UPPER BIG SIOUX RIVER WATERSHED PROJECT CONTINUATION

"Working Together for the Watershed"

Final Report

FY01 EPA 319 Grant Project

Grant #C998185-010

Project Sponsor

CITY OF WATERTOWN

Report Prepared By

Mike Williams, Project Coordinator

Jan Mullin, Assistant

Project Period

August 2001 – March 2005

SECTION 319 NONPOINT SOURCE POLLUTION CONTROL PROGRAM

WATERSHED PROTECTION FINAL REPORT

Upper Big Sioux River Watershed Project Continuation Grant

City of Watertown, SD

Project Advisory Board
Jack Little, Chairman
Geoff Heig, Vice-Chairman
Jim Madsen, Secretary

Project Coordinator
Mike Williams

Engineer Technician
Roger Foote

March 31, 2005

This project was conducted in cooperation with the State of South Dakota and the United States Environmental Protection Agency, Region 8

Grant # C998185-96, C998185-97, C998185-01

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EXECUTIVE SUMMARY

Project Title: **UPPER BIG SIOUX RIVER WATERSHED PROJECT**

Project Start Date: AUGUST 2001 Project Completion Date: MARCH 2005

FUNDING	Total Budget	$1,752,773.00
	Total EPA Grant	$1,000,000.00
	Total Expenditures of EPA Funds	$1,000,000.00
	Total Section 319 Match Accrued	$716,810.16
	Budget Revisions	
	TOTAL EXPENDITURES	$1,914,135.91

SUMMARY OF ACCOMPLISHMENTS

Table 1 shows a comparison of the Best Management Practices (BMPs) included in the Project Implementation Plan with the BMPs that were installed during this project segment and a cumulative comparison of the BMPs planned versus installed to date. The Project is on schedule to attain its long-term goal as stated in the Diagnostic Feasibility Study (January 1994). Some practices have exceeded goals because of landowner acceptance. It is estimated that the practices installed have reduced nutrient loadings by twelve percent and sediment loadings by twenty-seven percent.

Grassed waterways have lost favor with producers during the current dry period. Installation of managed grazing systems has slowed in spite of educational seminars and one-on-one contacts. Producers with small pastures don't seem to grasp the benefits of rotational grazing.

Table 1. Best Management Practices Planned and Completed

BEST MANAGEMENT PRACTICES	Current Project Segment		Cumulative 4 Grants (1994-2005)	
	Planned	Completed	Planned	Completed
ANIMAL NUTRIENT MGT PRACTICE (EA)	14	8	32	28
ALTERNATE LIVESTOCK WATER (EA)	30	4	33	4
GRAZING MANAGEMENT (AC)	36,760	2,368	38,280	3,528
GRASSED WATERWAYS (FT)	68,571	19,432	153,571	72,610
MANURE APPLICATION MGT (EA)	10	5	10	5
SHORELINE STABILIZATION (FT)	0	3,921	3,709	10,836
SMALL DAMS / BASINS (EA)	83	132	141	319
STREAMBANK STABILIZATION (FT)	7,936	1,960	11,636	3,876
WATER MONITORING (EA)	20	7	20	7

2. INTRODUCTION

The Upper Big Sioux River Watershed Project (UBSRWP) is a locally-lead project with financial assistance from an Environmental Protection Agency Clean Water Act Section 319 Grant provided through the South Dakota Department of Environment and Natural Resources. The project is a continuation of the original Lake Kampeska Watershed Project that resulted from a diagnostic/feasibility study (SD DENR 1992) implemented by volunteers from the Kampeska Chapter, Izaak Walton League of America. The name was changed to the Upper Big Sioux River Watershed Project when the Lake Pelican Water Project District joined the participating partners following completion of the Lake Pelican Diagnostic / Feasibility Study (SD DENR 1995). Studies conducted from 1989 through the spring of 1993 on Lake Kampeska and from 1993 to 1995 on the AGNPS computer simulation model were used to evaluate nutrient and sediment contributions from cropland and Animal Feeding Operations (AFOs). The Pacific Southwest Interagency Committee (PSIAC) sediment evaluation method was used to determine sediment loads from rangeland. The direct volume method to determine sediment amounts was used to calculate sediment contributions from channels, gullies and streambanks. The average phosphorus concentration in the soils was used to estimate phosphorus contributions from rangeland, gullies, channels and streambanks.

The major conclusions of the Upper Big Sioux River Basin Study were:

1. Ephemeral and classic gully erosion is the primary source of sediment. Additionally, streambank erosion in some subwatersheds is a major source of sediment that is contributed directly into the stream system.

2. Sheet and rill erosion and classic gully erosion contribute the majority of the phosphorus. Animal feeding operations, classic gully erosion, and rangeland are the major sources of dissolved phosphorus.

3. The deterioration of riparian areas along channels and streambanks, a result of livestock grazing pressure or the intensity of cropping practices, accelerates gully formation and reduces the sediment and nutrient filtering effects of vegetation.

The Big Sioux River from its origin to Lake Kampeska carries runoff from a 212,707-acre watershed basin to Lakes Kampeska and Pelican as it travels south to the confluence with the Missouri River near Sioux City, Iowa. An additional 13,065 acres bordering Lake Pelican and 19,627 acres on Lake Kampeska increases the Upper Big Sioux River watershed to 245,399 acres.

The Big Sioux River meanders through a wide floodplain. Its banks are subject to extensive erosion caused by extended spring runoff and large storm events. These events carry upland and floodplain runoff from croplands and rangeland. High concentrations of nutrients and solids are carried by the Big Sioux River to both lakes from livestock feeding operations, grazing lands, and row-crops. Extended livestock access to streambanks and the use of pesticides that remove plants from the river and tributary banks increase the potential for erosion.

Both lakes are of glacial origin. Lake Kampeska is a 4,817-acre lake with an average depth of 11 feet. Lake Pelican covers 2,796 acres and has an average depth of 6.5 feet. The Big Sioux River delivers ninety percent of the nutrient and sediment loads entering the lakes. Shoreline erosion also contributes to sediment and nutrient loading. Sediment volumes in the lakes are estimated at 56 and

36 million cubic yards for Lakes Kampeska and Pelican respectively. Like most lakes in the Prairie Coteau region (Figure 2), the water quality impairments are due, in part, to shallow depth and deep silt deposits. Strong winds agitate bottom sediment that reduces light penetration in the water. Elevated phosphorus levels in the sediment promote algae blooms, which decrease light penetration as well. As a result, in-lake macrophytes are sparse to nonexistent.

Restoration of Lakes Kampeska and Pelican will require several more years. The watershed and in-lake Best Management Practices (BMPs) continue the effort started by the Lake Kampeska Watershed Project, initiated during 1994 and continued by this grant. The BMPs selected for implementation are based on the Lake Kampeska and Pelican Lake studies referenced previously, the PL-566 assessment and the long-range plan developed as part of the Lake Kampeska Project Implementation Plan (PIP).

The project began when a small group from the Kampeska Chapter of the Izaak Walton League decided in 1989 to try to change the hypereutrophication of Lake Kampeska. The result was the Lake Kampeska Watershed Project. Chapter members spent two winters doing a silt assessment in the lake. A total of 2,800 measurements were taken on 4,800 acres of lake bottom. The Chapter then raised funds to match an Environmental Protection Agency grant to conduct an eighteen-month water quality assessment of Lake Kampeska and the Big Sioux River. This was followed in 1994 by a Section 319 implementation grant to begin restoration projects.

During 1993, Lake Pelican initiated a diagnostic/feasibility study sponsored by the Lake Pelican Water Project District with financial assistance from a Section 319 grant provided through DENR . The results, which were similar to the Lake Kampeska study, suggested that a combined project would provide for a more efficient management system. During 1996 and 1997, the two lakes were awarded $331,000 and $329,000 in Section 319 funds through DENR to implement lake and watershed BMPs. The City of Watertown continued as the sponsor of the project and still provides financial management of project funds.

The shared Kampeska/Pelican watershed is located in the Prairie Coteau region of eastern South Dakota (Figures 1-4). This unusual land formation was caused by glacial action some two to fifteen thousand years ago. The topography of the watershed ranges from nearly flat, well-drained and gently undulating to rugged, poorly-drained knob and kettle. Maximum relief in the project area is 150 feet with land elevations ranging from 1,860 feet Mean Sea Level (MSL) in the northwest to 1,710 feet MSL in the southeast portion of the project area. The Big Sioux River and four tributaries on the eastern slopes drain this high plain area. The river is the second largest of the three major river basins in eastern South Dakota that drain into the Missouri River. The project area is the upper 383 square miles of Roberts, Grant, Day counties, and the largest, Codington County.

The Big Sioux River controls both surface and shallow groundwater movement in the aquifer, and provides drinking water to one-third of the population of South Dakota from the river and its aquifers. The upper portion of the river delivers water to Lakes Kampeska and Pelican as it passes the lakes. The lakes become water storage areas during the spring snowmelt and storm events as water spills into the lakes and must exit from the same locations. This situation created silt sinks.

Surface deposits in the project area are divided into two main groups: glacial deposits and stream deposits. Glacial deposits are a mix of till (heterogeneous mixture of boulders, pebbles and sand in a matrix of clay and silt) and outwash (mostly sand and gravel with minor amounts of clay). Stream deposits consist mostly of alluvium. The parent material of watershed soils is glacial drift. The drift is approximately 500 feet thick over bedrock in the watershed. Many of the soils were formed in loess and overlie the drift while some others were formed in alluvium.

There are three main soil associations in the watershed:

1. Gently undulating silty soils formed in loess and loamy glacial till. The long, smooth slopes of this soil association are well-suited to contour farming, contour strip-cropping and crop residue management practices, which can help to control runoff erosion.
2. Well-drained, nearly level, medium-textured to moderately coarse soils are found on stream terraces and outwash plains. Water conservation and controlling wind erosion are major problems with these soils.
3. The third association consists of bottomland moderately fine-textured soils, poorly drained and occasionally flooded.

Most of the area's 22-inch average annual precipitation is associated with either snowmelt or spring storm events. The estimated evapotranspiration rate in the region is 34 inches annually.

Wellhead protection status is in effect for a portion of the project area. Aquifer contamination in the watershed, if it were to occur, will develop primarily through the extensive hydraulic connection between the Big Sioux River and the Big Sioux River Aquifer in Codington County.

The demographic and economic characteristics of the potential user population for the lakes indicate the city and surrounding area is a thriving community that continues to expand and grow. The recreation and economic base provided by the lakes has been and will be a key factor in the continued success of this community. Property values at Lake Kampeska were valued by the Codington County Director of Equalization at $106,026,446 for 2004. As the lake shore property provides a strong real estate tax base for the community, the loss of designated uses would impact the economy of Watertown. The total property value at Lake Pelican is estimated at $13,590,231 (March 2005). There is a potential for residential lot development along the shores of Lake Pelican.

A combined total of four state parks, one county park, four city parks, two private parks, and nine other lake access areas are located on the lake shorelines. The remaining shoreline consists of residential, agricultural and business properties. The Regional Economic Development value is estimated to be $29.74 per user day for all recreation forms. Recreational use collected from creel surveys conducted by the South Dakota Game, Fish and Parks Department and visitation records from the city, county and state parks around the lakes indicates 133,157 user days per year. The annual impact of recreation to Watertown and the surrounding region is estimated to be $3,960,089. (PL-566 Study, May 2000)

Upper Big Sioux River Watershed land ownership and use are shown in Tables 1 and 2 respectively. The tables are from the PL-566 Study, May 2000. Only minor ownership changes have taken place since the study was completed.

Table 2. Land Ownership In The Project Area

Subwatershed	Total	Private	Federal	State	Tribal
Upper Sioux	43,911	41,767	979	280	885
Indian River	24,972	24,872	100	0	0
Soo Creek	19,811	19,771	0	40	0
Mahoney Creek	15,206	15,072	0	134	0
Gravel Creek	44,763	44,658	0	105	0
Middle Sioux	34,774	33,858	399	277	240
Still Lake	6,940	6,741	80	119	0
Lower Sioux	15,351	14,822	0	506	23
Lake Kampeska	17,278	17,233	0	55	0
Lake Pelican	17,326	16,426	0	900	0
City of Watertown	5,067	5,007	0	60	0
Totals	245,399	240,217	1,558	2,476	1,148

Table 3. Watershed Land Use Information

Subwatershed	Total	Crop-land	Range-land	Grass	CRP	Trees	Other*
Upper Sioux	43,911	24,371	11,286	2,107	3,337	395	2,415
Indian River	24,972	14,084	6,817	1,224	1,523	175	1,149
Soo Creek	19,811	12,560	4,893	1,090	59	258	951
Mahoney Creek	15,206	11,344	1,855	988	46	183	790
Gravel Creek	44,763	28,066	10,654	2,462	448	895	2,239
Middle Sioux	34,774	22,916	6,051	1,982	1,773	348	1,704
Still Lake	6,940	4,143	1,270	361	340	56	770
Lower Sioux	15,351	10,608	2,211	921	61	153	1,397
Kampeska	17,278	9,123	4,284	795	190	225	2,661
Pelican	17,326	11,158	2,599	970	347	173	2,079
Watertown	5,067	1,348	1,608	117	52	70	1,872
Totals	245,399	149,721	53,528	13,017	8,176	2,931	18,026

*Roads, Trees, Towns, and Water

National Atlas of the United States

Figure 1. Upper Great Plains Region

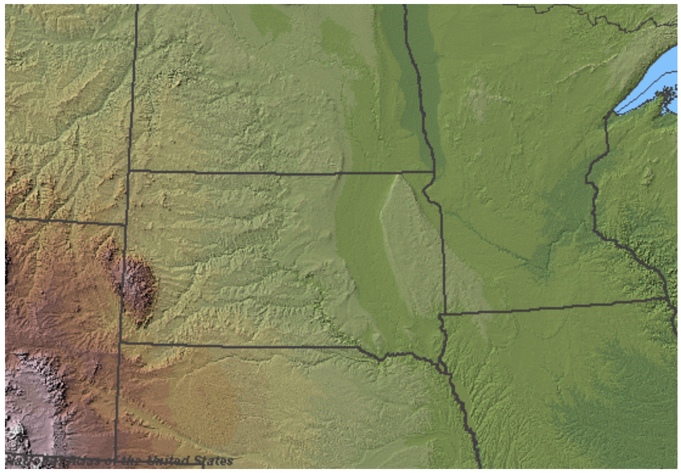


Figure 2 Coteau des Prairies Region

(Note arrowhead-shaped upland near Minnesota boundary)

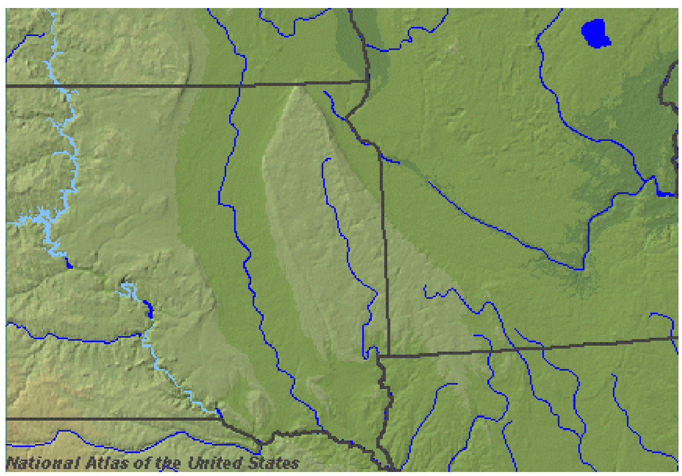


Figure 3 Upper Big Sioux River Watershed Project

(Project area circled)

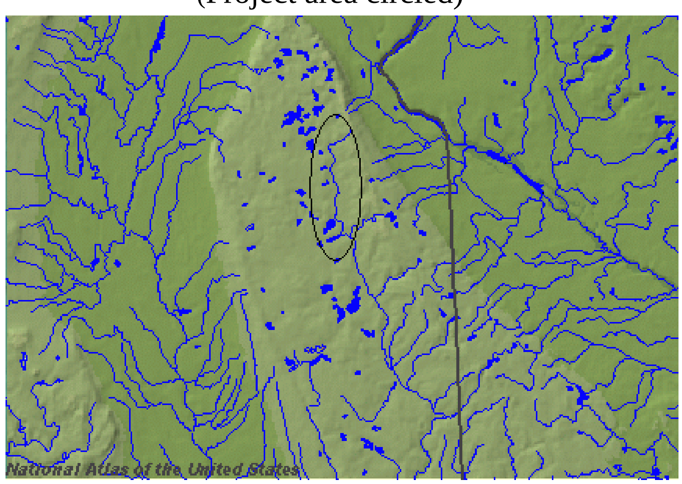
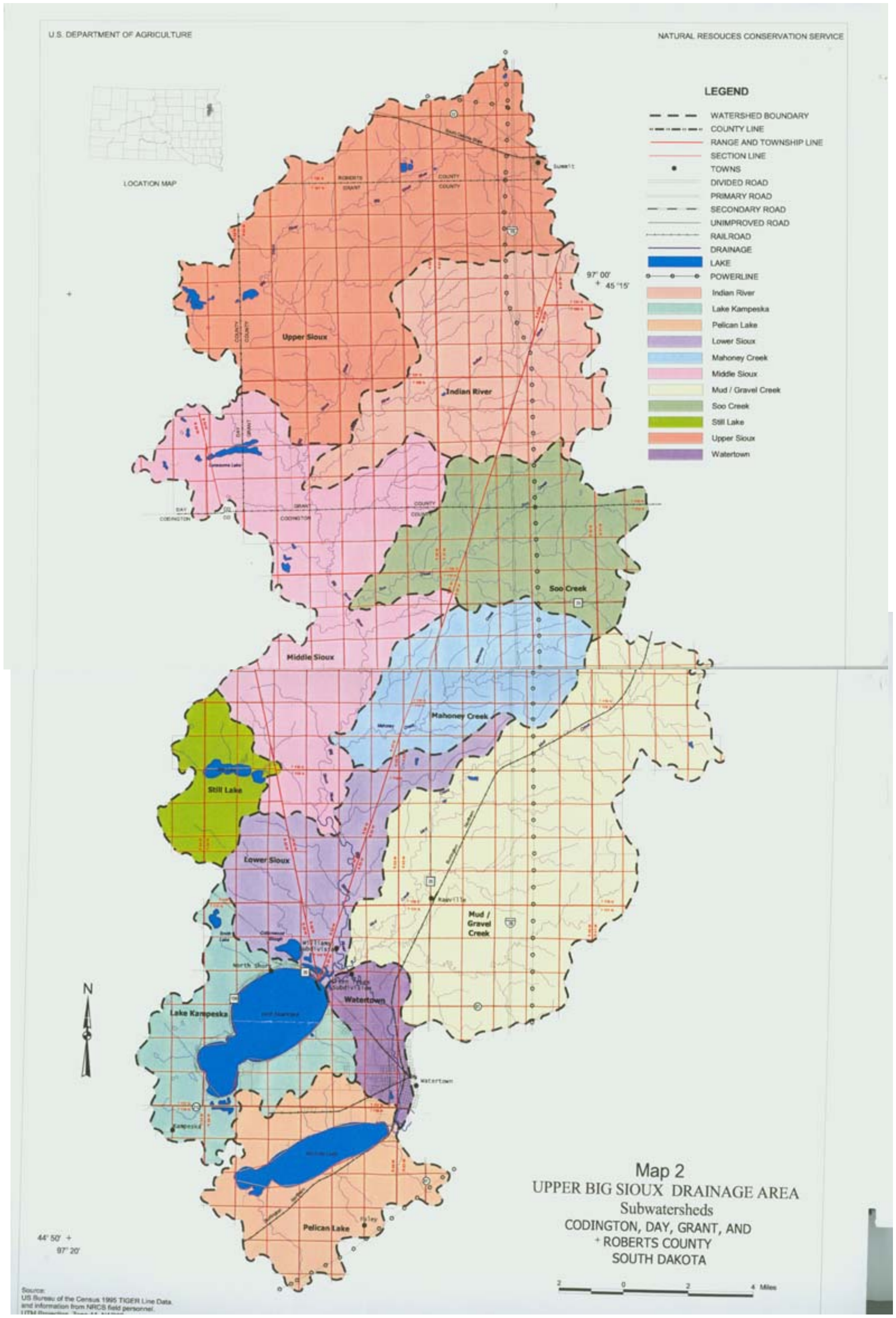


Figure 4. Upper Big Sioux River Watershed Project Subwatersheds



3. PROJECT ACTIVITIES

GOAL AND OBJECTIVES

The project goal was:

> "continue efforts to restore Lake Kampeska and Lake Pelican to a eutrophic state and ensure the long-term full realization of all designated uses of the lakes."

The diagnostic feasibility studies completed for the lakes recommended the following practices to restore the lakes to eutrophic states. The activities selected were those that:

1. would have the most immediate impact on improving water quality in the lakes and the Upper Big Sioux River Watershed and
2. were economically feasible.

Table 4 Long-term Recommended Restoration Activities from 1994 Workplan (20 year plan)

PRACTICE	MILESTONE
Lake Shoreline Stabilization	2,000 ft.
Construction of Small Ponds/Dams	75
Grassed Waterways	100,000 ft.
Filterstrips/Grass Seeding	1,000 ac.
Animal Nutrient Management Systems	50
Streambank Stabilization/Riparian Area Management	2,000 ac.
Continuous Information and Education Program to promote BMPs	
Wetland Restoration	100 ac.
Wetland Conservation Reserve Program	200 ac.
Septic System Survey	1
Selective Dredging	All
Construction of Flood Control Facilities	1
Construction of Lake Kampeska Outlet	1

The practices were expected to cost $34,950,000 over a twenty year period. Near the completion of the original 319 grant segment entitled "The Lake Kampeska Watershed Project", the Lake Pelican Project joined the Kampeska group and initiated the first of four 319 grant segments under the Upper Big Sioux River Watershed Project designation. Efforts were made to target watershed areas and operations that scored high in the AGNPS models and showed impairments based on water quality monitoring results. Also accepted were operators who volunteered to complete multi-practice conservation plans.

Table 5 Planned Versus Completed Milestone Comparison Project Segment 4

Objective 1. Task 1. Reduce nutrient loadings to Lakes Kampeska and Pelican by 15%.	**Milestone**	**Completed**
Product 1. Grazing Management	36,760 acres	2,368 acres
Product 2. Animal Nutrient Management Systems:	14 systems	8 systems
Product 3. Manure Application Management	10 operators	5 operators

Objective 2. Task 2. Reduce sediment loading from the watershed by 15%.		
Product 4. Implement Agricultural Best Management Practices		
4A. Grassed Waterways:	68,571 feet	19,432 feet
4B. Alternate Livestock Water:	30 units	4 units
4C. Small Ponds:	83 units	132 units
Product 5. Streambank Stabilization.	7.936 ft	1,960 ft streambank; 3,921 ft lake shoreline
Product 6. Information and Education:	27 Activities	27 Activities
Product 7. Water Monitoring:	20 samples	7 samples

The cumulative total BMPs installed are shown in Table 1.

Table 6 shows the BMPs installed by subwatershed.

EVALUATION OF GOAL ACHIEVEMENT

Pre-project loadings suggested that the total suspended solids load entering Lake Kampeska was approximately 430,000 kilograms (474 tons) per year. The loading was during a period of higher than normal water flows in the Big Sioux River. This contrasts to 7,500 kilograms (8 tons) of suspended solids leaving the lake. Since the inlet and the outlet are at the same location, the lake becomes a silt sink. A newly installed weir is expected to reduce the silt loadings to the lake by diverting contaminated water in the lower water column.

Pre-project loadings suggested that the annual total suspended solids load entering Lake Pelican from the Upper Big Sioux River was approximately 141,341 kilograms (156 tons). This contrasts to an annual load leaving the lake of 56,250 kilograms (62 tons). Since the inlet and the outlet are at the same location, the lake becomes a silt sink. A weir has been installed at the inlet and diversion of suspended solids lowered loadings in the lake during normal flow events. Monitoring activities included in the next project segment will measure load reductions realized.

The hydraulic connection between the river, the aquifer and the lakes maintains a balance most of the time. However, when the river begins to flow above that balance, 95% of the water is directed to the lakes. Both weirs raise that stage so more water is diverted downstream. The lakes now receive less water as the river rises. Until water tops the weirs the only water entering or leaving the lakes is through the fish opening. This continues at a lesser rate until the river begins to subside at which time water begins to move out of the lakes until the balance is restored.

Both lakes maintain depths equal to the aquifer that surrounds them during non-runoff periods. Lake Pelican generally has a lower aquifer level (approximately 9 feet) than Lake Kampeska and tends to drain at a slower rate.

During this project segment, frequent high flows in the river and above normal rain and snow events caused loadings in the Big Sioux River and the lakes that exceeded those during the pre-project studies. For example, during spring 1993, discharge flow in the Lake Kampeska from the river was at flood stage, but during 1997, more than twice the 1993 event occurred. Both lakes experienced flooding again during 2001 as near record levels of water flowed into the lakes from the river. All monitoring sites were flooded beyond use. Based on assessments, no water quality conclusions can be reached until a normal weather cycle similar to the diagnostic study period returns.

The original workplan called for nine BMPs and three special projects to be implemented in the watershed. The information and education program was directed to all the residents of the watershed community. School programs, watershed update meetings, farm forum meetings, tours, pamphlets, newsletters, media programs, video presentations, service club programs and educational aids were among the many methods of getting the message across. Terry Redlin, ten-time winner of the “Most Popular Artist of the Year”, donates a full-sized signed print to cooperators who install conservation construction practices. Local businesses and organizations pay for framing the print. The popular award says ‘Thank You’ to the land stewards.

During this project segment, animal waste management continued to be the most expensive and difficult practice to install. The original cost estimates of $35,000 were found to be 2-3 times too low. Eight systems were installed at an average cost of more than $100,000 each. The systems ranged in complexity from simple clean-water diversions to complete collection systems. It was found most feedlots present difficult problems due to location and soils. This has raised the cost of some systems that could be better served by relocation. However, there is often operator resistance to relocation.

Rotational grazing, a new concept for the landowners in the project area, is not well accepted. The purpose of this practice is to hold more water on the land and benefit the producer with better grass yields. Cross fence, alternate livestock, grass inventory and the number of animals were considered when developing grazing plans. A total of 2,368 acres were enrolled during the project period using these practices.

During this project segment there was a sharp decline in signups for grassed waterway construction. Only 19,432 linear feet were offered. This was related to dry conditions that allowed farmers to plant crops in linear wetlands. For those operators who wished to install grassed waterways, the narrow window of construction and coordination between landowner and contractorwais tantamount to any success. In the future, this practice may include payments for crops that must be destroyed because of contractor schedules.

When the workplan was developed, there were about 30,000 linear feet of shoreline damaged by flooding and high winds at Lake Kampeska. An assessment on Lake Pelican found 4,330 linear feet of shoreline with moderate to severe erosion. The project installed practices to protect 3,921 linear feet of damaged shoreline and 1,960 feet of streambanks. Several shoreline protection structures in Lake Kampeska were damaged during the 2001 spring flood. As the lake rose with the heavy inflow, the ice rose up and strong winds began to push the ice to shore. Many old and new bulkheads were partially or totally destroyed. The rock rip-rap seemed to hold up better than other forms of protection. A continuing cost share practice of repairing Lake Kampeska property damaged during the 2001 flood is being financed by the City of Watertown, the Upper Big Sioux River Project sponsor.

Riparian management was incorporated into three streambank restoration projects and two rotational grazing projects. These were used as demonstration projects and it is hoped that these projects will stimulate more enrollments in the future. Since the project started, a new and better-financed Filterstrip, Bufferstrip and Conservation Reserve continuous signup have made using EPA funds less attractive. The project coordinator worked with the SD Association of Conservation Districts Resource Management Specialist (319 funded 303(d) Watershed Planning and Assistance Project) to maximize this practice through better incentives than the project was able to offer. Due to specialist workloads no practices were installed in this project area.

The Big Sioux River and its tributaries have many miles of eroding streambanks. Early attempts at soft practices, or bio-engineering, were washed away by river flows that were as high as 15,000 cubic feet per second in a system that normally flows at a few hundred fps. The high flows contained ice that slammed into banks and wedged into trees, culverts and roads.

Three hard practice rock revetments installed to demonstrate the practice were successful in protecting banks. Experience shows that we should concentrate our “soft practice” bank stabilization to the upper reaches of the tributary system where they would be under less impact from weather extremes.

The flood of 2001 topped the berms of two animal waste management systems which necessitated repair. Twenty other systems performed properly. One large riparian demonstration project has not grown as expected. It is feared that the willow cuttings dried out with a very dry late fall. The project has introduced biological weed control to the area.

The Upper Big Sioux River Watershed Project is a long-term restoration effort. In spite of nearly impossible conditions related to excessive precipitation early on, the restoration effort is on schedule. More was accomplished than thought possible given the conditions. As more and more implementation projects begin across the state, there is more competition for technical assistance. In addition, changing regulations slow the pace of construction. Issues related to site specific clearances for threatened and endangered species has caused delays of up to 18 months in some instances. Challenges encountered using privatized technical assistance are slowly being corrected. For example, privatization of engineering services has been inefficient due to the location of the firm selected and insufficient inspections during construction led to a major cost overrun on one project.

PRINCIPAL PARTNERS

A volunteer board consisting of township representatives and representatives of local, state, and federal agencies who shared ideas, funds and technical assistance was formed to provide guidance to the sponsor relative to project administration. Funds from local, state and federal agencies were cost shared with landowners for project practices.

The principal partners for this grant were:

1. City of Watertown
2. Codington (County) Conservation District
3. Codington County Commission
4. East Dakota Water Development District
5. Grant County Conservation District
6. Kampeska Chapter Izaak Walton League
7. Lake Kampeska Water Project District
8. Lake Township

9. Lake Pelican Preservation Society
10. SD Department of Agriculture, Resource Conservation and Forestry Division
11. SD Department of Game, Fish and Parks
12. SD Department of Environment and Natural Resources
13. Sisseton-Wahpeton Sioux Nation
14. US Environmental Protection Agency
15. US Fish and Wildlife Service
16. USDA Farm Service Agency
17. USDA Natural Resources Conservation Service

See section six of this report for information relative to the contributions, financial and technical assistance provided by each of the project partners listed above.

4. BEST MANAGEMENT PRACTICE SELECTION

The cost of installing BMPs required changes to the Project Implementation Plan. Even though all suggested practices have a positive impact on the surface water quality, some provide more benefits than others. The Upper Big Sioux River Watershed Project has amended the PIPs for this and previous project segments to meet landowner requests and changing implementation costs in order to get the most benefit from the funds available. Every attempt is made to prioritize the benefits to be gained by selecting the most needed BMP. For example, this grant amended streambank stabilization to include shore stabilization. All soil from bank erosion directly enters the lakes whereas streambank erosion loadings may bypass the lakes because of the diversions in place at the inlets. Prioritization of selected BMP sites was determined by the Board of Directors who used AGNPS ratings in the prioritization process.

5. MONITORING RESULTS

Water quality in the Upper Big Sioux River Watershed Project has been monitored since 1991 for EPA 319 Assessment and Implementation Projects. The early data collected led to the implementation phase of this project. Monitoring is being conducted during the implementation project segments to track and evaluate project activities and detemermine load reductions realized.

To assure complete, accurate, representative and comparable data that are of known quality, technically sound, statistically accurate, properly documented and representative of the media being measured water quality monitoring is guided by “Standard Operating Procedures for Field Samplers” was used as a sampling guide manual.

The Upper Big Sioux River Watershed Advisory Board approved limited water monitoring with this grant. The sampling and analysis plan for this project segment was reduced because of very few flow events during a drought period. Our focus was limited to analysis of bacteria in Lake Kampeska. A sampling project conducted by East Dakota Water Project District in the City of Watertown was completed during this project segment. Results are available from EDWDD.

It was decided that water samples from Lake Kampeska that showed a fecal coliform bacteria count of greater than 300 MPN/110ml would be sent to Source Molecular in Florida for DNA testing. The South Dakota Department of Health did not offer this test; the state lab has since developed the capacity. Beginning with the 2005 season, source tracking determinations will be made by the state lab. Seven samples were sent to Source Molecular during this project. Bacterial source tracking determinations for Lake Kampeska water quality samples with E. Coli Bacteria levels over 250 MPN/100mL revealed that all samples except one were animal in origin and one may have been human. These tests will be continued during subsequent project segments.

SD DENR conducted water quality monitoring activities on the Big Sioux River upstream from Watertown during the project period. The results indicated low oxygen readings during low water periods. For additional information contact DENR.

Total load reductions achieved were determined during an Annual Agricultural Non-Point Source Model run. The results of several runs using the original AGNPS model and the newer AAGNPS, indicate that annual loads entering the lakes were reduced by 9,2971.43 pounds of phosphorus and 5,106 pounds of sediment. These estimates were based on a 25-year average rainfall data. The project continues to work with the DENR to pinpoint the accuracy of this report. Results will be reported in our next two GRTS reports.

Water quality monitoring was also conducted by volunteers participating in the South Dakota Citizen Water Quality Monitoring Program. The Secchi disk and pH readings taken by program participants indicate that there has been a gradual improvement in Lake Kampeska water quality.

6. COORDINATION EFFORTS

The Upper Big Sioux River Watershed Project has continued to partner with non-governmental agencies as well as federal and state agencies to gain maximum efficiency from financial and technical assistance sources that are compatible with the project. Local support for the project is high.

- Operation and maintenance surveys have been completed over the years. No major problems have been noted concerning the Best Management Practices implemented. All practices are constructed to the standards recommended by the Natural Resources Conservation Service. Cooperation with the NRCS Animal Nutrient Management Team and resource technicians was an integral part of the operations.

- The SD Department of Environment and Natural Resources administered the project grant and provided technical assistance on matters pertaining to water quality.

- The USDA Farm Service Agency provided cost-share funds through the Environmental Quality Incentive Plan, Wildlife Habitat Incentive Program, Wetland Reserve, Conservation Reserve Program, and the Floodplain Easement Program. Although these programs are not directly a part of the project, they play a vital role in keeping water resources clean.

- The US Fish and Wildlife Service assisted the project by providing technical assistance and cost share funds for small ponds and dams.

- The Lake Kampeska Water Project District provided water quality information, shoreline protection assistance and has been a major source of local matching funds. The Lake Pelican Water Project District withdrew from the project. It has been replaced by the Lake Pelican Preservation Society to assist in prioritizing in-lake activities.

- The Codington Conservation District provided cost-share assistance on practices and worked with the project on tree planting and crop residue management.

- The Natural Resources Conservation Service provided technical assistance in the construction of waterways, animal waste systems, and small ponds.

- The City of Watertown provides most of the matching funds for all segments of this project.

- The Upper Big Sioux River Watershed Project works closely with the Lake Poinsett project to conduct information and education programs. We combine our efforts and strategies on shoreline restoration and grassland education.

- The Terry Redlin Fresh Water Institute provides the city with a growing education program. Coordinated efforts on riparian and wetland education are popular in the community.

7. PUBLIC PARTICIPATION

Volunteers came forward to help conduct water quality assessments, establish public forums, and donate funds for conservation awards, publications, and education programs. The Kampeska Chapter of the Izaak Walton League of America conducted a silt survey test during the winters of 1989-1991. Silt accumulations were measured on 4,800 acres of the lake bottom. Several thousand man- and equipment-hours were donated to the project. The Chapter secured local matching funds to begin the Diagnostic Feasibility Study that resulted in five EPA 319 grants. Members of the Lake Kampeska Water Project District and the Lake Pelican Water Project District completed preliminary sediment determinations at 52 test holes in Pelican Lake. The districts assisted the US Geological Survey with a more comprehensive survey to determine the amount and distribution of sediment in Lake Pelican.

The lake associations conduct monthly water sampling through the Citizen's Water Quality Monitoring Program managed by the South Dakota Lakes and Streams. The SD 319 Information and Education Project grant provides monitoring equipment and pays lab costs for the program.

The community continues to assist with in-kind services to the project and the information and education programs. Volunteers continue to be involved in teaching outdoor conservation and wetland classes. These education programs are taught to the third grade, sixth grade, middle school, high school, conservation class at Mount Marty College and an adult series through the Terry Redlin Institute. The City of Watertown, the project sponsor, handled all invoices, vouchers, and records. The city's independent auditing service checked fund records annually at no cost to the project. This service could easily account for twenty-five thousand dollars of in-kind for this grant project.

8. PROJECT INSIGHTS

Two extensive floods during the project period polarized the urban and the rural communities. Floodwaters caused about $30,000,000 in damages in the watershed and the city. The National Guard was called out twice to help the citizens of Watertown. FEMA and the Governor of South Dakota instructed the city to find a solution to the flooding or the state would no longer provide assistance. Polarization developed over how to solve the problem. Even though water quality is a different issue, the program's success is based on volunteerism. This illustrates how important it is to have all stakeholders working toward the same goal.

The overall response from the rural watershed was excellent. Landowners were involved with the development of the PIP and have been kept up-to-date concerning project progress with an annual newsletter, press releases and one-on-one contact. Curious neighbors are always on hand during the completion of construction projects.

The largest hurdle to program success that must be overcome is one of economics. To solve this problem, the project sponsor added cost share that funded all practices except shoreline stabilization to 90 percent. In some cases, however, in-kind labor can reduce economic impacts to the landowner. The more the project can assist the landowner, the more they will participate. The best way to communicate is one-on-one at the farm/ranch headquarters. Bulk mailings were the least successful method of getting a response. Producer acceptance has been good in the target areas, but volunteers came from the entire watershed. (See Table 6). Time limitation of grant periods dictates allocation of some funds to volunteers on board when targeted producers are reluctant volunteers. A little more than one-half of the targeted producers are participating to date.

During past segments, the UBSRWP learned that to be successful there are very important do-and-do-not actions. Different regions of the state have different needs and different climates. A list of lessons learned during the first four segments follows.

- Always include every stakeholder that is affected by the problem. Involve them up front when the project is being proposed. Leave no stone unturned in finding the people who should be involved.

- Apply cost-share packages that are good incentives. Be creative enough so that financial integrity is maintained, but the whole community benefits along with the producer.

- Listen carefully to the potential cooperator. Apply the program to fit what he sees as his specific conservation needs. Try not to make him fit your needs without a win-win outcome.

- Maintain a strong trust with the cooperators. Make every effort to live up to what you promise. Always keep the door open to their needs.

- Make certain that the producer knows what to expect from project staff and the contractor, and what his role is in completing the practice. Show the producer other projects that are similar, so he sees a finished product before work begins on his practice.

- A project could have an effect on a neighboring producer. Have the cooperator tell his neighbor what he plans to do so the neighbor has a chance to voice any concerns. It could be a way to gain another cooperator.

Table 6. Cumulative total BMPs Installed by Subwatershed(1994-2005)

SUBWATERSHED	UPPER SIOUX	INDIAN RIVER	MIDDLE SIOUX	SOO CREEK	MAHONEY	STILL LAKE	LOWER SIOUX	MUD	KAMPESKA	PELICAN	TOTAL
PRACTICE											
ALT LIVESTOCK WATER	0	0	0	1	0	0	2	1	0	0	4
ANIMAL NUTRIENT MGT	5	0	3	3	3	1	1	8	3	1	28
CROP RESIDUE MGT	6	5	7	6	2	10	4	14	8	0	62
FILTERSTRIP	1	0	0	0	0	0	0	2	0	0	3
GRASSED WATERWAY	3	3	3	5	2	1	0	23	0	2	42
GRAZING MGT	8	3	3	0	2	0	1	2	3	2	24
INTEGRATED CROP MGT	1	0	0	0	0	0	1	1	1	0	4
MANURE APP MGT	2	0	0	1	0	0	0	2	1	0	6
RIPARIAN	0	0	0	0	0	0	1	1	0	0	2
SHORELINE	0	0	0	0	0	0	0	0	44	29	73
SMALL PONDS	33	29	54	33	16	9	18	99	17	11	319
STREAMBANK	1	0	1	0	0	0	1	3	1	2	9
WETLAND RESTORATION	0	0	0	0	0	0	0	0	2	1	3
TOTAL	**60**	**40**	**71**	**49**	**25**	**21**	**29**	**156**	**80**	**48**	**579**

9. PROJECT BUDGET / EXPENDITURES

A Project Implementation Plan was developed for this project based on previous experience. The budget for this plan was estimated based on previous landowner acceptance and practices that would provide the best water quality improvement. Construction is limited to a six or seven month season and contractors are seasonally hard to find.

During this project we were required to move from the USDA building to a city owned facility. A majority of the miscellaneous expenses listed were to support that move and resulting utility costs.

Table 7. Budget For Individual Tasks

PRACTICE CATEGORY Objective/Task/Product Numbers follow Practice)	ORIGINAL BUDGET AUGUST 2001	BUDGET TOTAL REVISED JANUARY 2005	ACTUAL EXPENDITURES MARCH 2005
ALT LIVESTOCK WATER (2.2.4B)	$105,000	$20,922.12	$9,248.20
ANIMAL NUTRIENT MGT (1.1.2)	$490,000	$642,142.27	$845,315.90
GRASSED WATERWAY (2.2.4A)	$120,000	$74,611.51	$41,699.15
GRAZING MGT (1.1.1)	$110,280	$92,347.41	$65,808.19
INFO & ED (2.2.6)	$12,000	$9,192.26	$6,910.94
MANURE APPLICATION MGT(1.1.3)	$100,000	$62,097.12	$33,277.77
SMALL PONDS/DAMS (2.2.4C)	$218,103	$209,057.73	$200,633.81
STREAMBANK STABIL 2.2.5)	$317,438	$216,906.38	$277,247.77
MISC	$11,558	$37,982.00	$43,671.85
WATER MONITORING (2.2.7)	$11,102	$7,087.50	$1,599.80
TECH ASSISTANCE	$116,642	$150,954.39	$156,416.46
SALARIES	$165,650	$229,472.31	$232,306.07
TOTAL	**$1,777,773**	**$1,752,773.00**	**1,914,135.91**

Table 8. Non Federal Budget

PRACTICE CATEGORY	ORIGINAL AUGUST 2001	REVISED JANUARY 2005	ACTUAL MARCH 2005
ALT LIVESTOCK WATER (2.2.4B	$46,200	$17,144.43	$5,470.51
ANIMAL NUTRIENT MGT (1.1.2)	$215,600	$220,817.93	$239,512.48
GRASSED WATERWAY (2.2.4A)	$52,800	$54,697.64	$21,785.28
GRAZING MGT (1.1.1)	$65,324	$65,324.00	$38,784.78
INFO & ED (2.2.6)	$5,280	$5,280.00	$2,921.90
MANURE APPLICATION MGT(1.1.3)	$44,000	$44,000.00	$15,180.65
SMALL PONDS/DAMS (2.2.4C)	$90,642	$79,612.41	$65,695.14
STREAMBANK STABIL (2.2.5)	$127,228	$110,197.59	$121,538.98
MISC	$5,280	$30,280.00	$35,304.95
WATER MONITORING (2.2.7)	$6,102	$6,102.00	$614.30
TECH ASSISTANCE	$25,217	$25,217.00	30,679.07
SALARIES	$78,450	$78,450.00	$81,283.76
TOTAL	**$762,123**	**$737,123.00**	**$658,771.80**

As this segment neared completion it became necessary to amend the budget because of unforeseen miscellaneous expenses related to our new office headquarters. The city provides the facility rent-free, but utilities are the responsibility of the watershed project. (See section 4 page 12)

Rising construction costs due to high fuel prices, steel, concrete, and pipe led to approved budget amendments by the SD DENR and EPA. These are included in our GRTS reports of 2004.

10. RESULTS AND FUTURE ACTIVITY RECOMMENDATIONS

Recreation in the Upper Big Sioux River Watershed consists mainly of hunting, fishing, and other activities such as swimming, water skiing, camping and boating. A large majority of these activities occur along the Big Sioux River and around Lakes Kampeska and Pelican. Recreation in the watershed, based on information collected from these three areas, is approximately 133,157 user days per year. A National Economic Development model (NED) sets the value for recreation at $638,552 annually. The Regional Economic Development (RED) impact of recreation to Watertown and the surrounding region is estimated to be $3,960,089 per year. Available residential and commercial property surrounding Lake Kampeska is nearly 100 percent developed. Future construction will occur as remodeling or upgrading, since few undeveloped lots remain. The Codington County Director of Equalization estimate of the 2004 assessed value of all property and buildings surrounding Lake Kampeska was $106,026,446.
Lake Pelican property values are much smaller than those for Lake Kampeska. The total property values at Lake Pelican are estimated at $13,590,231 (March 2005). There is a potential for residential lot development along the shores; however, this will be limited by the amount of private land available. The South Dakota Department of Game, Fish and Parks owns a large portion of Lake Pelican shoreline. The RED estimates a recreation value of $313,315 per year for Lake Pelican. (PL-566 Study, May 2000)

The major factor in long-term property valuations and recreational benefits will most likely be that of water quality. The City of Watertown currently obtains 40 percent of its drinking water from Lake Kampeska.

There are several park areas around Lake Kampeska and Lake Pelican that serve as centers of recreational activity. There are two state parks, three city parks, one county park and one private park. These parks have camping facilities, boat ramps, swimming beaches, picnic facilities, bath houses and storm shelters.

At the beginning of the project Lake Kampeska was the most fished lake in northeast South Dakota. The sport fishery was centered around the walleye which is the most sought after game fish in the state. Recent high water levels have greatly enhanced the fisheries on Lake Pelican, which could be attributable in part to the Upper Big Sioux River Watershed Project successes. Sport fishing has added $3,300,000 annually to the local economy.

Lake Kampeska displayed a notable improvement in algae blooms the past two summer seasons. Lake residents and the local newspaper noted only minor blooms in 2003 and no major blue-green algae bloom on Lake Kampeska in 2004. This has prompted the project to take comprehensive in-lake samples of Kampeska in 2005 to compare phosphorus load samples taken in 1992. An Annual AGNPS report is in progress to estimate load reductions from all grant segments.

Local citizens are researching the possibility of using the Kampeska pumping facility, currently used for drinking water supplies, as an algae skimming tool. The Municipal Utilities plans to discontinue using Kampeska as a drinking water source in 2008 or until water quality in the lake improves enough to be reconsidered. Studies will proceed on the feasibility of this idea through the community “Focus 2015” presented in April of 2005.

Although water sampling was not included as part of the current project, a comprehensive monitoring project was completed by the East Dakota Water Project District and the city. The SD DENR conducted regular watershed water samples above the city. The project segment has been implemented in accordance with the South Dakota Nonpoint Source Management Plan.

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FINAL REPORT
EXPENDITURES DETAIL

The following table shows the breakdown by funding sources for each of the practices as well as the total spent and budget amounts for each funding source.

Abbreviations for the funding sources:

EPA – US Environmental Protection Agency

USFWS – US Fish and Wildlife Service

FSA – USDA Farm Services Agency

NRCS – USDA Natural Resources Conservation Service

GF&P – SD Game, Fish and Parks

DENR – SD Department of Environment and Natural Resources

CITY – City of Watertown, SD

COD CO – Codington County, SD

CCD – Codington Conservation District, Watertown, SD

KWPD – Kampeska Water Project District, Watertown, SD

DU – Ducks Unlimited

OP$$ - Operator Cash

OP IK – Operator In Kind Contribution

OTHER IK – Other In Kind Contribution

Upper Big Sioux River Watershed Project FY01 EPA 319 Grant

APPENDIX A

FINAL BUDGET REPORT

Federal and State Funding Sources/Practices

PRACTICE	COST	EPA 319	USFWS	FSA	NRCS	GF&P	DENR
ALT. LIVESTOCK WATER	$ 9,248.20	$ 3,777.69	$ -	$ -	$ -	$ -	$ -
ANIMAL NUTRIENT MGT SYS	$ 845,315.90	$ 427,582.66	$ -	$ 178,220.76	$ -	$ -	$ -
GRASSED WATERWAY	$ 41,699.15	$ 19,913.87	$ -	$ -	$ -	$ -	$ -
GRAZING MANAGEMENT	$ 65,808.19	$ 27,023.41	$ -	$ -	$ -	$ -	$ -
MANURE APPLICATION MGT	$ 33,277.77	$ 18,097.12	$ -	$ -	$ -	$ -	$ -
SMALL DAM/BASIN	$ 200,633.81	$ 129,445.32	$ -	$ 3,454.99	$ -	$ 2,038.36	$ -
STREAM/LAKE STABILIZATION	$ 277,247.77	$ 99,708.79	$ -	$ -	$ -	$ 56,000.00	$ -
SALARY	$ 232,306.07	$ 151,022.31	$ -	$ -	$ -	$ -	$ -
TECHNICAL/ENGINEERING ASST	$ 156,271.30	$ 110,087.39	$ -	$ -	$ 15,650.00	$ -	$ -
TECH ASST EXPENSES HSS	$ 145.16	$ -	$ -	$ -	$ -	$ -	$ -
INFORMATION/EDUCATION	$ 6,910.94	$ 3,989.04	$ -	$ -	$ -	$ -	$ -
MISCELLANEOUS	$ 36,406.22	$ 4,718.31	$ -	$ -	$ -	$ -	$ -
PHONE - LONG DIST CENTREX	$ 515.63	$ 162.94	$ -	$ -	$ -	$ -	$ -
PHONE - MONTHLY QWEST	$ 996.56	$ 451.28	$ -	$ -	$ -	$ -	$ -
PICKUP FUEL/LUBRICANTS	$ 2,653.26	$ 1,312.89	$ -	$ -	$ -	$ -	$ -
UTILITIES	$ 2,898.39	$ 1,632.60	$ -	$ -	$ -	$ -	$ -
VEHICLE MAINTENANCE	$ 201.79	$ 88.88	$ -	$ -	$ -	$ -	$ -
WATER MONITORING	$ 1,599.80	$ 985.50	$ -	$ -	$ -	$ -	$ -
TOTAL	$ 1,914,135.91	$ 1,000,000.00	$ -	$ 181,675.75	$ 15,650.00	$ 58,038.36	$ -
BUDGET	$ 1,752,773.00	$ 1,000,000.00		$ -	$ 15,650.00	$ -	

Upper Big Sioux River Watershed Project

APPENDIX A

FINAL BUDGET REPORT

Local Funding

PRACTICE	CITY	MUNICIPAL UTILITIES	COD CO	CCD	KWPD	DU	OP $$	OP IK	OTHER IK
ALT. LIVESTOCK WATER	$ -	$ 700.00	$ -	$ 944.43	$ 2,901.27	$ -	$ 924.81	$ -	$ -
ANIMAL NUTRIENT MGT SYS	$ 30,326.52	$ 78,345.73	$ 25,531.00	$ 10,217.93	$ 16,725.00	$ -	$ 78,099.76	$ 266.54	$ -
GRASSED WATERWAY	$ -	$ 8,139.30	$ 8,466.14	$ 1,897.64	$ -	$ -	$ 3,282.20	$ -	$ -
GRAZING MANAGEMENT	$ 10,623.85	$ 19,376.44	$ -	$ -	$ -	$ -	$ 5,776.06	$ 3,008.43	$ -
MANURE APPLICATION MGT	$ 45.96	$ 10,387.19	$ 47.91	$ -	$ 1,988.13	$ -	$ -	$ 1,582.00	$ 1,129.46
SMALL DAM/BASIN	$ 16,443.27	$ 19,257.62	$ 8,970.41	$ -	$ 3,908.00	$ -	$ 17,115.84	$ -	$ -
STREAM/LAKE STABILIZATION	$ 21,974.72	$ 22,052.52	$ 21,151.11	$ 1,940.00	$ 388.79	$ -	$ 51,064.95	$ 306.75	$ 2,660.14
SALARY	$ 33,525.76	$ 15,650.00	$ 30,500.00	$ -	$ 1,608.00	$ -	$ -	$ -	$ -
TECHNICAL/ENGINEERING ASST	$ 3,113.81	$ 25,217.00	$ -	$ -	$ 2,203.10	$ -	$ -	$ -	$ -
TECH ASST EXPENSES HSS	$ -	$ -	$ -	$ -	$ 145.16	$ -	$ -	$ -	$ -
INFORMATION/EDUCATION	$ 353.30	$ 2,568.60	$ -	$ -	$ -	$ -	$ -	$ -	$ -
MISCELLANEOUS	$ 6,650.26	$ 15,473.90	$ 9,500.00	$ -	$ 63.75	$ -	$ -	$ -	$ -
PHONE - LONG DIST CENTREX	$ 352.69	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
PHONE - MONTHLY QWEST	$ 545.28	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
PICKUP FUEL/LUBRICANTS	$ 1,340.37	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
UTILITIES	$ 1,239.69	$ 26.10	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VEHICLE MAINTENANCE	$ 112.91	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
WATER MONITORING	$ 545.50	$ -	$ -	$ -	$ 68.80	$ -	$ -	$ -	$ -
TOTAL	$ 127,193.89	$ 217,194.40	$ 104,166.57	$ 15,000.00	$ 30,000.00	$ -	$ 156,263.62	$ 5,163.72	$ 3,789.60
BUDGET	$ 150,000.00	$ 270,000.00	$ 125,000.00	$ 15,000.00	$ 30,000.00		$ 147,123.00		

Upper Big Sioux River Watershed Project

APPENDIX A

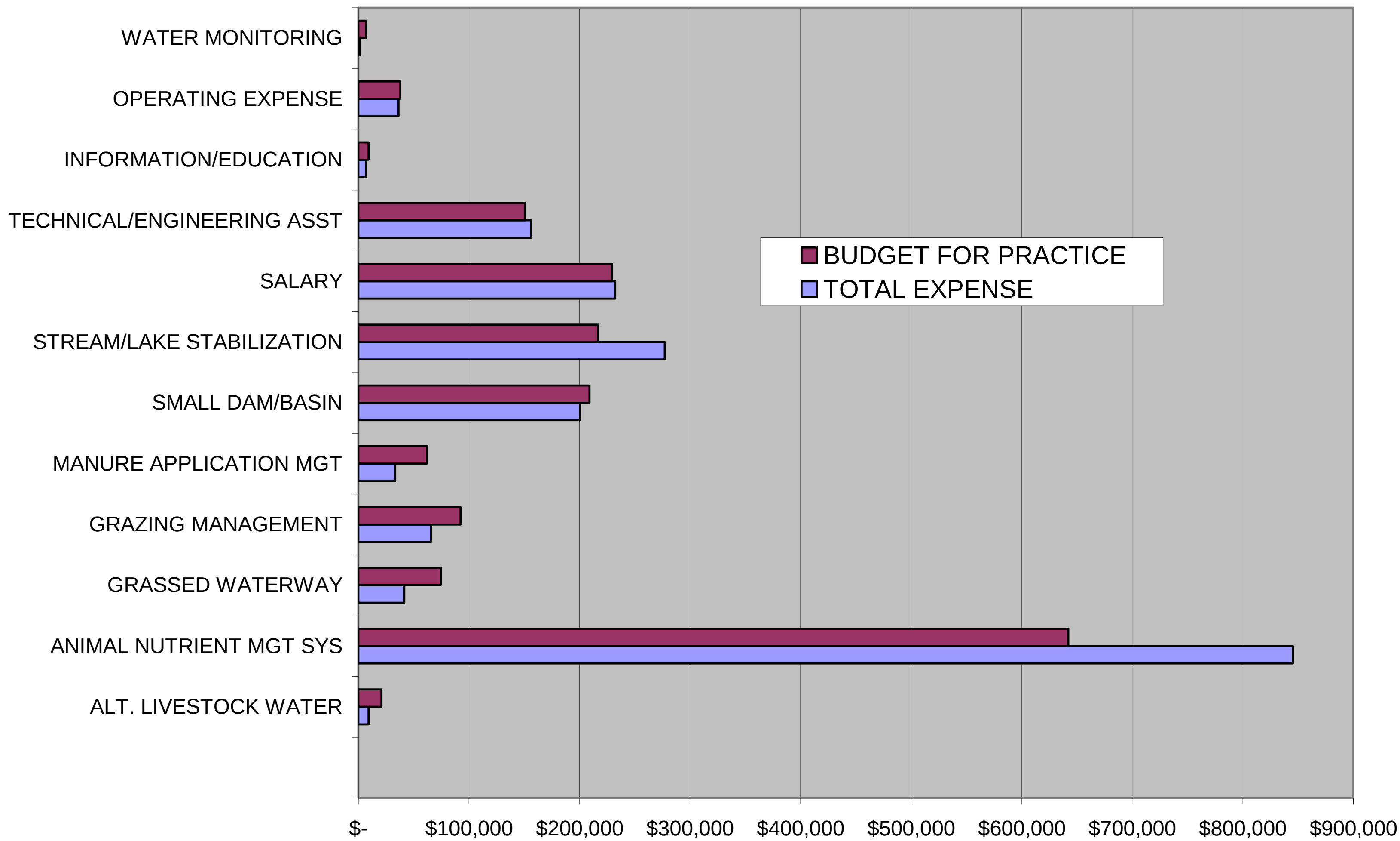
FINAL BUDGET REPORT

PRACTICE	FEDERAL TOTAL	STATE TOTAL	LOCAL TOTAL	TOTAL EXPENDITURE	BUDGET FOR PRACTICE	BALANCE REMAINING
ALT. LIVESTOCK WATER	$ 3,777.69	$ -	$ 5,470.51	$ 9,248.20	$ 20,922.12	$ 11,673.92
ANIMAL NUTRIENT MGT SYS	$ 605,803.42	$ -	$ 239,512.48	$ 845,315.90	$ 642,142.27	$ (203,173.63)
GRASSED WATERWAY	$ 19,913.87	$ -	$ 21,785.28	$ 41,699.15	$ 74,611.51	$ 32,912.36
GRAZING MANAGEMENT	$ 27,023.41	$ -	$ 38,784.78	$ 65,808.19	$ 92,347.41	$ 26,539.22
MANURE APPLICATION MGT	$ 18,097.12	$ -	$ 15,180.65	$ 33,277.77	$ 62,097.12	$ 28,819.35
SMALL DAM/BASIN	$ 132,900.31	$ 2,038.36	$ 65,695.14	$ 200,633.81	$ 209,057.73	$ 8,423.92
STREAM/LAKE STABILIZATION	$ 99,708.79	$ 56,000.00	$ 121,538.98	$ 277,247.77	$ 216,906.38	$ (60,341.39)
SALARY	$ 151,022.31	$ -	$ 81,283.76	$ 232,306.07	$ 229,472.31	$ (2,833.76)
TECHNICAL/ENGINEERING ASST	$ 125,737.39	$ -	$ 30,533.91	$ 156,271.30	$ 150,954.39	$ (5,316.91)
TECH ASST EXPENSES HSS	$ -	$ -	$ 145.16	$ 145.16		$ (145.16)
INFORMATION/EDUCATION	$ 3,989.04	$ -	$ 2,921.90	$ 6,910.94	$ 9,192.26	$ 2,281.32
MISCELLANEOUS	$ 4,718.31	$ -	$ 31,687.91	$ 36,406.22	$ 37,982.00	$ (5,689.85)
PHONE - LONG DIST CENTREX	$ 162.94	$ -	$ 352.69	$ 515.63		
PHONE - MONTHLY QWEST	$ 451.28	$ -	$ 545.28	$ 996.56		
PICKUP FUEL/LUBRICANTS	$ 1,312.89	$ -	$ 1,340.37	$ 2,653.26		
UTILITIES	$ 1,632.60	$ -	$ 1,265.79	$ 2,898.39		
VEHICLE MAINTENANCE	$ 88.88	$ -	$ 112.91	$ 201.79		
WATER MONITORING	$ 985.50	$ -	$ 614.30	$ 1,599.80	$ 7,087.50	$ 5,487.70
TOTAL	$ 1,197,325.75	$ 58,038.36	$ 658,771.80	$ 1,914,129.91	$ 1,752,773.00	$ (161,356.91)
BUDGET	$ 1,015,650.00	$ -	$ 737,123.00	$ 1,752,773.00		

APPENDIX B

Budget to Cost Comparison

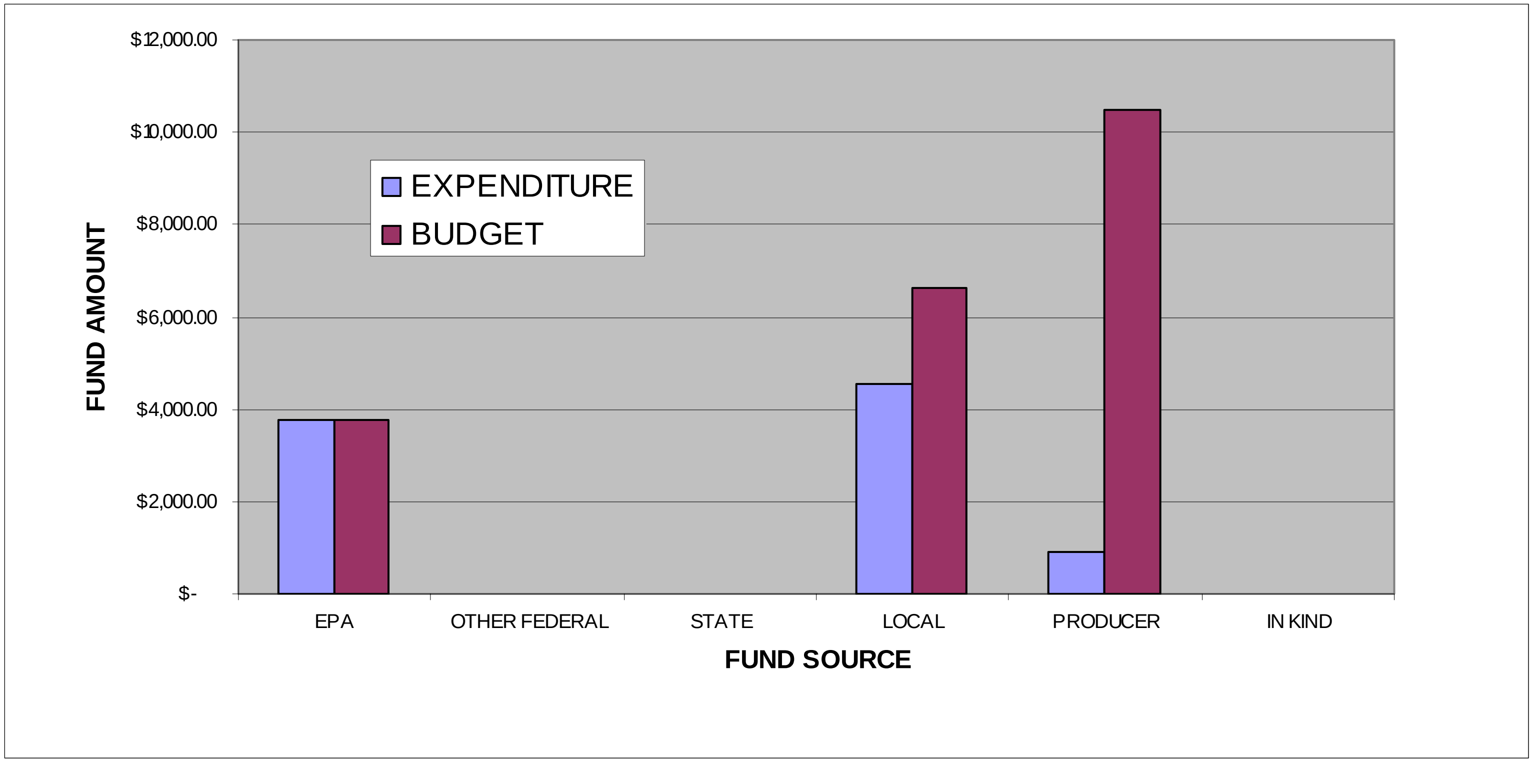
BUDGET / EXPENSE COMPARISON



APPENDIX C

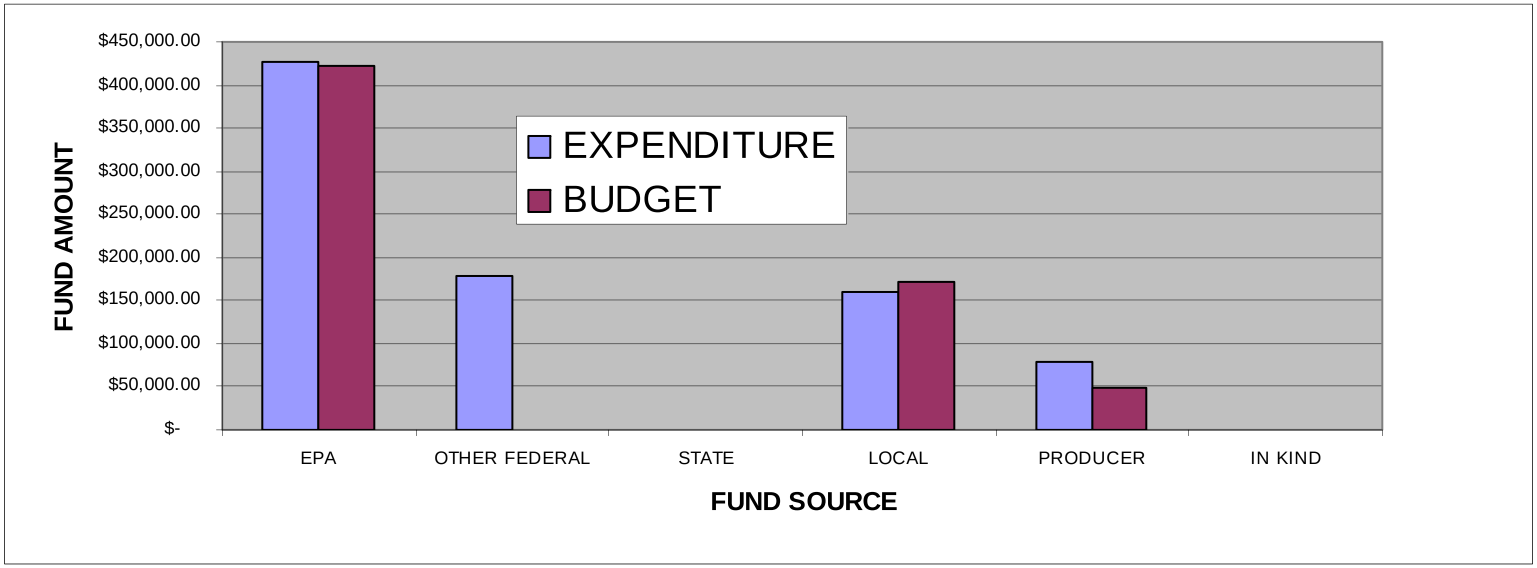
Individual
Best Management Practice
Expenditures

FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 9,248.20	3	15	$ 3,082.73	$ 1,914,129.91	$ 20,922.12
EPA	$ 3,777.69	2	15	$ 1,888.85	$ 1,000,000.00	$ 3,777.69
OTHER FEDERAL	$ -				$ 197,325.75	$ -
STATE	$ -				$ 58,038.36	$ -
LOCAL	$ 4,545.70	3	15	$ 1,515.23	$ 493,548.86	$ 6,644.43
PRODUCER	$ 924.81	3	15	$ 308.27	$ 161,427.34	$ 10,500.00
IN KIND	$ -				$ 3,789.60	$ -
TOTALS	$ 9,248.20				$ 1,914,129.91	$ 20,922.12

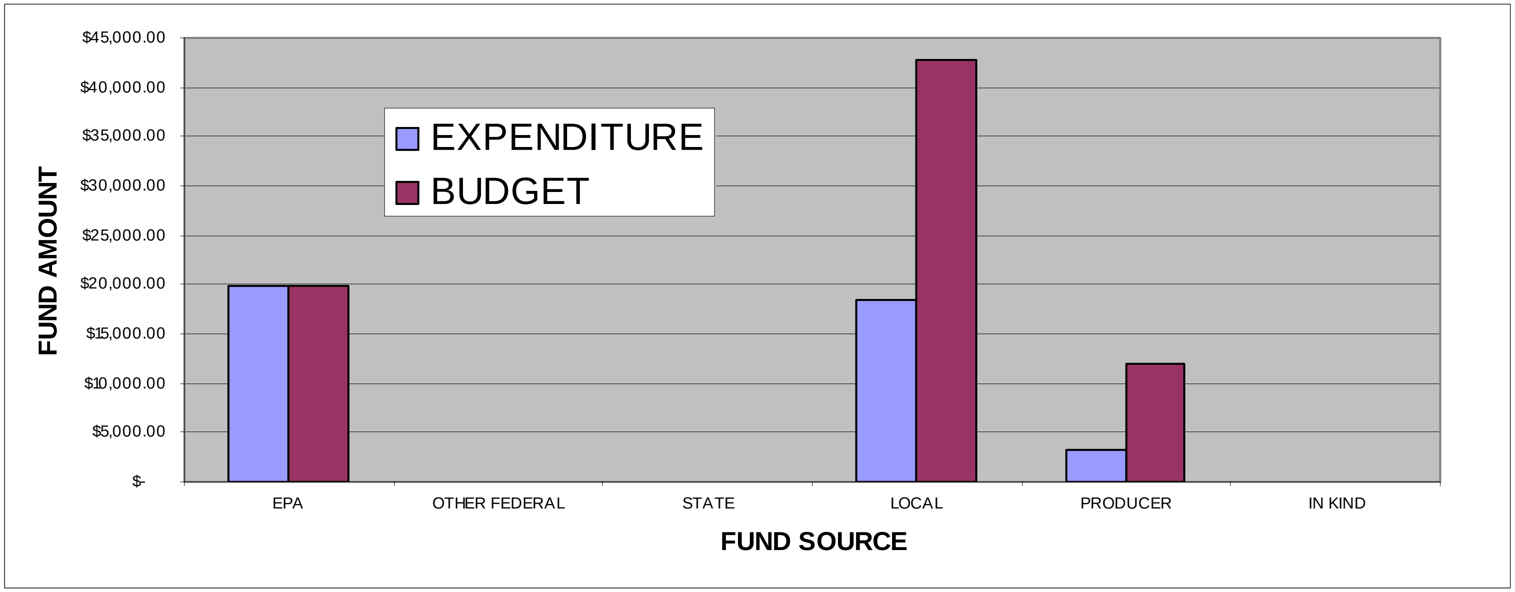


Alternative Livestock Water Practice

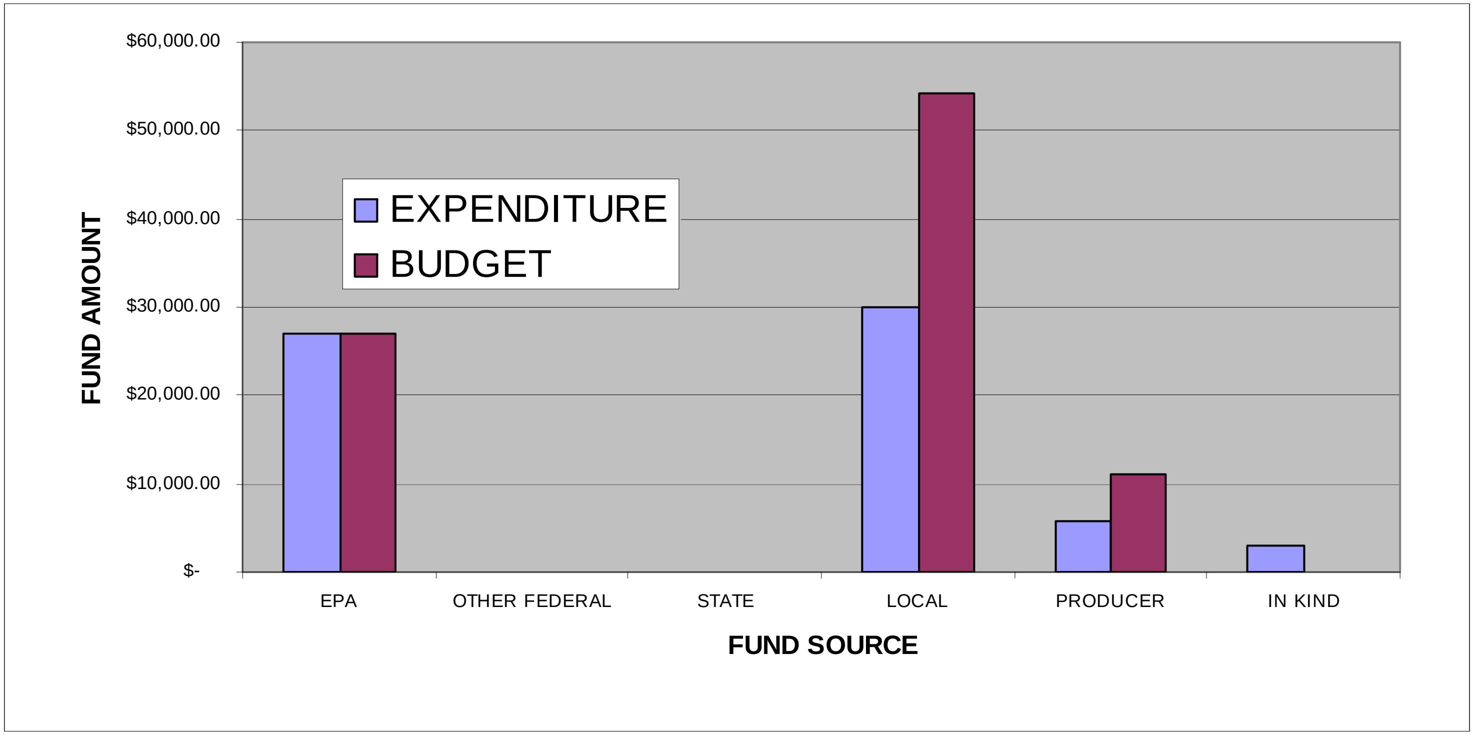
FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 845,315.90	8	20	$ 105,664.49	$ 1,914,129.91	$ 642,142.27
EPA	$ 427,582.66	8	20	$ 53,447.83	$ 1,000,000.00	$ 421,324.34
OTHER FEDERAL	$ 178,220.76	2	20	$ 89,110.38	$ 197,325.75	$ -
STATE	$ -	0			$ 58,038.36	$ -
LOCAL	$ 161,146.18	8	20	$ 20,143.27	$ 493,548.86	$ 171,817.93
PRODUCER	$ 78,366.30	8	20	$ 9,795.79	$ 161,427.34	$ 49,000.00
IN KIND	$ -				$ 3,789.60	
TOTALS	$ 845,315.90				$ 1,914,129.91	$ 642,142.27



FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 41,699.15	13	5	$ 3,207.63	$ 1,914,129.91	$ 74,611.51
EPA	$ 19,913.87	12	5	$ 1,659.49	$ 1,000,000.00	$ 19,913.87
OTHER FEDERAL	$ -				$ 197,325.75	$ -
STATE	$ -				$ 58,038.36	$ -
LOCAL	$ 18,503.08	13	5	$ 1,423.31	$ 493,548.86	$ 42,697.64
PRODUCER	$ 3,282.20	13	5	$ 252.48	$ 161,427.34	$ 12,000.00
IN KIND	$ -				$ 3,789.60	$ -
TOTALS	$ 41,699.15				$ 1,914,129.91	$ 74,611.51

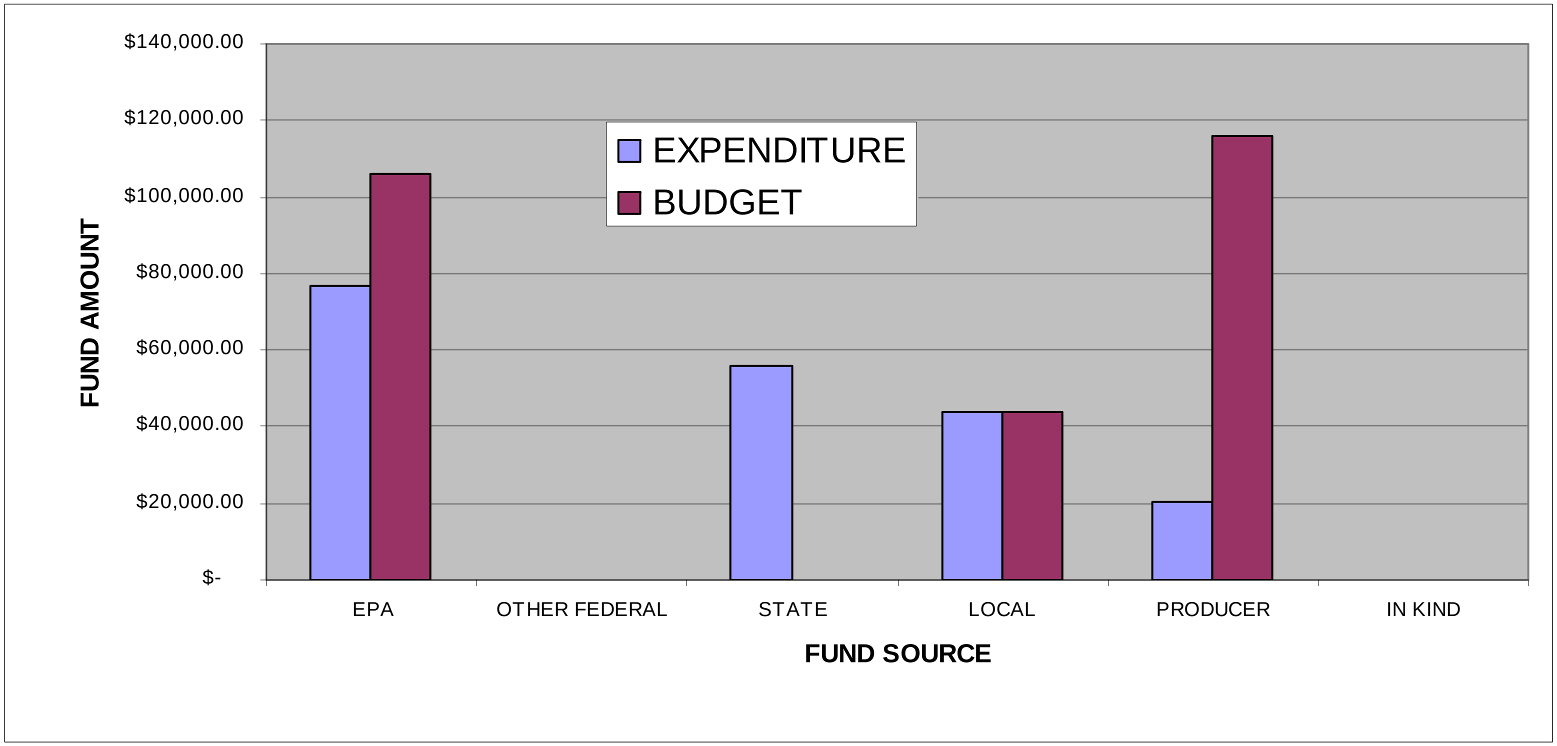


FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 65,808.19	10	10	$ 6,580.82	$ 1,914,129.91	$ 92,347.41
EPA	$ 27,023.41	8	10	$ 3,377.93	$ 1,000,000.00	$ 27,023.41
OTHER FEDERAL	$ -				$ 197,325.75	$ -
STATE	$ -				$ 58,038.36	$ -
LOCAL	$ 30,000.29	10	10	$ 3,000.03	$ 493,548.86	$ 54,296.00
PRODUCER	$ 5,776.06	10	10	$ 577.61	$ 161,427.34	$ 11,028.00
IN KIND	$ 3,008.43	4	10	$ 752.11	$ 3,789.60	$ -
TOTALS	$ 65,808.19				$ 1,914,129.91	$ 92,347.41

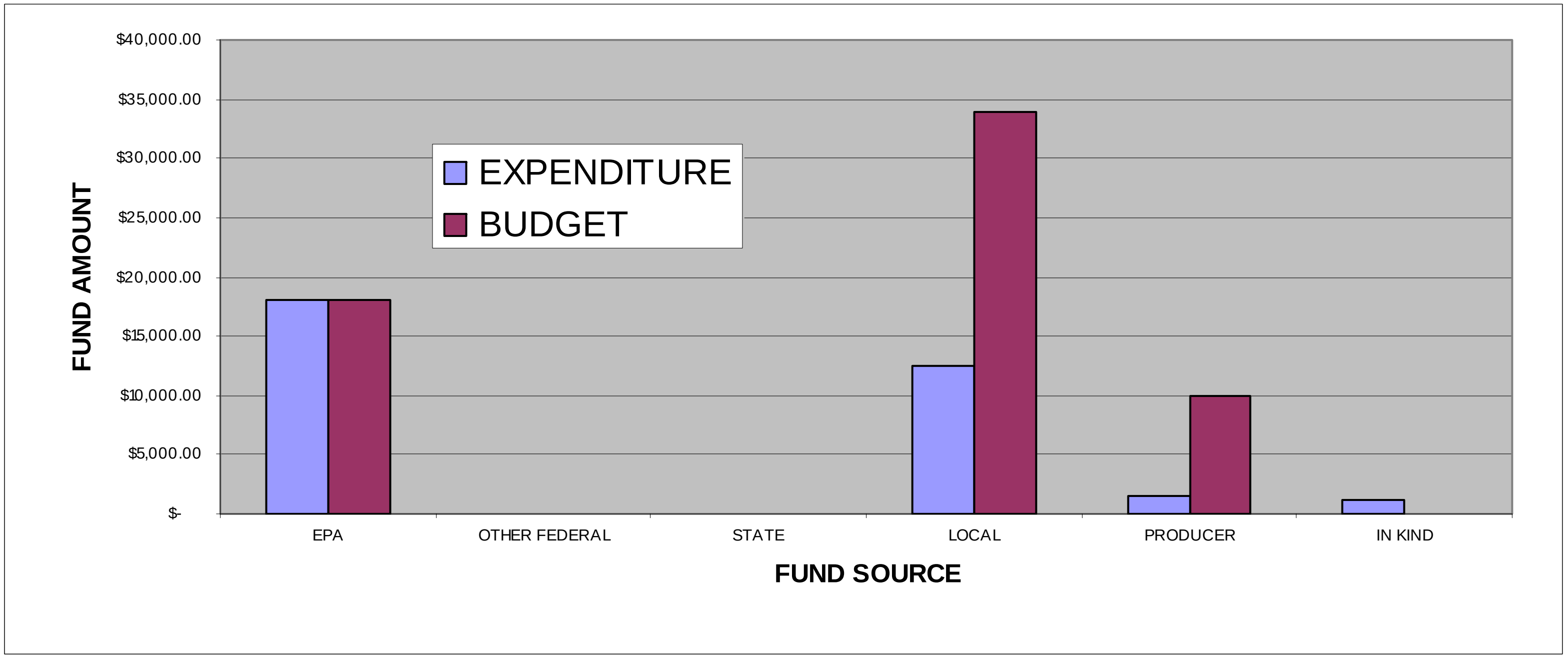


Grazing Management Practice
Appendix C - 5

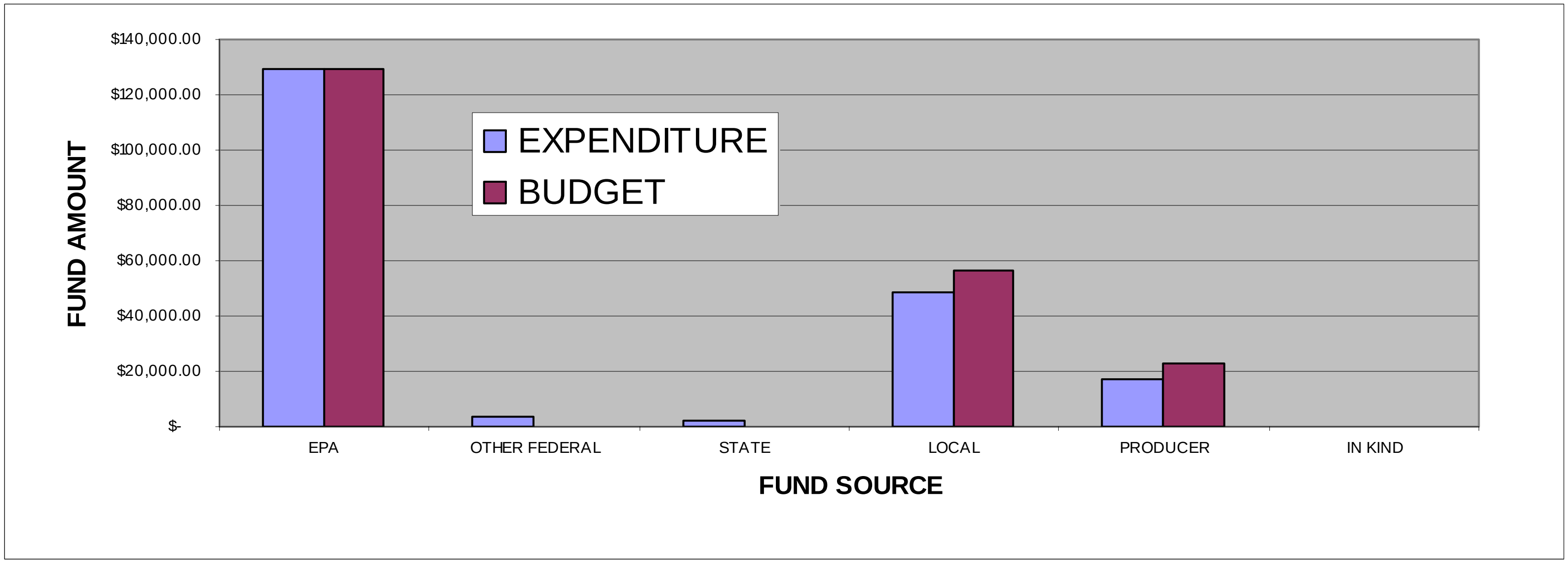
FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 197,564.86	14	20	$ 14,111.78	$ 1,914,129.91	$ 266,000.00
EPA	$ 76,972.48	14	20	$ 5,498.03	$ 1,000,000.00	$ 106,000.00
OTHER FEDERAL	$ -				$ 197,325.75	$ -
STATE	$ 56,000.00	1	20	$ 56,000.00	$ 58,038.36	$ -
LOCAL	$ 44,000.00	14	20	$ 3,142.86	$ 493,548.86	$ 44,000.00
PRODUCER	$ 20,592.38	13	20	$ 1,584.03	$ 161,427.34	$ 116,000.00
IN KIND	$ -				$ 3,789.60	$ -
TOTALS	$ 197,564.86				$ 1,914,129.91	$ 266,000.00



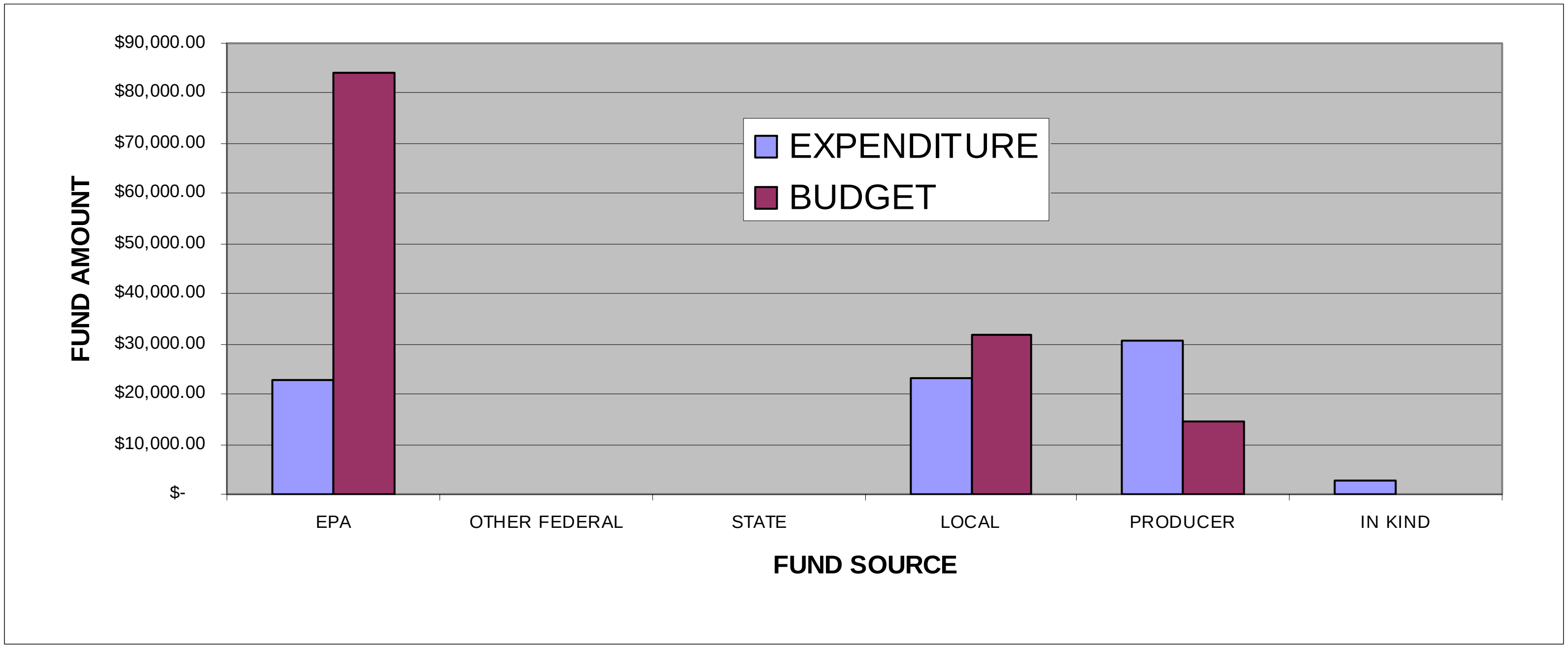
FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 33,277.77	5	Ongoing	$ 6,655.55	$ 1,914,129.91	$ 62,097.12
EPA	$ 18,097.12	5	Ongoing	$ 3,619.42	$ 1,000,000.00	$ 18,097.12
OTHER FEDERAL	$ -				$ 197,325.75	$ -
STATE	$ -				$ 58,038.36	$ -
LOCAL	$ 12,469.19	5	Ongoing	$ 2,493.84	$ 493,548.86	$ 34,000.00
PRODUCER	$ 1,582.00	5	Ongoing	$ 316.40	$ 161,427.34	$ 10,000.00
IN KIND	$ 1,129.46	2	Ongoing	$ 564.73	$ 3,789.60	$ -
TOTALS	$ 33,277.77				$ 1,914,129.91	$ 62,097.12



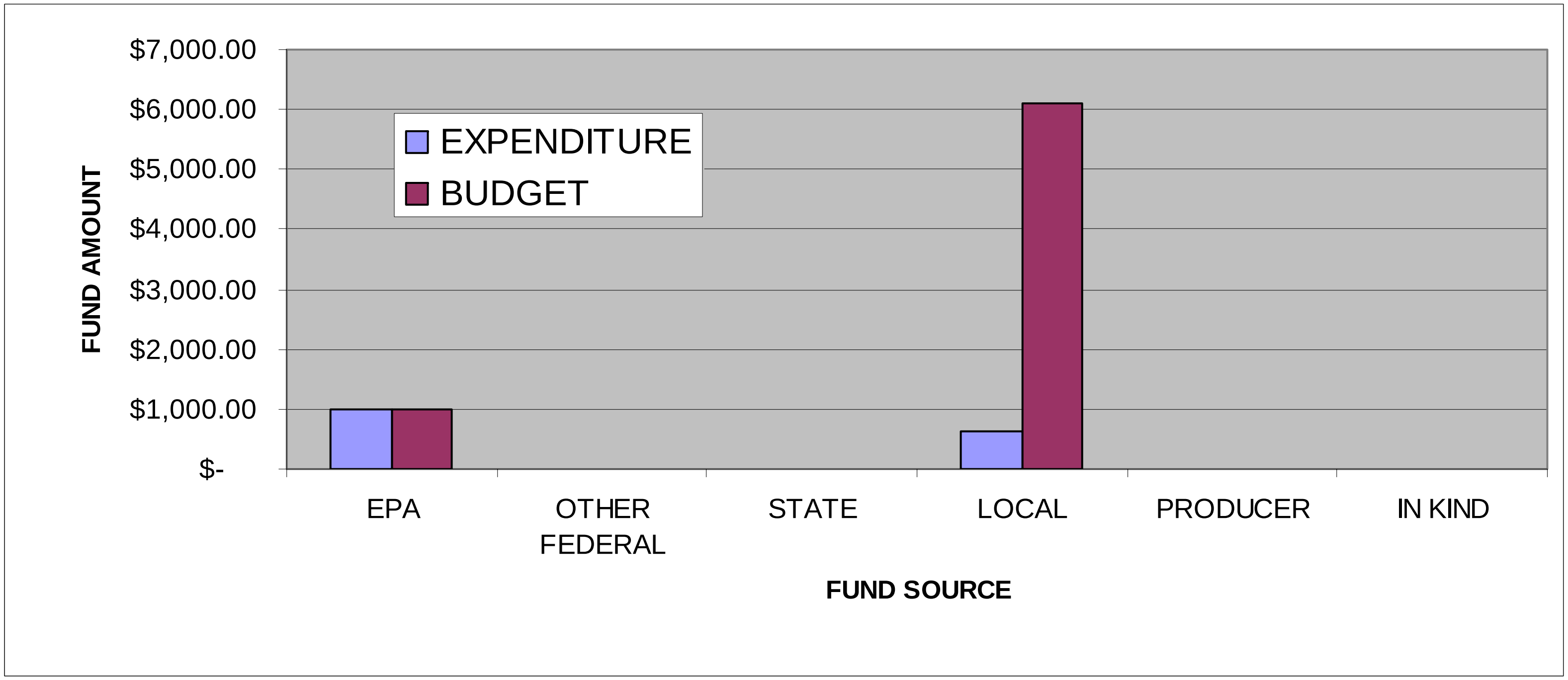
FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 200,633.81	132	15	$ 1,519.95	$ 1,914,129.91	$ 209,057.73
EPA	$ 129,445.32	131	15	$ 988.13	$ 1,000,000.00	$ 129,445.32
OTHER FEDERAL	$ 3,454.99	1	15	$ 3,454.99	$ 197,325.75	$ -
STATE	$ 2,038.36	1	15	$ 2,038.36	$ 58,038.36	$ -
LOCAL	$ 48,579.30	132	15	$ 368.03	$ 493,548.86	$ 56,761.41
PRODUCER	$ 17,115.84	132	15	$ 129.67	$ 161,427.34	$ 22,851.00
IN KIND					$ 3,789.60	$ -
TOTALS	$ 200,633.81				$ 1,914,129.91	$ 209,057.73



FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 79,512.92	5	20	$ 15,902.58	$ 1,914,129.91	$ 130,707.59
EPA	$ 22,736.31	3	20	$ 7,578.77	$ 1,000,000.00	$ 84,210.00
OTHER FEDERAL	$ -				$ 197,325.75	$ -
STATE	$ -				$ 58,038.36	$ -
LOCAL	$ 23,337.15	5	20	$ 4,667.43	$ 493,548.86	$ 32,029.59
PRODUCER	$ 30,559.32	5	20	$ 6,111.86	$ 161,427.34	$ 14,468.00
IN KIND	$ 2,880.14	2	20	$ 1,440.07	$ 3,789.60	$ -
TOTALS	$ 79,512.92				$ 1,914,129.91	$ 130,707.59



FUND SOURCE	TOTAL COST	NUMBER OF CONTRACTS	LIFE EXPECTANCY	AVERAGE COST	PROJECT TOTAL	BUDGET FOR PRACTICE
PRACTICE TOTAL	$ 1,599.80	7	ONGOING	$ 228.54	$ 1,914,129.91	$ 7,087.50
EPA	$ 985.50	5	ONGOING	$ 197.10	$ 1,000,000.00	$ 985.50
OTHER FEDERAL	$ -				$ 197,325.75	$ -
STATE	$ -				$ 58,038.36	$ -
LOCAL	$ 614.30	6	ONGOING	$ 102.38	$ 493,548.86	$ 6,102.00
PRODUCER	$ -	0			$ 161,427.34	$ -
IN KIND	$ -	0			$ 3,789.60	$ -
TOTALS	$ 1,599.80				$ 1,914,129.91	$ 7,087.50



APPENDIX D
FINAL REPORT
PROJECT
PHOTOGRAPHS

Animal Nutrient Management Systems

8 systems Completed

Before Construciton

During Construction

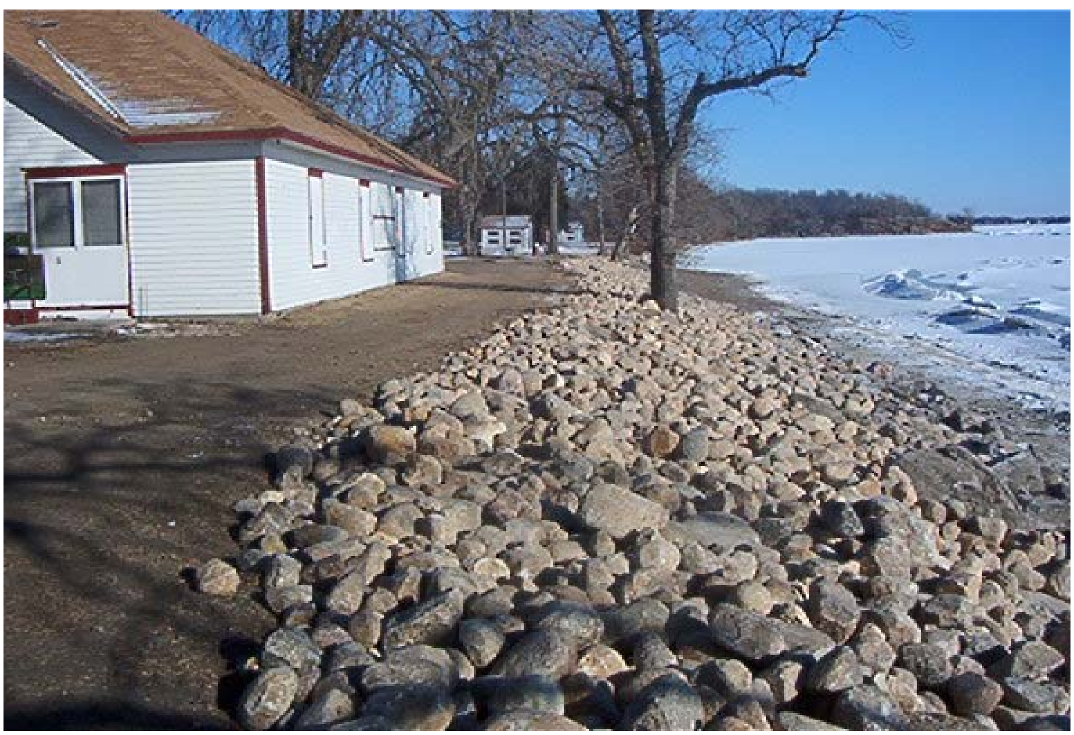
Completed System

Animal Nutrient Management Systems
8 systems Completed

Grassed Waterways
19,432 feet completed

Grazing Management
2,368 acres completed

Lake Shoreline Stabilization
3,921 feet stabilized



Manure Application Management
5 Cooperators

Small Ponds / Dams
132 units

Streambank Stabilization
1,960 Feet Stabilized

Water Monitoring
7 Samples