to South Dakota DENR for entry into the STORET database.

5.3 Models

The Lincoln Conservation District and project coordinator will receive technical assistance and training on which models to use and how to use them from SD DENR. AnnAGNPS, RUSLE2 and other computer models, such as STEPL will be used to evaluate the impact of BMP installation in the watershed.

5.4 Major Activities

The major activities of this project will involve contracts (to include US Fish and Wildlife Service and Wildlife Extension Agreements) with landowners for BMP operation and maintenance. The operation and maintenance section of these contracts will specify the BMP maintenance life span, and identify responsibility for maintenance and operation. The Lincoln

and Union Conservation Districts are responsible to ensure O&M agreements are carried out. The Districts and County will continue to lead efforts to identify, fund, and implement needed O&M, as well as other additional improvements needed for the watershed beyond this proposal's grant period.

6.0 Budget

Table 6.1. Budget Table For Lower Big Sioux Watershed Project (Part 1 of Segment 2)

PART 1: FUNDING SOURCES

Funding Source	2010	2011	Total
EPA SECTION 319 FUNDS 1.) FY 10 (FA) Subtotals	$159,500 $159,500	$165,500 $165,500	$325,000 $325,000
OTHER FEDERAL FUNDS 1.) NRCS (FA) 2.) US F&W 3.) FSA (FA) Subtotals	 $96,866 $96,866	 $188,534 $188,534	 $285,400 $285,400
STATE/LOCAL MATCH (FA&TA) 1.) Local CD (TA) 2.) Landowners(FA) 3.) GF&P(FA) 4.) CWFC (FA) 5.) DOA (FA) 6.) DENR (TA) Subtotals:	 $1,500 $73,933 $9,125 $43,000 $3,171 $130,739	 $1,500 $114,890 $10,875 $43,000 $4,946 $175,211	 $3,000 $188,823 $20,000 $86,000 $8,117 $305,950
TOTAL BUDGET	$387,105	$529,245	$916,350

FA:	Financial Assistance
TA	Technical Assistance
CD	Conservation District
GF&P	SD Game, Fish and Parks Department
DENR	SD Department of Environment and Natural Resources
DOA	SD Department of Agriculture
NRCS	USDA Natural Resources Conservation Service
US F&W	US Fish and Wildlife Service
FSA	USDA Farm Service Agency
CWFC	Consolidated Water Facilities Construction Funds

Table 6.2 - Detailed Budget: Segment 2: July 1, 2010 Through June 30, 2012
Lower Big Sioux Watershed Project

ITEM	Year 1	Year 2	Total	319-EPA	Cons. Comm.	CWFC	USDA	SD GF&P	Local
Personnel Support									
Project Coordinator (Lower Big Sioux River Watershed Project)	$41,000	$42,500	$83,500	$83,500					
Payroll Tax	$3,280	$3,400	$6,680	$6,680					
Health Insurance	$3,273	$3,601	$6,874	$6,874					
Workmans Comp.	$488	$512	$1,000	$1,000					
Unemployment Insurance	$405	$425	$830	$830					
Retirement (3% of salary)	$1,230	$1,275	$2,505	$2,505					
Lodging/Meals/Expenses	$585	$614	$1,199	$1,199					
Travel:									
Vehicle Lease:	$3,075	$3,075	$6,150	$6,150					
Fuel/Oil	$3,790	$3,845	$7,635	$7,635					
Repairs/service	$750	$800	$1,550	$1,550					
Vehicle and General Liability Insurance	$1,218	$1,279	$2,497	$2,497					
Administration:									
Office Supplies	$195	$205	$400	$400					
Postage	$50	$53	$103	$103					
Phone	$300	$315	$615	$615					
Office Space	$1,350	$1,350	$2,700	$2,700					
Contract Management: (Lincoln CD)	$1,113	$1,113	$2,226	$2,226					
Project Management: (Sponsor and Advisory Board)	$1,500	$1,500	$3,000						$3,000
SDACD Contract Management	$6,953	$6,953	$13,906	$13,906					
Computer Support:									
Computer Lease	$675	$680	$1,355	$1,355					
Computer Maintenance	$750	$775	$1,525	$1,525					
Subtotal: Personnel Support	**$71,980**	**$74,270**	**$146,250**	**$143,250**	**$0**	**$0**	**$0**	**$0**	**$3,000**
Objective 1: Best Management Practice (BMP) Implementation									
Task 1: Cropland BMPs (4,380 acres)									
Product 1: Terrace Restoration - (800 ac.) 20,000 LF. @ $1.05/LF.	$6,000	$15,000	$21,000	$15,750					$5,250
Product 2: Conservation Tillage - 2,800 acres @ $0.00/ac.									
Fertilizer Application Workshops - 2 @ $0.00									
Product 3: Seeding: Perennial Vegetation: 700ac.@ $100/ac.	$30,000	$40,000	$70,000				$35,000	$17,500	$17,500
Product 4: Filter Strips (40 ac.) and Grassed Waterways (27,500 LF.)									
Filter Strips - 40 ac. @ $100/ac.	$2,000	$2,000	$4,000				$3,000		$1,000
Grassed Waterways - (40 ac.) 27,500 LF. @ $1.70/LF.	$20,000	$26,750	$46,750				$37,400		$9,350
Task 2: Grassland BMPs (1,000 acres)									
Product 5: Grassland Management (500 ac.)									
Rotational Grazing Systems: 500 ac. @ $0.00									
Fencing: 2,500 LF @ $1/LF	$1,250	$1,250	$2,500					$1,250	$1,250
Water Developments:									
Pipelines: 2,500LF @ $2.50/LF	$3,125	$3,125	$6,250		$2,675				$3,575
Tanks: 2 each @ $1,000 each	$1,000	$1,000	$2,000		$667				$1,333
Rural Water Hook-up: 1 each @ $1,550		$1,550	$1,550		$500				$1,050
Product 6: Riparian Area Grassland Management (500 ac.)									
Rotational Grazing Systems: 500 ac. @ $0.00									
Fencing: 2,500 LF @ $1/LF	$1,250	$1,250	$2,500					$1,250	$1,250
Water Developments:									
Pipelines: 2,000LF @ $2.50/LF	$2,000	$3,000	$5,000		$2,500				$2,500
Tanks: 2 each @ $1000 each	$1,000	$1,000	$2,000		$1,000				$1,000
Rural Water Hook-up: 1 @ $1,550		$1,550	$1,550		$775				$775

Table 6.2 - Detailed Budget: Segment 2: July 1, 2010 Through June 30, 2012 (Continued)

Lower Big Sioux Watershed Project

ITEM	Year 1	Year 2	Total	319-EPA	Cons. Comm.	CWFC	USDA	SD GF&P	Local
Task 3: Animal Waste Management Systems (AWMS)									
Products 7: Feasibility Studies, Designs, Nutrient Plans, Archeological Search (4)									
Initial Feasibility and System Design 4 @ $20,000 each	$40,000	$40,000	$80,000	$48,000		$12,000			$20,000
Nutrient Management Plans 4 @ $2,500 each	$5,000	$5,000	$10,000	$6,000		$1,500			$2,500
Archeological/Cultural Resouces Search 4 @ $500 each	$1,000	$1,000	$2,000	$1,200		$300			$500
Products 8: Construction of 4 animal waste management systems									
Conventional Waste Storage Facility Construction 3 @ $140,000 each	$140,000	$280,000	$420,000	$41,800		$63,200	$210,000		$105,000
Alternative Technology Vegetative Treatment System (VTS) Construction									
1Alternative Technology VTS @ $60,000 each	$60,000		$60,000	$36,000		$9,000.00			$15,000.00
SubTotal: BMP Implementation	**$313,625**	**$423,475**	**$737,100**	**$148,750**	**$8,117**	**$86,000**	**$285,400**	**$20,000**	**$188,833**
Objective 2: Informational Outreach									
Task 4: Information Campaign (300 watershed residents)									
Products 9: Web Site, Newsletters, Presentations and Press Releases									
Web Site: With SDACD: Maintenance Costs	$1,000	$1,000	$2,000	$2,000					
Newsletters: 2 mailings (1,000 each @ $.50/piece)	$500	$500	$1,000	$1,000					
Presentations: 2 @ $200 each									
(Included in Personnel Costs)									
Press Release/Media Event: 2 @ $50 each									
(Included in Personnel Costs)									
Subtotal: Informational Outreach	**$1,500**	**$1,500**	**$3,000**	**$3,000**					.
Objective 3: Watershed Monitoring									
Task 5: Bank Erosion Sheer Testing Equipment and Sampling									
Products 10: Sheer Tester, Jet Tester, Auger/Rods/Case, Samples									
Sheer Tester 2 @ $13,500 each		$27,000	$27,000	$27,000					
Jet Tester 1 @ $2,000		$2,000	$2,000	$2,000					
Auger/Rods/Case 1 @ $500		$500	$500	$500					
Sample Analysis $500		$500	$500	$500					
Sample/Data Collection (SDDENR personnel)									
Subtotal: Watershed Monitoring		**$30,000**	**$30,000**	**$30,000**					
Objective 4: Project Reports									
Task 6: Project Reports for EPA, DENR, and Partners.									
Products 11: Semi annual, annual, final, monthly reports and PIP Development									
Semi-Annual Reports - 2									
Annual Reports - 2									
Monthly Reports - 24									
Final Report - 1									
Segment 3 PIP									
(Costs covered by personnel/supplies budget are not included below)									
Subtotal: Project Reports/PIP Development:	**$0.00**	**$0.00**	**$0.00**	**$0.00**					
Total Project Cost:	**$387,105**	**$529,245**	**$916,350**	**$325,000**	**$8,117**	**$86,000**	**$285,400**	**$20,000**	**$191,833**
Match:									
Ineligible Match - Federal and/or Project Allocated			$285,400				$285,400		
Match: Project Totals For Match			$630,950	$325,000	$8,117	$86,000		$20,000	$191,833
Match Percentages:				**52%**	**1%**	**14%**	**0%**	**3%**	**30%**

Table 6.3 - Summary Budget: Segment 2: July 1, 2010 Through June 30, 2012

Lower Big Sioux Watershed Project

ITEM	Year 1	Year 2	Total	319-EPA	Cons. Comm.	CWFC	USDA	SD GF&P	Local
Personnel Support									
Project Coordinator (Lower Big Sioux River Watershed Project)	$41,000	$42,500	$83,500	$83,500					
Payroll Tax	$3,280	$3,400	$6,680	$6,680					
Health Insurance	$3,273	$3,601	$6,874	$6,874					
Workmans Comp.	$488	$512	$1,000	$1,000					
Unemployment Insurance	$405	$425	$830	$830					
Retirement (3% of salary)	$1,230	$1,275	$2,505	$2,505					
Lodging/Meals/Expenses	$585	$614	$1,199	$1,199					
Travel:									
Vehicle Lease:	$3,075	$3,075	$6,150	$6,150					
Fuel/Oil	$3,790	$3,845	$7,635	$7,635					
Repairs/service	$750	$800	$1,550	$1,550					
Vehicle and General Liability Insurance	$1,218	$1,279	$2,497	$2,497					
Administration:									
Office Supplies	$195	$205	$400	$400					
Postage	$50	$53	$103	$103					
Phone	$300	$315	$615	$615					
Office Space	$1,350	$1,350	$2,700	$2,700					
Contract Management: (Lincoln CD)	$1,113	$1,113	$2,226	$2,226					
Project Management: (Sponsor and Advisory Board)	$1,500	$1,500	$3,000						$3,000
SDACD Contract Management	$6,953	$6,953	$13,906	$13,906					
Computer Support:									
Computer Lease	$675	$680	$1,355	$1,355					
Computer Maintenance	$750	$775	$1,525	$1,525					
Subtotal: Personnel Support	**$71,980**	**$74,270**	**$146,250**	**$143,250**	**$0**	**$0**	**$0**	**$0**	**$3,000**
Objective 1: Best Management Practice (BMP) Implementation									
Task 1: Cropland BMPs (4,380 acres)	$58,000	$83,750	$141,750	$15,750			$75,400	$17,500	$27,850
Task 2: Grassland BMPs (1,000 acres)	$9,625	$13,725	$23,350		$8,117			$2,500	$12,733
Task 3: Animal Waste Management Systems (AWMS)	$246,000	$326,000	$572,000	$133,000		$86,000	$210,000		$143,000
Objective 2: Informational Outreach									
Task 4: Information Campaign (300 watershed residents)	$1,500	$1,500	$3,000	$3,000					
Objective 3: Watershed Monitoring									
Task 5: Bank Erosion Sheer Testing Equipment and Sampling		$30,000	$30,000	$30,000					
Objective 4: Project Reports									
Task 6: Project Reports for EPA, DENR, and Partners.									
Watershed PIP and Segment 3 PIP. (Costs part of Personnel costs)									
Total Project Cost:	**$387,105**	**$529,245**	**$916,350**	**$325,000**	**$8,117**	**$86,000**	**$285,400**	**$20,000**	**$186,583**
Match:									
Ineligible Match - Federal and/or Project Allocated			$285,400				$285,400		
Match: Project Totals For Match			$630,950	$325,000	$8,117	$86,000		$20,000	$186,583
Match Percentages:				**52%**	**1%**	**14%**	**0%**	**3%**	**30%**

7.0 PUBLIC INVOLVEMENT

7.1 A local steering committee will meet at least three times each year to provide input for project management and coordination of resources to Lincoln Conservation District. The work group consists of representatives from Lincoln and Union Conservation Districts, South Dakota Game, Fish, and Parks, SD DENR, South Dakota Department of Agriculture, SDACD, SD Consolidated Water Facilities, USDA NRCS, USDA FSA, and US F&WS.

The Conservation Districts, through completion of Objective 2 (Information and Education) of this proposal, will provide information to the public through a web site, a watershed newsletter, press releases and informational meetings.

8.0 THREATENED AND ENDANGERED SPECIES

The species listed in the Federal list of threatened and endangered species in the Lower Big Sioux River Basin Watershed are the Bald Eagle (Haliaeetus Leucocephalus), Topeka Shiner (Notropis Topeka), Interior Least Tern (Sterna Antillarum Athalassos), Piping Plover (Charadrius Melodius)(SDGFP, 2003). The U.S. Fish and Wildlife Service lists the Western Prairie Fringed Orchid as a species that could potentially be found in the area. None of these species were encountered during the Lower Big Sioux River Watershed Assessment Project; however, care will be taken when implementing best management practices in the Lower Big Sioux River Basin Watershed.

The procedures that will be followed to ensure the project will not adversely affect threatened and endangered species are based on the following premises:

1. The best management practices to be implemented will promote the improvement of water quality which will benefit threatened and endangered species that depend on water.
2. The occurrence of migratory endangered species is expected to be transitory, and if they are present project activities will cease until they have left the area.

The precautions that will be taken with respect to threatened and endangered species that could potentially be found in the area are as follows.

1. Topeka Shiner

The project proposal gives priority to improving grazing management on grasslands within two miles of the major riparian waterways in the watershed. Planned riparian buffers and stream bank stabilization will improve stream channel and habitat conditions at several locations. There may be some short-term increases in suspended solids concentrations during stream bank stabilization activities. Appropriate measures directed by the US Fish and Wildlife Service and the South Dakota Topeka Shiner Management Plan will be followed. Under no circumstances will in-stream construction be completed during the spawning period from May 15th to July 31st. Other BMPs to be implemented on cropland and animal feeding areas will improve water quality for the Shiner.

2. Interior Least Tern

The Least Tern nests along the shoreline of sandy beaches or gravelly shorelines of some portions of the Missouri River. These areas are outside of the Project area therefore little or no impact to the species should occur. No project activities are planned that will disturb nesting or

reduce food sources. If a Least Tern is observed at any project site, all mechanical activities will be suspended. Work will be altered so no harm will come to the organism(s).

3. Piping Plover

The Piping plover nests mainly along unrestricted stretches (shore lines) of the Missouri River. These areas are not considered a part of this project, therefore little or no impact to the species should occur. No project activities are planned that will disturb nesting or reduce food sources. If a Piping Plover is observed at any project site, all mechanical activities will be suspended. Work will be altered so no harm will come to the organism(s).

4. Western Prairie Fringed Orchid

At this time there are no documented populations of the western prairie fringed orchid in South Dakota. *Platanthera praeclara* grows up to four feet tall and has two dozen or more white to creamy colored, one-inch long flowers on a stalk. This species is distinguished from eastern prairie fringed orchids by larger flowers, differing petal shape, and longer nectar spur. The flowers emerge in May, bloom from June to July, and are pollinated by sphinx moths. Fringed orchids are found in tall grass prairies, most often in moist habitats or sedge meadows, and require direct sunlight for growth. They persist in areas disturbed by light grazing, burning, or mowing. Western prairie fringed orchids are known to have occurred from Northeastern Oklahoma, within the Ark/Red, as well as locations in Kansas, Missouri, Nebraska, Iowa, Minnesota, and South Dakota. The greatest threat to the species is conversion of tall grass prairie to other land uses. If an orchid is observed at any project work site, all mechanical activities at the site will be suspended. Work will be altered or the plant(s) protected so no harm will come to it.

Milestone Table

Lower Big Sioux River Basin Watershed Project
7/1/2008 through 6/30/2010

Task	Group	Quantity	2010/2011				2010/2011			
			Jul/Aug/Sep	Oct/Nov/Dec	Jan/Feb/Mar	Apr/May/Jun	Jul/Aug/Sep	Oct/Nov/Dec	Jan/Feb/Mar	Apr/May/Jun
Objective 1: Best Management Practice (BMP) Implementation										
Task 1: Cropland BMPs (4,380 acres)	1,2,3,4									
Product 1: Terrace Restoration (800 ac.)		20,000 LF.				7,500			12,500	
Product 2: Conservation Tillage		2,800 ac.	500			900	500		900	
Fertilizer Application Workshops		2			1			1		
Product 3: Seeding: Perennial Vegetation		700 ac.		100		200		200		200
Product 4: Filter Strips		40 ac.	5		15				15	
Grassed Waterways (40 ac.)		27500 LF.		6,000		6,000		7,500		8,000
Task 2: Grassland BMPs (1,000 acres)	1,2,3									
Product 5: Grassland Management		500 ac.			250				250	
Product 6: Riparian Area Grassland Management		500 ac.				250				250
Task 3: Animal Waste Management Systems (AWMS)	1,2,3									
Products 7: Feasibility Studies, Designs, Nutrient Plans, Archeological Search		4			2				2	
Products 8: Construction of animal waste management systems		4				2				2
Objective 2: Informational Outreach										
Task 4: Information Campaign (300 watershed residents)	1,2,3,4									
Products 9: Web Site, Newsletters, Presentations and Press Releases										
Web Site Maintenance		1								
Newsletters		2			1				1	
Presentations		2		1				1		
Press Release/Media Event		2			1				1	
Objective 3: Watershed Monitoring										
Task 5: Bank Erosion Sheer Testing Equipment and Sampling	1,3									
Products 10: Sheer Tester, Jet Tester, Auger/Rods/Case, Samples										
Sheer Tester		2			2					
Jet Tester		1			1					
Auger/Rods/Case		1			1					
Sample Analysis		10							10	
Objective 4: Project Reports										
Task 6: Project Reports for EPA, DENR, and Partners.	1,2									
Products 11: Semi annual, annual, final, monthly reports and PIP Development										
Semi-Annual Reports		2			1				1	
Annual Reports		2				1				1
Monthly Reports		24	3	3	3	3	3	3	3	3
Final Report		1								1
Segment 3 PIP		1					1			

Groups
1. Project Coordinator/Conservation Districts
2. Federal = NRCS/USFWS/LJRC&D
3. State = SDGF&P/SDSU/SDRCF/DENR/SDDOA
4. Local = VBWDD,/Producers/Conservation Districts