

PROJECT SUMMARY SHEET

PROJECT TITLE: Little Missouri River Tributaries Implementation

PROJECT SPONSOR:

Bowman-Slope Soil Conservation District
PO Box 920
111 2nd Ave NW
Bowman, ND 58623

STATE CONTACT PERSON: Greg Sandness, ND Department of Health
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STATE North Dakota WATERSHED Little Missouri River
Tributaries

HYDROLOGIC UNIT CODE 10110201

HIGH PRIORITY WATERSHED (yes/no) yes

TMDL Development and/or Implementation (Check any that apply)

PROJECT TYPES: Watershed WATERBODY TYPES: Streams

NPS CATEGORY: Agriculture

SUMMARIZATION OF MAJOR GOALS: To restore the riparian health of the Spring, Skull, Horse, Fivemile and Sevenmile Watersheds, reduce non-point source pollutants entering the Little Missouri River's Tributaries.

PROJECT DESCRIPTION:

This Watershed Project is a conservation project that will strive to reduce non-point source pollution and through management education, the implementation of Best Management Practices, and monitoring project activities.

The educational and cooperative activities, such as interactive conservation tours and forums, and a multi-media source distribution of educational information, will educate watershed producers and the community on the impacts of non-point source pollution and riparian health and the importance of improving soil health.

The implementation of the Best Management Practices will be used to improve soil health and rangeland health, which will improve the health of the riparian reach through improved hydrological functioning (improved infiltration/reduced runoff) and stream bank stability. Implementation of practices will improve watershed function and trend, reducing non-point source pollutants entering the Little Missouri River through sedimentation and runoff.

FY 2017

Total 319 Funds Requested: \$251,538

Local Match Total: \$240,499

Other Federal Funds: \$450,000

Total Budget: \$942,037

2.0 STATEMENT OF NEED

2.1

The Little Missouri River from its confluence with Little Beaver Creek downstream to its confluence with Deep Creek is listed on the 303(d) list, or "TMDL List", as fully supporting recreation but threatened due to total fecal coliform bacteria. During major runoff events, it is likely the Spring, Skull, Horse, Fivemile and Sevenmile Creek Watersheds, which are tributaries to the Little Missouri River are contributing to the high fecal coliform bacteria counts in the Little Missouri River, thus contributing to the TMDL listing status of the Little Missouri River. Given this connection to recreational use impairments in the Little Missouri River, this project will focus on the contributions of several tributaries to the Little Missouri River by implementing the appropriate management practices to improve watershed function and trend, reducing non-point source pollutants entering the Little Missouri River through sedimentation and runoff. See Appendix 6 for a map of the project area.

Spring, Skull, Horse, Fivemile and Sevenmile Creeks are a sub-watershed of the Little Missouri watershed located in southwest North Dakota. Headwaters of these watersheds begin south and west of Rhame, ND in Bowman County and flow south west where it confluences with the Little Missouri River south of Marmarth, ND in Bowman County.

The assessment of these watersheds, conclusions, and management suggestions were completed and prepared by Miranda Meehan, Ph.D. Livestock Environmental Stewardship Specialist with North Dakota State University and Garrett Hecker, Graduate Research Assistant at North Dakota State University. The Bowman-Slope SCD is very satisfied and pleased with this type of assessment method which has resulted in a very good "picture" of these watersheds and their function. Their conclusions have assisted in the planning of this project by suggesting specific focus areas and management strategies to address in priority areas.

The NDSU Assessment Report (due to the size and number of pages the full assessment reports are available from the ND Department of Health and/or the Bowman-Slope Soil Conservation District) explains that it is widely recognized that riparian health is inherently linked to watershed condition and the health of the adjacent upland plant communities (Debano and Schmidt 1989; Martin et al. 2012). Healthy soils and plant communities in the uplands have been shown to increase infiltration and decrease overland flow. High overland flow results in more water traveling through the stream channel and higher velocities, which often leads to channel entrenchment and widening. As a result some agencies are utilizing a watershed-scale assessment in the planning process. However, to date there has been no work published directly linking the state of upland ecological sites to riparian ecological sites. This project assessed the link between riparian and rangeland health. On each tributary, the assessment included: Rosgen's classification of natural streams to identify the current state of the stream and vegetation associated with each reach, used to determine the current state of the riparian ecosystem, whether it is stable, unstable or at risk. The assessment of the upland adjacent to the assessed stream reaches utilized the Rangeland Health and Soil Health protocols used to evaluate stability, hydrologic function and biotic integrity of the ecological sites within the uplands. The major goal of this assessment method was to improve and strengthen the ability of resource managers and landowners to restore and/or properly manage riparian ecosystems through improved understanding of the relationships between 1) riparian and rangeland health, and 2) ecosystem health and land management. Increased

knowledge of these relationships led to the development of best management practices for riparian ecosystems, specifically grazing management strategies that will enhance stability and resilience within a particular riparian system.

In addition to the watershed health assessment, the Bowman/Slope SCD conducted various other needs assessment methods to fully research the need for this project. Needs assessment methods used include:

- Key informant interviews
- Questionnaire and survey

In key informant interviews conducted by the watershed coordinator, producers in these watersheds expressed a high level of interest in the water quality. The SCD board held multiple meetings discussing and prioritizing the conservation issues producers in the watershed are dealing with. A survey was mailed to all producers in these watersheds asking what BMP's and educational needs (related to water quality) are in the watershed. The survey was a successful tool in the planning process for this project.

The results from the surveys returned are listed below:

- 100% of the returned survey's supported the need for the project and listed BMP's they see a need for on their operation
- A strong interest in BMP's on rangeland were expressed with the need to improve and facilitate grazing systems and improve soil health.
- Producers also requested BMP's to lesson livestock's time in the riparian areas (portable windbreaks, alternative water sources)
- Specific requests were made for assistance with learning more about cover crops and improving soil health

(Actual Producer Survey Results)

This survey, in addition to the watershed assessments, were the basis for the estimated BMP's (see a copy of this survey in Appendix 4). Through this survey producers requested the following BMP's: cross fencing, water developments to improve grazing distribution, pasture/hayland plantings, invasive species control, waste management systems, cover crops, and windbreak establishment. Educational needs expressed through this survey were; soil health, rangeland/grazing management, cover crops, and Holistic Resource Management.

There are also a number of operations in this watershed that winter their cow herd near natural protection that is also located near the creek and riparian areas. Therefore an important option for these producers will be a partial manure management system; winter grazing system; and/or portable windbreaks to be able to move winter feeding areas away from riparian areas.

To limit impacts of livestock, wildlife and equipment a recommendation is to install stream hardened crossings to encourage one "main" stream crossing instead of multiple sites being used causing stream bank erosion, sedimentation and streambank degradation. Including this practice in the BMP's available to producers and land owners will be a unique conservation opportunity available to this project area and may offer a "great" conservation return for a low cost investment.

2.2

Spring, Skull, Horse, Sevenmile and Fivemile Creeks are located in Bowman County, and in North Dakota in hydrologic unit code 10110201. All of these listed creeks are intermittent tributaries of the Little Missouri River.

Spring Creek is approximately 19 miles in length and drainage area of approximately 20,432 acres. The Spring Creek Watershed is located within 2 Major Land Resource Areas (MLRA), the eastern portion of the watershed is located within MLRA 54, the Rolling Soft Shale Plain, and the western portion is located within MLRA 58C, the Northern Rolling High Plains, Northwestern Part.

Skull Creek is approximately 20.6 miles in length with drainage area of approximately 20,658 acres. The Skull Creek Watershed is located within MLRA 58D, the Northern Rolling High Plains, Eastern Part.

Horse Creek is approximately 17 miles in length with a draining area of approximately 17,267 acres. Sevenmile is approximately 22 miles in length with a drainage area of approximately 17,570 acres. Fivemile Creek is approximately 18 miles in length with a drainage area of approximately 20,586 acres. All of these watersheds are a landscape of MLRA 58D.

Landscape in these watersheds is a diverse accumulation of rangeland, cropland, nearly barren and barren buttes and bluffs which make up the Badlands of southwestern North Dakota. Farming and ranching is the heart of the area's economy and land within the watershed is managed for this purpose.

The Watershed Assessment for Spring and Skull Creek Watersheds was completed by Miranda Meehan, Carlson McCain in 2014. The Watershed Assessment for Horse, Sevenmile and Fivemile Creeks were completed by Miranda Meehan, and Garret Hecker, NDSU in 2015. Methodology is explained in the Watershed Assessment Reports, available upon request to the Bowman-Slope SCD and/or ND Department of Health.

2.3 See Appendix 6 for maps.

2.4

The total acreage in this project area is approximately 96,513 acres and approximately 97 miles of streams length.

Spring Creek Watershed drains approximately 20,432 acres in Bowman County. The topography of the watershed varies from nearly level cropland to the steep and complex badlands. Agriculture is the predominant land use in the watershed. Grassland occupies the greatest area of the watershed at 64.3%, cropland accounting for 15%, hayland 1.5%, pastureland 1.6%, shrubland 9.4%, riparian/wetland 2% and other land uses such as roads, water, and farmsteads cover the balance.

Skull Creek Watershed drains approximately 20,658 acres in Bowman County. The landscape is characterized by level plains with occasional flat-topped, steep sided buttes rising out of the plains. The dominant native vegetation within MLRA 58D is mixed prairie. Agriculture is the predominant land use in the watershed. Grassland occupies the greatest area of the watershed at 67%, cropland accounting for 8.5%, hayland .9%,

pastureland 1%, shrubland 16%, riparian/wetland 2.4% and other land uses such as roads, water, and farmsteads cover the balance.

Horse Creek Watershed drains approximately 17,267 acres and the Sevenmile Creek Watershed drains 17,570 acres all in Bowman County. The landscape is consistent with the MLRA 58D being characterized by mostly gentle slopes with steep slopes being common. The flat lands are dominated by native vegetation with mixed grass prairie. Agriculture is the predominant land use in the watershed. Grassland occupies the greatest area of the watershed at 67%, cropland accounting for 3.22%, hayland/pasture .01%, shrubland 18.09%, riparian/wetland 2.62%, badlands and barren lands 6.02% and other land uses such as roads, water, and farmsteads cover the balance

Fivemile Creek Watershed drains approximately 20,568 acres in Bowman County. The landscape is characterized by gentle to steep slopes, and contains some areas that are relatively flat where steep –sided buttes occur. The dominant native vegetation within MLRA 58D is mixed grass prairie. Agriculture is the predominant land use in the watershed. Grassland occupies the greatest area of the watershed at 64%, cropland accounting for 8%, shrubland 16%, riparian/wetland 3% and other land uses such as roads, water, and farmsteads cover the balance.

The predominant enterprises in these watersheds are cow/calf and small grain operations with forage crops, back-grounding, and sheep operations also present. There are a small number of producers that irrigate out of the Little Missouri River in these watersheds. The Energy and Gas Industry is very active in these watersheds also.

These watersheds are in a brittle type ecosystem, soils are generally very shallow, droughty and highly erodible. The ability for agriculture practices to improve infiltration rates and reduce run-off is crucial to the health of the watershed and production agriculture in this area.

The North Dakota State Land Department and Bureau of Land Management are also landowners in this watershed.

2.5

The Watershed Assessments concluded:

Spring and Skull Creek Watersheds: Six of the nineteen riparian reaches evaluated were determined to have a downward trend, showing bank destabilization, channel down cutting and channel widening. The replacement of deep rooted native riparian species within the greenline plant community by shallow rooted upland and/or introduced species cause bank to become less stable resulting in the transition into state two.

Horse and Sevenmile Creek Watersheds: Of the twelve riparian reaches evaluated, six were determined to have a downward trend. Sites that were classified as having a downward trend had introduced species within their greenline communities and idle land management.

Fivemile Creek Watershed: Of the eleven riparian reaches evaluated, five were determined to be unstable/less stable condition. Sites that were classified as having a downward trend had bank destabilization, channel down cutting, high amount of upland species cover within greenline area, and channel widening.

Management suggestions to improve these downward trending sites included healthy grazing management which promotes and facilitates a healthy functioning native plant system, with deep roots to promote bank stabilization and improve infiltration rates. Grazing can include grazing riparian areas when plants are dormant to avoid plant damage, grazing systems to improve idle land and control Brome Grass invasions and promote healthy native and manage introduced grass species (Kentucky Bluegrass).

To limit the impacts of both livestock and equipment it is recommended that the number of stream crossing utilized be limited. Condensing stream crossings can reduce sedimentation and erosion, increasing water quality.

With portions of the Little Missouri River being on the North Dakota Section 303(d) list

Water samples were not collected in these creeks due to lack of flow, geographical barriers, and access issues. The lack of flow in the upper portion of this watershed made relying strictly on rain events difficult to capture water quality samples. And the lower portion of the watershed is in the Badlands landscape and physically getting to the flow sites after a rain event is almost impossible. In the watersheds in the assessment portion of this project, there are more accessible points to collect water samples near the entry point of the river.

3.0 PROJECT DESCRIPTION

3.1 GOAL

To reduce the potential for the Spring, Skull, Horse, Sevenmile and Fivemile Creek Watersheds, to contribute to downstream recreational use impairments to the Little Missouri River. The implementation of the Best Management Practices will be used to improve soil health and rangeland health, which will improve the health of the riparian reach through improved hydrological functioning (improved infiltration/reduced runoff) and stream bank stability.

3.2 OBJECTIVES, TASKS, PRODUCTS, AND COST

Objective 1: Sponsor and conduct multiple conservation and water quality educational activities for the public to bring interactive and innovative educational opportunities to our community. .

Task 1: Employ one part-time support staff to implement all project tasks. *See a description of staff duties in appendix 6.*

Products: Administration, educational and informational activities, conservation plans, BMP Monitoring, producer survey.

Cost: \$176,233 (\$101,240 319 Funds, \$77,993 Local Cash & In-Kind Match)

Task 2: Conduct tours, meetings, presentations, and lyceums for producers, school systems, and the general public.

Products: Conservation tours/meetings educating participants on: Rangeland health, Prescribed Grazing Techniques, Water Quality Indicators, Riparian health, Soil Health, Watershed Function and Conservation Impacts, Nutrient Management Planning, Cropping Rotations (2 per year, 10 total during the project period).

Cost: \$42,000 (\$5,000 319 Funds, \$37,000 In-Kind and Cash Match)

Task 3: Implement a conservation and water quality information campaign using

multi-media sources to distribute education.

Products: Educational articles (2 per year), Radio spots (6 monthly spots per year), Educational booth at the local county fairs (2 per year)

Cost: \$15,000 In-Kind and Cash Match)

Task 4: Coordinate with other state, federal and/or local organization's resource management activities in the watershed to ensure water quality issues are being addressed and avoid duplications of efforts.

Product: Increased communication and coordination regarding water quality issues in the watershed.

Cost: \$0- included in staff budget

Objective 2: Restore the function and reverse the downward trend on 20% of the stream reaches of the tributaries to the Little Missouri River by improving soil health and land management along the creeks.

Task 5: Assist producers with the planning and implementation of BMP's that will improve management on approximately 20,000 acres of land adjacent to the creeks to restore and protect the vegetative communities in the riparian corridor and improve plant diversity, soil health and infiltration rates on lands adjacent to the riparian corridor.

Products: See BMP Table in Appendix 3 for specific practices.

Cost: \$269,800 (\$145,297 319 Funds, \$94,503 Producer Cash Match, \$30,000 Prescribed Grazing In-Kind Match, \$5,000 In-kind match for SCD vehicle use & the balance of cost are included in Task 1 Personnel/Support.)

Objective 3: Coordinate with the NDDoH and the North Dakota State University to monitor and document riparian improvements and estimate benefits of applied BMP's in the Spring, Skull, Horse, Sevenmile and Fivemile Creeks Watersheds.

Task 6: Conduct follow-up evaluations to document post-project riparian conditions and watershed function trend in the watershed.

Products: End-of-project riparian rankings defining conditions

Cost: Included in staff budget

Task 7: Track the location of applied BMP and document the benefits of select BMP using photo-monitoring sites.

Products: Photo documentation of riparian improvements related to applied BMP; Estimated nitrogen and phosphorus load reductions associated with full containments and partial manure management systems; and a map of BMP locations. See Appendix 8 for photo-monitoring methods to be used.

Costs: Included in staff budget

Task 8: Follow-up survey with producers in the watershed to measure the improved knowledge they gain from the project.

Product: Survey data and summary report to measure the impact the educational activities have.

Cost: Included in staff budget

3.3 Milestone Table – See Appendix 1

3.4

The appropriate environmental permits that may potentially apply to this project are:

- NDDoH Approval to Operate Permit for Animal Feeding Operations
- Cultural Resource inventories and regulations
- US Corps of Engineer 404 Permits

3.5

The Bowman/Slope SCD has over twenty-six years of proven effective experience with watershed and EPA-319 projects. The SCD has demonstrated leadership in progressive conservation in the local communities, district, region, and state. The SCD has sufficient resources to implement all aspects of this watershed project including: personnel with experience in federal programs, equipment, vehicles, and an established reputation with the agriculture community.

3.6

The project sponsor will be responsible for insuring the proper Operations and Maintenance (O&M) of 319 funded BMP's. Project staff will monitor and inspect installed BMP's as needed. BMP's standards will follow the NRCS Technical Guide. Project staff will inform the cost-share recipients of the O&M conditions during the planning process, the recipient will sign *Section 319 Cost Share Agreement Provisions*, which will be included with *Conservation Plan of Operations*.

4.0 COORDINATION PLAN

4.1

(1) The Bowman/Slope Soil Conservation District will be the lead project sponsor for the Little Missouri River Tributaries Project. The SCD will be responsible for the implementation of all the goals, objectives, tasks, and products presented in this proposal. The SCD will provide all personnel, administration, equipment, and financial support required to successfully implement the project.

(2) USDA Natural Resources Conservation Service (NRCS) will provide technical assistance, engineering services, technology/equipment, and participate in the educational activities and project promotion. The implementation of NRCS conservation programs (EQIP, WHIP, CSP, etc.) during this project period will correlate with and support the goals and objectives of this project.

(4) North Dakota State University Extension Service will provide the project with technical and educational assistance for tours, demonstrations, lyceums, newsletters, project promotion, and training. The SCD personnel will work closely with the Bowman County Extension Service to develop an effective education and outreach program. The NDSU Extension Service will provide in-kind match towards the project.

(5) North Dakota Department of Health (NDDoH) will be the EPA-319 funding administrator for the project. NDDoH will provide continued technical assistance and training to SCD staff for the implementation of the project's Quality Assurance Project Plan.

(6) Local Community Partners multiple local businesses and organizations will provide technical and financial assistance for the implementation of the project's educational activities. (i.e., Farm Credit Services and Dakota Western Bank will sponsor a meal and refreshments for a tour.)

4.2

Throughout the assessment phase of the Little Missouri River Tributaries Watershed Project, the Bowman-Slope SCD and cooperators have created public awareness of the need for the project through newsletter articles and one-on-one conservation planning with producers.

The SCD mailed a survey to these watershed producers to research the general support for the project and specific BMP and educational needs in the watershed. This proved to be a very beneficial tool for the planning of the implementation of this project. 100% of the surveys returned supported the need for this project. See a copy of this survey in Appendix 4.

Letters of support and commitment for the project are included in Appendix 8.

4.3

Coordination with existing projects and organizations is a strong point in this project. The proposed educational activities and BMP's in the Little Missouri River Tributaries (LMRT) Watershed project complement many existing projects and conservation activities throughout the Little Missouri River Watershed.

The SCD will coordinate this watershed project with all applicable programs available in the most efficient method to achieve the goals and objectives of the project. USDA Conservation Programs available in the watershed are the Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP), and Conservation Stewardship Program (CSP). NRCS currently has an active Special Sage Grouse Initiative within this watershed area that is implementing many BMP's with a common conservation goal as this EPA-319 Project. There continues to be conservation practices planned through NRCS in this special Sage Grouse Initiative to improve grazing systems and soil health. Through the LMRT Project, producers will be able to receive education and technical assistance to implement new grazing management strategies to complement the practices planned in their NRCS contracts. BMP's through this EPA-319 Project will also be used to complement and/or build upon a producers existing USDA plan.

4.4

The Little Missouri River Watersheds are located in Greater Sage-Grouse Habitat. In 2010 the US Fish & Wildlife Service placed the Sage Grouse on the list of species that are candidates for the Endangered Species Act Protection and in 2016 did not list the species on the Endangered Species List. Therefore there is and has been a strong effort by the USDA, US Fish & Wildlife Service and ND Game & Fish and Bowman-Slope SCD to improve habitat for the Sage Grouse. Generally, improving rangeland and soil health improves Sage Grouse Habitat; therefore, the BMP's installed through the Little Missouri River Tributaries Project and potential findings in the other watershed assessments will complement the existing efforts in Sage Grouse Habitat areas.

5.0 EVALUATION AND MONITORING PLAN

5.1-5.5

The Little Missouri River Tributaries Project will be evaluated through:

- Photo-monitoring
- Riparian cross sections be sampled using the same protocol as done in the assessment
- LPO of the greenline communities

Other methods of evaluation will be a project effectiveness evaluation by the SCD board and a follow-up survey to watershed producers. In addition, project staff will document participants attendance at activities completed in Tasks 1-4 to measure if project goal and objectives are achieved.

Tracking BMP Implementation

BMP Implementation

The ND NPS Program BMP Tracker database will be used to store information on all BMPs applied during the project. The database will be updated and maintained regularly throughout the project to track the costs, type, location and amounts of specific BMP's implemented in the watershed. Information (e.g., location, type, & amount) from the database will be used to associate the applied BMP with data from the riparian assessment sites to document the environmental benefits resulting from the BMP. The BMP data will also be used to document the and map the extent of land use improvement in the watershed.

6.0 Budget

6.1 See Appendix 2 for budget tables

7.0 Public Involvement

The Little Missouri Tributaries Watershed Project will ensure public involvement through an extensive information and education campaign to increase the awareness of the project and resource concerns in the watershed. The planned "hands- on" educational activities will allow producers to learn how to address their individual resource concerns and ensure involvement from all participants.

The assessment survey completed by the producers in the watershed gave the producers "ownership" and individual involvement in the planning of this project. With the implementation of this project, producers will have the opportunity to complete BMP's and participate in the educational activities that they expressed a need for.

The SCD board represents the constituents of the watershed. They uphold the responsibility to address the needs of their constituents and ensure their involvement in the project.

Appendix

Appendix 1..... Milestone Table

Appendix 2 Budgets

Appendix 3 BMP Table

Appendix 4 Producer Survey

Appendix 5Maps

Appendix 6 Staff Job Descriptions

Appendix 7 Photo Monitoring Protocol

Appendix 8 Letters of Support

Little Missouri River Tributaries Implementation Project Budget

PART 2: Funding

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Total Costs	Cash Match	In-Kind Match	319 Funds
PERSONNEL/SUPPORT									
1) Salary- Part-time Project Coordinator	\$19,000	\$24,000	\$26,605	\$27,403	\$28,225	\$125,233	\$50,093		\$75,140
2) Benefits - Project Coordinator	\$6,400	\$8,500	\$8,600	\$8,700	\$8,800	\$41,000	\$16,400		\$24,600
3) Office Equipment	\$0	\$0	\$0	\$0	\$0	\$0			\$0
4) Travel	\$500	\$500	\$500	\$500	\$500	\$2,500	\$1,000		\$1,500
5) Supplies	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000	\$5,000	\$3,000	
6) Postage	\$500	\$500	\$500	\$500	\$500	\$2,500	\$2,500		
Subtotals	\$27,400	\$34,500	\$37,205	\$38,103	\$39,025	\$176,233	\$74,993	\$3,000	\$101,240
OBJECTIVE 1: EDUCATIONAL ACTIVITIES									
Task 1: Project Staff	Included in Personnel/Support								
Task 2: Tours	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$27,000	\$11,000	\$11,000	\$5,000
Task 3: Information Campaign	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$15,000	\$10,000	\$5,000	
Task 4: Multi-organization Coordination	Included in Personnel/Support								
Subtotals	\$8,400	\$8,400	\$8,400	\$8,400	\$8,400	\$42,000	\$10,000	\$16,000	\$5,000
OBJECTIVE 2:									
Task 5: Planning & BMP's	\$53,960	\$53,960	\$53,960	\$53,960	\$53,960	\$269,800	\$94,502	\$30,000	\$145,298
Subtotals	\$53,960	\$53,960	\$53,960	\$53,960	\$53,960	\$269,800	\$94,502	\$30,000	\$145,298
OBJECTIVE 3: MONITOR AND EVALUATE									
Task 7: Monitor Riparian health	Included in Personnel/Support								
Task 8: Photo Monitoring	Included in Personnel/Support								
Task 9: Follow-up Survey	Included in Personnel/Support								
Subtotals						\$0	\$0	\$0	\$0
Administration and Accounting									
SCD Management	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$15,000	\$0	\$15,000	\$0
TOTAL PROJECT BUDGET	\$92,760	\$99,860	\$102,565	\$103,463	\$104,385	\$503,033	\$179,495	\$61,000	\$251,538

All Personnel/Support costs are separate and not included in the total cost of each Task Total.

** Conservation Planning: In-kind value for SCD vehicle use*

*** BMP In-Kind: based on 10,000 acres of Prescribed Grazing @ \$3/ac.*

Refer to BMP Table (Appendix 3) for more detailed BMP costs.

Little Missouri Tributaries BUDGET TABLE

PART 1: Funding Sources	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	TOTAL
EPA Section 319 Funds						
1) FY 17 Funds (FA)	\$48,816	\$51,846	\$53,543	\$48,816	\$48,517	\$251,538
Subtotals	\$48,816	\$51,846	\$53,543	\$48,816	\$48,517	\$251,538
Other Federal Funds						
1) NRCS- EQIP, WHIP, CSP (FA)	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000
NRCS (TA)	\$40,000	\$40,000	\$45,000	\$45,000	\$30,000	\$200,000
Subtotals	\$90,000	\$68,000	\$85,000	\$85,000	\$58,000	\$450,000
State/Local Match						
1) Bowman/Slope SCD (FA, TA)	\$17,095	\$17,094	\$17,094	\$17,097	\$17,099	\$85,479
2) Watershed Producers (FA)	\$24,900	\$24,900	\$24,900	\$24,900	\$24,900	\$124,500
3) NDSU Extension Service (TA)	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$20,000
4) Local Sponsors (FA)*	\$2,104	\$2,104	\$2,104	\$2,104	\$2,104	\$10,520
Subtotals	\$48,099	\$48,098	\$48,098	\$48,101	\$48,103	\$240,499
TOTAL BUDGET FUNDS						
	\$186,915	\$167,944	\$186,641	\$181,917	\$154,620	\$942,037

FA: Financial Assistance

TA: Technical Assistance

NRCS: Natural Resource Conservation Service

SCD: Soil Conservation District

* Local sponsors: Local Business and organizations providing assistance for the educational activities (i.e. meal/refreshments sponsor)

BEST MANAGEMENT PRACTICE TABLE

PRACTICE CODE	PRACTICE DESCRIPTION	COST PER UNIT	QUANTITY	TOTAL	319 FUNDS
382	Fencing	\$1.35/ft	5,000 ft	\$6,750.00	\$5,467.50
512	Pasture/Hayland Planting	\$35/ac	250 ac	\$8,750.00	\$5,250.00
516	Pipelines	\$3.00/ft	10,000 ft	\$30,000.00	\$18,000.00
550	Range Planting	\$40/ac	50 ac	\$2,000.00	\$1,200.00
614	Trough and Tank	\$1,500/each	10/ each	\$15,000.00	\$9,000.00
633	Waste Utilization	\$2/ton	100/ton	\$200.00	\$120.00
642	Well (livestock only)	\$8100/each	3 each	\$24,300.00	\$14,580.00
351	Well Decommissioning	\$900/each	3 each	\$2,700.00	\$1,620.00
380	Windbreak/Shelterbelt Establishment	\$30/hlf	5,000 ft	\$1,500.00	\$900.00
312	Waste Management System	\$50,000/ea	1	\$50,000.00	\$30,000.00
340	Cover Crops	\$20/ac	1,000 ac	\$20,000.00	\$12,000.00
528A	Prescribed Grazing (In-Kind)	\$5/ac	10,000 ac	\$30,000.00	
	Portable Windbreaks	\$27.00	800 ft	\$21,600.00	\$12,960.00
	Solar System	\$6,000	2 each	\$12,000.00	\$7,200.00
	Harden Water Crossing	\$9,000 each	5 each	\$45,000.00	\$27,000.00
			TOTAL	\$269,800.00	\$145,297.50

* Standard Cost Share Ratio: 60% Federal / 40% Local Funds

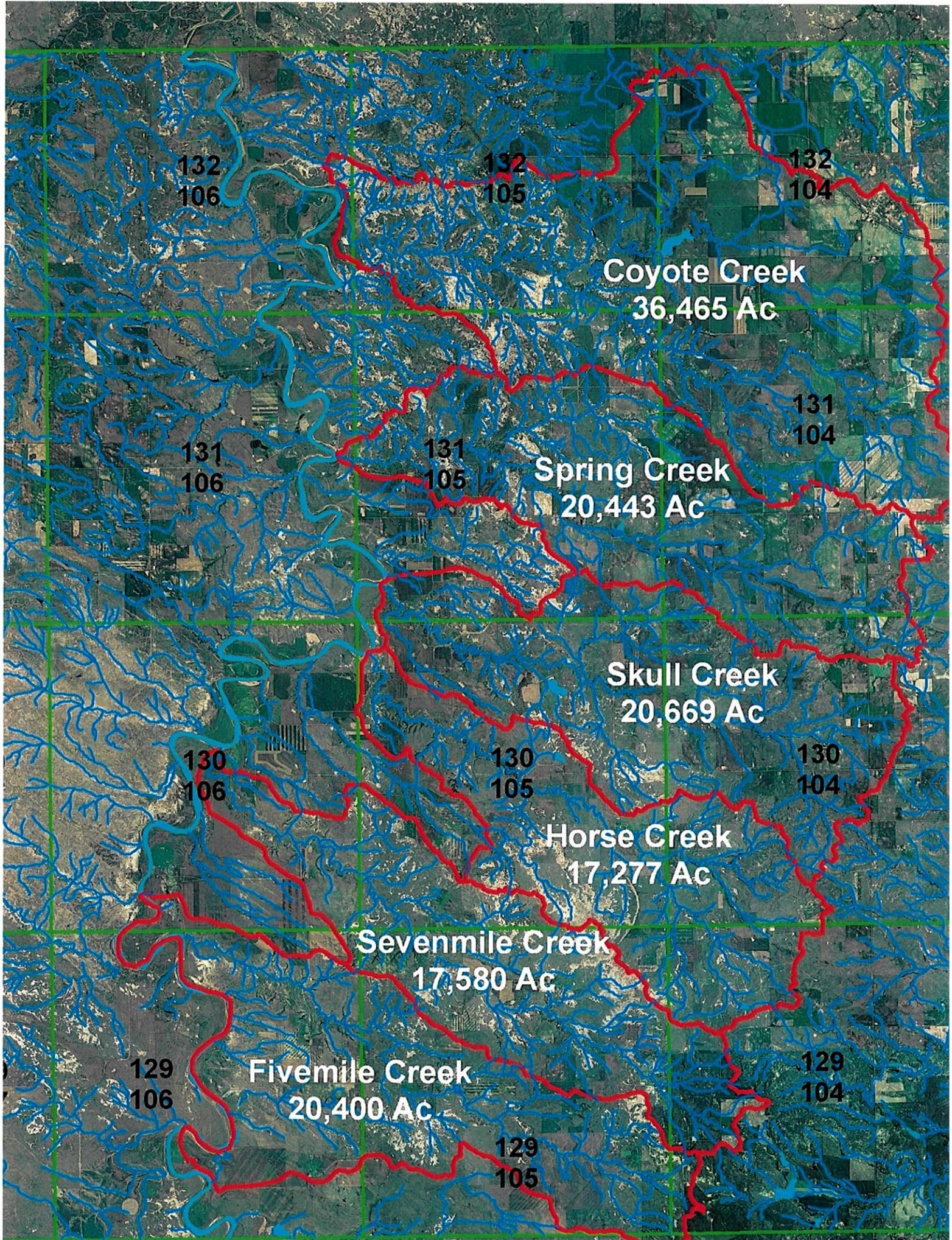
**Little Missouri River Eastern Tributaries Watershed
319 Project Producer Survey**

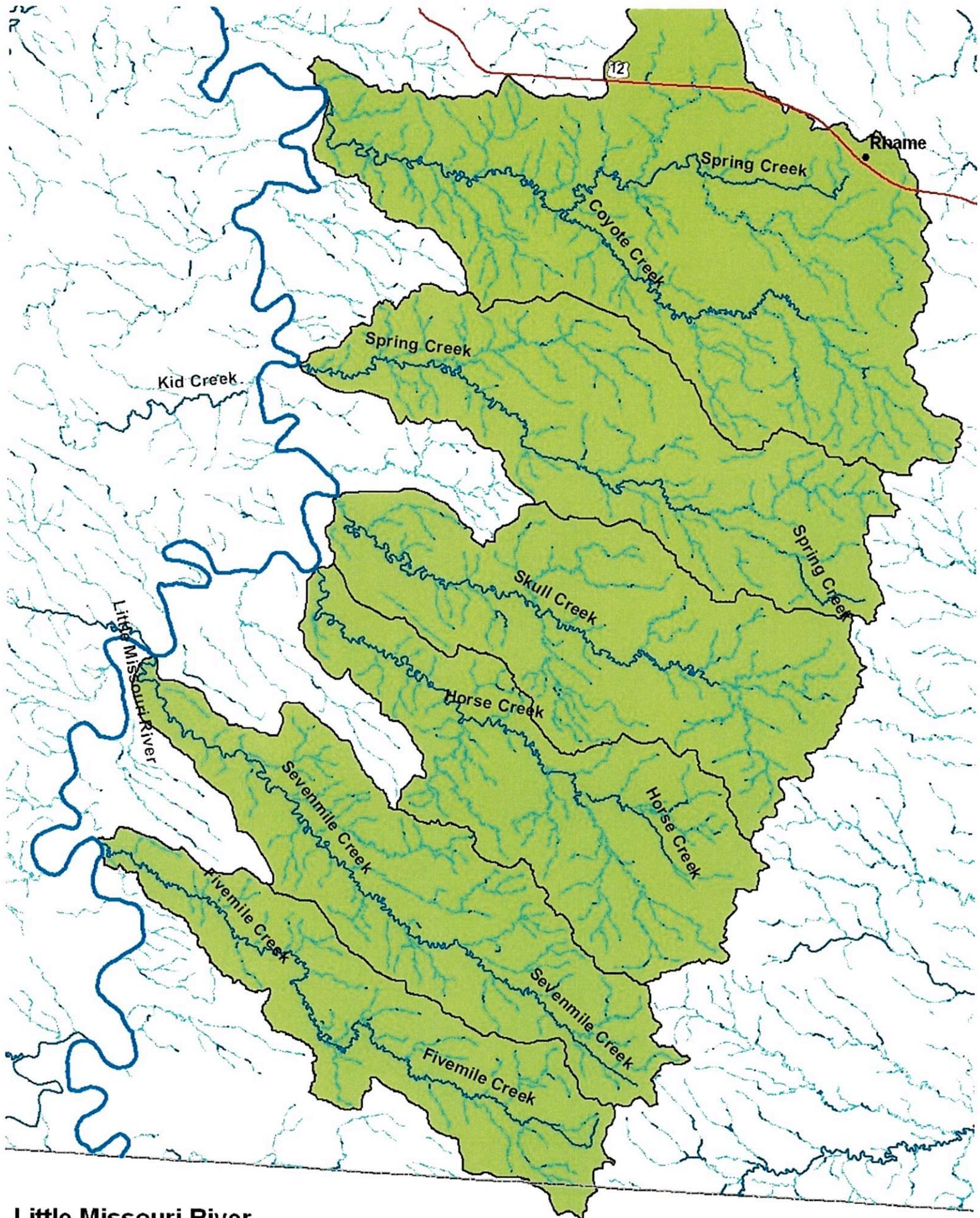
Possible Best Management Practices (BMP), please check all that apply.

<u>Practice</u>	<u>Yes Interested in Installing</u>	<u>Quantity</u>
Grazing Lands Practices		
Fencing	_____	_____
Livestock Pipelines	_____	_____
Water tanks	_____	_____
Water Well	_____	_____
Cropland/Hayland Practices		
Grass Seeding	_____	_____
Native Range Seeding	_____	_____
Tree Planting	_____	_____
Cover Crops	_____	_____
Other Practices		
Harden Water Crossing		
*Used to provide one "main" creek crossing for people and livestock to lesson trials and erosion points on creek banks	_____	_____
Agriculture Nutrient Management Systems		
*Feedlots and/or winter Feeding operations	_____	_____
Portable Windbreaks To move and rotate winter Feeding areas	_____	_____

Demonstration Project Ideas:

Education Ideas, Topics, Type:





**Little Missouri River
Tributaries Assessment**

Legend



Watershed Coordinator Job Description

The Bowman-Slope SCD watershed coordinator will be responsible for promoting, implementing, and completing all aspects of the watershed BMP practices and overall project management. The SCD Board of Supervisors will serve as the supervisor and management for this position.

Specifically the coordinator will:

- Promote conservation practices through producer contacts
- Develop conservation plans, gather data, complete/assist with field work
- Plan, organize, and conduct educational activities
- Assist the SCD Board in a coordinated effort with other agencies/organizations to improve the natural resources of the watershed
- Complete all necessary reports, record keeping, database management, and administrative needs of the watershed
- Collect water samples and field data need for project monitoring and for the assessment of additional watersheds
- Complete the administrative aspects of the project (financial records, bookkeeping, reimbursement reports, newsletters, ect.)
- Other duties as established by the SCD Board and/or required to implement the project

Monitoring Riparian Areas With a Camera

By Michael DeLaune¹, Holly George², and Philip Maurer³

Riparian areas are next to streams, rivers, ponds and lakes. Physical characteristics that influence riparian areas vary considerably and include slope, aspect, topography, soil, type of streambed material, water quality, elevation, size, and adjacent plant community as seen in (Figure 1).

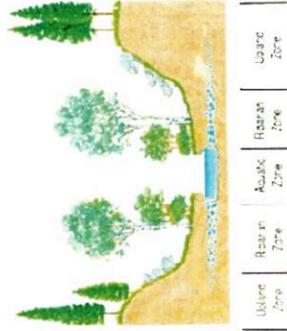


Figure 1
Riparian zones are identified by the presence of vegetation that requires large amounts of fire or unbound water.

Source: BLM, Colorado State Office, 1990

You probably have overall management goals that include live-stock production objectives. What about your riparian areas? **Management objectives for a healthy riparian area may include:**

- High water table and maintenance of water storage capacity.
- High forage production.
- Shade for cool water.
- Habitat for desirable fish.
- Wildlife habitat diversity.
- Presence of vegetation and roots to protect and stabilize banks.

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- Late summer stream flows.

Management objectives can help you define what to monitor. For example, by recording amount of bare soil along a stream bank each season, you may determine the trend of the U towards stability or degradation. If the amount of bare banks is increasing, then management practices should be changed to fulfill the objective of protected banks and stream banks.

Riparian Area Inventory

The first step in monitoring riparian areas is to determine the location, amount and the type riparian areas in your management area. Riparian inventory is important when determining what to monitor. For an example of a riparian inventory short form see *Appendix III*.

Where to Monitor

Select areas that represent the different riparian areas on your property. These areas should be useful for demonstrating trends. Include riparian areas where management is having an impact either positive or negative. You should also include riparian areas that are in some way degraded or highly susceptible to degradation. These areas may have little bank vegetation, resulting in bank instability, little shade, warmer water, lower water table, poor fish habitat, etc. At least one monitoring site should be established for each different riparian area. The transect for collection is linear or parallel to the stream course.

Riparian Photo Monitoring Components

Riparian monitoring has two components:

- 1) Landscape photo
- 2) Site description with data collection.

Photo points are used to record change over time. The pictures on the following page are examples of the power of photographs to illustrate change over time. They also indicate the direction that change is occurring.

(see following page)

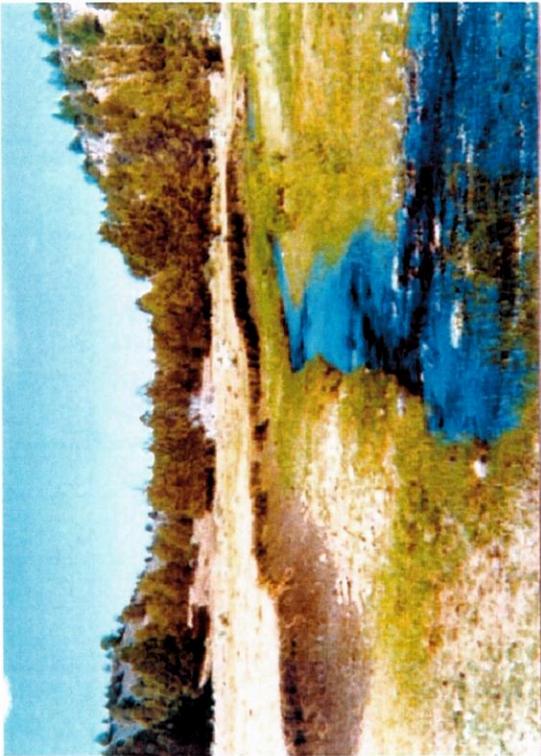


Photo Pt. 2 Fitzhugh Creek.
Summer 1976



Photo Pt. 2 Fitzhugh Creek.
Summer 1987

The second riparian monitoring component describes the site and its physical and biological characteristics, such as vegetative cover and bank condition.

Ideally, photographic monitoring is used together with site description and data collection. Monitoring that is based solely on photography might not provide sufficient information to evaluate objectives.

Photo Monitoring

It is convenient to use the same riparian monitoring areas for photographic monitoring and for collecting information on physical and biological characteristics. However, photographs should be taken before the sampling so the vegetation is not trampled. Also, photos should be taken at approximately the same time of year for comparison. Each monitoring area should have a number and location description unique to the management area (See *Appendix IV - Photo Monitoring Site Record*).

Monitoring Area Location and Size

The monitoring area (distance along stream course) should be long enough to give a representative view of the area. For example, a narrow creek that is only ten feet wide with dense vegetation may only need a monitoring area that is 50 feet long, while a one-hundred-foot-wide stream in an open meadow may need a 400-foot monitoring area to better represent the section. As a rule of thumb, your monitoring area length should be about four times the width of the channel, at the bank's edges.

Two permanent markers (post, tree, etc.) are used to delineate the monitoring area, one at the beginning and one at the end of the stream (see Figure 2). These two markers are the principal photo points. One of the monitoring area markers should be referenced with a compass bearing and distance to a witness point such as a nearby large tree or utility pole to aid in future location of the monitoring area or if the marker post is removed. The compass bearing and distance between the two permanent landmarks should also be noted. The referenced landmark should be noted on a map or aerial photos as shown in Figure 2. This information should be included on the Photo Monitoring Site Record.

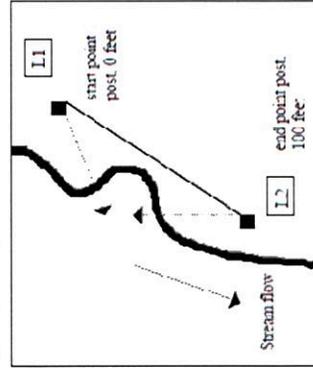


Figure 2

A stream channel that is only 10 feet wide may require as few as two photographs to adequately cover the area.

A diagram similar to Figure 2 should be drawn with a sketch of the stream channel, the photo points, the direction of stream flow, a reference or witness point, and any extra comments that would be helpful in locating the monitoring area.

It doesn't matter how you label the points within the monitoring area but be consistent. The suggested method is to denote the left side of the stream with an 'L' and the right side with an 'R' and the upstream marker as point 1. Left and Right Bank is determined by facing downstream. So you might have photo point labels 'L1' and 'L2' as shown in figure 2.

Photographing the Monitoring Area

The photographs are intended to provide a representative view of the actual stream channel, bank and bank vegetation. Photos are taken in several directions upstream, downstream and across the stream. The camera may be oriented either vertically or horizontally as needed to obtain the best results in framing the most representative view of the stream channel.

At locations with heavy woody vegetation or the potential for a lot of growth, you may want to take photos from the center or edge of the stream. Views that are open and void of woody vegetation today may be blocked by dense vegetation in a few years.

Take as many photos as are necessary to document the conditions. As few as two photographs may be adequate for a riparian area that is ten feet wide, while as many as eight photographs may be necessary for a one-hundred foot wide riparian area (Figure 3). Terrain and riparian vegetation conditions and changes over time may cause some of the photo points to become impractical. For that reason, you may want to take additional pictures when you start.

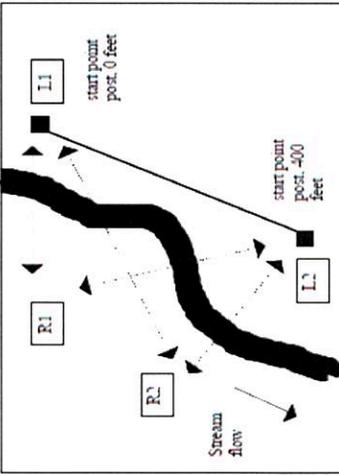


Figure 3

A stream channel that is 100 feet wide may require as many as eight photographs to adequately cover the area.

When taking the photographs, use the monitoring area posts as photo stations. Get close enough to the stream channel so your photo gets as clear a view of the other bank as possible. Also, frame a readily identifiable permanent landmark in your photo so you can use it next year to get the same view. Indicate the direction of each photo on the sample area sketch.

A quick method for clearly identifying the photos is to have someone hold a small chalkboard at the edge of the photo that is labeled something like:

SAMPLE AREA: 3
FROM: R1

It is best to use the same film type and speed each year and, when possible, the same camera lens size.

Equipment List

- 2 permanent markers (steel angle iron posts or rebar)
- camera and film
- felt tip pen, non-white photo description card (example in Appendix II)
- compass
- steel post
- hammer
- steel post driver

References for More Information

Oregon Watershed Improvement Coalition Brochure, 1994.

Cowley, Ervin R., Protocols for Classifying, Monitoring, and Evaluating Stream Riparian Vegetation on Idaho Rangeland Streams. Idaho Department of Health and Welfare, Division of Environmental Quality, November 1992.

Farthing, Patry, Bill Hestie, Shann Weston and Don Wolf. The Stream Scene: Watersheds, Wildlife and People. Oregon Fish & Wildlife, 1990.

Frost, William E., Neil K. McDougald, E. Lama Smith and W. James Clawson. Procedures for Measuring, Analyzing and Interpreting Vegetation Trend In Riparian Areas. Department of Agronomy and Range, University of California, Davis, Range Science Report #23, August 1989.

Riparian Area Management Series. U.S. Department of the Interior, Bureau of Land Management.



September 20, 2016

Mr. Greg Sandness
North Dakota Department of Health
918 East Divide Ave, 4th Floor
Bismarck, ND 58501-1947

Dear Mr. Greg Sandness:

The purpose of this letter is to document the Natural Resources Conservation Service (NRCS) supports the Little Missouri River Tributaries Implementation Project.

NRCS is always thankful to have additional partners to network with when trying to address resource concerns on land. The area within the proposed project is of high concern to all conservation partners as it provides North Dakota's only habitat for the Sage Grouse. The funding of the proposed Bowman-Slope SCD project would allow all planners to have an additional "tool in the conservation toolbox" whether designing a grazing plan for water quality improvement or Sage Grouse habitat.

The Bowman NRCS Field Office will serve as a cooperator for the Little Missouri River Tributaries Implementation Project. We will provide technical assistance through conservation planning; practice designs and engineering services; and practice implementation and certification. In addition, we will partner with the project sponsors and other cooperators to promote the project through educational activities and public outreach opportunities.

I look forward to partnering with you and the project sponsors to improve the water quality of the Little Missouri River through the promotion of conservation practices and educational activities.

Sincerely,

A handwritten signature in blue ink that reads "Wendy F. Bartholomay". The signature is fluid and cursive, with a large loop at the end.

Wendy F. Bartholomay
District Conservationist