MIDDLE SHEYENNE RIVER WATERSHED

PHASE I

FY 2016

EPA
SECTION 319
PROJECT PROPOSAL

PROJECT NAME: Middle Sheyenne River Watershed Project

LEAD PROJECT SPONSOR: Wells County Soil Conservation District
P.O. Box 7
Fessenden, ND 58438
Phone: 701-547-3622 ext. 5

STATE CONTACT PERSON: Greg Sandness
North Dakota Dept. of Health
918 East Divide Ave
Bismarck, ND 58501-1947
Phone: 701-328-5232

STATE: North Dakota **WATERSHED**: Middle Sheyenne River Watershed

HYDROLOGIC UNIT CODE: 09020202 - 030,-050,-070

HIGH PRIORITY WATERSHED: No

PROJECT TYPE:	**WATER BODY TYPE:**	**NPS CATEGORY:**
Watershed	Rivers / Streams	Agriculture

MAJOR GOALS: The primary goal of the watershed project is to improve the beneficial uses, aquatic life and recreation, within the Sheyenne River reach located in the project area, by reducing nutrients and bacteria, originating on agricultural land. Through financial and technical assistance and targeted BMP installation, the project will restore the beneficial uses of the Middle Sheyenne River Watershed.

PROJECT DESCRIPTION: E-coli bacteria, originating on animal feeding areas, grazing land and animal loafing areas along the river corridor, have been identified as NPS pollutants impacting water quality in the Sheyenne River. To reduce the effects of these pollutants, the Wells County and North Central Soil Conservation Districts will provide financial and technical assistance for farm unit conservation planning and initiate an I / E program to place emphasis on NPS pollution issues. Through these efforts the project sponsors plan to 1) heighten local residents awareness of potential NPS impacts in the watershed area, 2) inform landusers of effective methods or technologies for NPS pollution control / prevention, 3) address NPS pollution control measures needed on agricultural lands in the watershed, and 4) document the benefits of applied BMP's and project efforts.

FUNDING:

FY 2016 319 Funds Requested:	**$ 321,727**
Local / Producer Match:	**$ 236,072**
Other Federal Funds:	**$ 160,000**
Total Project Costs:	**$ 717,799**

319 Funded Full Time Personnel: 1

2.0 STATEMENT OF NEED

2.1 The Wells County and North Central Soil Conservation Districts (SCD), Water Resource Districts (WRD) and local county leadership have long recognized the natural, economic and recreational value of the Sheyenne River. The Wells County and North Central SCDs, Upper Sheyenne Joint Water Resource Board, Garrison Diversion Conservancy District and State Water Commission conducted a water quality and watershed assessment of the Sheyenne River in 2009-2010. The goal of the project was to assess the current water quality condition and beneficial use support status of the Sheyenne River above Lake Ashtabula/Baldhill Dam and its tributaries.

As part of the 2014 Section 303(d) List of Waters Needing Total Maximum Daily Loads, the North Dakota Department of Health (NDDoH, 2014) has identified a 34.58 mile segment of the Sheyenne River from Harvey Dam downstream to its confluence with Big Coulee (ND-09020202-007-S_00) located in Pierce, Benson and Wells County as fully supporting but threatened beneficial use for fish and other aquatic biota due to sedimentation/siltation, a 40.55 mile segment of the Sheyenne River from its confluence with Big Coulee (ND-09020202-007-S_00), downstream to its confluence with the Warsing Dam Watershed (ND-09020202-001L_00) as fully supporting but threatened for fish and aquatic biota due to sedimentation/siltation and benthic-macroinvertebrate bioassessments, and a 9.16 mile segment of the Sheyenne River from its confluence with the Warsing Dam Watershed, downstream to the end of the hydrologic unit, located along the Benson and Eddy County line as fully supporting but threatened for fish and other aquatic biota due to sedimentation/siltation. (See Figure 1.)

An E. coli Bacteria TMDL was developed and approved for Sheyenne River segment ND-09020202-004-S_00 in September 2012 (See Figure 1).

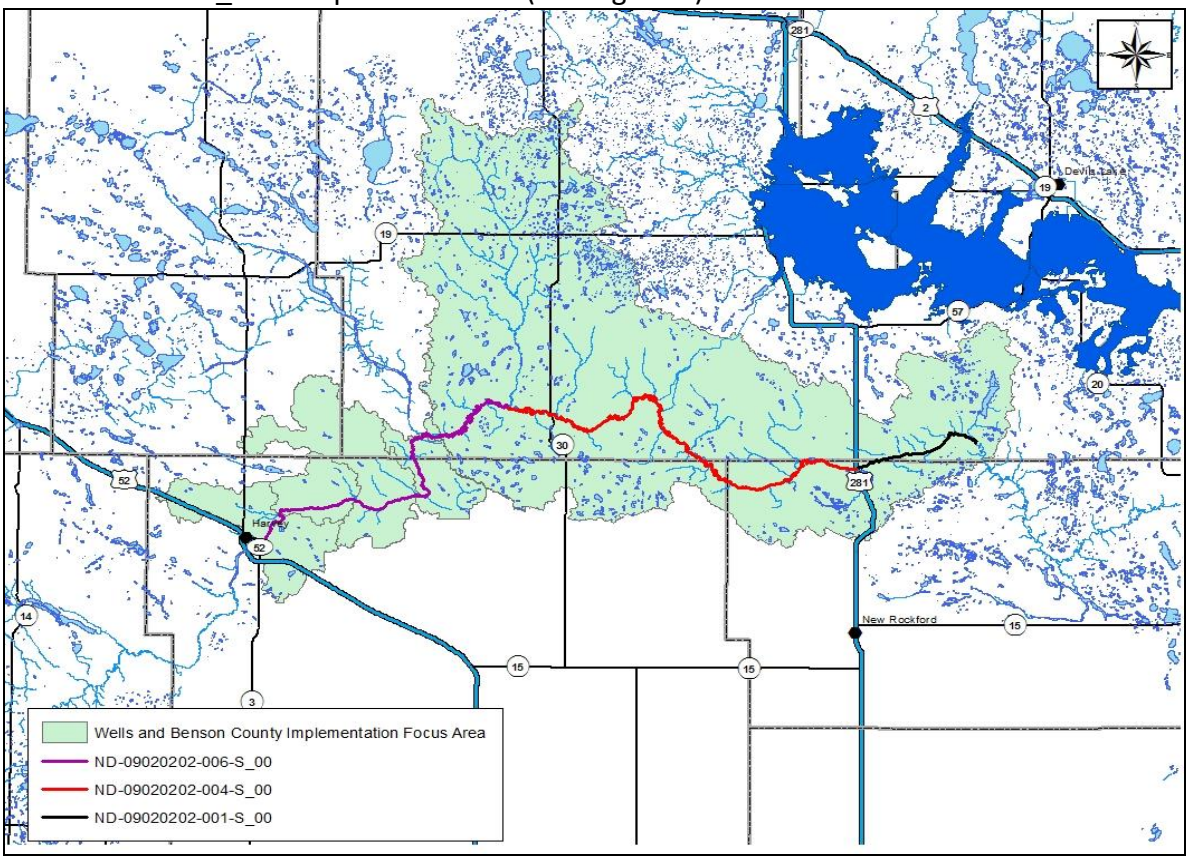


Figure 1. Impaired Reaches of the Sheyenne River and Implementation Focus Area in Wells and Benson County.

In addition to a water quality/watershed assessment and TMDL for the segments of the Sheyenne River, the Wells and North Central SCD and WRD developed and distributed a Landowner Interest Survey to individuals along the Sheyenne River main stem riparian corridor. The purpose of the survey was to help gauge the landowner interest and knowledge of the Sheyenne River and its current water quality condition. The survey was also utilized to gain information concerning participation in a NPS 319 Water Quality Program and conservation practices of interest. The feedback from the survey would be used to identify water quality and resource concerns in the watershed and help utilize Section 319 grant funds efficiently and effectively. The survey consisted of identifying the demographics of the Sheyenne River main stem, knowledge of quality of water in the Sheyenne River, technical opportunities and ways to communicate education and information to landowners along the Sheyenne River. A sample of the questions and responses from the survey can be found in Figures 2-4. A copy of the letter, survey and results can be found in Appendix A.

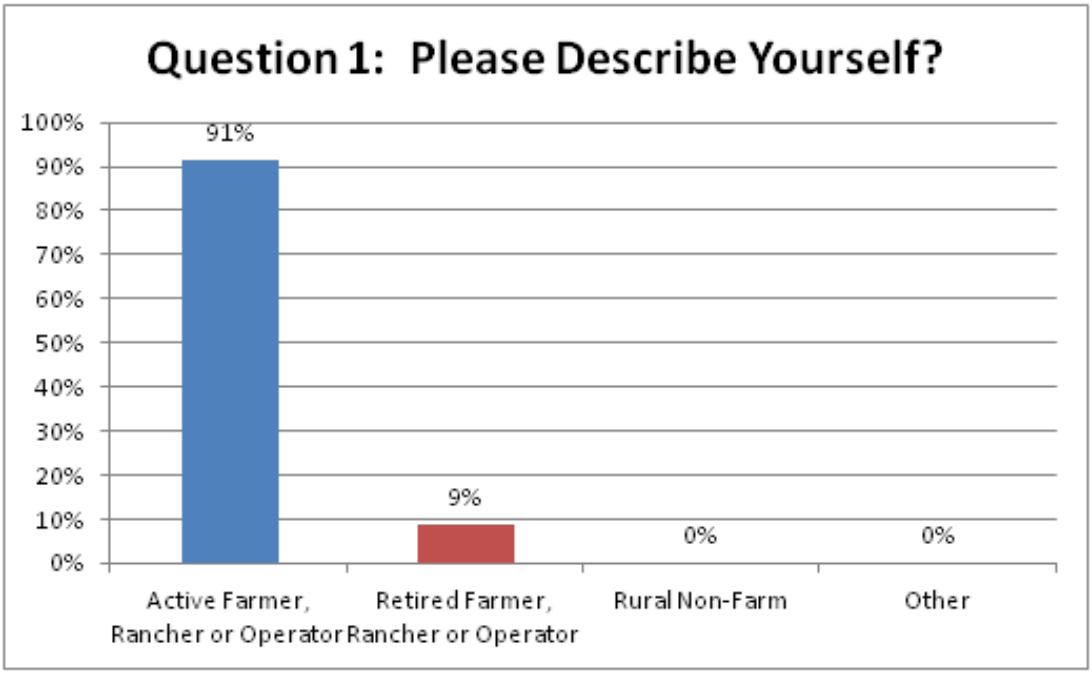


Figure 2. Demographics Survey Question Result for the Wells and Benson County Landowner Survey.

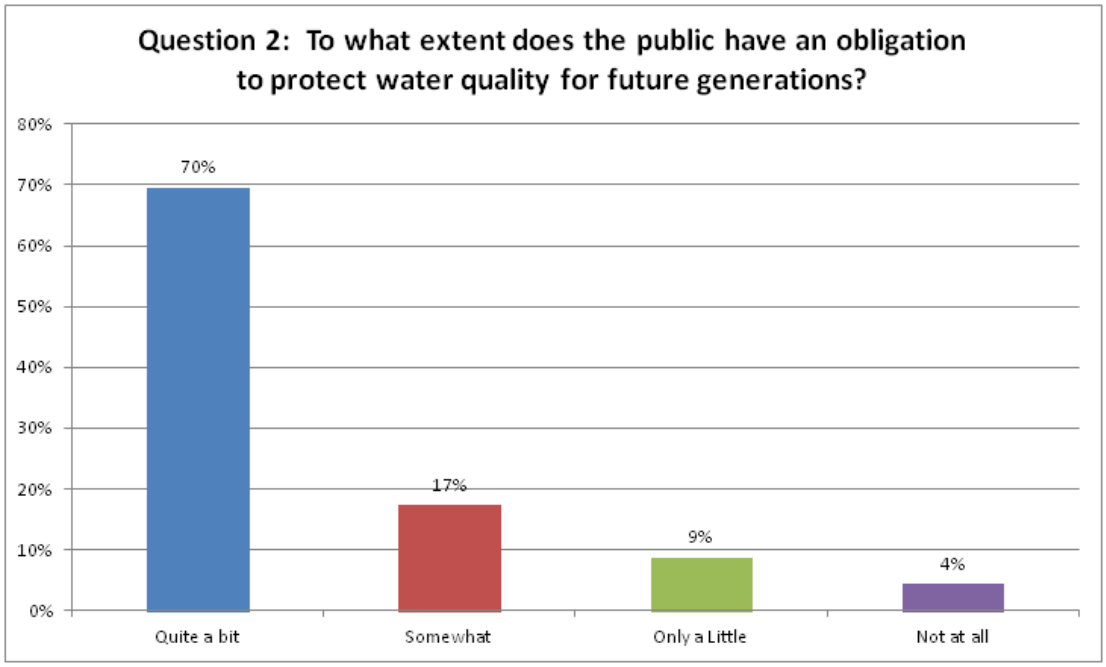


Figure 3. Public Awareness Survey Question Result for the Wells and Benson County Landowner Survey.

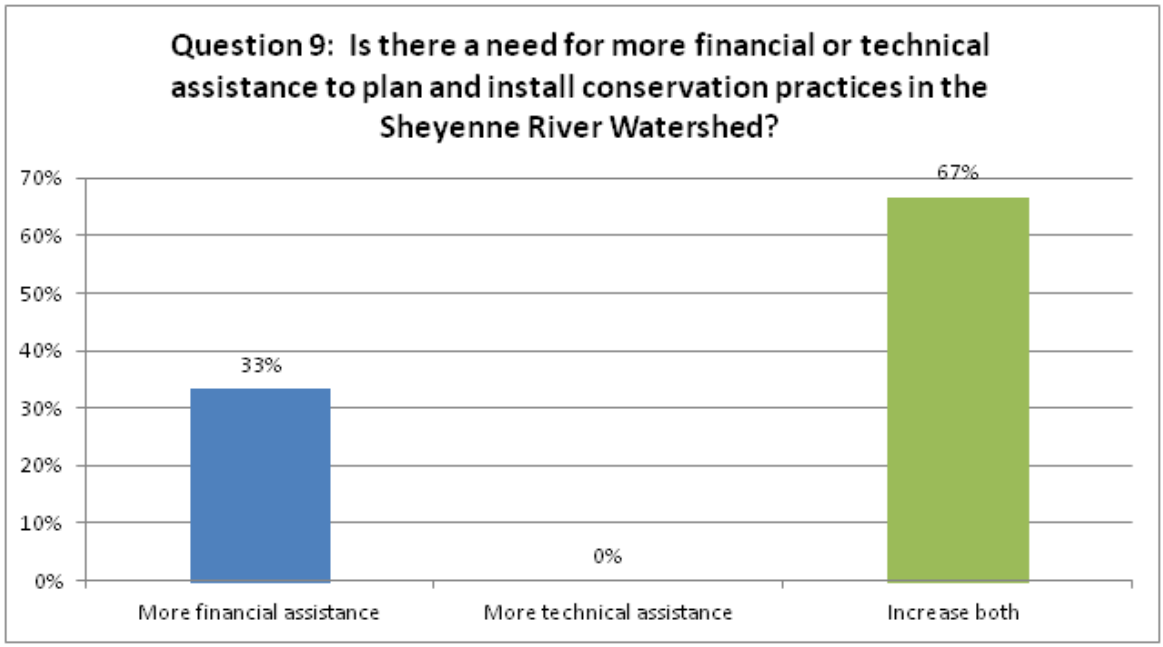


Figure 4. Technical and Financial Needs Survey Question for the Wells and Benson County Landowner Survey.

2.2 The Sheyenne River is classified as Class IA. Streams that fall into the Class IA category have the same water quality standards as Class I streams, except where natural conditions exceed Class I criteria for municipal and domestic use. In these cases the availability of softening or other treatment methods may be considered in determining whether ambient water quality meets the drinking water requirements of the NDDoH. The Sheyenne River from its headwaters to one-tenth mile downstream from Baldhill Dam is not classified for municipal or domestic use (NDDoH, 2014).

In addition, all streams in North Dakota have a numeric bacteria water quality standard. The numeric criteria for E. coli bacteria is defined as not to exceed 126 organisms per 100 mL as a geometric mean of representative samples collected during any 30-day consecutive period, nor shall more than ten percent of samples collected during any 30-day consecutive period individually exceed 409 organisms per 100 mL. This standard shall apply only during the recreation season of May 1 to September 30 (NDDoH, 2014).

2.3 An Annualized Agricultural Nonpoint Source Pollution (AnnAGNPS) model was developed for the targeted area in Wells and Benson County of the Sheyenne River watershed. The AnnAGNPS model uses soils, fertilization rates, cropping systems, elevation, land use, and precipitation data, etc. to 1) characterize the size and shape of the watershed and 2) identify "high priority areas" that are potentially the most significant sources of nutrients (N and P) and sediment in the target watershed. The results of the AnnAGNPS model will be used to target technical and financial assistance for the implementation of Best Management Practices (BMPs) in the watershed, with the primary focus on the riparian corridor of the Sheyenne River in Wells and Benson Counties. (Appendix B, Figures 6 and 7, features the AnnAGNPS high priority areas along the Sheyenne River in Wells and Benson Counties).

2.4 General Watershed Information

The focus area watershed lies in northwestern portion of Wells County and the southern part of Benson County. The priority project area encompasses 61,509 acres with 36,905 acres located in Benson County and 24,604 acres in Wells County. There are 10,190 acres of cropland and 6,473 acres of non-cropland within the project area that are identified as high priority. (See Appendix B, Figure 8 for priority project area).

The topography of the focus area watershed varies from smooth to a subtle rolling landscape. The area contains a large number of temporary and seasonal wetlands. The soils range from thick glacial till, highly permeable with low water holding capacity and rocky.

The average size per farm unit is 2,500 acres. Most operating units are diversified and raise small grains, row crops and livestock. Land use activity varies throughout the watershed from cropland and mixed range. Most acres are intensively farmed with heavy cultivation. A typical rotation is one year small grains followed by soybeans or dry beans, corn, flax or canola, etc. The majority of the riparian area is utilized as pasture/grazing land and grazing practices are typically season long.

From the 2014 NASS Land Use Data the land use in the watershed project area is as follows:

Cropland or Tilled	- 32,827 acres
Native Grassland	- 18,976 acres
Tame Grasses	- 4,675 acres
Water	- 2,211 acres
Roads/Developed/Bare	- 2,068 acres
Alfalfa	- 554 acres
Riparian Woodlands/Tree Rows	- 198 acres

Precipitation averages 18 inches annually. Seventy percent (70%) falls during the growing season, May through September, and about half in the period June through August.

2.5 Watershed Water Quality

Within the focus area watershed, E. coli data were collected at three sites (Appendix B, Figure 9). Data were collected during the recreation season of May 1 through September 30 in 2009 and 2010. Recreational beneficial use attainment was determined for each site and is summarized in Table 2.

Analysis of E. coli bacteria data collected at site 385502 in 2009 and 2010, demonstrated that the site was fully supporting in June and August, and fully supporting but threatened in July and September. There was insufficient data to make a determination for May for this site as well.

Analysis of E. coli bacteria data collected at site 385505 in 2009 and 2010, demonstrated that the site was fully supporting but threatened in June and August, fully supporting in July, and not supporting in September. There was insufficient data to make a determination for May. The geometric means for August and September are high enough to suggest that riparian protection and exclusion from livestock would improve water quality in this area.

Analysis of E. coli bacteria data collected at site 385503 in 2009 and 2010, demonstrated the site was fully supporting the recreational beneficial uses for the entire recreation season.

Since most of the fully supporting but threatened designations were the result of brief periods of high E. coli concentration values (over 409 CFU/100mL) this suggests direct contact of livestock with the water.

Table 2. Summary of E. coli Data for Sites 385502, 385503 and 385505 Collected in 2009 and 2010.

385502					
Recreational Season	**May**	**June**	**July**	**August**	**September**
Number of Samples	4	10	8	9	9
Geometric Mean	60	49	52	48	105
% Exceeded 409 CFU/100 mL	0%	0%	25%	0%	11%
Recreational Use Assessment	INSFD	FS	FSBT	FS	FSBT
385503					
Recreational Season	**May**	**June**	**July**	**August**	**September**
Number of Samples	7	9	8	9	9
Geometric Mean	13	34	31	55	84
% Exceeded 409 CFU/100 mL	0%	0%	0%	0%	0%
Recreational Use Assessment	FS	FS	FS	FS	FS
385505					
Recreational Season	**May**	**June**	**July**	**August**	**September**
Number of Samples	4	10	8	9	9
Geometric Mean	52	61	37	124	165
% Exceeded 409 CFU/100 mL	0%	10%	0%	11%	22%
Recreational Use Assessment	INSFD	FSBT	FS	FSBT	NS

FS – Fully Supporting; FSbT- Fully Supporting but Threatened; NS – Not Supporting; INSFD – Insufficient Data

The E. coli TMDL approved in 2012 established load reductions of E. coli bacteria to restore the recreational beneficial use of the Sheyenne River segment ND-09020202-004-S_00. (See Table 3 and Figure 5 for Load Duration Curve Calculations and Figure 9 for location of Reach ND-09020202-004-S_00).

Table 3. E. coli Bacteria Load Duration Curve Calculations for the Sheyenne River (ND-09020202-004-S_00) Monitoring Site 385505.

	Load (10^7 CFUs/Day)				Load (10^7 CFUs/Period)		
	Median Percentile	**Existing**	**TMDL**	**Days**	**Existing**	**TMDL**	**Percent Reduction**
Wet	23.00%	59031.34	24048.12	116.80	6894860.58	2808820.58	59.26%
Moist	51.50%	17827.83	5241.26	91.25	1626789.40	478264.72	70.60%
			Total	208	8521650	3287085	61.43%

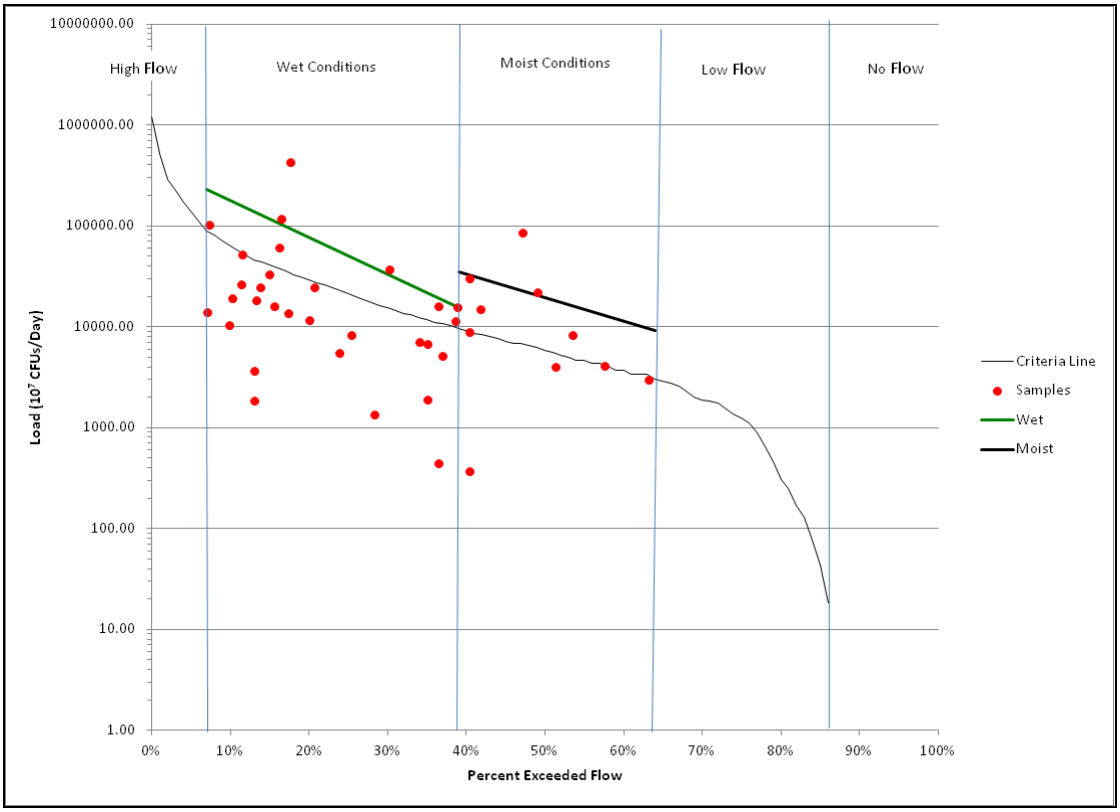


Figure 5. E. coli Bacteria Load Duration Curve for the Sheyenne River (ND-09020202-004-S_00) Monitoring Site 385505.

Animals grazing in the riparian area contribute E. coli bacteria by depositing manure where it has an immediate impact on water quality. Managed livestock grazing along the riparian area reduces the potential of direct manure deposit and therefore should be considered of high importance.

Livestock feeding areas are another source of nutrients and E.coli impacting water quality. Twenty four concentrated feeding areas have been identified within the project area. Fourteen feeding areas are located within ½ mile of the river channel. (See appendix B, figure 10 for location of feeding areas).

Based on the data available, the general focus of the BMPs should be on riparian grazing and livestock feeding areas adjacent to or in close proximity to the main stem of the Sheyenne River in Wells and Benson County.

Emphasis will be placed on applying BMP within 1 mile of the Sheyenne River in the priority area to address sources of stressors threatening recreational and aquatic life uses.

3.0 Project Description.

3.1 Project Goals.

Through increased technical and financial assistance and targeted BMP implementation the project will restore the recreational and aquatic life uses of the Middle Sheyenne River Watershed.

3.2 Objectives and Tasks

Objective 1: Implement the appropriate BMP to achieve and maintain the geometric mean concentrations for E. coli bacteria at 126 CFU/100 ml, with less than 10% of samples exceeding 409 CFU/100 ml.

Task 1: Employ a watershed conservationist located in Wells County.
Product: Watershed conservationist.
Cost: $ 390,512

Task 2: Provide technical and financial assistance to agricultural producers to plan, design, and implement BMP's that will improve management over 2,250 acres of grazing land and 275 acres of crop land.
Product: 15 producer contracts.
(See BMP budget table for types of BMP to be installed)
Cost: $ 89,949

Task 3: Provide technical and financial assistance to livestock producers to design and install manure management systems on the highest priority animal feeding operations in the watershed.
Product: 4 partial manure management systems installed.
Cost: $ 49,900

Task 4: Document acreage and location of planned and installed BMP's to assess progress and target areas for annual work activities and monitor O&M of Section 319 cost-shared practices in accordance with the ND NPS Program BMP Cost Share Guidelines.
Product: Database report of acres planned and/or applied.

Objective 2: Increase the public's awareness of NPS pollution impacts by disseminating information on the project as well as the impacts of NPS pollution to water quality and the associated solutions to the problem. The primary target audience will be landowners/operators within the Middle Sheyenne River project area.

Task 5: Conduct I / E events addressing NPS and water quality issues typically found in the area and coordinate them, when possible, with ongoing state and/or federally sponsored I / E programs.
Product: 3 tours/workshops.
Cost: $ 3,000

Task 6: Prepare newsletter articles and direct mailings to local land users, general public, and media.
Product: 5 newsletters, 5 articles and 10 direct mailing
Cost: $ 2,850

Task 7: Complete annual and final project reports to update the GRTS. These will be provided to NDDH, EPA, all sponsors and interested individuals.
Product: Published annual and 1 final report.

3.3 Milestone Table.

See attached milestone table.

3.4 Permits.

Permits required (404, cultural resource reviews, etc.) to complete the scheduled project activities will be secured. Full manure management systems will be submitted for North Dakota Department of Health permit process.

3.5 Appropriateness of the Lead Sponsor.

Wells County Soil Conservation District, Wells County Water Resource District, Wells County Commission, Benson County Commission, Benson County Water Resource District and North Central Soil Conservation District are sponsoring the Middle Sheyenne River water quality project. The Wells County SCD will be the lead sponsor. The SCD has staff presence, as well as the presence of Natural Resource Conservation Service (NRCS) personnel. The SCDs annual and long-range plans, along with the input of the Locally Led Conservation Group, help to prioritize and guide the field service of both staff. The Wells County SCD will be responsible for the O&M and will conduct annual compliance checks of BMP's cost shared with Section 319 funds. The Wells County SCD has legal authorization to employ and receive and expend funds. They have a track record for personnel management and addressing conservation issues for their constituency. An Executive Board of the sponsors will be formed to manage personnel and funding associated with this project and oversees implementation of the scheduled project activities.

4.0 Coordination Plan.

4.1 Cooperating organizations, roles agreements.

1. Wells County Soil Conservation District – The SCD is an initiator, supporter of and has endorsed this Section 319 proposal. The SCD will be the lead agency responsible for administration of the Section 319 contract. They will provide clerical assistance, access to equipment and supplies as well as annual financial support ($1,971/yr.). The SCD board will provide for staff time if feasible.

2. Wells County Water Resource District – The WRD has endorsed this plan to accelerate technical assistance, in addition the WRD will provide financial support ($5,585/yr.) to ensure all project goals and objectives are achieved.

3. Wells County Commission – The commission has endorsed the water quality project plan and will provide financial support ($5,585/yr.) to ensure all project goals and objectives are achieved.

4. North Central Soil Conservation District – The SCD is a supporter of and has endorsed this Section 319 proposal. The SCD will assist with contacting producers as well as providing financial support ($6,570/yr.) to ensure project goals and objectives are achieved.

5. Benson County Water Resource District - The WRD is a supporter of and has endorsed this Section 319 proposal and will provide financial support ($6,570/yr.) to ensure project goals and objectives are achieved.

6. Benson County Commission - The Commission is a supporter of and has endorsed this Section 319 proposal and will provide financial support ($6,570/yr.) to ensure project goals and objectives are achieved.

7. North Dakota Department of Health – The NDDH will oversee Section 319 funding and provide sponsor over sight to ensure proper management and expenditure of Section 319 funding as well as develop the quality assurance project plan (QAPP) for this project. NDDH will provide training for proper water quality sample collection, preservation and transportation, to ensure reliable data is obtained. The NDDH will assist with development and scheduling of a biomonitoring plan.

8. USDA Natural Resources Conservation Service (NRCS) – The NRCS will provide; use of vehicle, computer and copier, technical assistance, if needed, and financial assistance, if funding is available, through the EQIP and WRP programs.

9. North Dakota Cooperative Extension Service (EXT) – Local and State Extension personnel and educational materials will be utilized to compliment the projects' activities. This will include such things as publications and assistance with workshops and information meetings. The specific role of EXT will be dependent on the type of I / E activity being implemented and availability of staff and materials. More specifically, the Extension Nutrient Management Specialist from the Carrington Extension Research Center will be utilized to assist in evaluating and developing manure management systems and also to provide information for manure management workshops and tours of the watershed project.

10. The NPS BMP Engineering Team through the Sheyenne James RC&D Council will be contacted for assistance in designing structural BMP for the watershed project.

11. USDA Farm Service Agency (FSA) – Conservation programs through FSA (i.e. CRP, continuous CRP, or other) will be utilized if available.

4.2 Local Support.

The Wells County SCD, Wells County Water Resource District, Wells County Commission, North Central SCD, Benson County Water Resource District, and Benson County Commission support this phase 1 water quality improvement project for the Middle Sheyenne River Watershed. Memorandums of agreement from the Soil Conservation Districts, County Commission, Water Resource Districts and NRCS are on file. (See Appendix C for letters of support).

4.3 Coordination with other NPS efforts.

The Wells and North Central SCD's hold an annual ECO-ED camp for 6th graders in each county. These events will be coordinated with the I/E activities supported through the Section 319 project. Networking between the I/E coordinator and project staff will occur, to the benefit of residents and project sponsors.

EQIP funds will be utilized, when available, in the watershed project area to assist in funding BMP's and I / E activities. USDA Farm Service Agency programs (i.e. CRP or others) will be utilized when available.

Funding, should it be available, from other sources such as; North Dakota Outdoor Heritage Fund, North Dakota Game & Fish Dept., North Dakota Natural Resources Trust, Ducks Unlimited, US Fish & Wildlife Service, etc., will be requested to assist in installing conservation practices. The Middle Sheyenne River Project will coordinate with the North Dakota Dept. of Agriculture Livestock Pollution Prevention Program and the North Dakota Stockmen's Environmental Services Program if needed, to plan and install manure management systems.

5.0 Evaluation and Monitoring Plan.

5.1 The quality assurance project plan (QAPP) will be developed by the ND Department of Health after the project implementation plan is finalized and approved for funding. The QAPP will be attached in Appendix D of the final PIP submitted to the EPA.

6.0 Budget.

6.1 The attached budget provides estimated costs per year to complete the water quality project.

Literature Cited

NDDoH, 2014. Standards of Water Quality for the State of North Dakota. NDCC 61-28-04, 23-33, 61-2. Environmental Health Section, North Dakota Department of Health, Bismarck, ND.

MIDDLE SHEYENNE RIVER WATERSHED PROJECT
MILESTONE TABLE

Task	Output	Responsibility	Start	End
Objective 1				
Task 1- Employ a project coordinator	Staff presence to provide technical assistance for conservation planning	Project executive board	7/2016	6/2021
Task 2 – Contact producers in project area to provide plan development and follow-up.	15 producer contracts	Project Staff	7/2016	6/2021
Task 3 – Provide technical and financial assistance to livestock producers	4 partial manure management systems	Project Staff	7/2016	6/2021
Task 4 – Document installed BMP's to track progress and monitor O&M on cost shared practices.	Data base report on acres planned and / or applied.	Project Staff	7/2016	6/2021
Objective 2				
Task 5 – Conduct I / E events addressing NPS and water quality issues.	2 tours/workshops	Project Staff	7/2016	6/2021
Task 6 – Prepare newsletter articles and direct mailings.	5 newsletters, 5 articles, 10 direct mailings.	Project Staff	7/2016	6/2021
Task 7 – Complete annual and final report.	Published annual and final report	Project Staff	7/2016	6/2021

BUDGET TABLE
MIDDLE SHEYENNE RIVER WATERSHED PROJECT

PART 1: FUNDING SOURCES

		2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	Total
EPA SECTION 319 FUNDS							
FY2016 Funds (FA)		$50,950	$71,036	$74,770	$65,463	$59,508	
Subtotal		**$50,950**	**$71,036**	**$74,770**	**$65,463**	**$59,508**	**$321,727**
OTHER FEDERAL FUNDS							
NDDoH	(FA)	$7,000	$7,000	$7,000	$7,000	$7,000	
NRCS	(FA)	$25,000	$25,000	$25,000	$25,000	$25,000 .	
Subtotal		**$32,000**	**$32,000**	**$32,000**	**$32,000**	**$32,000**	**$160,000**
State / Local Match							
Wells Co. SCD	(FA & TA)	$1,773	$1,856	$1,919	$1,968	$1,997	$9,513
Wells Co. WRD	(FA)	$5,171	$5,415	$5,597	$5,740	$5,823	$27,746
Wells Co. Comm.	(FA)	$5,171	$5,415	$5,597	$5,740	$5,823	$27,746
Benson Co. SCD	(FA & TA)	$5,910	$6,188	$6,396	$6,560	$6,655	$31,709
Benson Co. WRD	(FA)	$5,910	$6,188	$6,396	$6,560	$6,655	$31,709
Benson Co. Comm.	(FA)	$5,910	$6,188	$6,396	$6,560	$6,655	$31,709
Producers Match	(FA)	$4,418	$16,417	$17,865	$10,844	$6,396	$55,940
Administrative Inkind	(TA)	$4,000	$4,000	$4,000	$4,000	$4,000	$20,000
Subtotal		**$38,263**	**$51,667**	**$54,166**	**$47,972**	**$44,004**	**$236,072**
Total Budget		**$121,213**	**$154,703**	**$160,936**	**$145,435**	**$135,512**	**$717,799**

NDDoH: ND Dept. of Health
SCD: Soil Conservation District
WRD: Water Resource District
Comm: County Commission Board
NRCS: Natural Resources Conservation Service

TA: Technical Assistance
FA: Financial Assistance

Middle Sheyenne River Watershed Project Phase 1 BUDGET

Part 2: Section 319/Non-Federal Budget	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	Total Costs	Cash Match	In-Kind Match	319 Funds
Personnel / Support									
Project Coordinator - Salary	$ 45,500	$ 46,150	$ 46,800	$ 47,450	$ 48,100	$ 234,000	$ 93,600		$ 140,400
Project Coordinator - Fringe Benefits	$ 25,699	$ 27,528	$ 29,360	$ 30,853	$ 32,432	$ 145,872	$ 58,349		$ 87,523
Travel	$ 350	$ 350	$ 500	$ 500	$ 500	$ 2,200	$ 880		$ 1,320
Training	$ 250	$ 250	$ 250	$ 250	$ 250	$ 1,250	$ 500		$ 750
Telephone	$ 698	$ 698	$ 698	$ 698	$ 698	$ 3,490	$ 1,396		$ 2,094
Postage	$ 475	$ 475	$ 495	$ 495	$ 510	$ 2,450	$ 980		$ 1,470
Supplies	$ 250	$ 250	$ 250	$ 250	$ 250	$ 1,250	$ 500		$ 750
Subtotal	**$ 73,222**	**$ 75,701**	**$ 78,353**	**$ 80,496**	**$ 82,740**	**$ 390,512**	**$ 156,205**		**$ 234,307**
Objective 1: Apply Best Mngt Practices*									
BMP's									
Manure Mgmt Systems	$ -	$ 18,500	$ 13,500	$ 11,500	$ 6,400	$ 49,900	$ 19,960		$ 29,940
Grazing Systems	$ 11,044	$ 21,793	$ 29,413	$ 14,109	$ 8,090	$ 84,449	$ 33,780		$ 50,669
Cropland Management Systems	$ -	$ 750	$ 1,750	$ 1,500	$ 1,500	$ 5,500	$ 2,200		$ 3,300
Subtotal	**$ 11,044**	**$ 41,043**	**$ 44,663**	**$ 27,109**	**$ 15,990**	**$ 139,849**	**$ 55,940**		**$ 83,909**
Objective 2: Information / Education									
Tour / Workshop	$ -	$ 1,000	$ 1,000	$ 1,000	$ -	$ 3,000	$ 1,200		$ 1,800
Newsletter	$ 300	$ 300	$ 300	$ 300	$ 300	$ 1,500	$ 600		$ 900
Brouchure / Flyers	$ 350	$ 350	$ 300	$ 200	$ 150	$ 1,350	$ 540		$ 810
Subtotal	**$ 650**	**$ 1,650**	**$ 1,600**	**$ 1,500**	**$ 450**	**$ 5,850**	**$ 2,340**		**$ 3,510**
Administative									
Administative In-Kind Match	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 7,500		$ 7,500	
Board Meeting In-Kind Match	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 12,500		$ 12,500	
Subtotal	**$ 4,000**	**$ 4,000**	**$ 4,000**	**$ 4,000**	**$ 4,000**	**$ 20,000**		**$ 20,000**	
Total 319 / Non-Federal Budget	**$ 88,916**	**$ 122,394**	**$ 128,616**	**$ 113,105**	**$ 103,180**	**$ 556,211**	**$ 214,484**	**$ 20,000**	**$ 321,727**

* See BMP budget table for breakdown of BMP costs.

Middle Sheyenne River Watershed
BMP Budget

	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	Total
Cropland Management Syst.						
Cover Crops 275ac @ 20.00/ac	$0	$750	$1,750	$1,500	$1,500	$5,500
Subtotal	**$0**	**$750**	**$1,750**	**$1,500**	**$1,500**	**$5,500**
Grazing Systems						
Fencing 29040 ft @ 1.35/ft	$8,625	$12,937	$8,625	$4,704	$4,313	$39,204
Use Exclusion 350ac @ 20.00/ac	$539	$1,610	$2,170	$2,142	$539	$7,000
Pasture and Hayland Planting 225ac @ 35.00/ac	$0	$1,733	$1,809	$2,600	$1,733	$7,875
Pipeline 2640 ft@ 3.00/ft	$1,030	$1,663	$2,059	$1,663	$1,505	$7,920
Tank 3000gal @ 1.00/gal 3 ea	$0	$3,000	$3,000	$3,000	$0	$9,000
Storage Tank 1 ea	$0	$0	$750	$0	$0	$750
Alternative Power Source 3 ea	$850	$850	$5,000	$0	$0	$6,700
Well 1 ea	$0	$0	$6,000	$0	$0	$6,000
Subtotal	**$11,044**	**$21,793**	**$29,413**	**$14,109**	**$8,090**	**$84,449**
Manure Mgmt Syst.						
4 Partial Manure Mgmt Syst.	$0	$18,500	$13,500	$11,500	$6,400	$49,900
Subtotal	**$0**	**$18,500**	**$13,500**	**$11,500**	**$6,400**	**$49,900**
Total	**$11,044**	**$41,043**	**$44,663**	**$27,109**	**$15,990**	**$139,849**

All costs are consistent with information in the NPS Program Cost Share Guidelines.

APPENDIX A

Landowner/Producer Survey and Results

Sheyenne River Landowner Interest Survey

February 9, 2015

Dear Landowner/Operator:

The primary goal of the Upper and Middle Sheyenne River Water Quality and Watershed Assessment Project was to evaluate current water quality conditions and beneficial uses of the Sheyenne River and its watersheds. Initiated by the Upper Sheyenne Joint Water Resource Board, project partners also included Soil Conservation and Water Resource Districts throughout the basin, Spirit Lake Nation, North Dakota State Water Commission, Garrison Diversion Conservancy District and North Dakota Department of Health. Due to the large size of the Sheyenne River basin above Lake Ashtabula, seven separate sub-watersheds were designated and assessed. The focus of this letter and attached landowner interest survey will focus on a reach of the Upper Sheyenne River located in Wells and Benson Counties (See Map).

The water quality assessment was accomplished by collecting and analyzing samples at two sites. Site 385505 located on the Sheyenne River 3 miles south of Flora, ND and the second site 385502 on the Sheyenne River located 5 miles east and 5.25 miles north of Bremen, ND. Samples were collected on the river during open water period of 2009/2010 **(See Map)**.

To better understand the general public's interest, the Wells County Soil Conservation District (SCD) and Water Resource Board (WRB) is conducting a survey of residents in the Wells County portion of the Sheyenne River **(orange shaded line on map)**. Your responses to this survey will greatly help the SCD/WRB to better understand watershed residents' thoughts on: 1) current water quality conditions in Sheyenne River; 2) interest in supporting a watershed project focused on water quality and conservation; and 3) feasible solutions for improving or protecting the quality of water in the Wells County portion of the Sheyenne River. Feedback through the survey will also provide the information needed to apply for a Section 319 grant to support efforts addressing water quality concerns identified through the watershed assessment and survey. If successful, the SCD/WRB will use the Section 319 funding to support a wide variety of activities including: conservation planning; cost share assistance for conservation practices; educational workshops; water quality monitoring; equipment demonstrations and other activities that would help address water quality concerns in the Sheyenne River.

Enclosed you will find the survey, a map of the focus area, and a self-addressed, stamped envelope to use when returning the survey. Please feel free to include any additional comments you deem necessary or relevant to the project. Your response and time is greatly appreciated. If you would like more information about Section 319 funding **(included with survey)** or Sheyenne River water quality results please contact the North Dakota Department of Health and ask for Michael Hargiss. Thank you!

Sincerely,

Sheyenne River Water Quality Report

Contact Information

Michael Hargiss
North Dakota Department of Health
Division of Water Quality
1120 28th Ave N., Suite B
Fargo, ND 58102
Office Phone: 701-499-5209
Email: mhargiss@nd.gov

Sheyenne River Landowner Interest Survey

1. Please describe yourself.
    a. Active Farmer/Rancher/Operator
    b. Not Currently an active Farmer/Rancher/Operator (i.e., retired)
    c. Rural Non-Farm
    d. Other (please specify)_____

2. To what extent does the public have an obligation to protect water quality for future generations?
    a. Quite a bit
    b. Somewhat
    c. Only a little
    d. Not at all
    e. Don't know

3. To what extent is the quality of your water affected by people who live upstream from you?
    a. Quite a bit
    b. Somewhat
    c. Only a little
    d. Not at all
    e. Don't know

4. In your opinion, how polluted is the Sheyenne River and its tributaries?
    a. Very polluted
    b. Somewhat polluted
    c. Not very polluted
    d. Not at all polluted
    e. Don't know

5. How concerned are you about whether the Sheyenne River Watershed is polluted?
    a. Very concerned
    b. Somewhat concerned
    c. Not very concerned
    d. Not at all concerned
    e. Don't know

6. In your opinion, what is the best way to communicate efforts to protect water quality in the Sheyenne River Watershed?
    a. Public meetings
    b. Informational workshops
    c. Newsletters/mailings
    d. Newspaper articles
    e. Television or radio ads

7. Have you ever received technical assistance to help with management decisions regarding the implementation of conservation practices on cropland or grazing land? (Yes/No).
    f. Yes (go to #7a)
    g. No (go to #8)

7a. If yes, which entities provided the assistance? (Choose all that apply)

    a. Private Firms (ex. Co-ops or seed dealers)
    b. Commodity groups/organizations
    c. NRCS
    d. Local Soil Conservation District
    e. NDSU Extension
    f. Websites, magazines, etc.
    g. Friends and neighbors
    h. Someone else (Please Specify) _____
    i. Don't Know

8. Do you feel the financial and technical assistance programs offered by USDA (i.e. EQIP, WHIP, CSP) are sufficient to adequately address your resource concerns?

    h. Yes (go to #10)
    i. No (go to #9)

9. Is there a need for more financial or technical assistance to plan and install conservation practices in the Sheyenne River watershed?

    j. More financial assistance
    k. More technical assistance
    l. Increase both financial and technical assistance

10. If Section 319 funding was received by the SCD and/or WRD to increase the availability of financial and technical assistance in the Sheyenne River watershed, would you participate in the program to help address the resource concerns in the watershed?

    a. Yes
    b. No
    c. Maybe/Need to Know More

11. Which conservation practices are you most interested in if Section 319 funding were received for financial and technical assistance?

	Not Interested					**Very Interested**	**No Opinion**
	0	**1**	**2**	**3**	**4**	**5**	
Use Exclusion							
Water Development							
Buffer Strips							
Pipeline, Tank, and Solar Pump							
Prescribed Grazing							
Cover Crops							

12. Are there any other conservation practices that you are interested in but not listed in Question 11? Please list below.

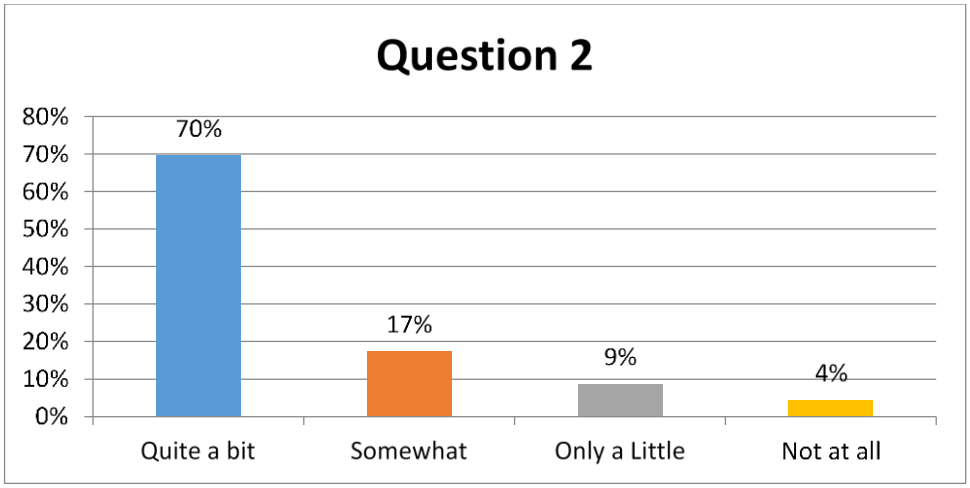
    _____
    _____
    _____
    _____

Middle Sheyenne Producer Survey Results

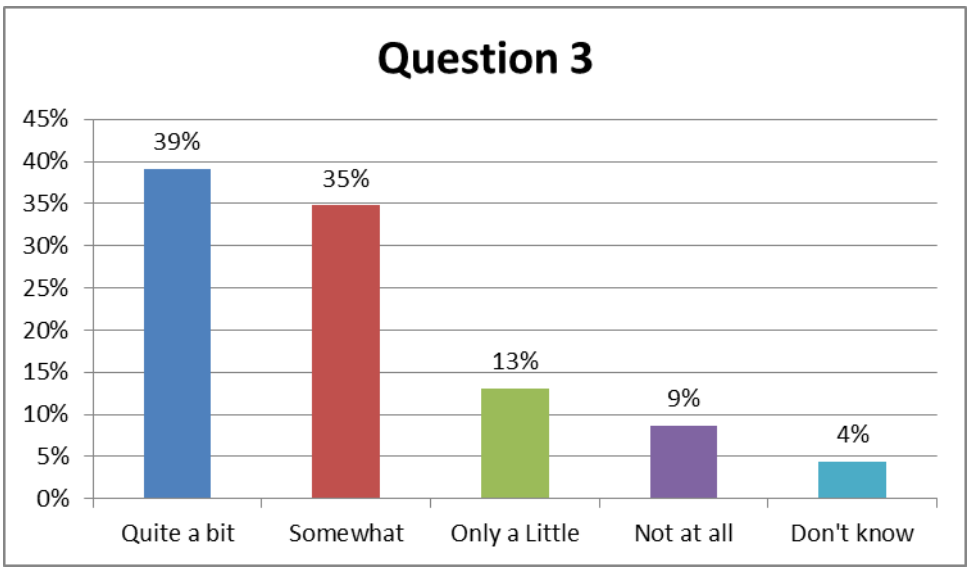
Question 1:

23 total surveys filled out	Wells	Benson	Total	
Active F/R/O	12	9	21	91%
Retired F/R/O		2	2	9%
Rural Non-Farm				
Other				

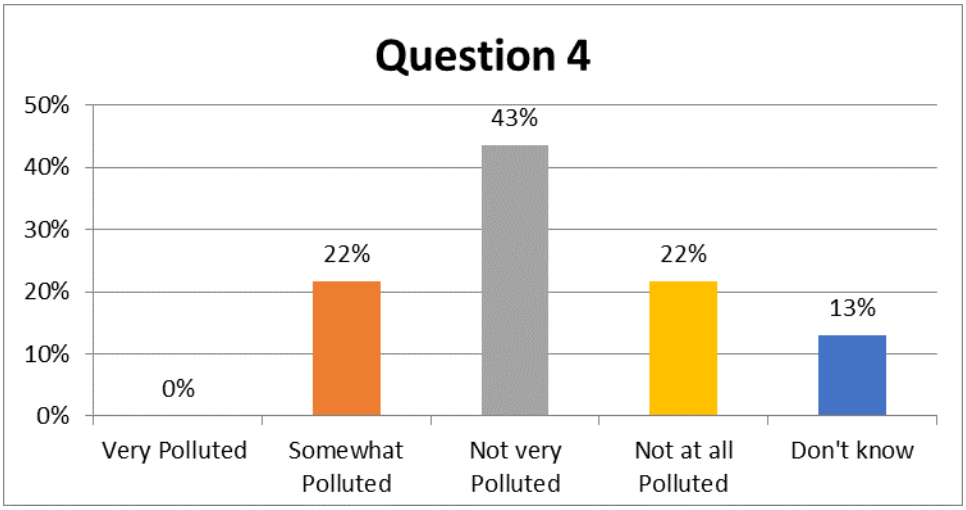
Question 2:				
Quite a bit	8	8	16	70%
Somewhat	2	2	4	17%
Only a Little	1	1	2	9%
Not at all	1		1	4%
Don't know				



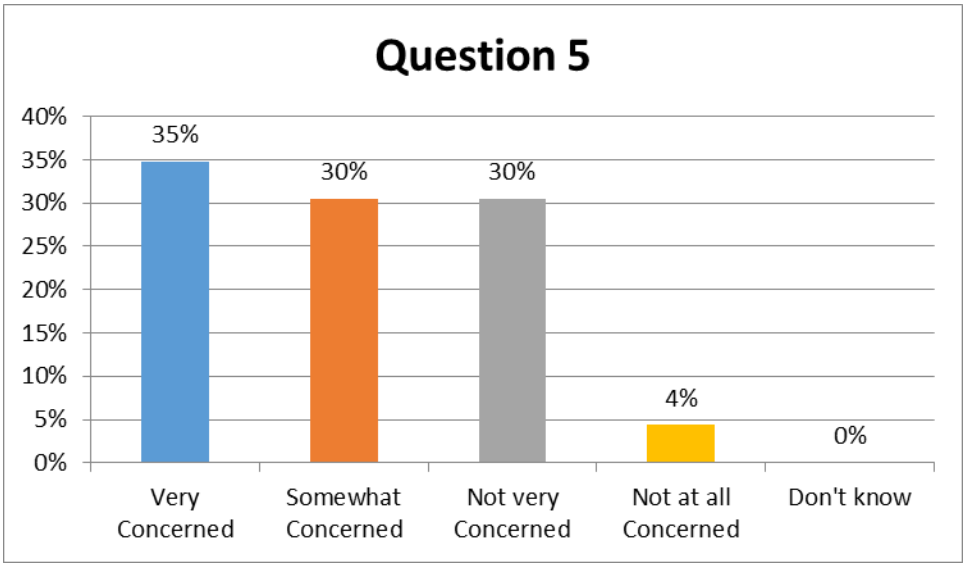
Question 3:				
Quite a bit	4	5	9	39%
Somewhat	4	4	8	35%
Only a Little	2	1	3	13%
Not at all	1	1	2	9%
Don't know	1	0	1	4%



Question 4:				
Very Polluted	0	0	0	0%
Somewhat Polluted	2	3	5	22%
Not very Polluted	7	3	10	43%
Not at all Polluted	1	4	5	22%
Don't know	2	1	3	13%



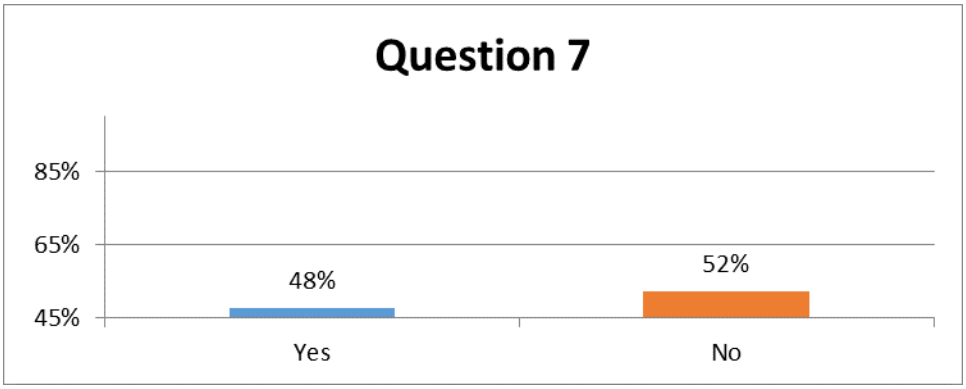
Question 5:				
Very Concerned	2	6	8	35%
Somewhat Concerned	7	0	7	30%
Not very Concerned	2	5	7	30%
Not at all Concerned	1	0	1	4%
Don't know		0	0	0%



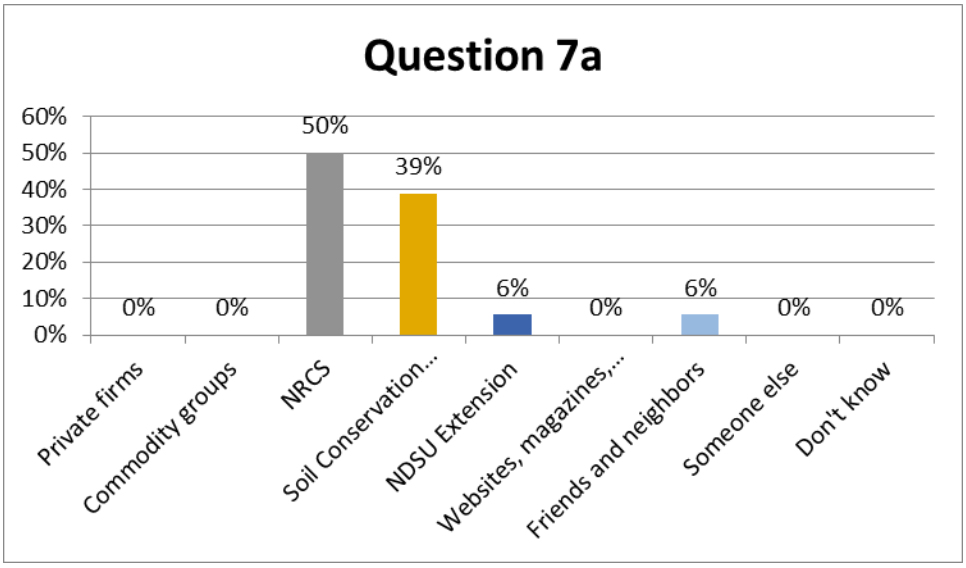
Question 6:				
Public Meetings	2	3	5	21%
Informational Wkshps		0	0	0%
Newsletters/mailings	7	5	12	50%
Newspaper articles	2	1	3	13%
TV or radio ads	1	1	2	8%
Did not Answer		2	2	8%

Red = Surveyor picked 2

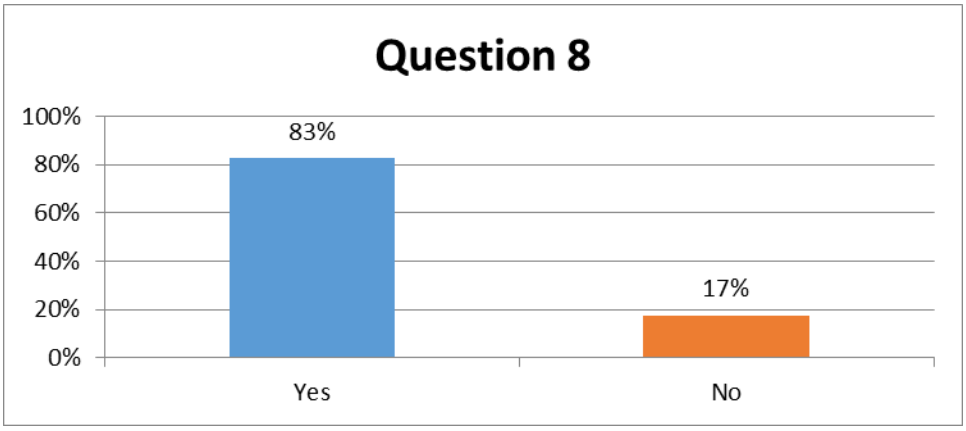
Question 7:				
Yes	4	7	11	48%
No	8	4	12	52%



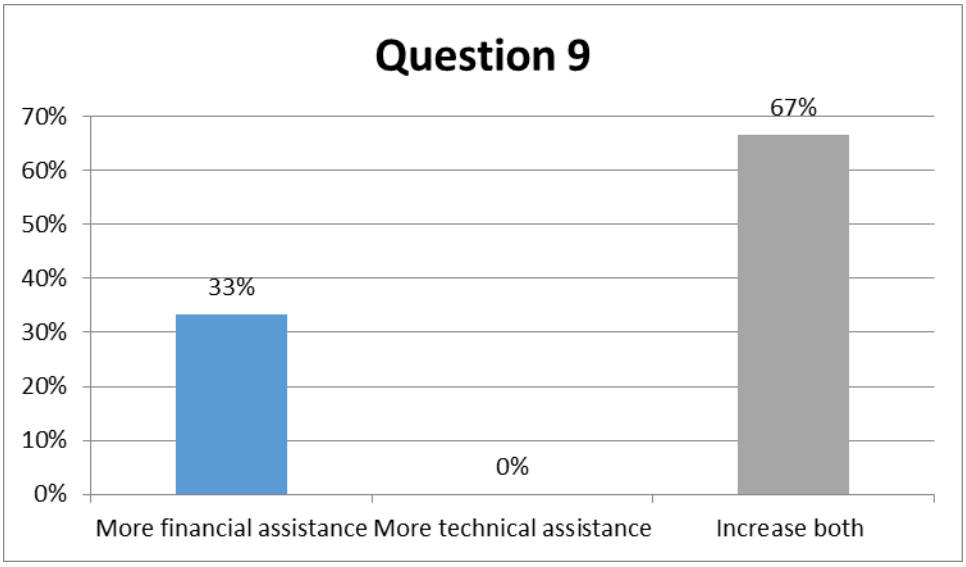
Question 7a:				
Private firms		0	0	0%
Commodity groups		0	0	0%
NRCS	4	5	9	50%
Soil Conservation District	3	4	7	39%
NDSU Extension	1	0	1	6%
Websites, magazines, etc.		0	0	0%
Friends and neighbors	1	0	1	6%
Someone else		0	0	0%
Don't know		0	0	0%



Question 8:				
Yes	11	8	19	83%
No	1	3	4	17%
Did not Answer				

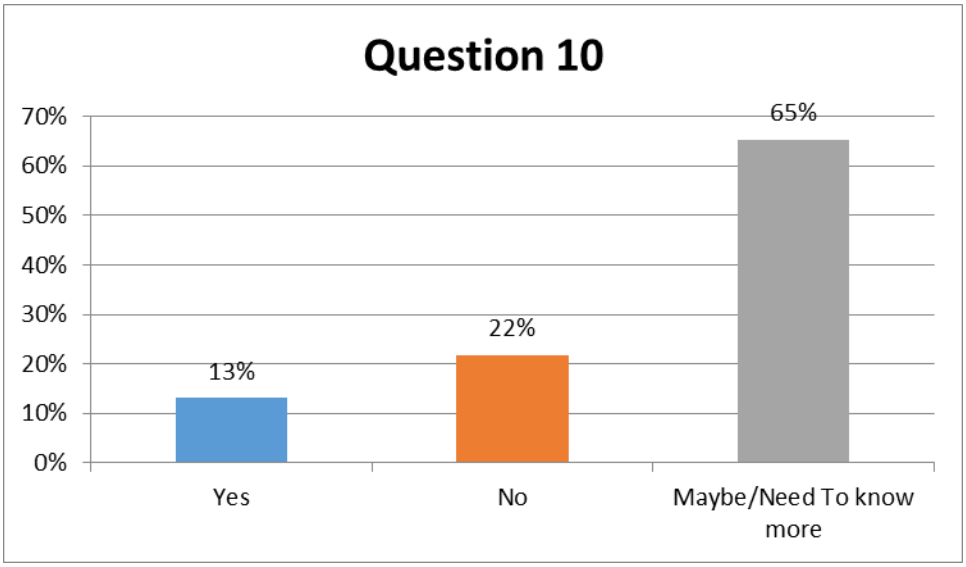


Question 9:				
More financial assistance	1	1	2	33%
More technical assistance	0	0	0	0%
Increase both	1	3	4	67%



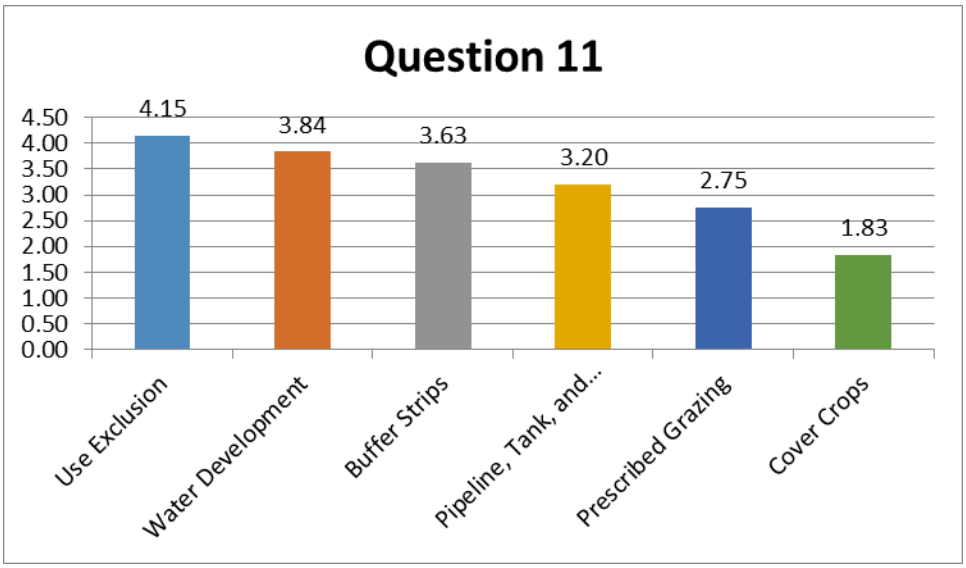
Question 10:

Yes	1	2	3	13%
No	2	3	5	22%
Maybe/Need To know more	9	6	15	65%



Question 11:

Use Exclusion	3.80	4.50	4.15
Water Development	3.34	4.33	3.84
Buffer Strips	3.00	4.25	3.63
Pipeline, Tank, and Solar Pump	2.21	4.20	3.20
Prescribed Grazing	2.00	3.50	2.75
Cover Crops	1.00	2.67	1.83



APPENDIX B

FIGURES CITED

FIGURE 6. HIGH PRIORITY ACRES – CROPLAND.

FIGURE 7. HIGH PRIORITY ACRES – NON-CROPLAND.

FIGURE 8. MIDDLE SHEYENNE RIVER WATERSHED PROJECT AREA WELLS AND BENSON COUNTIES, NORTH DAKOTA.

FIGURE 9. MIDDLE SHEYENNE BASIN, PROJECT IMPLEMENTATION FOCUS AREA AND WATER QUALITY SAMPLING SITES.

FIGURE 10. LIVESTOCK FEEDING AREAS.

Figure 6. Middle Sheyenne River Project Area - High Priority Crop Acres

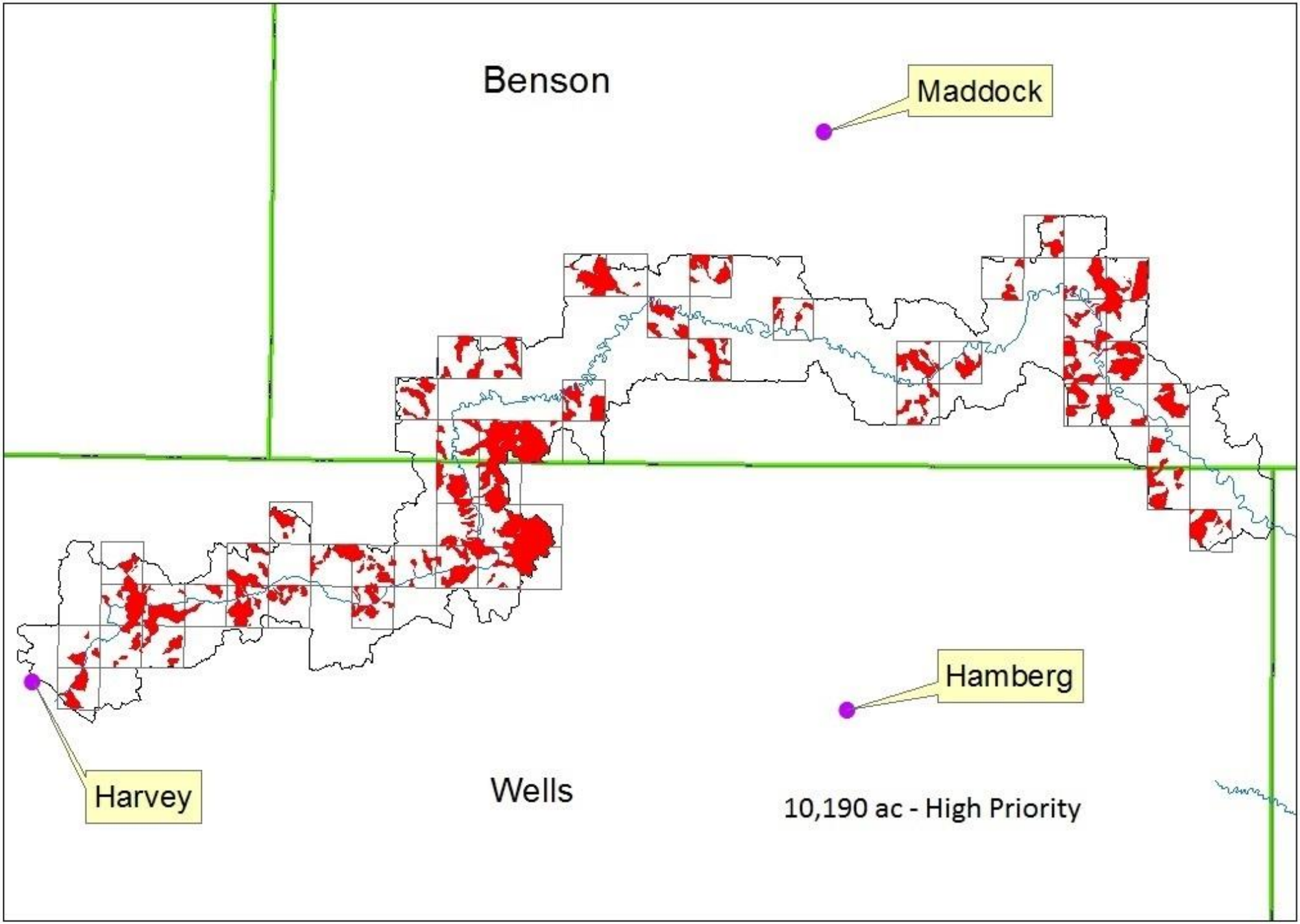


Figure 7. Middle Sheyenne River Project Area - High Priority Non-Crop Acres

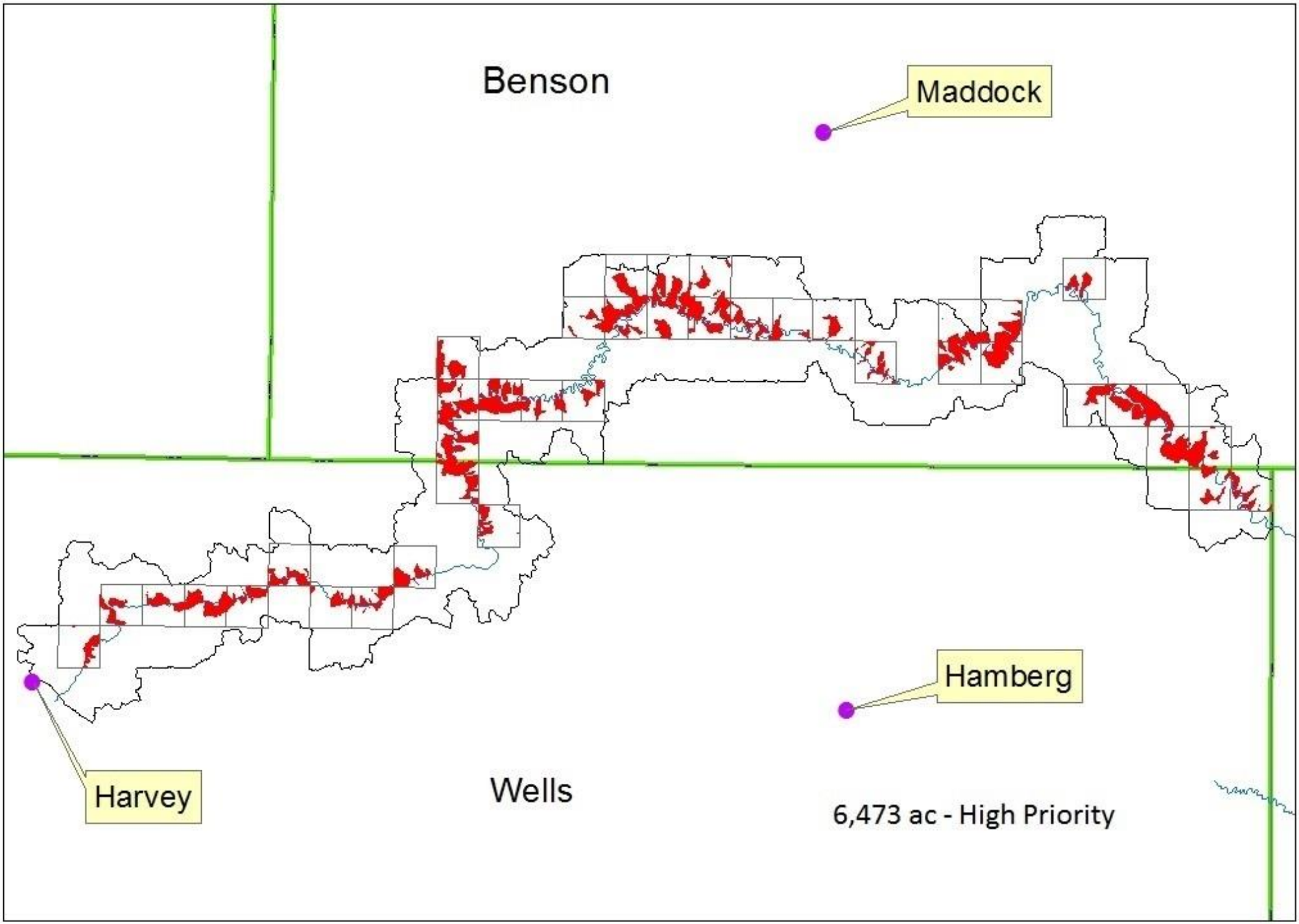
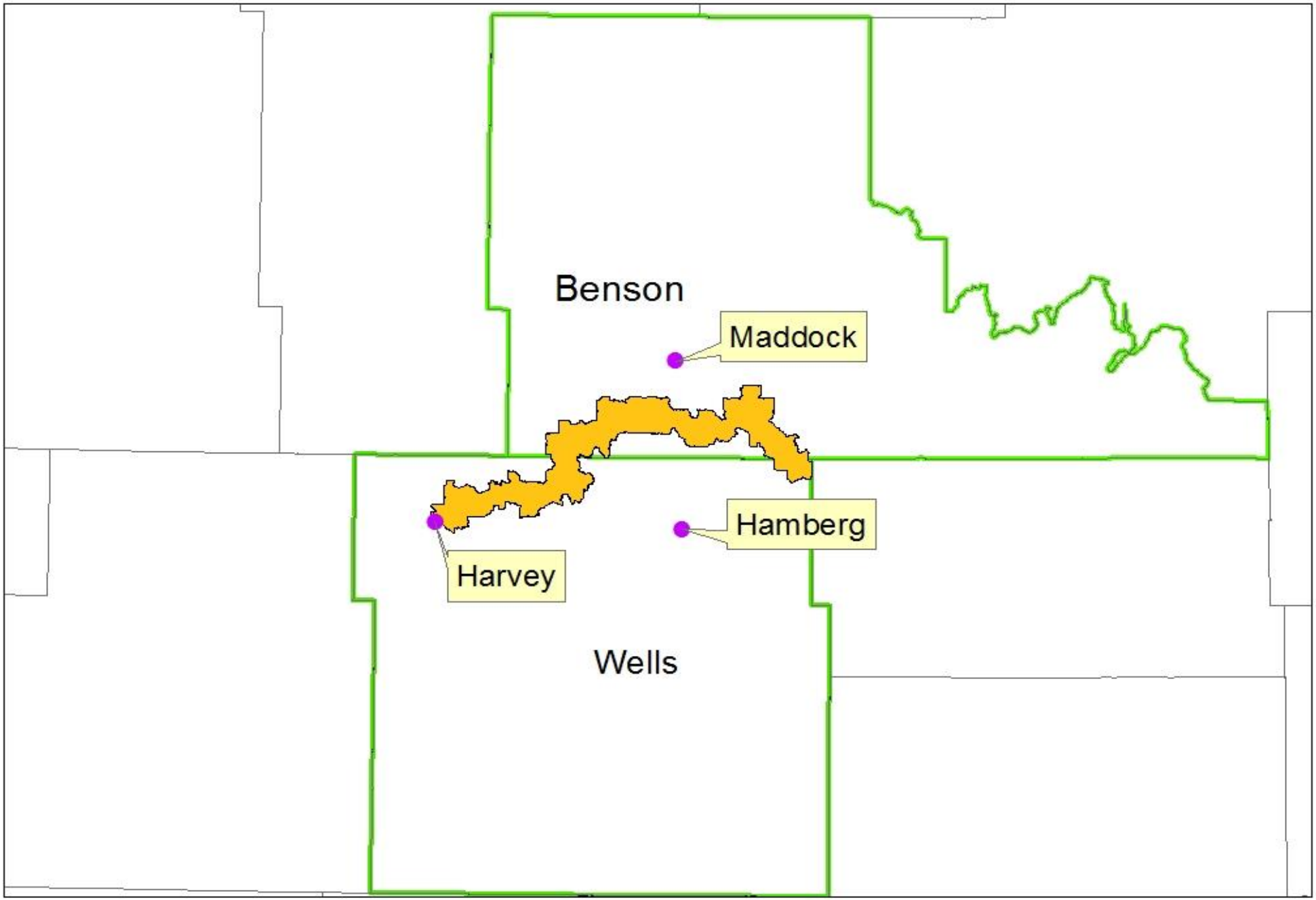


Figure 8. Middle Sheyenne River Project Area - Wells and Benson Counties



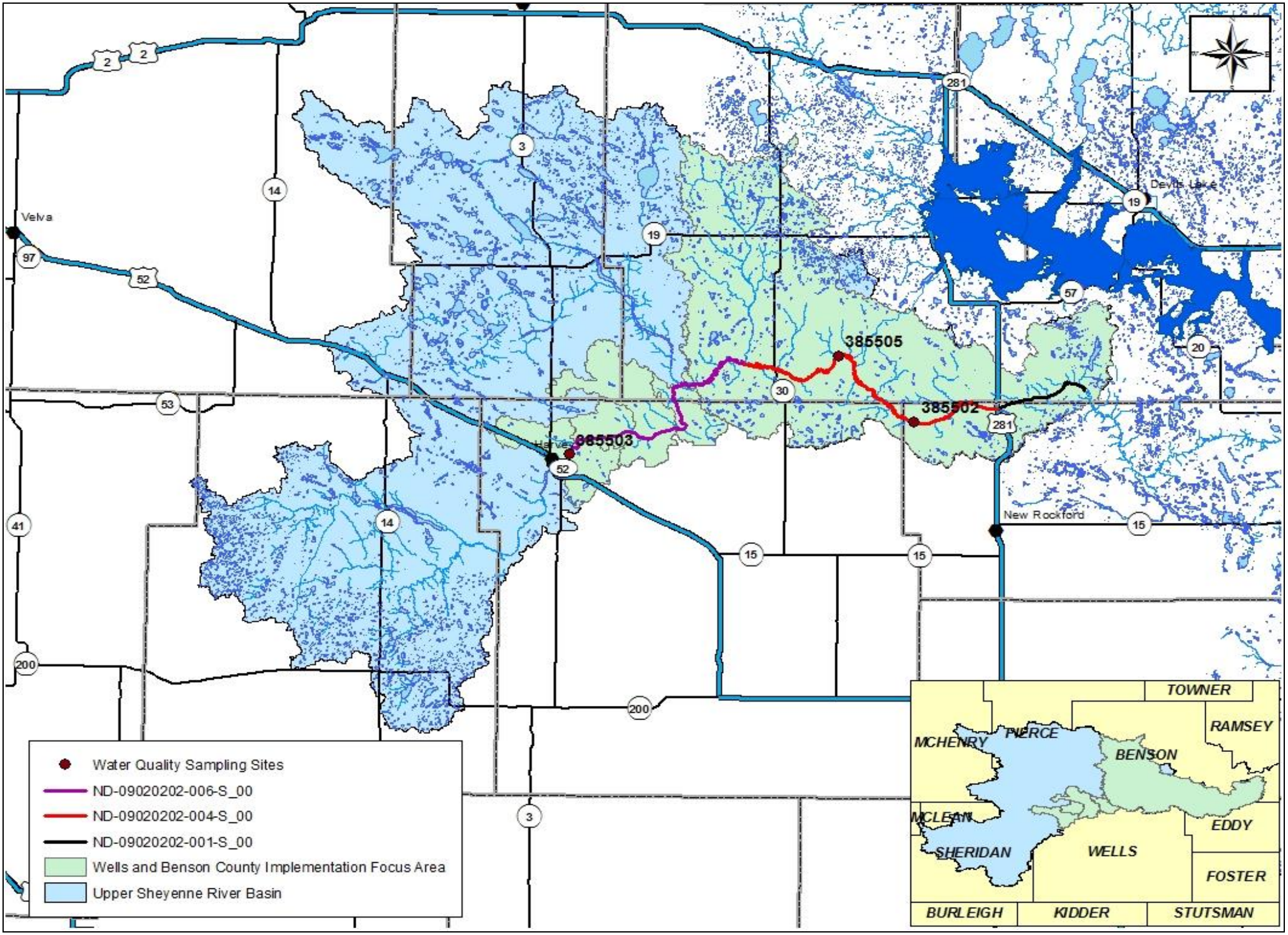
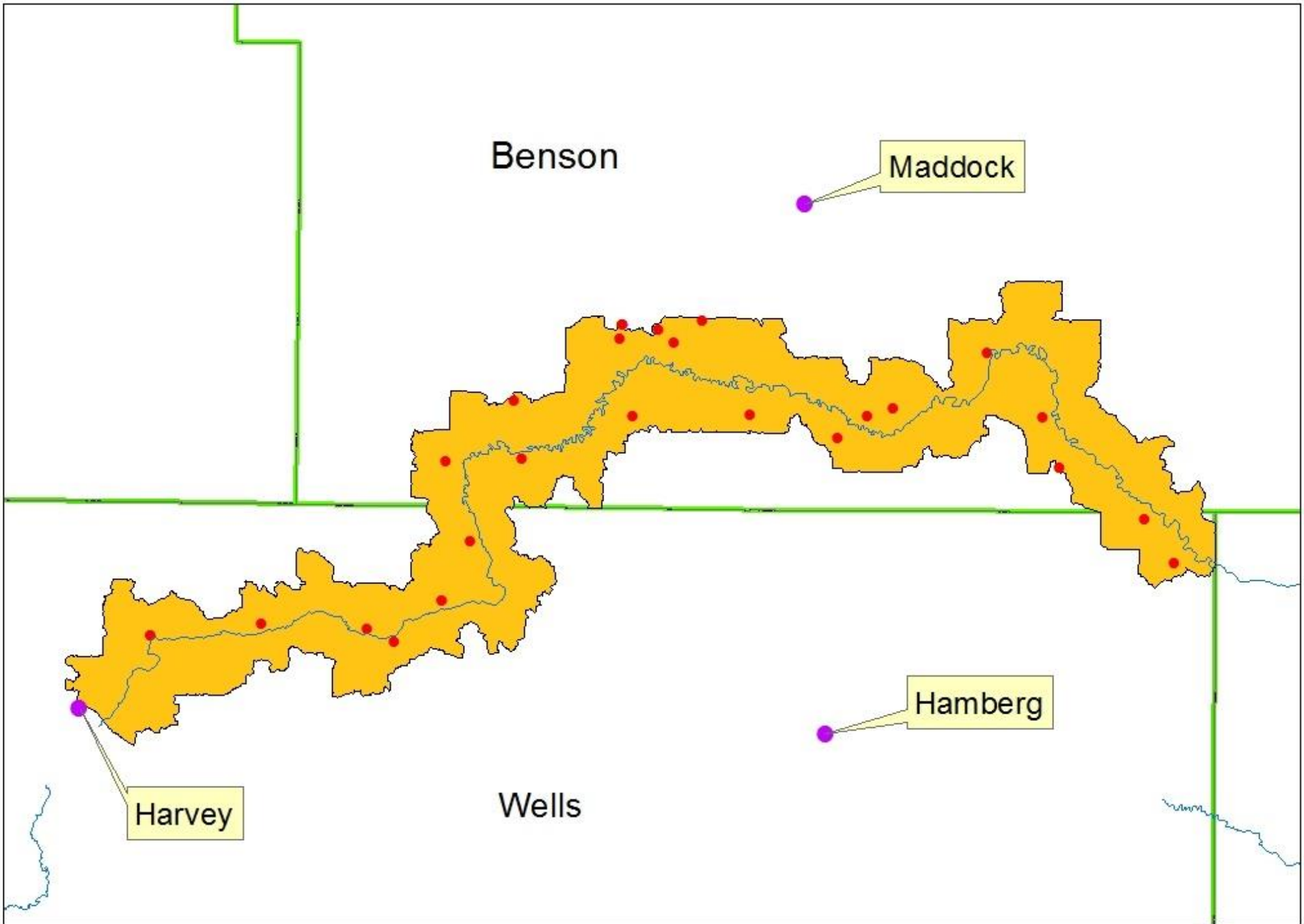


Figure 9. Middle Sheyenne Basin, Project Implementation Focus Area and Water Quality Sampling Sites.

Figure 10. Middle Sheyenne River Project Area - Livestock Feeding Areas



APPENDIX C

MOA

LETTERS OF PROJECT SUPPORT

MIDDLE SHEYENNE RIVER WATERSHED

MEMORANDUM OF AGREEMENT

WITH

Benson County Water Resource District

The Benson County Water Resource District, along with the Benson County Commission, North Central Soil Conservation District, Wells County Water Resource District and Wells County Soil Conservation District, agrees to commit funds to support the Middle Sheyenne River Watershed Project for 5 years, beginning July 1, 2016 through November 30, 2021.

The first year amount of $6,179, is the Benson County Water Resource Districts' share of the 40% local cash match required to implement the EPA Section 319 water quality project.

Ken Hoffert

Ken Hoffert
Chairman - Benson County WRD

9/1/15

Date

MIDDLE SHEYENNE RIVER WATERSHED

MEMORANDUM OF AGREEMENT

WITH

North Central Soil Conservation District

The North Central Soil Conservation District, along with the Benson County Water Resource District, Benson County Commission, Wells County Water Resource District and Wells County Soil Conservation District, agrees to commit funds to support the Middle Sheyenne River Watershed Project for 5 years, beginning July 1, 2016 through November 30, 2021.

The first year amount of $6,179, is the North Central Soil Conservation Districts' share of the 40% local cash match required to implement the EPA Section 319 water quality project.

Ardon Herman

Ardon Herman
Chairman – North Central SCD

11-12-015
Date

MIDDLE SHEYENNE RIVER WATERSHED

MEMORANDUM OF AGREEMENT

WITH

Benson County Commission

The Benson County Commission, along with the Benson County Water Resource District, North Central Soil Conservation District, Wells County Water Resource District and Wells County Soil Conservation District, agrees to commit funds to support the Middle Sheyenne River Watershed Project for 5 years, beginning July 1, 2016 through November 30, 2021.

The first year amount of $6,179, is the Benson County Commissions' share of the 40% local cash match required to implement the EPA Section 319 water quality project.

Lowell Haagenson

Lowell Haagenson
Chairman - Benson County Commission

9-01-15
Date

MIDDLE SHEYENNE RIVER WATERSHED

MEMORANDUM OF AGREEMENT

WITH

Wells County Water Resource District

The Wells County Water Resource District, along with the Wells County Soil Conservation District, Benson County Commission, Benson County Water Resource District and North Central Soil Conservation District, agrees to commit funds to support the Middle Sheyenne River Watershed Project for 5 years, beginning July 1, 2016 through Noveraber 30, 2021.

The first year amount of $10,505, is the Wells County Water Resource Districts' share of the 40% local cash match required to implement the EPA Section 319 water quality project.

Mike Weihemuller

Mike Weihemuller
Chairman - Wells County WRD

10-15-15
Date

MIDDLE SHEYENNE RIVER WATERSHED

MEMORANDUM OF AGREEMENT

WITH

Wells County Soil Conservation District

The Wells County Soil Conservation District, along with the Wells County Water Resource District, Benson County Commission, Benson County Water Resource District and North Central Soil Conservation District, agrees to allocate funds to support the Middle Sheyenne River Watershed Project for 5 years, beginning July 1, 2016 through November 30, 2021.

The first year amount of $1,854, is the Wells County Soil Conservation Districts' share of the 40% local cash match required to implement the EPA Section 319 water quality project.

David Lautt
Chairman - Wells County SCD

8-25-15
Date

APPENDIX D

NORTH DAKOTA DEPARTMENT OF HEALTH
QUALITY ASSURANCE PROJECT PLAN