GREEN MOUNTAIN WATERSHED PROJECT IMPLEMENTATION PLAN

Lead Sponsor: Green Mountain Conservation District
c/o PO Box 133
Noxon, MT 59853

Contact Person: Marily McWilliams
District Administrator
Ph: (406) 847-2603

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Project Types: Watershed

Waterbody Types: Groundwater
Lakes/Reservoirs
Rivers
Streams
Wetlands

NPS Category: Agriculture
Silviculture
Construction
Resource Extraction
Hydrologic Modification
Other: Oil pipeline, train spills

Project Location: Latitude: 115 Min: 59 Longitude: 47 Min: 59

Summarization of Major Goals:

The Green Mountain Conservation District (GMCD) is approaching watershed planning tributary by tributary and is involving the local citizens in the planning process by encouraging them to form watershed councils for their tributaries. The Councils will help develop comprehensive management plans for these watersheds which may include restoration projects. GMCD is striving to 1) improve on its ability to assess stream conditions, 2) maintain and, where needed, restore the chemical, physical and biological integrity of the district's streams, and 3) improve the quality of water and habitat in Elk Creek where the first council has already been formed.

Project Description:

GIS hardware and software will be obtained as well as GIS training as needed. Current digitized information pertinent to stream ecology for the streams in the district will be obtained from agencies and the MT State Library/Natural Resource Information Service (NRIS), and stored in GIS format. Adequacy of the database will be assessed and further monitoring programs and additional data layers developed as needed. Assistance will be given to local tributary watershed councils as they develop and define their vision, goals and objectives for their watershed, and as they design management plans, restoration projects, and monitoring programs for their watersheds. In Elk Creek, a management plan, and monitoring and restoration projects will be developed and implemented in cooperation with the Elk Creek Watershed Council (ECWC) and other entities. Implementation for other tributaries will be addressed in future proposals. Work under this project will be coordinated with related efforts by other entities and will utilize a project coordinator, GIS technicians, agency personnel and private consultants as needed to accomplish these tasks.

GMCD's Mission:

To involve local citizens in the maintenance or, where needed, the restoration of the chemical, physical and biological integrity of the district's streams.

PROJECT GOALS:

Project Goal #1: To set up a GIS system to be used by GMCD as it works with local watershed councils, the County Planner and local citizens. The system will help to assess the chemical, physical, and biological characteristics of the district's streams and help develop management plans, monitoring plans, and restoration projects for these streams. To develop availability of GIS information to local citizens.

Project Goal #2: In cooperation with the Elk Creek Watershed Council, improve the quality of water and habitat in Elk Creek so that it meets state standards for a cold water fishery and restore the native salmonid populations.

OBJECTIVES AND TASKS:

Goal 1 - Objective 1: Project Coordination and Administration

Tasks:

1) Hire personnel to accomplish project goals. May include a project coordinator, GIS technician, and independent contractors.

2) Work with watershed councils as they form and as they write ecosystem status reports, develop management plans, monitoring plans and restoration projects.

3) Coordinate with related efforts and other entities.

4) Administer grant funds, maintain records, and write related reports.

5) Provide funds for expenses such as mileage and office expenses.

Cost:	$ 59,000	319 funds:	$ 33,600
		RDGP funds:	$ 23,400
		In-kind:	$ 2000 from GMCD

Goal 1 - Objective 2: Set Up GIS System

Tasks: Obtain the computer hardware and software necessary for proposed GIS data base and associated graphics or word processing. Provide training in GIS technology as offered by the producer of the Arc/Info software (2 weeks of training). Develop an information data base in GIS format, in cooperation with the county planner, to be used in the assessment of environmental/stream ecology issues as they relate to county, Green Mountain Conservation District, and Watershed Council planning activities. Obtain data layers from agencies, NRIS, develop new layers as needed.

Cost:	Salary + $ 13,500	319 funds:	$ 5300 for hardware, general software & food/lodging at training
		In-kind:	$ 8200 for GIS software & training from Adopt-A-Stream

Goal 1 - Objective 3: Use the GIS system

Tasks: Use the GIS system to assist tributary watershed councils with writing status reports, management, restoration and monitoring plans. (Implementation of management plans other than for Elk Creek to be accomplished in future projects.) Attend local watershed council meetings and coordinate with GMCD Board of Supervisors.

Cost:	Salary + $3000	In-kind:	$ 3000 from GMCD

Goal 1 - Objective 4: Make GIS information accessible

Tasks: Contact local schools and libraries to inform them of the opportunity and show them how to acquire the Arc/View software from NRIS, if new hardware is needed help find

grant opportunities, and when Arc/View is in place, provide libraries with the data layers that they can use, and conduct workshps on how to use the systems.

Cost: Salary + $900 In-kind: $ 900 from librarians

Goal 2 - Objective 1: Develop a comprehensive long term watershed management plan for Elk Creek and a monitoring plan to provide baseline data and assess the current physical, chemical and biological state of Elk Creek

Tasks: Assist ECWC as they compile exisiting resource information and evaluations into a status report describing monitoring sites and baseline information, detailing where further information is needed, identifying particularly valuable but threatened areas, and describing conditions of prioiritized problem areas where work is needed, including photo documentation. Assist ECWC in the establishment of specific and measurable restoration and projection goals that reflect a healthy ecosystem and are derived from their stated vision for the watershed, develop strategies to acheive their goals, and write a comprehensive watershed management plan.

Cost: Salary + $4500 In-kind: $ 4500 from ECWC

Goal 2 - Objective 2: Conduct an education program for the Elk Creek landowners

Tasks: Distribute information on the long term benefits of the Elk Creek watershed project and conduct an educational workshp for the public and landowners on the benefits of having an improved riparian zone. Meet with landowners to develop grazing management plans.

Cost: Salary + $3500 RDGP Funds: $ 500 for printing, mailing
In-Kind: $ 3000 from ECWC

Goal 2 - Objective 3: Improve water quality of Elk Creek and improve riparian zone conditions by implementing grazing management plans, reducing sediment delivery in the Clark Fork River and increasing depleted native fish populations through use of appropriate BMP's in Elk Creek and the surrounding riparian zone

Tasks: Use appropriate BMP's at sites identified during stream assessment including: stream bank fencing; off-stream stock watering sites; streambank stabilization such as root wad or rock revetments, rechannelization, bank shaping and other Rosgen techniques; planting native riparian vegetation; and installing fish habitat structures. Stream assessment and identification of sites needing attention has already begun by technical consultants under a Future Fisheries Grant from MFWP of $7300. Another Future Fisheries grant of $55,800 is promised for implementation projects. Plans for specific sites will be developed by technical consultants to ECWC and reviewed by ECWC, GMCD, MFWP and any other entities involved.

Cost: Salary + $143,600 RDGP Funds: $ 64,000 for contractor fees
In-Kind: $ 16,500 from ECWC
Other sources: $ 7300 from MFWP
$ 55,800 from MFWP

Goal 2 - Objective 4: Monitoring and Evaluation

Tasks: Develop and implement a monitoring plan that will provide information that is comparable with the baseline information and will provide quantitative data with which to evaluate the success of the restoration projects and the overall health of the stream. Prepare written evaluations based on follow-up monitoring for each restoration project and progress reports to be distributed to GMCD and other cooperating entities.

Costs: Salary + $30,900 In-Kind: $ 21,000 from ECWC
$ 9900 from MFWP

STATEMENT OF NEED:

The 1994 Montana Water Quality (305b) Report lists 14 streams in the district plus the Noxon Reservoir and Lower Clark Fork River as water bodies that do not fully meet water quality standards or that are fully supporting their uses but are threatened. In addition, one stream, Rock Creek, has a special designation as a Moderate Priority for TMDL development. These streams, which are classified as "B1" water bodies, are referred to as "water quality limited". They are listed as having threatened cold water fisheries, and some as having impaired aquatic life support. Primary causes of impairment listed are nutrients, siltation, thermal modifications, flow alterations, and suspended solids. It is the intent of the State of Montana, as stated in the 1991 Nonpoint Source Management Plan to correct and prevent these human-induced nonpoint source water quality problems and this proposal addresses these NPS issues.

The district's water bodies have provided both residents and visitors to the area with a range of recreational opportunities that have become an integral part of the local lifestyle. However, as people move into the area, development within the drainage and increased use of these water bodies and associated watersheds has the potential to reduce the overall health and values that these systems currently possess. In order to prevent degradation of these water bodies and ultimately the quality of life in the district, proactive, well-informed planning supported by a current and comprehensive, easily accessible data base is essential.

Sanders County is the 5th fastest growing county (of 56) in Montana. Development is increasing in and adjacent to the flood plains and riparian corridors of streams, impairing their values and threatening water quality. Land is rapidly being subdivided into small acreage parcels. The county is currently looking at about 150 new septic system permits/year and the GMCD is processing about 65 new 310 permits per year, up from an average of 7/year in the late 1980's.

GMCD has listed the top priority streams in the district where watershed planning and restoration are needed. These streams in order of priority are: Elk Creek, Whitepine Creek, Prospect Creek, Beaver Creek, Pilgrim Creek, and Bull River. Of special concern in these streams are riparian and floodplain development, depletion of the riparian vegetation, riparian grazing, upland vegetation removal, roads, culverts, and bridges - all of which contribute to increased sediment loading and channel destabilization.

The Sanders County Planner is also concerned about development including roads and septic systems and has requested GMCD and NRCS assistance in developing an information database with which to evaluate these impacts and recommend solutions. Watershed Councils are requesting planning assistance to address effects from land use changes and to start water quality, riparian and fish habitat improvements.

The information does not exist, or is not in an available format for the GMCD or the Councils to make the needed evaluations for assessing conditions and formulating watershed plans, and current staffing, tasks and funding restrictions prevent the GMCD from responding to these needs. GIS capability is viewed as a needed tool for meeting these needs as it streamlines the handling of resource information. Montana state agencies and the state library (NRIS) have already digitized much natural resource information in compatible formats which, with the proper equipment, can now be quickly accessed. To make stream ecology evaluations and cumulative impacts assessments involving a variety of development activities along stream corridors, CD supervisors need to see watershed, stream ecology and development information in a spatial (mapped) format and it must be quickly and easily accessible.

In January of 1995 the GMCD embarked upon the strategy described herein. Workshops for the GMCD supervisors were organized to help them grasp the concept of watershed planning. Technical advisors were called in from the USFS, MFWP and WWP to give assessments of the streams in the district. Finally a stream was chosen (Elk Creek) to be the pilot project.

Residents of the Elk Creek watershed were personally contacted and informed about the opportunity to engage in proactive management of their watershed. A planning committee of landowners was formed which, with help from a local facilitator and the Montana Watercourse, planned a "Know Your Watershed Workshop" for January 27, 1996. The goals of the workshop were to inform all possible stakeholders about the ecology of the watershed, and to start the council. A Vision Statement was formulated:

"In twenty years, Elk Creek will be running full length with good water quality; it will have numerous fish; it will have a well managed habitat with a healthy riparian zone; it will have happy neighbors (but no more of them); it will have responsible watershed residents; it will have a thoughtful management process in place which uses community priority setting and decision making, drawing on a good database."

As a result of flood events of November 30, 1995 and February 9, 1996, ECWC members recognized that the flooding had caused abnormally extensive and severe damage to the stream. This damage occurred where development activities had altered the landscape and compromised the stream's integrity in various ways, resulting in a massive increase in bedload which caused gravel deposition, channel braiding and severe stream bank erosion. This prompted the ECWC to make stream restoration a top priority issue.

DESCRIPTION OF WATER BODIES:

The priority streams in the district are Elk Creek, Whitepine Creek, Propect Creek, Beaver Creek, Pilgrim Creek, and Bull River. The first five are on the SW side of the Clark Fork valley and drain the Bitterroot Mountains. (see district map) Bull River is on the NE side of the Clark Fork valley and drains the Cabinet Mountains. These mountains are sedimentary formations (Belt rock) from the Precambrian era. Although the Clark Fork valley did not contain ice age glaciers (the surrounding peaks did), it did harbor glacial Lake Missoula and the terraced soils in the valleys were formed by the geologic event.

The climate is dominated by Pacific maritime weather. Summer days may be warm but the air temperature cools quickly after sunset resulting in a relatively short frost-free season. The majority of precipitation occurs from November through Jnauary. Average annual precipitation in the valleys ranges from 23 inches at the eastern portion of the district near Thompson Falls to 34 inches in the western portion near Heron. Precipitation increase up to 100 inches/year at higher elevations.

The majority of the land in the district is National Forest land and timber production is the primary land use activity. Some mining has occurred or is planned. The entire Clark Fork River in the district is dominated by three hydroelectric dams: Thompson Falls Dam, Noxon Rapids Dam, and Cabinet Gorge Dam, none of which provide fish passage. The latter two are approaching relicensing (2001) and a "settlement agreement" is being worked upon for the conditions of the license which will involve mitigation for bull trout.

The entire area was heavily impacted by fires in the 1910 era and it is believed that very high peak flows with resultant erosion following this historic loss of forest canopy caused a massive increase in bedload in the streams. As a result, during current late summer low flow periods, there are reaches in these streams, particularly on the Bitterroot Mountains side that 'dry up', or actually flow under their gravels. These streams are highly susceptible to destabilization from sediment inputs from spring peak flows and winter rain-on-snow events which are capable of producing flows greater that spring run-off. The streams are composed of mostly "B & C" (Rosgen classification) type reaches with some reaches of E type where the channels are stable. Where destabilization has occurred, generally due to excessive bedload movement, D type braided reaches appear.

The Montana Bull Trout Restoration team has designated four streams in the GMCD district as bull trout recovery "core areas". These are Prospect Creek, Vermillion River, Rock

Creek, and Bull River. Of these, Prospect Creek and Bull River are on the GMCD's priority list.

Between 1992 and 1995, a survey of the major streams of the lower Clark Fork River drainage was conducted as part of a cooperative research project between the United State Forest Service (USFS), Montana Department of Fish, Wildlife and Parks (MFWP), and the Washington Water Power (WWP) to be used in assessments for the relicensing of the two WWP dams. The stream habitat data base generated by this project forms the basis of information for streams located in the GMCD and will be included in the GIS database and will be used in the development of management plans. This includes information on substrate composition, deposition of fine sediment, channel stability, documentation of major stream features, riparian vegetation composition and percent vegetated bank cover, quantification of large woody debris, stream hydrology, the water temperature regime, salmonid spawning and rearing habitat availability, primary and secondary productivity, salmonid spawning gravel composition and estimated salmonid embryo survival, fish populations composition, abundance, and distribution, as well as fish age, growth, and mortality.

CHARACTERISTICS COMMON TO GMCD'S PRIORITY STREAMS ARE:

High amounts of fine sediment in gravels, altered riparian zones that have lost some of their values with associated channel and bank instability, and relatively low amounts of pool forming materials (large woody debris) resulting in riffle habitat being the predominant habitat feature. The water temperature regimes are relatively high and at times exceed levels suitable for salmonid populations. Substrate is dominated by gravels (0.6-15 cm). Salmonid populations in the district consist primarily of westslope cutthroat trout, followed by eastern brook, brown, and bull trout. Westslope cutthroat and bull trout were native to the area. These population appear to hampered by a combination of stream intermittency, channel and bank instability, massive bedload movement, high water temperatures, low amounts of large woody debris, spawning gravel siltation, low cover complexity, and a lack of suitable spawning and rearing habitat.

CHARACTERISTICS SPECIFIC TO EACH OF THE 6 STREAMS ARE:

ELK CREEK is a fourth order stream that covers 55 square miles and contains 32 miles of stream and 42 miles of roads. 72% of the watershed is National Forest land with a Clearcut Equivalency (CCE) of 1147.5 ac. (see note) Its health is considered to be good but in a state of decline as a result of silviculture, agriculture, residential development and road construction. Primary and secondary productivity is relatively high in comparison with average values for the district. Native cutthroat trout are present but considered depleted, and native bull trout have not been found in the past decade. Introduced brown and brook trout are present. A recent train derailment spilled diesel fuel in the watershed. The lowest reach "dries up' in late summer.

Note: CCE is a computation of the amount of canopy removal which accounts for age and type of harvest. Recent 100% canopy removal represents 100% CCE area while lesser % and older canopy removal results in smaller CCE's. Roads are included in CCE area computations. (the figures given are rough computations and may have missed some types of cuts.)

WHITEPINE CREEK is a third order stream that covers 32.7 square miles and contains 21.1 miles of stream and 34 miles of roads. 97% of the watershed is National Forest land with a CCE of 1098.5 ac. Its health is considered to be threatened as the result of a high amount of residential development in and along the floodplain.

PROSPECT CREEK is a fifth order stream that covers 169 square miles and contains 89.5 miles of stream and 133 miles of roads. 93% of the watershed is National Forest land with

a clear cut equivalency of 3601ac. (a large portion from a fire). Its health is considered to be poor as the result of silviculture, agriculture, mining, stream channelization, urbanization, and road, powerline, and pipeline construction. Measures of net primary productivity are high and secondary productivity values are high for species richness and diversity, but moderate for invertebrate densities. Densities are moderate for cutthroat/rainbow trout, and low for brook and brown trout. Prospect Creek is the second most important support stream for the isolated and diminishing population of Bull trout in the Noxon Rapids Reservoir. The Yellowstone Pipeline carries fuel up the Prospect Creek channel on its way to Spokane. This past year floods created 34 exposures of the buried pipeline, some of which have required immediate repair. The stream has many sections that 'dry up' in the summer.

BEAVER CREEK (including Little Beaver Creek) is a fourth order stream that covers 77 square miles and contains 48 miles of stream and 99 miles of roads. 87% of the watershed is National Forest land with a CCE of 2330.6 ac. Its health is considered to be poor as the result of silviculture, agriculture, stream channelization, urbanization, and road construction. The stream 'dries up' in its lowest reach in summer.

PILGRIM CREEK is a fourth order stream that covers 28 square miles and contains 17.3 miles of stream and 33 miles of roads. 84% of the watershed is National Forest land with a CCE of 1085.5 ac. The general health of the Pilgrim Creek watershed can be described as good but declining. Development is increasing which threatens the functioning of riparian areas, channel and bank instability, and inputs of sedimentation. Primary productivity is moderate, secondary productivity values are high for density, moderate for species richness, and low for invertebrate species diversity. The stream 'dries up' in its middle reach during the summer. Cutthroat and brook trout are present.

BULL RIVER is a fifth order stream that flows from the southwestern slopes of the Cabinet Mountains Wilderness to the Clark Fork River. The watershed covers 138 square miles and contains 73 miles of stream and 77 miles of roads. 91% of the watershed is National Forest land with CCE of 1648.6 ac. The health of the watershed is considered good but declining. This declining trend is the result of past and present land use activities including silviculture, agriculture, stream channelization, urbanization, and road construction. Physical habitat in the stream lacks diversity. The substrate is dominated by cobble in the high gradient reaches and sand/silt in low gradient reaches with high amounts of fine sediment. The main stem has a greatly depleted riparian zone and low amounts of large woody debris and has a slightly elevated nutrient load. Primary productivity is high and secondary productivity is high for density and species richness and moderate for invertebrate species diversity. Bull River is the primary supporting stream for the isolated and dwindling bull trout population in the Cabinet Gorge Reservoir.

PROJECT MILESTONES:

This project will begin in May of 1997 and extend for three years through April of 2000. All of the project objectives will extend the full length of the project with these exceptions:

Goal 1 - Objective 4: Make GIS information accessible. This objective will not begin until the GIS system is well-established with adequate data layers to be used by the public, probably after the first project year in summer 1998.

Goal 2 - Objective 2: Conduct an education program for the Elk Creek landowners. This portion of the project will probably extend over a 6 month period in the winter of 1997-1998.

Goal 2 - Objective 3: Implementation along Elk Creek. This work will take place

throughout the length of the project but the majority of the implementation will take place in summer 1997 with followup in spring and summer 1998.

PERMITS REQUIRED:

It is likely that 310 permits, Short Term Exemption Permit (MT DEQ-3A), and 404 Permits (Corps of Engineers) could be required for the implementation of some portions of the work on Elk Creek.

WHY THE LEAD SPONSOR IS THE APPROPRIATE ENTITY:

The Green Mountain Conservation District is the lead project sponsor. GMCD is the appropriate entity for this project because conservation districts are responsible for nonpoint source pollution (NPS) control at the local level (Ref. MOU,1973). Also, conservation districts were established to give local citizens the opportunity to shape natural resource planning and management in their areas. Accordingly, this project is geared toward supporting locally directed watershed planning via the formation of local watershed councils for each tributary. Finally, conservation districts are political subdivisions of the state, and have established channels of technical and financial assistance that are available to make such watershed projects a successful venture.

COOPERATING ORGANIZATIONS AND THEIR ROLES:

1) Green Mountain Conservation District (GMCD) - Project sponsor and contract executor. Staff person of GMCD will be Project Coordinator and GMCD may hire GIS technical assistance and other private consultants.
2) Elk Creek Watershed Council (ECWC) - Citizens' council for Elk Creek, deciding upon Elk Creek management plan, participating in restoration projects and monitoring.
3) Sanders County Planner - to participate in the development and use of data layers.
4) Natural Resource Conservation Service (NRCS) - to aid in the development of data layers, to provide 10-12 days of technical advisory assistance using GPS equipment for digitizing stream site locations.
5) The Adopt-A-Stream Project (AAS) - to supply the GIS software (PC Arc/Info v.3.4.2 and Arc/View v.2 including Avenue), also to supply two weeks of free training. MOU to be written.
6) MT Department of Fish, Wildlife and Parks (MFWP) - Providing supplemental financial assistance for work in Elk Creek (Future Fisheries grants of $7300 and $55,800). To provide technical assistance in stream monitoring and assessment, and to supply data layers. Has supplied maps for this proposal.
7) US Forest Service (USFS) - Has and will provide technical counsel and assistance in stream monitoring and assessment, management plan development, and will provide data layers. Is developing an Ecosystem Management Plan for the Elk Creek drainage.
8) Washington Water Power (WWP) - Has and will provide technical counsel and assistance in stream monitoring and assessment, management plan development, and will provide data layers.
9) MT State Library, Natural Resource Information Service (NRIS) - will provide data layers, technical training for GIS capability, help with getting GIS equipment set up, and GIS advisory assistance.
10) MT Department of Environmental Quality - Water quality monitoring advice.
11) Libraries (Thompson Falls HS, Noxon HS, Thompson Falls Library, Heron Library) - to install Arc/View with data layers, host training sessions for community members.
12) Tri-State Implementation Council - supports this effort, has met with the GMCD and will assist in future fund raising and educational activities.

13) State Bull Trout Restoration Team/Clark Fork Relicensing Team - a consortium of agencies and entities in the Lower Clark Fork that are involved with the future of water and fisheries in the valley and are working on a 'settlement agreement' for the relicensing of the dams operated by WWP which have and will affect the aquatic resources in the district. GMCD is part of this team.

14) MT Watercourse (MSU Bozeman) - has been instrumental in getting the ECWC off the ground with a Know Your Watershed Workshop, provided maps for this proposal, and may provide similar services in the future.

DESCRIPTION OF LOCAL SUPPORT FOR THE PROJECT:

A. Watershed councils:

The Elk Creek Watershed Council has held monthly meetings since beginning in January, 1996 that have been well attended (10-20 people) with much interest and enthusisam. The Council has established a vision statement for the watershed and is currently in the process of evaluating the watershed and preparing their goals and management plans - long range and short range. They have received one Future Fisheries grant of $7300 to assist in stream assessment and another $55,800 is promised for implementation work.

Residents of Whitepine Creek and Prospect Creek drainages have expressed interest in forming watershed councils and this proposal offers help and encouragement in that process.

Beaver Creek residents have already begun a watershed planning and restoration effort. Future Fisheries funds have been acquired for fencing projects. A 66 page report has been prepared (Smith et. al, 1995) which documents the gathering of baseline data, describes current stream conditions, and gives recommendations for stream restoration tasks in Little Beaver Creek. The residents of Little Beaver Creek (tributary of Beaver Creek) that were involved in this process have implemented some of the recommendations and are hoping to get help to further coordinate and expand the project.

B. County offices:

The Sanders County Planner, in consultation with the County Commissioners, is interested in making use of the GIS information and will be involved in the development of the data layers.

C. Schools and libraries:

The schools and libraries in the district have been informed of the project and have expressed their interest in developing the services that are being offered.

LETTERS OF SUPPORT ON FILE AT GMCD:

Pat Bawden - Sanders Cty Planner	Don Feist - NRCS, Plains
Dave Reynolds - Cty Emergency Services	Mary Hoelke - Heron Public Library
Don Jensen - Thompson Falls HS Principal	Jim Vashro - MFWP Regional Fisheries
Mark Sheets - Thompson Falls Sci. teacher	Ruth Watkins - Tri-State Implem. Council
Mike Miller - Elk Ck Watershed Council	Jim Stimson - MT State Library (NRIS)
Tim Swant - Wash. Water Power	Prospect Ck and Whitepine Ck residents

COORDINATION:

Coordination efforts with local groups and state and federal agencies for technical and financial assestance has been successful. The MFWP will complement the project with Future Fisheries funds available for assessment and implementation in Elk Creek. The Adopt-A-Stream Project trains citizens in the area in standardized stream monitoring mehtods and helps to establish watershed councils that are coordinated with GMCD and works to encourage citizens to take an active role in the stewardship of their watersheds. The Project Director of the AAS Project facilitated the formation of the ECWC and participated in the writing of this grant

proposal. Future USFS activities in the watershed are being communicated and discussed with the ECWC for input on their plans' compatibility with the watershed goals. A technical advisory committee from the agencies is working with the ECWC.

EVALUATION AND MONITORING PLAN:
A) MONITORING STRATEGY

Project Goal #1: Evaluation of the success of this goal will be measured in terms of the scope of coverage that will be acquired and built into the GIS system, the number of requests for information that are received from project cooperators and its reported usefulness, and the status reports, management plans and restoration projects for tributary councils successfully planned. Evaluation of the restoration projects themselves will be addressed via evaluation reports for each of the projects. Also, improvement in the level of cooperation and communication among agencies and entities in the valley as a result of this project will be gauged as a measure of success by means of observation. In addition the number of new Arc/View systems that are installed in the county, the number of training workshops requested, and the amount of use the systems are given, plus an estimation regarding the increased public awareness of natural resource issues and concerns that results from this project will be recorded.

Project Goal #2: Evaluation of the success of this goal will be measured in terms of the lasting beneficial effects of the restoration projects that are implemented relative to the specific, measurable objectives that are established. This will be assessed with information from the associated monitoring program. Monitoring data will be analyzed and evaluations written for the restoration projects implemented.

B) DESCRIPTION OF SAMPLING AND ANALYSIS DESIGN:

Site specific parameters and protocols for each restoration project site will be used. These will utilize the modified "Hanken and Reeves' curriculum that was developed by the US Forest Service. This is the same methodology that was used in the assessment of the district's streams as part of the cooperative research project between the USFS, MFWP, and WWP. Thus the existing monitoring information will serve as baseline data for restoration projects and future monitoring will be developed which will be comparable.

In addition, The Adopt-A-Stream Project monitoring curriculum is currently being utilized in the watershed. This curriculum monitors chemical (temp, DO, pH, conductivity, turidity), physical (riparian conditions, cross-section profiles, width/depth ratio, sinuosity, gradient, bank stability, pool/riffle ratio, substrate score, flow) and biological (macroinvertebrates and algae) parameters in a 500' stream reach. Aquatic insects are a key element of the program and are identified (to the family level) and counted by the streamkeepers. One such site just above the Miller property was monitored by ECWC members in 1995. This will continue and in addition the following is planned as a preliminary to accomplishing Goal 2 - Objective 4 (Monitoring and Evaluation):

Relative to Goal 2 - Objective 1(Development of status report and management plan): Photo documentation before project implementation and annually thereafter will be accomplished by ECWC members.

Relative to Goal 2 - Objective 3 (Elk Creek Implementation Projects): At the five county road bridges that cross the stream bugs will be sampled and substrate will be scored annually by ECWC members using the AAS curriculum. Also, help from the FS will be sought to establish gauging stations on at least 2 of these bridges. When this is accomplished, cross-section profiles will be obtained and discharge will be measured using the gauging stations 4 times/year and during additional high flow events (AAS). TSS, turbidity and temperature will be measured whenever discharge is being measured (AAS). Also, MFWP will do core sampling in spawning

gravels annually. In addition, ECWC members will walk and inventory the entire streamcourse annually in order to assess channel conditions and to estimate the reduction in amount of eroding streambanks in response to project implementation. Fish population estimates will be conducted using either electrofishing or snorkel count techniques. Electrofishing estimates will be accomplished using a multiple-pass removal methodology developed by MFWP (Shepard and Graham 1983). Snorkel counts will be conducted at night following the sampling protocol as outlined in Thurow 1995.

C) QA/QC:

Standardized parameters and protocols are in effect for both the Hanken and Reeves curriculum and the Adopt-A-Stream curriculum. These standard operating procedures require extensive note taking on standardized forms.

The AAS curriculum was developed by an Advisory Committee with representatives from MDEQ, MFWP, and USFS. The MDEQ representative was Bob Bukantis who is state NPS monitoring coordinator. Bob's modified protocols for sampling bugs and MFWP's protocols (Tom Weaver) for substrate scoring are used in the program.

The Hanken and Reeves QA/QC methodology (1988) involves the visual estimation and random verification of stream habitat parameters and has been modified and adopted by the US Forest Service to evaluate stream habitat conditions.

D) DESCRIPTION OF DATA MANAGEMENT AND REPORTING PLAN:

The Project Coordinator will help with data management, analysis and reporting. Data will be compiled and stored in a GIS format as appropriate. Additional data spreadsheets and statistical analysis programs may be developed and utilized. Progress reports and project evaluation will be written and distributed to all cooperating entities. Technical consultants may be used to help in these tasks as needed.

BUDGET TABLE: ATTACHED

Note to Warren:

Goal 1 - Objective 1 is for Project Coordination/Administration. Here is a breakdown of how I divided up the amounts:

You told me that the funds would be available as follows:

Salary:	17,400	RDGP
	27,600	319 Funds
	45,000	
Administrative:	6,000	RDGP
	6,000	319 Funds
	12,000	

My breakdown:

	RDGP		319	
	Salary	Admin	Salary	Admin
Coordinator's salary				
18,000 + 2000 (Employer costs)= 20,000	7500	3500	7500	1500
GIS Salary				
40 hrs x $10=$400/monthx36 mo=$14,400			14400	
Stream consultants	9900		5700	
Supplies, materials		1500		1500
Phone		500		500
Mileage		500		500
Equipment (heating, office equipment)				2000
TOTAL = $57,000	17400	6000	27600	6000

WHEW!!

Cost Category	RDGP Budget	G/Obj & Source	InKind	G/Obj & Source	Outside Sources	G/Obj & Source	Total
1) Salaries & Wages							
A) Contract Admin.	$3,500.00	G1/01 RDGP	$2,000.00	G1/01 GMCD	$1,500.00	G1/01 319 $	$7,000.00
B) Project Coord.	$7,500.00	G1/01 RDGP	$3,000.00	G1/03 GMCD	$7,500.00	G1/01 319 $	$18,900.00
			$900.00	G1/04 Libraries			
2) Contracted Services							
A) GIS Technical					$14,400.00	G1/01 319 $	$14,400.00
B) Stream Assessments	$9,900.00	G1/01 RDGP	$4,500.00	G2/01 ECWC.	$5,700.00	G1/01 319 $	$27,400.00
					$7,300.00	G2/03 MFWP	
C) Stream Restoration	$64,000.00	G2/03 RDGP	$16,500.00	G2/03 ECWC	$55,800.00	G2/03 MFWP	$119,800.00
D) Monitoring			$21,000.00	G2/04 ECWC			$30,900.00
			$9,900.00	G2/04 MFWP			
3) Supplies & Materials	$500.00	G2/02 RDGP	$3,000.00	G2/02 ECWC	$1,500.00	G1/01 319 $	$6,500.00
	$1,500.00	G1/01 RDGP					
4) Communications	$500.00	G1/01 RDGP			$500.00	G1/01 319 $	$1,000.00
5) Travel	$500.00	G1/01 RDGP			$500.00	G1/01 319 $	$1,800.00
					$800.00	G1/02 319 $	
6) Equipment					$4,500.00	G1/02 319 $	$6,500.00
					$2,000.00	G1/01 319 $	
7) Miscellaneous			$8,200.00	G1/02 AAS			$8,200.00
TOTAL	$87,900.00		$69,000.00		$102,000.00		$258,900.00

ATTACHMENT A

1/19/98

Elk Creek, Heron, Sanders County

Quantified Goals for TMDL Submission

("Goal" info (left side) from 7/96 319 Grant Proposal Draft #4. "Accomplished" info (right side) from Watershed Consulting report & field estimates by Mike Miller.)

Goal	Accomplished
1) Develop 2,000 lf stream bank fencing	3,000 lf
2) Develop off stream stock water holes	None at present
3) Plant 4,000 lf of native riparian vegetation along stream bank	5,265 lf*
4) Reduce sediment delivery into Clark Fork River by 50% over 5 years	No info yet
5) Implement riparian management & stream bank stabilization on 3,000 lf of severely eroded bank	5,265 lf
6) Rechannel 1,000 lf of creek bed	2,910 lf
7) Increase WS cutthroat populations & bull trout populations by 100% & enhance recruitment of young fish into the population along entire stream	No info yet

* Additional info such as total number of plants that were planted, width of area planted or square footage of area planted, pounds of grass seed planted, etc.