

Renewable Resource Grant and Loan Program

Project Evaluations and Funding Recommendations
For the 2002-2003 Biennium

And

2000-2001 Biennium Status Report

Prepared by the

Montana
Department of Natural Resources
And Conservation

January 2001

CONTENTS

List of Abbreviations	vi
Alphabetical Index of Project Summaries	viii
Introduction	xii

Chapter 1

The Renewable Resource Grant and Loan Program

Background	1
Purpose	1
Project & Applicant Eligibility	1
Private Entities	1
Emergency Grants	2
Funding Limitations	2
Funding Authority	2
Program Implementation	3
Rule-Making Authority	3
Program Goals	3

Chapter 2

Renewable Resource Grants to Public Entities

Application Administration and Project Review Procedures	5
Project Solicitation	5
Application Review	6
Project Ranking Criteria	8
Funding Recommendations	9
Project Management	10
Project Monitoring	10
Project Evaluation	10
Grant and Loan Application Evaluations	13

Chapter 3

Coal Severance Tax Loans to Public Entities

Application Administration and Project Review Procedures	198
Project Solicitation	198
Application Review	198
Funding Recommendations	198
Availability of Funds	198
Loan Repayment	199
Interest Rates	199
Project Management	200
Project Monitoring	200

Chapter 4

Renewable Resource Grants and Loans to Private Entities

Grant Application Administration and Project Review Procedures	205
Project Solicitation.....	205
Application Review	205
Funding Recommendations	205
Grant Project Management	206
Project Monitoring	206
Project Evaluation	206
Private Loan Application and Project Review Procedures.....	207
Project Solicitation.....	207
Application Review	207
Funding Recommendations	208
Availability of Loan Funds	208
Interest Rates	208
Loan Project Management.....	208
Project Monitoring	209
Project Evaluation	209
Private Loans Previously Funded	209

Chapter 5

Emergency Grants and Loans

Application Administration and Project Review Procedures	211
Project Solicitation.....	211
Application Review	211
Funding Recommendations	211
Project Management	212
Emergency Grant and Loan Applications in Calendar Years 1999 and 2000	212
Authorized Projects	212
Projects not Funded	213

Chapter 6

Summary of Active Grants to Public Entities

Grant Projects Completed since July 1, 1999.....	215
Active Grant Projects	220
Authorized Grant Projects Not Yet Executed.....	227
Projects that have been Terminated	228

Chapter 7

Renewable Resource Project Planning Grants

Application Administration and Project Review Procedures	230
Project Solicitation.....	230
Application Review	230
Funding Recommendations	230
Project Management	230
Authorized Projects	231

List of Figures

1	Flowchart of Grant Application Review and Ranking Process.....	5
2	Renewable Resource Grant and Loan Program -- Project Recommendations.....	11
3	Resource Development Public Loans.....	203
4	Water Development Public Loans.....	203
5	Public Loans Authorized in 1999 and Seeking Reauthorization	204
6	Public Loans Authorized in 1999 That Have Been Cancelled	204
7	Private Grant Applications in Calendar Years 1999 and 2000	207
8	Private Loan Applications in Calendar Years 1999 and 2000	209

LIST OF ABBREVIATIONS

AUM	animal unit month
BMP	best management practice
BOD	biological oxygen demand
BRID	Bitterroot Irrigation District
CARDD	Conservation and Resource Development Division
CD	conservation district
CDBG	Community Development Block Grant Program
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
Cfs	cubic feet per second
Co	county
CST	Coal Severance Tax
DEQ	Montana Department of Environmental Quality
DFWP	Montana Department of Fish, Wildlife and Parks
DNRC	Montana Department of Natural Resources and Conservation
DOC	Montana Department of Commerce
DOT	Montana Department of Transportation
EA	environmental assessment
EDA	Economic Development Administration
EDU	Equivalent Dwelling Unit
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
FY	Fiscal Year
FONSI	Finding of No Significant Impact
GIS	Geographic Information System
GWIC	Groundwater Information Center
HUD	Housing and Urban Development
I/I	inflow and infiltration
I/P	infiltration and percolation
LWQD	Local Water Quality District
MBMG	Montana Bureau of Mines and Geology
MCA	<i>Montana Code Annotated</i>
MCC	Montana Climate Center
MDA	Montana Department of Agriculture
MEPA	Montana Environmental Policy Act
MHI	Median Household Income
MRWS	Montana Rural Water Systems, Inc.
MSCA	Montana Salinity Control Association
MSU	Montana State University
MT	Montana
NPS	non-point source
NRCS	Natural Resources Conservation Service, U.S. Department of Agriculture
NRIS	Montana Natural Resource Information System
O&M	Operation and Maintenance
PER	Preliminary Engineering Report
pH	measure of alkalinity
Psi	pounds per square inch
RC&D	Resource Conservation and Development Area
RD	Rural Development Program
RDGP	Reclamation and Development Grants Program
RIT	Resource Indemnity Trust
RRGL	Renewable Resources Grant and Loan Program
SCS	Soil Conservation Service (now NRCS)
SID	Special Improvement District
SMP	Specific Agriculture Chemical Groundwater Management Plan

SRF State Revolving Fund
 TMDL..... Total Maximum Daily Load
 TSEP Treasure State Endowment Program
 TSS Total Suspended Solids
 USBR U.S. Bureau of Reclamation, Department of the Interior
 USDA U.S. Department of Agriculture
 USFS U.S. Forest Service, U.S. Department of Agriculture
 USFWS U.S. Fish and Wildlife Service
 USGS U.S. Geological Survey
 WAPA..... Western Area Power Administration
 WCSIP West Crane Sprinkler Irrigation Project
 WRD..... Water Resources Division, DNRC

ALPHABETICAL INDEX OF PROJECTS

Applications for funding during Fiscal Years 2000 and 2001

This table provides an alphabetical list (by applicant) of the 71 grant and loan proposals submitted in 2000 that have requested funds during the 2002-2003 biennium. Page numbers correspond to the project evaluation contained in this report.

Alder Water and Sewer District Wastewater System Improvements	26
Ashland Water and Sewer District Wastewater System Improvements	66
Beaverhead County Big Hole Watershed Management Project	108
Bitterroot Irrigation District Water Use and Water Quality Improvement Project - Phase II	42
Butte-Silver Bow Elimination of Combined Sewers	157
Butte-Silver Bow Local Government Basin Creek Dam #1 and #2 Site Improvements Projects	168
Canyon Creek Irrigation District Wyant Lake Dam Rehabilitation	21
Canyon Creek Irrigation District Canyon Lake Dam Rehabilitation	24
Carbon Conservation District Whitehorse Ditch Reorganization	104
Cascade County Conservation District Sun River Valley Ditch Company's Water Conservation and Quality Improvement Project	32
Charlo Sewer District Wastewater System Improvements	56
Charlo Water District New Water Well	133
Choteau, City of Water System Improvements	106
Circle, Town of Water Reclamation Project	171
Clyde Park, Town of Water System Improvements Project	76
Colstrip, City of Water System Improvements	174

Deer Lodge, City of	
Clark Fork River Water Quality Protection Project.....	87
Elk Meadows Ranchettes County Water District	
Water Systems Improvements.....	101
Essex Water and Sewer District	
Water System Improvements.....	183
Flathead Basin Commission	
Implementation of the Flathead Basin Voluntary Nutrient Reduction.....	29
Florence County Water and Sewer District	
Wastewater System Improvements	39
Geraldine, Town of	
Water System Improvements Phase I	63
Glasgow Irrigation District	
Vandalia Diversion Dam Rehabilitation Phase II North Bridge Pier	61
Glen Lake Irrigation District	
Therriault Creek Point of Diversion Infrastructure and Fish Habitat Improvement Project	48
Glen Lake Irrigation District	
Costich Drop Improvements Project	146
Great Falls, City of	
Yard Waste Management Facility	159
Helena Valley Irrigation District	
Fixed Wheel Gate and Hydraulic Cylinder Repair.....	127
Hill County	
Beaver Creek Dam Rehabilitation	125
Hinsdale Water and Sewer District	
Wastewater System Improvements	128
Hobson, Town of	
Water Exploration.....	111
Hot Springs, Town of	
Water System Improvements.....	92
Jordan, Town of	
Water and Wastewater System Improvements	186
Kalispell, City of	
Water and Sewer Utility Extension Project.....	189
LaCasa Grande Water and Sewer District	
Water Supply and Distribution System.....	74
Lambert County Sewer and Water District	
Water System Improvement Project	161

Laurel, City of	
City of Laurel Ground-Water and Salinity Management, Feasibility Project.....	141
Lewis & Clark Conservation District	
Willow Creek Water Quality Improvement Project.....	90
Lewis & Clark Conservation District	
Nilan Dam Repair and Irrigation Efficiency Project	192
Lima, Town of	
Water System Improvements.....	195
Lockwood Water and Sewer District	
Wastewater Collection System	116
Lower Willow Creek Drainage District	
Lower Willow Creek Dam Rehabilitation	84
Malta Irrigation District	
Replacement and Modification of Check Structures	149
Manhattan, Town of	
Wastewater Systems Improvements	45
Milk River Project Joint Board of Control	
Saint Mary River Siphon Repair Phase II	69
Missoula, City of	
Rattlesnake Stream Restoration and Flood Control Project	113
Montana State University	
Married Student Housing Irrigation Project	144
MT Dept. of Corrections Correctional Enterprises Ranch	
Rehabilitation of Prison Ranch Dams	19
MT Dept. of Environmental Quality	
Bertha Tailings Reclamation Project.....	179
MT Dept. of Environmental Quality	
Snowshoe Mine Reclamation Project.....	181
MT Dept. of Natural Resources and Conservation	
Bair Dam Rehabilitation Proposal	14
MT Dept. of Natural Resources and Conservation	
Seepage Monitoring Program (DNRC)	136
MT Dept. of Natural Resources and Conservation	
Montana's Water Resources in the 20th Century: A Reference Guide.....	176
MT Dept. of Natural Resources and Conservation	
Nevada Creek Dam Rehabilitation	16
MT Dept. of Natural Resources and Conservation	
Seepage Monitoring Program (DFWP)	139

Nashua, Town of	
Wastewater System Improvements	79
Park City/County Water and Sewer District	
Wastewater System Improvements	81
Park County Conservation District	
Wildlife Assessment: Upper Yellowstone River Task Force Cumulative Effects Investigation.....	164
Power-Teton County Water and Sewer District	
Water System Improvements.....	154
Richey, Town of	
Water System Improvements.....	131
Ruby Valley Conservation District	
Lower Ruby Valley Groundwater Management Plan.....	53
Scobey, City of	
Wellfield Rehabilitation Study.....	151
Stanford, Town of	
Wastewater System Improvements	71
Stillwater County Commissioners	
Improving Soil Productivity and Water Quality in South Central MT through Land-Use Changes	119
Teton County	
Burton Bench Aquifer Evaluation	98
Troy, City of	
Water System Improvements.....	166
Virginia City, Town of	
Wastewater Treatment System.....	34
Whitefish County Water and Sewer District	
Revisit to the Limnology of Whitefish Lake	37
Whitefish, City of	
Wastewater Aeration System Improvements and Lagoon Solids Removal Project.....	50
Whitefish, City of	
Whitefish City Beach	122
Whitewater Water and Sewer District	
Wastewater Systems Improvements	59
Wisdom Sewer District	
Wastewater System Improvements	95

INTRODUCTION

The Renewable Resource Grant and Loan Program provides funding for projects that conserve, manage, develop or protect the beneficial use of renewable resources. Governmental entities may apply to the program to obtain funding for resource-related projects. Past projects have included the construction of municipal water and sewer systems, irrigation system rehabilitation, reforestation, watershed restoration, resource studies and engineering and feasibility studies for construction projects. Applications are due May 15 of each even-numbered year. Montana Department of Natural Resources and Conservation (DNRC) staff reviews and ranks proposals from public entities and then presents a list of projects recommended for funding to the legislature during the regular legislative session. Recommendations for the 2001 legislative session are contained in the report.

This biennium, grants of up to \$10,000 each were available to fund the technical efforts necessary for the development of renewable resource projects. Applications that satisfied project and applicant eligibility criteria were funded on a first come, first serve basis.

Private entities are also eligible for both grant and loan funding for water-related projects under the Renewable Grant and Loan Program. Montana's constitution prohibits the legislature from appropriating funds directly to private entities. Therefore, selection of projects occurs under a different process that involves review by DNRC staff and final approval by DNRC's director. Loan applications from private entities may be submitted anytime during the biennium. Private grants for water resource development or improvements, are limited to \$5,000 or 25 percent of the project's cost, whichever is less.

CHAPTER 1

The Renewable Resource Grant and Loan Program

Background

The former Renewable Resource Development Program was established by the legislature in 1975 to promote the development of our renewable resources. Funds generated by the use of non-renewable mineral resources were pledged toward the development of more sustainable resource-based industries. Only governmental entities were eligible to apply for funding. Funds were provided for the purchase, lease, planning, design, construction or rehabilitation of projects that conserved, managed, developed, or preserved land, water, fish, wildlife, recreation, and other renewable natural resources.

The former Water Development Program was established by the Montana Legislature in 1981 to promote and advance the beneficial use of water, and to allow Montana's citizens full use of the state's water by providing grants and loans for water development projects and activities. Under the Water Development Program, both governmental entities and private persons were eligible to apply for funding.

In 1993, the Renewable Resource Development Program was combined with the Title 85 Water Development Program. DNRC's role under Title 85 was expanded to provide for DNRC's coordination of the development of the state's renewable resources. The Resource Development Bureau of DNRC thus assumed the responsibility of administering the Renewable Resource Grant and Loan Program as stipulated under Title 85, part 6, MCA. Combining the two programs streamlined program administration but did not change applicant and project eligibility criteria.

Purpose

The purpose of the Renewable Resource Grant and Loan program is to further the state's policies, set forth in Section 85-1-101, MCA, regarding the conservation, development, and beneficial use of renewable resources. The goal of the program is to invest in renewable natural resource projects that will preserve for the citizens of Montana the economic and other benefits of the state's natural heritage.

Project and Applicant Eligibility

Grants and loans are available for projects that conserve, manage, develop or protect the state's water, land, vegetation, fish, wildlife, recreation and other renewable resources. The majority of projects funded under this program are water resource projects, but forestry, soil conservation, and solid waste projects have received funding in the past. Project funding is available for construction, research, design, demonstration, and planning. Watershed projects that protect and improve water quality, and projects that help plan for the future management and protection of water sources (such as groundwater assessment studies) have received funding in the past. Chapter 6 of this report provides more examples of previous public grants and projects funded by the legislature.

Private Entities

Funding is also available to private entities. These applicants include individuals, associations, partnerships, for-profit corporations and not-for-profit corporations. Funding for private grant projects is limited. In 1999, the legislature appropriated \$100,000 for grants to private entities. By law, grant funding for a single project may not exceed 25 percent of the total estimated cost, or \$5,000, whichever is less. Statute provides that grants and loans may be made to private entities for water-related projects that conserve, manage, use, develop or preserve the state's water. Only water related projects may be funded. They must have quantifiable benefits that will exceed costs. Projects must also provide public benefits in addition to any private benefits. Applicants must hold or be able to acquire all necessary lands other than public lands and interests in the lands and water rights necessary for the construction, operation, and maintenance of the project.

Private grant and loan applications are managed under a process separate from state and local government entities. Montana's constitution prohibits the legislature from appropriating funds to a private entity directly. Therefore, funds appropriated by the legislature are used to issue individual awards to private grantees. Criteria for the award of funds to private entities are specified in the law. Each application is reviewed and, based on statutory criteria, funding recommendations are made to DNRC's director. The director has final authority over grants to private entities.

Irrigation system improvement projects, such as the conversion from flood irrigation to sprinkler irrigation, are the most common type of projects funded through private loans. Projects to convert to gravity flow irrigation systems are another typical project. Loans have also been provided for the development and improvement of rural water supply systems. Chapter 4 of this report provides more examples of previously funded private loan projects. Private loans must be secured with real property. Projects that are not water-related or that are unable to provide real property to secure a loan have not been funded. Irrigation water users associations have applied for loans in the past but have not qualified for funding because the association had no common property that could be offered as security.

Loans are made only to private applicants that are credit worthy and that are able and willing to enter into a contract for a loan repayment.

Emergency Grants

Statute allows DNRC to request up to 10 percent of the funds available for grants in a biennium to use for emergency grants. DNRC may provide grant funds for up to \$30,000 for a total of \$125,000 to governmental entities to resolve water-related emergencies. Emergency funds may be granted for projects which if delayed until the next regular legislative session would result in substantial damages or legal liability. Requests for emergency funds are reviewed by DNRC staff and approved by DNRC's director. Chapter 5 of this report provides information about the application for emergency assistance received in 1997 and 1998.

Funding Limitations

The law does not impose specific limitations on the amount of grant funding that the legislature may provide for renewable resource projects proposed by governmental entities. Grant recommendations presented to the Long Range Planning Subcommittee by DNRC are for limited amounts. These limits are consistent with limits imposed by the legislature in the past and have been imposed to obtain optimal public benefit from the investment of public funds. Guidelines used to develop funding recommendations were developed with input from the Long Range Planning subcommittee. Proposed funding levels do not constrain the legislature's ability to appropriate grants and loans in amounts deemed appropriate based on testimony presented in legislative hearings and consistent with current legislative priorities.

Grants to private entities are limited by law to 25 percent of the project cost. Loans to private entities may not exceed the lesser of \$200,000 or 80 percent of the fair market value of the security given for the project.

Funding Authority

A total of \$3.5 million was available over the 1999-2000 biennium for grants to public entities for renewable resource projects. An additional \$400,000 was available for grants to assist public entities in the planning and design of projects eligible for funding under RRGLP, and \$100,000 was available for private grants. In addition to the grants authorized by the legislature, the department has authority to provide \$125,000 in emergency grants to governmental entities if delaying the project until legislative approval can be given would cause loss of property or create legal liability. The loan program is funded through the issuance of general obligation and coal severance tax bonds.

Program Implementation

Part 6 of Title 85 specifies DNRC's role in the management of the Renewable Resource Grant and Loan Program. 85-1-605, MCA, allows DNRC to make project-funding recommendations only. The legislature approves by appropriation the actual awards of those grants and loans to governmental entities that it finds consistent with the policies and purposes of the program. In presenting recommendations to the legislature, DNRC provides information about each project for legislative consideration. All public grant projects are ranked by DNRC to show the legislature the potential value of a given project compared to all of the other grant projects requesting funds. Grant projects that do not meet minimum technical and financial standards are not recommended by DNRC for funding. All recommendations made by DNRC may be rejected by the legislature in favor of other considerations that it holds as higher priorities. Once the legislature makes an award, DNRC manages the authorized grants and loans according to conditions set out in DNRC's report to the legislature and in the legislative appropriations bill.

Acting within the limits of the authority provided by statute, DNRC provides the staffing necessary to administer state and local government assistance rendered under the Renewable Resource Grant and Loan Program. Each legislative session, members of the Long Range Planning subcommittee review the funding recommendations provided by DNRC. In response, the committee provides DNRC direction for the future.

Statute clearly prescribes DNRC's role in the administration of grants and loans to private entities. 85-1-606-614, MCA, is specific with respect to the parameters for the award of these funds. DNRC is directed to publicize statutes and rules governing these grants and loans and to set application deadlines. Only water-related projects are eligible. Additional eligibility criteria and the criteria used for project evaluation are set out in 85-1-609 and 610, MCA.

Rule Making Authority

DNRC's role of administering the Renewable Resource Grant and Loan Program is limited to a coordinating role. Limited by its authority to adopt rules, DNRC cannot expand or limit the mission of the Renewable Resource Grant and Loan Program beyond legislative intent. DNRC does not have the authority to limit the amount of public grants or to narrow the range of eligible grants based on DNRC priorities. Title 85, MCA, directs DNRC to adopt rules that prescribe the application fee and content for grant and loan applications. DNRC also determines the ranking criteria used to evaluate and prioritize public grant applications and the process for awarding grants and loans to private entities according to statutory criteria. DNRC authority provides for the servicing of loans and determination of the terms and conditions for making grants and loans.

Program Goals

DNRC's goals for administering the Renewable Resource Grant and Loan Program are carried out through the solicitation of applications; the evaluation of applications to provide the legislature with a basis for the selection of projects that best support the purposes and stipulations of Title 85, MCA; and the administration of grants and loans to comply with the conditions of the authorization and applicable laws.

DNRC seeks to:

1. Inform the public and private sectors that grant and loan funding for water and other renewable resource projects is available, that certain applicant eligibility criteria for obtaining funds exist, and that projects that meet the purposes of Title 85, MCA, qualify for funding. To promote the program, DNRC provides specific information:
 - a. about the grant and loan program to state and local government entities that are most likely to sponsor projects eligible for funding. Information is provided through press releases, news articles, brochures mailed directly to potential applicants, and at workshops held in communities across the state.

- b. to targeted private entities to obtain applications for grant funds that will result in significant public benefit. Information is provided through press releases, news articles, and direct contact.
- 2. coordinate with other state and federal agencies to provide information about government funding sources for water and other renewable resource projects, to facilitate a uniform application process, and to award funds without duplication
- 3. solicit public comment and suggestions for improvements to the program through the administrative rule making and legislative processes, during the solicitation for grant applications, and throughout the review of projects for funding
- 4. evaluate grant projects on the basis of technical merit and the resource benefits established in statute
- 5. effectively administer grants and loans to ensure that funds are used for allowable costs and that projects are executed in accordance with any conditions set by the legislature and in compliance with Title 85, MCA, and other applicable laws without undue burden to the recipient
- 6. offer loans at the most affordable rates available through the sale of public bonds
- 7. adequately secure loans to protect the investment of public funds
- 8. advise the legislature concerning DNRC's efforts to effectively administer the program according to statute and legislative intent

CHAPTER 2

Renewable Resource Grants to Public

Application Administration and Project Review Procedures

DNRC's Resource Development Bureau accepts applications for public grants and loans that are submitted or postmarked by May 15 of each even-numbered year. A \$250 application fee is required with each application. Exceptions are made for organizations that also provide voluntary expert review of DNRC grant applications. Those state agencies and units of the university system or other organizations that contribute to DNRC's extensive grant review process may request an application fee waiver.

Project Solicitation

Project applications are solicited broadly because DNRC seeks to maintain the competitive nature of the program. Those projects that most closely meet statutory priorities rank the highest and are most likely to rank above the cut-off point for available funding. Projects that do not rank competitively and fall below the projected funding line are less likely to receive legislative approval.

An extensive mailing list is used to promote the program and to solicit applications from eligible applicants. Mailing lists were originally obtained from divisions within DNRC and other state agencies. Included are contacts from the university system, state agencies, municipalities, environmental organizations, water users associations, irrigation districts, water and sewer districts, tribal leaders, conservation districts and federal agencies.

To begin promotion for the 2000 application cycle, press releases were issued to announce the application deadline. Press releases were sent to all Montana daily newspapers during December 1999. Press releases provide general program information, a telephone number and address to request more information, and application forms and guidelines.

In addition to direct mail and media announcements, DNRC combines forces with other state agencies to meet locally with potential applicants. Information about a variety of state and federal funding programs is presented collectively at public seminars for Montana's state and local government financial assistance programs.

A substantial increase in grant and loan applications was seen from the previous biennium. In the previous cycle, 62 applicants requested \$6.9 million in grant funding. Applications for this cycle increased to 71 grant applications requesting \$6.9 million in grant funding.

The increase in the number of applications may be attributed to a variety of factors. Federal funding has continued to decrease, and a growing pool of applicants is chasing an ever-decreasing pool of grant funds. The increase in grant applicants may in part be the result of a more streamlined grant application process. The grant and loan application for the Renewable Resource Grant and Loan program was trimmed from 36 pages in 1998 to 28 pages for the current cycle. Furthermore, the program now shares common forms with the Treasure State Endowment Program and the Community Development Block Grant Program for five of seven sections of the application.

Information requested in the 1998 cycle application included:

- A proposal abstract describing the project's merits
- A technical narrative to describe the proposal's purpose, project history and a description of prior efforts; specific goals and objectives are provided, as well as a discussion of project alternatives. Technical documentation is requested to support the technical narrative.
- A financial narrative and budget forms describing the funding structure
- Affordability data, used to evaluate the local financial commitment and ability to pay of applicants that have the potential to generate revenue through fees or taxes.

- A project management plan which outlines the steps that will be made to ensure successful project implementation
- A discussion of the public and natural resource benefits achieved by the proposed project.
- An environmental checklist that provides information necessary to assess the extent of any adverse environmental impacts that may occur as a result of the project.

Application Review

All applications received by the deadline are evaluated for completeness. Those missing documentation, application fees or other basic requirements are notified and provided time to submit additional material. Applications are then distributed to a team of key reviewers for evaluation. **Figure 1** shows the flow of the grant application review and ranking process.

To review applications for the 2000 cycle, DNRC assembled a technical review team of 19 key reviewers. Key reviewers include staff from other divisions within DNRC and contracted private engineering firms. On average, each key reviewer was asked to coordinate the review of five projects. Projects are assigned to reviewers based on the reviewer's area of expertise. Key reviewers are given information about the program, application materials and guidelines for reviewing applications.

DNRC's technical review team evaluates each application to ensure that the proposal is technically and financially feasible. During project review, additional detailed technical and financial information may be requested if necessary. With the results of their own evaluations and comments from agencies and outside experts, key reviewers assess and document the merits of each proposal based on standard review criteria outlined in the ranking form.

Each project is evaluated for the potential to cause adverse environmental impacts. In the event that long-term environmental impacts could occur as a result of the project, contingencies are attached to the funding recommendations to minimize impacts and to ensure that appropriate steps are taken to protect the environment.

State law requires DNRC to solicit views of interested and affected parties. Local, state, and federal agencies, environmental groups, private organizations and universities are solicited for input during the technical review of applications. Guidelines, developed specifically for application review, are used to provide a consistent basis for reviewing applications. Press releases are issued in Montana's daily and weekly newspapers to also inform the general public of the projects seeking funding under the Renewable Resource Grant and Loan Program.

FIGURE 1

Project Ranking Criteria

To obtain an objective evaluation of all applications, DNRC developed a standard ranking form containing review instructions and guidelines. Each key reviewer completes a ranking form for each application to document the merits of the proposal and the resulting score.

Each key reviewer assigns a score to reflect project merit under the following five primary categories:

(1) FINANCIAL FEASIBILITY (-100 points).

Financial feasibility is determined by DNRC's technical review team, a group of experienced individuals who evaluate the merits of similar proposals based on standard principles of finance. The reviewers determine whether the funds necessary to complete the project are available. They must also determine whether the costs identified in the project budget are justified. Reviewers will evaluate the security of the other funding sources that are necessary to complete the proposal; whether documentation of these funds is provided; whether the security required to support a loan requested in conjunction with the grant exists and is sufficient; and whether matching funds are in-kind contributions or another form of soft match.

(2) ADVERSE ENVIRONMENTAL IMPACT (-100 points).

DNRC will review the environmental narrative and checklist submitted with each application to identify the seriousness of any potential environmental impacts. If any adverse effects would result from a project, those impacts are evaluated against the environmental benefits of the project. DNRC will also consider the effectiveness of measures to mitigate adverse impacts. Points are deducted incrementally depending on the seriousness of any adverse impacts. If the adverse environmental impacts of the project outweigh the environmental benefits, the proposal could lose a maximum of 10 points. Points for environmental benefits are not awarded in this category.

(3) PROJECT MANAGEMENT AND IMPLEMENTATION (-100 points).

Each application is evaluated on the basis of the following criteria. Deficiencies in the project management plan will result in the loss of points.

- Has the applicant identified the staff required necessary for successful project management?
- Is there adequate funding in the project budget to effectively manage the project?
- Could any hurdles in project management or coordination with public or private entities prevent successful project implementation?
- Has the applicant identified a strategy for integrating public input into project development and implementation?
- Has the applicant identified a strategy for managing consultants or contractors responsible for the completion of major project tasks?

(4) TECHNICAL MERIT (400 POINTS)

Standard principles of engineering, research and program development are used to evaluate a proposal's technical merit. Coordinating agencies must indicate that a project meets the standards and complies with state law. Applicants also must either hold or show the ability to acquire all of the land and water right interests necessary to implement the proposal. Proposals that use commonly accepted technology and are not experimental efforts are more competitive than those that use a more experimental type of technology to solve a common problem. Proposal time lines must be reasonable and well documented. Up to 400 points are awarded to an application under the technical merit category.

(5) RENEWABLE RESOURCE BENEFITS (600 points).

Renewable Resource benefit criteria are based on Montana statutes. Up to 600 points may be awarded, depending on the degree to which these tests apply.

A. Resource Conservation, Management, or Protection (300 points)

Will the project:

- Result in a quantifiably significant contribution to renewable resource conservation or management that protects existing uses and ensures adequate future supplies of renewable resources for domestic, agricultural, industrial and other beneficial uses? (75 points)
- Protect or preserve resources such as land, air, water or wildlife, to ensure the long-term quality of Montana's renewable resources? (75 points)
- Develop a renewable natural resource to provide future benefits to Montanans? (75 points)
- Support prior project phases or activities implemented as part of an ongoing program in support of renewable resource conservation and management? (75 points)

B. Renewable Resource Enhancement (200 points)

Does the project:

- Develop natural-resource-based recreation? (40 points)
- Develop off-stream or tributary water storage? (40 points)
- Improve water quality and/or water-use efficiency, including the installation of measuring devices? (40 points)
- Advance farming practices that reduce agricultural chemical use? (40 points)
- Support the development of state, tribal, or federal water projects? (40 points)

C. Citizen Benefits and Support (100 points)

Will the project:

- Provide a quantifiable benefit or service to the public?
- Have multiple uses?
- Receive documented citizen support?
- Provide new, permanent jobs?
- Affect a large number of people in Montana?

After each key reviewer determines the score for assigned projects, all of the key reviewers and the bureau chief meet to discuss the projects and scores proposed. During this process, the key reviewer gives a short presentation about each project reviewed and the score given. After all the projects are presented, the individual scores for each category on the scoring sheet are discussed. The team then decides the scores each project should receive in relation to all projects. Discussion by the team reduces inconsistencies between scores given by individual reviewers. Final team scores are recorded on a ranking spreadsheet to document the ranking process.

DNRC's ranking system is used to determine the relative merit of every proposal submitted for grant funding. Ranking scores are used as a guide for the staff to select projects that best serve the program's objectives as stipulated by statute and to summarize information for DNRC's director. Proposal recommendations are presented to the Governor for grant funding in the order DNRC staff ranks them. Ranking scores are not binding. Either DNRC's director or the Governor may make any adjustments to the recommendations prepared by DNRC deemed necessary to reflect their assessment of natural resource and other policy priorities. Based on the Governor's priorities, an appropriations bill is drafted and introduced to the legislature. Actual funding decisions are made by the legislature. Not bound by DNRC's review criteria or the Governor's final ranking, the legislature ultimately will authorize funding for the projects in the order of priority and in the amounts that it judges will best serve the state.

Funding Recommendations:

All feasible grant requests are ranked according to standard criteria to select those that most efficiently use the state's natural resources in accordance with statutory guidelines. Then, in conjunction with its

recommendation for funding priority, DNRC makes its recommendations concerning the amount of funding to be awarded each project (**see Figure 2**).

With the Governor's approval, final funding recommendations are presented to the legislature as part of this report. These recommendations do not impose any limit on the amount of funding the legislature may provide to any governmental entity for a single grant project.

Although grant funding for public projects is not limited by statute, in the past the legislature has limited its grant funding awards to a maximum of \$100,000 per project. This policy reflects the legislature's interest in providing funding for a large number of grants. This policy prompts the leveraging of additional grants, loans and in-kind services and provides for greater geographical distribution of limited grant funds.

Project Management

After an appropriations bill is enacted to authorize grants and loans, DNRC notifies the applicants of their funding status. Sponsors of funded projects are reminded that work on their projects may not begin prior to entering into a grant or loan agreement with DNRC. DNRC does not reimburse any project costs incurred before the legislative authorization is given or before a formal funding agreement is executed.

Project Monitoring

Procedures for monitoring projects are driven by a project grant contract agreement between DNRC and the project sponsor. The equivalent of two full-time staff administers the 40 or more active construction, planning, research, and public information grants.

Site visits are made to all municipal water and sewer projects in the construction phase and to approximately 50 percent of all other projects. Site visits are made to spot check for problems or to respond to a request for assistance from the project sponsor. Budget and staffing constraints preclude DNRC's site involvement at every project site.

Grant agreements, as with contract instruments used for DNRC's other state and federal grant programs, require quarterly progress reports, expenditure reports, and a final report. During a project's contract term, the project sponsor must submit quarterly reports to DNRC. These reports must reflect the percentage of the project completed, the project costs to date, any problems encountered, and the need for any agreement amendment. Projects are closely monitored each quarter when quarterly reports are submitted. Program staff document decisions and conversations that affect ongoing projects, make notes to the file, and document important conversations with correspondence. Amendments to grant agreements are prepared and issued in response to any problems that require changes to the project's time line or budget.

Project sponsors submit claims and obtain reimbursement of allowable costs from DNRC. Invoices may be submitted monthly, and all costs must be supported by an invoice or receipt. DNRC withholds payment of 10 percent of the grant amount until all contract requirements are met and the grant is closed.

Project Evaluation

Through its ongoing monitoring efforts, DNRC evaluates grants funded under the Renewable Resource Grant and Loan Program. Upon project completion, DNRC requires submission of a final project report to document project history and the quantifiable results of the expenditure of grant dollars. This report summarizes grant expenditures, documents the work accomplished, and compares project objectives as presented to the legislature with the final project results. Evaluation of the project through a final project report enables DNRC to measure how well the projects implement the program goals of developing, managing, and conserving Montana's renewable resources. Projects are considered successful if they complete the scope of work outlined in the grant agreement.

FIGURE 2

RANK	SPONSOR	RECOMMENDED GRANT FUNDING	RECOMMENDED LOAN FUNDING
1	MT Dept. of Natural Resources and Conservation Bair Dam Rehabilitation	\$100,000	988,772
2	MT Dept. of Natural Resources and Conservation Nevada Creek Dam Rehabilitation	100,000	494,041
3	MT Dept. of Corrections Correctional Enterprises Ranch Rehabilitation of Prison Ranch Dams	100,000	
4	Canyon Creek Irrigation District Wyant Lake Dam Rehabilitation	100,000	
5	Canyon Creek Irrigation District Canyon Lake Dam Rehabilitation	100,000	
6	Alder Water and Sewer District Wastewater System Improvements	100,000	
7	Flathead Basin Commission Implementation of the Flathead Basin Voluntary Nutrient Reduction	99,697	
8	Cascade County Conservation District Sun River Valley Ditch Co. Water Conservation and Quality Improvement Project	99,230	
9	Virginia City, Town of Wastewater Treatment System	100,000	
10	Whitefish County Water and Sewer District Revisit to the Limnology of Whitefish Lake	100,000	
11	Florence County Water and Sewer District Wastewater System Improvements	100,000	
12	Bitterroot Irrigation District Water Use and Water Quality Improvement Project Phase II	100,000	
13	Manhattan, Town of Wastewater System Improvements	100,000	
14	Glen Lake Irrigation District Therriault Creek Point of Diversion Infrastructure and Fish Habitat Improvement Project	94,500	
15	Whitefish, City of Wastewater Aeration System Improvements and Lagoon Solids Removal Project	100,000	
16	Ruby Valley Conservation District Lower Ruby Valley Groundwater Management Plan	98,352	
17	Charlo Sewer District Wastewater System Improvements	100,000	
18	Whitewater Water and Sewer District Wastewater Systems Improvements	100,000	
19	Glasgow Irrigation District Vandalia Diversion Dam Rehabilitation Phase II North Bridge Pier	100,000	
20	Geraldine, Town of Water System Improvements Phase I	100,000	
21	Ashland Water and Sewer District Wastewater System Improvements	100,000	
22	Milk River Project Joint Board of Control Saint Mary River Siphon Repair Phase II	100,000	
23	Stanford, Town of Wastewater System Improvements	100,000	
24	LaCasa Grande Water and Sewer District Water Supply and Distribution System	100,000	
25	Clyde Park, Town of Water System Improvements	100,000	
26	Nashua, Town of Wastewater System Improvements	100,000	
27	Park City/County Water and Sewer District Wastewater System Improvements	100,000	

RANK	SPONSOR	RECOMMENDED GRANT FUNDING	RECOMMENDED LOAN FUNDING
28	Lower Willow Creek Drainage District Lower Willow Creek Dam Rehabilitation	100,000	1,350,000
29	Deer Lodge, City of Clark Fork River Water Quality Protection Project	100,000	
30	Lewis & Clark Conservation District Willow Creek Water Quality Improvement Project	98,636	
31	Hot Springs, Town of Water System Improvements	100,000	
32	Wisdom Sewer District Wastewater System Improvements	100,000	
33	Teton County Burton Bench Aquifer Evaluation	99,014	
34	Elk Meadows Ranchettes County Water District Water System Improvements	100,000	
35	Carbon Conservation District Whitehorse Ditch Reorganization	57,200	
36	Choteau, City of Water System Improvements	100,000	
37	Beaverhead County Big Hole Watershed Management Project	100,000	
38	Hobson, Town of Water Exploration	40,000	
39	Missoula, City of Rattlesnake Stream Restoration and Flood Control Project	100,000	
40	Lockwood Water and Sewer District Wastewater Collection System	100,000	3,300,000
41	Stillwater County Commissioners Improving Soil Productivity and Water Quality in South Central Montana Through Land-use Changes	98,870	
42	Whitefish, City of Whitefish City Beach	58,650	
43	Hill County Beaver Creek Dam Rehabilitation	100,000	
44	Helena Valley Irrigation District Fixed Wheel Gate and Hydraulic Cylinder Repair	100,000	188,400
45	Hinsdale Water and Sewer District Wastewater System Improvements	100,000	
46	Richey, Town of Water System Improvements	100,000	
47	Charlo Water District New Water Well	100,000	
48	MT Dept. of Natural Resources and Conservation Seepage Monitoring Program (DNRC)	100,000	
49	MT Dept. of Natural Resources and Conservation Seepage Monitoring Program (FWP)	100,000	
50	Laurel, City of Groundwater and Salinity Management Feasibility Study	99,991	
51	Montana State University Married Student Housing Irrigation Project	100,000	
52	Glen Lake Irrigation District Costich Drop Improvements Project	100,000	
53	Malta Irrigation District Replacement and Modification of Check Structures	68,290	
54	Scobey, City of Wellfield Rehabilitation Study	67,605	
55	Power-Teton County Water and Sewer District Water System Improvements	100,000	
56	Butte-Silver Bow Elimination of Combined Sewers	27,919	

RANK	SPONSOR	RECOMMENDED GRANT FUNDING	RECOMMENDED LOAN FUNDING
57	Great Falls, City of Yard Waste Management Facility	100,000	
58	Lambert County Sewer and Water District Water System Improvement Project	100,000	
59	Park County Conservation District Wildlife Assessment: Governor's Upper Yellowstone River Task Force Cumulative Effects Investigation	100,000	
60	Troy, City of Water System Improvements	99,970	
61	Butte-Silver Bow Local Government Basin Creek Dam #1 and #2 Site Improvements Projects	100,000	
	TOTAL FUNDS RECOMMENDED	\$5,938,468.00	\$6,321,213.00
Projects Below This Line Were Not Recommended for Funding			
	Circle, Town of Water Reclamation Project	No Funding	
	Colstrip, City of Water System Improvements	No Funding	
	MT Dept. of Natural Resources and Conservation Montana's Water Resources in the 20 th Century: A Reference Guide	No Funding	
	MT Dept. of Environmental Quality Bertha Tailings Reclamation Project	No Funding	
	MT Dept. of Environmental Quality Snowshoe Mine Reclamation Project	No Funding	
	Essex Water and Sewer District Water System Improvements	No Funding	
	Jordan, Town of Water and Wastewater System Improvements	No Funding	
	Kalispell, City of Water and Sewer Utility Extension Project	No Funding	
	Lewis & Clark Conservation District Nilan Dam Repair and Irrigation Efficiency Project	No Funding	
	Lima, Town of Water System Improvements	No Funding	

Project No. 1

Applicant Name: Montana Department of Natural Resources and Conservation
Project Name: Bair Dam Rehabilitation

Amount Requested:	\$ 100,000	Grant
	\$ 988,772	Loan
Amount Recommended:	\$ 100,000	Grant
	\$ 988,772	Loan
Other Funding Sources:	\$1,261,228	Broadwater Hydropower Earnings
	<u>\$ 124,684</u>	In-kind Contribution
Total Project Cost:	\$2,474,684	

Project Abstract: (Prepared and submitted by applicant.)

Bair Dam is a "high-hazard" earthen embankment located in Meagher County near the town of Checkerboard on the North Fork of the Musselshell River. The dam is owned by the Department of Natural Resources and Conservation (DNRC) and is managed by the State Water Projects Bureau. The dam is classified "high-hazard" because of the potential for loss of life below the dam, should the dam fail.

Bair Dam was completed in 1939. The spillway is in poor structural condition and incapable of routing required inflow design flood for a dam of its size and hazard classification. The rock cut slope above the existing spillway is unstable and debris has fallen into the spillway since the original construction. The dam's existing outlet structure has also deteriorated significantly. A reservoir level restriction was permanently implemented in the spring of 1997, until such time that the spillway is repaired to meet Dam Safety Program requirements.

The purpose of this project is to rehabilitate Bair Dam to reduce the potential for loss of life due to catastrophic failure and to maximize the storage capacity of the reservoir for the beneficial use of Montana's citizens. The rehabilitation will consist of spillway and outlet structure replacement and slope stabilization above the spillway.

The funding in this request would be used to help pay for rehabilitation construction costs. DNRC is requesting a grant in the amount of \$100,000 and a loan in the amount of \$988,772 to contribute to the overall project. The estimated total cost of the project at the feasibility stage is approximately \$2.47 million, including in-kind contributions. Additional sources of funding for the project will include the Broadwater Hydropower Earnings as authorized by the Legislature.

Technical Assessment:

Project Background:

Bair Dam is located in Meagher County near the community of Checkerboard on the North Fork of the Musselshell River. Bair Dam was constructed in 1939 and is owned by DNRC. The Upper Musselshell Water Users Association (UMWUA) operates the dam and supplies water to 54 downstream water users who irrigate about 22,000 acres. Bair Dam also provides recreational opportunities to area anglers and boaters. Bair Dam has been classified as a high-hazard dam under the Montana Dam Safety Act. The spillway is in poor structural condition and is incapable of routing the required inflow design flood. The outlet structure has deteriorated and is in poor condition. The rock cut slope above the spillway is eroding and unstable. As a result of these problems, a restriction has been placed on the volume of water that can be safely stored in the reservoir. The proposed rehabilitation will correct the current deficiencies with the dam and restore the dam's original storage capacity.

Technical Approach:

The goals of the proposed rehabilitation project include:

1. Restore the dam's original storage capacity, which will conserve state water resources and maintain existing recreational opportunities.
2. Prevent potential loss of life and economic hardship associated with dam failure.
3. Extend the dam's useful life for another 50 to 70 years.

The goals will be met by constructing a new dam spillway that meets Montana Dam Safety Act standards, replacing the existing outlet structure and improving slope stability adjacent to the new spillway. DNRC has completed a feasibility study that evaluated several alternatives for correcting problems with the dam. This study determined that the proposed rehabilitation project was the most cost-effective and environmentally acceptable solution, and that the project as proposed will comply with current standards and regulations. Permitting of the proposed project is relatively straightforward. The project should be simple to implement and complete within the proposed schedule.

Project Management:

It is anticipated that the proposed dam rehabilitation project will be completed using the traditional design-bid-build sequence. The DNRC State Water Projects Bureau will manage and oversee this project. A qualified engineering consultant selected in conformance with state laws and regulation will complete the design and provide construction administration. A single prime contractor selected through a competitive bidding process will be responsible for project construction. DNRC staff will be responsible for obtaining all necessary construction and environmental permits. DNRC personnel will also be on-site during construction to oversee all dam and spillway rehabilitation activities.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$124,684	\$124,684
Professional & Technical	\$100,000	\$0	\$183,440	\$283,440
Construction	\$0	\$988,722	\$1,077,838	\$2,066,560
Total	\$100,000	\$988,722	\$1,385,962	\$2,474,684

The budget appears to be sufficient to fund the proposed project. Material, labor and equipment costs used to develop the budget appear to be reasonable and adequate. The costs of the various alternatives evaluated in the feasibility study appear to have been developed in a consistent manner, and the proposed project was determined to be the most cost-effective alternative.

The proposed funding package appears to be a reasonable mix of state and local funds. In addition to the requested DNRC grant and loan funds, DNRC has requested Broadwater Hydropower Earnings through the Executive Planning Process (EPP) and will provide an in-kind contribution by assuming administrative and management responsibilities for the project. The EPP request will be considered during the 2001 legislative session, as will the RRGL grant and loan applications.

DNRC and UMWUA have entered into an agreement requiring UMWUA to contribute about \$76,000 per year in local funds to repay the DNRC loan. Based on a total of 21,718 acres of irrigated land, this will result in an increase in the existing operation and maintenance charge (\$3.50 per acre-foot) of about \$3.50 per acre-foot, for a total water use charge of \$7.00 per acre-foot. An economic study of agricultural operations impacted by the proposed project estimated the net value added per acre by irrigation at \$69.30. The proposed increase in operation and maintenance charges appears to be reasonable when compared to the estimated increase in crop value resulting from the availability of irrigation water. In addition to the proposed increase in the yearly operation and maintenance charge, UMWUA has agreed to contribute \$247,193 in reserves as a loan coverage amount upon closing of the DNRC loan.

Benefit Assessment:

The project will provide direct, quantifiable benefits. The rehabilitation of the proposed project will restore the dam's capacity to store surface water during periods of high flow to be used later to about 22,000 acres of cropland. The proposed project will also minimize potential loss of life and property damage associated with possible dam failure. In addition, the project will enhance water based recreation opportunities on the reservoir.

Environmental Evaluation:

The majority of the adverse environmental impacts normally associated with the construction of dams (flooding of agricultural land, loss of riparian habitat and wetlands, etc.) occurred more than 60 years ago as the result of the original dam in 1939. Rehabilitation of the Bair Dam will maintain current environmental conditions. Long-term environmental impacts would be minimal. Short-term impacts due to rehabilitation activities such as dust, noise and stormwater runoff will be relatively minor and are more than outweighed by the project benefits.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 and loan funding of \$988,772 upon DNRC approval of a project scope of work, administration and budget. Reduction in either the requested grant or loan funds would require either an increase in the EPP request for Broadwater Hydropower Earning to be allocated to this project, or an increase in the amount of funds being contributed by UMWUA. Increasing the EPP request could adversely impact other projects requesting such funds. An increase in the UMWUA contribution would require further increasing the proposed water charges. Such an increase may be beyond the payment capability of the water users.

Project No. 2

Applicant Name: Montana Department of Natural Resources and Conservation
Project Name: Nevada Creek Dam Rehabilitation

Amount Requested:	\$ 100,000	Grant
	\$ 494,041	Loan
Amount Recommended:	\$ 100,000	Grant
	\$ 494,041	Loan
Other Funding Sources:	\$1,505,959	Broadwater Hydropower Earnings
	\$ 500,000	Water Storage Account
	<u>\$ 123,154</u>	In-kind Contribution
Total Project Cost:	\$2,723,154	
Amount Recommended:	\$ 100,000	Grant
	\$ 494,041	Loan

Project Abstract: (Prepared and submitted by applicant.)

Nevada Creek Dam is a "high-hazard" earthen embankment located near Helmville in Powell County. The dam is classified "high-hazard" under the Montana Dam Safety Act guidelines because of the potential for loss of life below the dam, should the dam fail. Nevada Creek Dam was completed in 1938.

The dam is owned by the Department of Natural Resources and Conservation (DNRC) and operated by the Nevada Creek Water Users Association. The spillway concrete is severely deteriorated and may not be able to safely route the required inflow design flood for a dam of its size and hazard classification. The

dam has experienced high levels of seepage since it was constructed. Past grouting programs were unsuccessful in reducing seepage.

The purpose of this project is to rehabilitate the Nevada Creek Dam to reduce the potential for loss of life due to catastrophic failure and to maximize the storage capacity of the reservoir for the beneficial use of Montana's citizens. Project rehabilitation will consist of spillway replacement, outlet tunnel extension and installation of a seepage collection system.

The funding in this request would be used to help pay for rehabilitation construction costs. DNRC is requesting a grant in the amount of \$100,000 and a loan in the amount of \$494,041 to contribute to the overall project. The estimated total cost of the project at the feasibility stage is about \$2.72 million, including the DNRC in-kind contribution. Additional sources of funding for the project would include the Water Storage Account and Broadwater Hydropower Earnings.

Technical Assessment:

Project Background:

Nevada Creek Dam is located in Powell County near the community of Helmville. Nevada Creek Dam was constructed in 1938 and is owned by the Montana Department of Natural Resources and Conservation (DNRC). The Nevada Creek Water Users Association (NCWUA) operates the dam and supplies water to 15 downstream water users who use the water to irrigate about 13,000 acres. The dam also provides recreational opportunities to area anglers and boaters. Nevada Creek Dam has been classified as a high-hazard dam under the Montana Dam Safety Act. The spillway is in poor structural condition and is incapable of routing the required inflow design flood. The outlet structure has deteriorated and is in poor condition. The dam has experienced high levels of seepage since it was constructed. As a result of these problems, in 1981 the U.S. Army Corps of Engineers declared the dam to be "unsafe." The proposed rehabilitation will correct the current deficiencies with the dam and return the dam to a safe condition.

Technical Approach:

The goals of the proposed rehabilitation project include:

1. Restore the dam to a safe condition, which will conserve State water resources and maintain existing recreational opportunities.
2. Prevent potential loss of life and economic hardship associated with dam failure.
3. Control excessive and chronic seepage through the dam.
4. Extend the dam's useful life for another 50 to 70 years.

The goals will be met by constructing a new dam spillway that meets Montana Dam Safety Act standards, rehabilitating the existing outlet structure and constructing a seepage collection and control system. DNRC has completed a feasibility study that evaluated several alternatives for correcting problems with the dam. This study determined that the proposed rehabilitation project was the most cost-effective and environmentally-acceptable solution, and that the project as proposed will comply with current standards and regulations. Permitting of the proposed project is relatively straightforward. The project should be simple to implement and complete within the proposed schedule.

Project Management:

It is anticipated that the proposed dam rehabilitation project will be completed using the traditional design-bid-build sequence. The DNRC State Water Projects Bureau will manage and oversee this project. A qualified engineering consultant selected in conformance with state laws and regulation will complete the design and provide construction administration. A single prime contractor selected through a competitive bidding process will be responsible for project construction. DNRC staff will be responsible for obtaining all necessary construction and environmental permits. DNRC personnel will also be on-site during construction to oversee all dam and spillway rehabilitation activities.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$123,154	\$123,154
Professional & Technical	\$100,000	\$0	\$50,965	\$150,965
Construction	\$0	\$494,041	\$1,954,994	\$2,449,035
Total	\$100,000	\$494,041	\$2,129,113	\$2,723,154

The budget appears to be sufficient to fund the proposed project. Material, labor and equipment costs used to develop the budget appear to be reasonable and adequate. The costs of the various alternatives evaluated in the feasibility study appear to have been developed in a consistent manner, and the proposed project was determined to be the most cost-effective alternative.

The proposed funding package appears to be a reasonable mix of state and local funds. In addition to the requested DNRC grant and loan funds, DNRC has requested Broadwater Hydropower Earnings and Water Storage Account funds through the Executive Planning Process (EPP) and will provide an in-kind contribution by assuming administrative and management responsibilities for the project. The EPP request will be considered during the 2001 legislative session, as will the RRGL grant and loan applications.

The DNRC and the NCWUA have entered into an agreement requiring the NCWUA to contribute about \$38,000 per year in local funds to repay the DNRC loan. Based on a total of 13,000 acres of irrigated land, this will result in an increase in the existing operation and maintenance charge (\$5.50 per acre-foot) of about \$4.50 per acre-foot, for a total water use charge of \$10.00 per acre-foot. An economic study of agricultural operations impacted by the proposed project estimated the net value added per acre by irrigation at \$17.84. The proposed increase in operation and maintenance charge appears to be reasonable when compared to the estimated increase in crop value resulting from the availability of irrigation water. In addition to the proposed increase in the yearly operation and maintenance charge, the NCWUA has agreed to contribute \$123,510 in reserves as a loan coverage amount upon closing of the DNRC loan.

Benefit Assessment:

The project will provide direct, quantifiable benefits. The rehabilitation of the proposed project will restore the dam's capacity to store surface water during periods of high flow to be used later to irrigate 13,000 acres of cropland. The proposed project will also minimize potential loss of life and property damage associated with possible dam failure. In addition, the project will enhance water-based recreation opportunities on the reservoir.

Environmental Evaluation:

The majority of adverse environmental impacts normally associated with the construction of dam (flooding of agricultural land, loss of riparian habitat and wetlands, etc.) occurred over more than 60 years ago as the result of the construction of the original dam in 1938. Rehabilitation of the Nevada Creek Dam will maintain the current environmental conditions. Long-term environmental impacts would be minimal. Short-term impacts associated with the rehabilitation activities are more than outweighed by the project benefits.

Funding Recommendation:

DNRC recommends grant and loan funding of the total amount requested, \$100,000 in grant funds and \$494,041 in loan funds, upon approval of project scope of work, administration and budget. Reduction in either the requested grant or loan funds, would require either an increase in the EPP request for Broadwater Hydropower Earnings to be allocated to this project, or an increase in the amount of funds being contributed by the NCWUA. Increasing the EPP request could adversely impact other projects

requesting such funds. An increase in the NCWUA contribution would require an increase in the proposed increase in water charges. Such an increase may be beyond the payment capability of the water users.

Project No. 3.

Applicant Name: Department of Corrections
Project Name: Rehabilitation of State Prison Ranch Dams

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$ 23,439 Prison Ranch funds

Total Project Cost: \$123,439

Amount Recommended: \$100,000

Project Abstract: (Prepared and submitted by applicant.)

The Montana State prison ranch uses eight irrigation reservoirs as part of overall ranch operation. The City of Deer Lodge also uses one of these reservoirs for irrigation. Five of these reservoirs have dams that are classified to be high-hazard. The term high-hazard refers to the potential for loss of life downstream, should the dam fail. There are several downstream hazards below the prison ranch dams, including portions of the town of Deer Lodge, several prison ranch buildings and paved roads. High hazard dams are required to conform to standards set forth by the Montana Dam Safety Act.

The prison ranch dams range in age from 30 to 50 years old. As with most old earthen embankments, these dams have deficiencies. It is necessary to make several upgrades to four of these dams in order to meet current state safety standards. To assist in determining priorities, the Department of Natural Resources and Conservation (DNRC) conducted a long-term planning study at the request of the Department of Corrections. In this study, deficiencies were prioritized according to severity, potential for loss of life downstream, potential for property damage, and cost/ease of repair. With a combination of renewable resource loans and prison ranch proprietary fund resources, the Department of Corrections is confident that all safety deficiencies can be addressed over the next five years.

This application pertains to projects on two dams identified in the DNRC planning study as top priority:

1. replacement of north outlet/removal of the south outlet on Mud Lake Dam
2. feasibility study of outlet rehabilitation alternatives on Upper Taylor Dam
3. detailed evaluation of three alternatives to address spillway inadequacy on Upper Taylor Dam
4. engineering design of an alternative that best addresses spillway inadequacy on Upper Taylor Dam

Technical Assessment:

Project Background:

The Montana State Prison ranch uses eight reservoirs for irrigation, five of which have high-hazard dams. These earthen embankment dams are 30 to 50 years old, and four of them need upgrades to meet current dam safety standards. These dams are very important to the continued production of hay and livestock on the ranch. A planning and feasibility study has been prepared which identifies the problems and needs for rehabilitation for all of the dams, only two of which are included in this application. The ranch is providing an extensive contribution, both financially and otherwise, for four of the high-hazard dams currently under investigation.

Technical Approach:

The goal of this project is to rehabilitate the prison ranch dams, ensuring the continued supply of irrigation water to the ranch and eventually bringing the dams up to Montana Dam Safety Standards. Two dams are addressed by this proposal, Mud Lake and Upper Taylor. The work on Mud Lake includes both engineering and construction, while all of the work on Upper Taylor consists of an engineering feasibility study and actual design. Overall, costs for both engineering and construction by the methods proposed appear reasonable.

This grant application deals with two specific deficiencies on two specific dams: corrosion of corrugated metal outlet pipes (Mud Lake Dam and Upper Taylor Dam) and spillway inadequacy (Upper Taylor Dam). These deficiencies could lead to failure of the dams, and are therefore considered serious.

Failure of corrugated metal pipes: In the past 10 years, many dams have experienced problems that were a direct result of corrosion of the dam's corrugated metal outlet pipe. Once the outlet pipe leaks, the process of piping and void initiation along the outside of the pipe occurs. This can happen very rapidly, depending on the material causing possible failure of the dam. Thus, it is very important to address pipe corrosion problems before the pipe reaches the end of its useful life. Typically, corrugated metal pipe has a useful life of 30 years under normal conditions. More corrosive soils and water can decrease a pipe's life; adding a bituminous coating can extend a pipe's life. Options for rehabilitation are more abundant if addressed early. For example, if leaks have already developed in a pipe, only one option remains for rehabilitation: complete excavation of the embankment and replacement of the pipe. If the pipe has not corroded completely through, there are several rehabilitation options.

Spillway inadequacy: If the emergency spillway capacity of a dam is exceeded, the dam will begin to overtop. Most dams that overtop fail. Spillway inadequacy refers not only to the inability of the spillway to pass an extreme storm event, it also refers to the inability of a spillway to withstand the erosional force of water moving through the spillway at high velocity.

The State Dam Safety Program permits all of the prison ranch high-hazard dams under jurisdiction of the Montana Dam Safety Act. It is a requirement of the Dam Safety Program that all high-hazard dams with corrugated metal outlet pipes that are beginning to show corrosion have some plan in place for eventual replacement. High hazard dams are also required to have adequate spillway capacity. If these deficiencies are not addressed within a reasonable amount of time, the operation permits will not be renewed, and these reservoirs will be required to remain empty or the dams breached.

The objectives and tasks to accomplish them are:

Mud Lake:

Replace the north outlet and remove the south outlet. This project involves both design and construction. The proposed action is to repair or preserve the existing dam structure by replacing the north dam outlet pipe and removing the south dam corrugated metal pipe.

Upper Taylor:

Feasibility Study of outlet rehabilitation alternatives. This project could involve feasibility level planning. The proposed action is to evaluate a variety of rehabilitation alternatives. A preferred alternative will be recommended and appropriate cost estimates made. Final design and construction of the preferred alternative would occur using prison ranch operation budget or future renewable resource grant monies.

Detailed evaluation of alternatives to address spillway inadequacy: The project would involve further analysis of three alternatives that were previously identified in the preliminary analysis. A preferred alternative will be recommended and appropriate cost estimates made.

Engineering design of alternatives that best addresses spillway inadequacy. This project would include an engineering design of the preferred alternative previously determined. Construction would occur using prison ranch operation budget or future renewable resource grant monies.

A Dam Safety Act Construction Permit would be required for the work. A temporary exemption of Montana Surface Water Quality Standards would be needed during construction.

Project Management:

The project will be managed by the prison ranch director, who will also be responsible for obtaining all regulatory permits. Coordination with the Montana Dam Safety Program will be required.

Contract administration will be managed by the Montana Correctional Enterprise fiscal manager. The consulting engineer will assign a project engineer to work with the prison ranch director and to coordinate with the dam safety program.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$67,820	\$0	\$0	\$67,820
Construction	\$32,180	\$0	\$23,439	\$55,619
Total	\$100,000	\$0	\$23,439	\$123,439

Costs are reasonable and the total cost is adequate. Funds other than RRGL funds are primarily in-kind services consisting of prison ranch equipment and Job Corps labor.

The project will not affect user fees. Water stored behind prison ranch dams is used to irrigate 1,640 acres on the ranch as well as the Deer Lodge cemetery and golf course.

Benefit Assessment:

The project will improve help the long-term water resource conservation by helping preserve two of the prison ranch dams. These dams enable the prison ranch to be self-supporting, and thereby benefiting all the citizens of Montana. The improvements will result in dams that are less likely to fail, reducing the risk of loss of life and property damage downstream in the Town of Deer Lodge.

Environmental Evaluation:

There are no long-term adverse environmental impacts or potential adverse impacts that would occur from the proposed improvements. Short-term impacts due to rehabilitation would be relatively minor and are more than outweighed by project benefits.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 4

Applicant Name: Canyon Creek Irrigation District
Project Name: Wyant Lake Dam Rehabilitation

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$220,000 (district funding, direct, in-kind and loan)

Total Project Cost: \$320,000
Project Abstract: (Prepared and submitted by applicant.)

The Renewable Resource Grant and Loan Program is to enhance Montana's renewable resources. The main renewable resource involved in this project is the preservation and improvement of a water storage and release system. Incidental to the existence of this system for storage of late season irrigation water is the enhancement of other renewable resources important to the State of Montana.

1. The primary project goal is to rehabilitate the 109-year-old high-hazard dam for compliance with current dam safety requirements, for retaining full-storage water rights, and to ensure efficient releases.
2. This design and construction project proposes to:
 - a. Add spillway capacity to increase flood protection to withstand a probable maximum flood (PMF).
 - b. Replace a failing outlet conduit to ensure reliable and increased irrigation and base flow releases.
 - c. Reclaim historical borrow areas and remove construction artifacts from the wilderness setting.
3. The incidental benefits to other renewable resources are:
 - a. Recharge of groundwater aquifers in the vicinity of Hamilton, Montana.
 - b. Flood control in the Canyon Creek drainage and contribution to flood control in the Bitterroot Basin.
 - c. Maintenance of sustainable fisheries in the reservoir and in Canyon Creek, and contribution to sustainable fisheries in the Bitterroot River, including habitat for listed species such as bull trout and westslope cutthroat trout.
 - d. Protection of water quality through the control of stream bank erosion along Canyon Creek.
 - e. Maintenance of a stable water source and improved riparian area for wildlife habitat and food source.
 - f. The preservation of productive agricultural hay fields, which contribute to open green space in the Bitterroot Valley.
 - g. Maintenance of the reservoir, which is used by the U.S. Forest Service (USFS) as a water source to fight forest fires, thus contributing to the protection of the timber resource.
 - h. Securing the reservoir as a possible source for future domestic water for the City of Hamilton.

Technical Assessment:

Project Background:

Wyant Dam is located on Canyon Creek in the Selway-Bitterroot Wilderness west of Hamilton. The dam was originally constructed in 1910, and over time, the dam embankment and outlet works have deteriorated. Additionally, the dam embankment height is insufficient to contain the flood required for a high-hazard dam. The application seeks partial funding to repair historic deterioration of the dam outlet works and embankment and to bring the dam into compliance with dam safety regulations. Construction will take place in September of 2003, with final design and permitting ongoing until that time.

Technical Approach:

The goals of the project are to bring the dam into compliance with current dam safety criteria and to ensure continued functioning of the dam outlet works. Technical alternatives were evaluated and the least costly and most environmentally sound alternative was chosen.

The proposed alternative for rehabilitation would ensure that the dam would meet current dam safety standards and would ensure an adequate and timely supply of irrigation water to the district. Further analysis needs to be completed to see if raising the dam crest two feet would be geotechnically feasible

under the design flood in the new configuration. This would be done in the final design of the project during the spring of 2003.

Permitting requirements have been documented, with the exception of a Stormwater Discharge Permit.

Project Management:

The applicant has generally anticipated the staffing that will be required for project implementation and has budgeted funds accordingly. However, there may be significant coordination with USFS during environmental review of the project that does not appear to have been anticipated. Public input into the project will be accomplished through the environmental assessment or impact statement (EA/EIS) process to be conducted by USFS. Management of the project will be done primarily through the irrigation district's engineer.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$8,000	\$8,000
Professional & Technical	\$0	\$0	\$53,000	\$53,000
Construction	\$100,000	\$0	\$157,000	\$257,000
Total	\$100,000	\$0	\$218,000	\$318,000

The applicant anticipates providing \$220,000 from the district's own funds (either special construction assessments, or future increases in member assessments to pay back a construction loan or in-kind services). The remainder of the project would be financed by the proposed \$100,000 grant. The special assessment is substantial (\$640 per user). Future increases in assessments would raise the per-acre contribution of each user from \$6.50 per acre to \$8.50 per acre. The district collects assessments from 1,500 acres; consequently, an additional \$3,000 per year would be generated to retire the construction debt. However, the district's own calculations indicate that about \$4,800 per year would be necessary to retire the construction debt. Reduction in operating expenses may provide the difference, though the applicant does not document this.

The project budget is very complete and thorough and seems to have anticipated reasonable contingencies, inflation and potential legal challenges to the project. The only item that it does not include is costs for an HDPE pipe fusion machine and accompanying generator (part of the project is to slipline an existing outlet with HDPE pipe).

Benefit Assessment:

The project protects and preserves the existing dam. In doing so, it conserves the benefits the dam has historically provided, including flood control, recreation, water supply (both for existing and future uses), and associated benefits. It does not enhance these benefits measurably but only ensures that the dam will comply with statutes. However, the dam's operable lifespan should be extended significantly. The project will impact water users within the Canyon Creek Irrigation District and people who live in or visit the Bitterroot Valley in the vicinity of Canyon Creek.

Environmental Evaluation:

The project will not have any long-term adverse impacts as it essentially only restores an existing facility. There will be some temporary impacts during construction, but the applicant has prepared for adequate mitigation of these short-term impacts.

Additional environmental review will be required by USFS in an Environmental Assessment (EA) or Environmental Impact Assessment (EIS). An EA on the nearby Canyon Lake Dam Repair (which is similar in scope to the proposed Wyant Lake Dam Rehabilitation) was prepared during 1996. The EA

resulted in a Finding of No Significant Impact (FONSI). Unless unique features of the Wyant Lake area are discovered (such as an endangered species), it seems likely that the Wyant Lake project might also result in a FONSI.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 5

Applicant Name: Canyon Creek Irrigation District
Project Name: Canyon Lake Dam Rehabilitation

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000	
Other Funding Sources:	\$330,000	Sponsor (special assessment and loans)
	<u>\$ 60,000</u>	Sponsor (In-kind Services)
Total Project Cost:	\$490,000	

Project Abstract: (Prepared and submitted by applicant.)

The Renewable Resource Grant and Loan Program is to enhance Montana's renewable resources. The main renewable resource involved in this project is the preservation and improvement of a water storage and release system. Incidental to the existence of this system for storage of late season irrigation water is the enhancement of other renewable resources important to the State of Montana.

1. The primary project goal is to rehabilitate the 109-year-old high-hazard dam for compliance with current dam safety requirements, for retaining full-storage water rights, and to ensure efficient releases.
2. This design and construction project proposes to:
 - a. Add spillway capacity to increase flood protection to withstand a probable maximum flood (PMF).
 - b. Replace a failing outlet conduit to ensure reliable and increased irrigation and base flow releases.
 - c. Reclaim historical borrow areas and remove construction artifacts from the wilderness setting.
3. The incidental benefits to other renewable resources are:
 - a. Recharge of groundwater aquifers in the vicinity of Hamilton, Montana.
 - b. Flood control in the Canyon Creek drainage and contribution to flood control in the Bitterroot Basin.
 - c. Sustainable fisheries in the reservoir and in Canyon Creek, and contribution to sustainable fisheries in the Bitterroot River, including habitat for listed species such as bull trout and westslope cutthroat trout.
 - d. Protection of water quality through the control of stream bank erosion along Canyon Creek.
 - e. Stable water source and improved riparian area for wildlife habitat and food source.
 - f. The preservation of productive agricultural fields of hay, which contribute to open green space in the Bitterroot Valley.
 - g. Maintenance of the reservoir, which is used by the U.S. Forest Service (USFS) as a water source to fight forest fires, thus contributing to the protection of the timber resource.
 - h. Securing the reservoir as a possible source for future domestic water for the City of Hamilton.

Technical Assessment:

Project Background:

Canyon Lake Dam is a high mountain dam in the Selway-Bitterroot Wilderness west of Hamilton. The dam was constructed in 1891. With time and use, portions of the dam have deteriorated, and episodic flood events have damaged the dam. Access to the dam has been by trail, but the trail itself has deteriorated. The dam has been determined to be a high-hazard dam with numerous dam safety deficiencies.

Technical Approach:

The goals of the project are to upgrade the dam to comply with current dam safety standards and to ensure an adequate and timely supply of irrigation water to the district. The specific objectives of the project include: raising the crest of the dam by 1 to 1.5 feet, constructing a 45-foot wide auxiliary spillway, and replacing the existing outlet works with a new bored outlet and related appurtenances.

Appropriate alternatives were considered. The applicant identified the least-cost alternative for the preferred solution, and this alternative meets the needs, goals and objectives of the project proposal.

The selected alternative addresses improvement in the ability of the applicant to operate the gate controls of the dam. This addresses one of the key long-term operation and maintenance needs of the dam. Legal hurdles including water rights, permit requirements, property easements and other considerations have been addressed in the application. Because the project is within a wilderness area, the hurdles associated with mechanized construction are significant, but the applicant has successfully negotiated these hurdles in the past.

The proposed schedule appears reasonable (construction is scheduled for September of 2002).

Project Management:

The applicant's budget is a reasonable estimate of the staff requirements necessary for successful project management. Project implementation will require significant coordination between the irrigation district and USFS. There is a two-year timeline for the USFS National Environmental Policy Act (NEPA) process. The NEPA process will allow for integration of public input into the project development and implementation.

The irrigation district's engineer will serve as project manager.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$8,000	\$ 8,000
Professional & Technical	\$0	\$0	\$75,000	\$ 75,000
Construction	\$100,000	\$0	\$306,000	\$ 406,000
Total	\$100,000	\$0	\$389,000	\$ 489,000

Canyon Creek Irrigation District serves 125 users on 1,500 acres. The district anticipates levying a special assessment of \$1,320 per user to help fund the project. The district will also borrow \$165,000. Loan repayment will be made by increasing assessments by \$2.00 per acre. The resulting revenue (\$3,000 per year) will not be sufficient to pay back an estimated loan payment of \$9,908.22. The district plans to use part of its existing funding (\$17,000 per year) to repay its debt.

The funding structure appears to be in place to fully fund the project. A detailed construction cost estimate is included, and other costs such as design and administration are estimated as reasonable

percentages of the construction cost. The applicants have provided a scope of work describing in-kind services from the irrigation district. Since the vast majority of the funds will be from the district itself or from a private loan, it appears likely that the applicant will be able to secure matching funds sufficient to complete the project. All the sources of funds needed to conduct the project have been clearly identified and appear to be reasonable. A reasonable contingency needs to be added to the costs.

Benefit Assessment:

Repair of the dam will result in a quantifiably significant contribution to conservation of water in the Canyon Creek drainage. The dam will help protect the existing uses and ensure adequate future supplies of water for agricultural and other beneficial uses. Water-use efficiency will be slightly enhanced by improvements to be made to the operating gate. Irrigation is the dam's primary use, but it is also being considered as a municipal water source. The lake is a popular destination for wilderness recreationists. There was no documented public support in the application.

Environmental Evaluation:

No long-term, adverse environmental impacts are associated with the project. The project will undergo rigorous environmental review by USFS because it is in a wilderness area. At this preliminary stage, it appears that the environmental impacts associated with this project will likely be of the short-term type generally associated with construction activities.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 6

Applicant Name: Alder Water and Sewer District
Project Name: Wastewater System Improvements

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000	
Other Funding Sources:	\$500,000	Treasure State Endowment Program Grant
	\$500,000	Community Development Block Grant
	\$457,500	Rural Development Grant
	<u>\$165,000</u>	Rural Development Loan
Total Project Cost:	\$1,722,500	

Project Abstract: (Prepared and submitted by applicant.)

The unincorporated community of Alder is addressing a serious problem with wastewater treatment and disposal. Wastewater is currently treated and disposed of in individual on-site systems (septic tanks or drainfields) rather than in a central municipal system. Madison County has placed a moratorium on the installation of new individual wastewater treatment systems because such on-site systems are unable to meet current standards in the Alder area. With county assistance, a local steering committee initiated and completed the formation of a water and sewer district to deal with the problem. The county sponsored the completion of a Preliminary Engineering Report through planning grants from the CDBG T.A. Program and DNRC Program.

The community of Alder is in the Ruby Valley. The Ruby River runs north and is situated one mile west of Alder. Alder Creek also runs north and is located east of town. This proximity to two rivers results in a groundwater table that rises to within 1 to 4 feet of the ground surface. This situation has caused some

on-site treatment systems to fail. Wastewater from systems still in use is probably not being adequately treated. Several wells in town have documented coliform contamination, some with fecal coliform, clearly the result of sewage contamination. Because of these problems, the Madison County sanitarian has placed a moratorium on any proposed new on-site systems. Those wishing to repair or replace existing failed systems must receive a variance from the county commission. In addition, several local businesses have been placed under state orders to improve or replace their current wastewater treatment system (multiple septic tanks and drainfields) or connect to a municipal system that will accept their wastewater.

The proposed solution would involve abandoning the existing on-site septic tank and drainfield systems and replacing them with a conventional (8-inch minimum diameter pipes with manholes) gravity collection system. The collection system would flow to a lift station, at which point the sewage would be pumped to two facultative storage lagoons. The treated effluent would be discharged using spray irrigation in the summer months.

Technical Assessment:

Project Background:

The unincorporated community of Alder is located in Madison County in the Ruby Valley in the vicinity of the Ruby River and Alder Creek. Wastewater from the Madison County Alder Water and Sewer District is currently managed through the use of individual on-site wastewater disposal systems rather than a public, centralized municipal system. The proximity of Alder to the Ruby River and Alder Creek results in a groundwater table that rises to within 1 to 4 feet of the ground surface. This groundwater situation has caused failure of several on-site wastewater disposal systems, and for those systems that have not yet failed, does not allow for adequate treatment of the wastewater before it reaches the groundwater. Several wells in the area have documented coliform and fecal coliform bacteria contamination, possibly a result from these failed and inadequate on-site wastewater disposal systems. The Madison County sanitarian has placed a moratorium on any proposed new on-site systems. The community is working to solve the current problems through the construction of a new public wastewater collection and treatment facility.

Technical Approach:

The goal of this project is to eliminate the discharge of all partially treated wastewater into the groundwater by designing and constructing a community collection and treatment facility. To achieve this goal, a facility plan was developed that identified and evaluated many collection and treatment alternatives, ranging from advanced mechanical systems with subsurface disposal to total retention systems. Several collection and treatment systems were evaluated in detail. The recommended alternative is to install a conventional gravity collection system and sewage lift station, with treatment consisting of facultative lagoons and land application. This system achieves a high level of treatment at a relatively low capital and operating cost. Furthermore, it has the benefit of putting an additional 7 acres of agricultural land into irrigated use.

The selected alternative would achieve compliance with all state and federal standards. The proposed schedule is to begin design of the facilities in early 2002 and initiate construction in May 2003, with completion and start-up later that fall.

Project Management:

A detailed project management and implementation plan has been developed. The applicant has identified the staff required for successful project management, including the district manager, the Madison County clerk, a professional administrative consultant and a design consultant. The applicant has prepared a comprehensive facility plan, and the public had the opportunity to comment on the plan.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$51,500	\$51,500
Professional & Technical	\$0	\$0	\$235,000	\$235,000
Construction	\$100,000	\$0	\$1,336,000	\$1,436,000
Total	\$100,000	\$0	\$1,622,500	\$1,722,500

The project budget presented in the application appears to be well documented, complete, and reasonable. Construction costs are based on best engineering judgment and past projects for technical development at the preliminary engineering report level.

Not all funds have been secured because a commitment is required from several agencies, but the applicant has presented a detailed and realistic funding strategy. The applicant proposes to fund wastewater improvements using about \$1.557 million in grants from the Montana Department of Commerce Treasure State Endowment (TSEP) and Community Development Block Grant (CDBG) Programs, the Montana Department of Natural Resources and Conservation Renewable Resource Grant and Loan (DNRC RRGL) Program, and the U.S. Department of Agricultural Rural Development (RD) program. The applicant will also pursue a \$165,000 loan from the RD program.

With the proposed funding package, the average monthly user charges will be about \$27.00. Since there currently is no community system, there are no monthly user rates.

Benefit Assessment:

The project will eliminate local groundwater contamination and contamination of local and downstream surface waters from failed septic and drainfield systems. Resource conservation will benefit by 6 million gallons per year of wastewater being directly applied to agricultural land. This wastewater is currently discharged to the groundwater and degrades its quality. Resource enhancement will result because 4.6 million gallons per year of partially treated wastewater currently discharged to the groundwater will be eliminated. Citizens will directly benefit through protection of their current source of potable water and elimination of potential contact with partially treated wastewater in nearby drainage areas and Alder Creek.

The benefits of the project will be long-term and will be quantified through continued groundwater monitoring for reduced nitrate concentrations and bacterial levels. Public support for the project is significant. Voter approval created the district specifically to address the described problems. Several letters of support by state and county officials were included in the application.

Environmental Evaluation:

The project will produce short-term adverse environmental impacts typical during construction due to noise, dust and stormwater run-off. Mitigation measures will be further developed during detailed design and will be enforced during construction.

The only long-term potentially negative aspect is the opportunity for periodic odors from the lagoons. The wastewater treatment facility has been sited such that the odors will affect a minimal number of residents.

Currently wastewater within the district is disposed of by inadequate and dilapidated septic tanks and drainfields. Because of the poor condition of the wastewater disposal systems, high groundwater, and relative close proximity to Alder Creek, the ineffective on-site wastewater disposal system has resulted in both surface and groundwater pollution. The groundwater pollution has resulted in contaminated water supplies in the area, and the Madison County sanitarian has issued a moratorium on new on-site wastewater disposal systems in the area. The proposed project will replace failing on-site systems. This project is expected to result in an overall long-term positive environmental impact.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 7

Applicant Name: Flathead Basin Commission (FBC)
Project Name: Implementation of the Flathead Basin Voluntary Nutrient Reduction Strategy

Amount Requested:	\$ 99,697	Grant
Amount Recommended:	\$ 99,697	
Other Funding Sources:	\$ 7,800	Flathead Basin Commission
	\$ 14,746	DNRC, MDEQ, MFWP, U of M Biological Station
	\$ 11,812	USFW, USFS, USEPA, USBR, NRCS
	\$ 2,592	Confederated Salish and Kootenai Tribes
	\$ 14,220	Plum Creek, Flathead Lakers, Volunteer Monitors, Citizen Members
	\$ 5,107	Local Government
	<u>\$ 10,445</u>	International Entities

Total Project Cost: \$166,419

Project Abstract: (Prepared and submitted by applicant)

If you ask Montanans which five Montana lakes are the most important, invariably Flathead Lake would be in the top three picks. The size of the lake, notoriety, aesthetic value, recreation benefits and water quality are reasons why Flathead Lake is a popular destination point and considered exceptionally valuable to all Montanans. However, few Montanans know that Flathead Lake water does not meet State water quality standards (ARM 17.30.637 (1)(e) General Prohibitions), and is undergoing the eutrophication process at an accelerated rate. Excess nutrients in the form of phosphorus, nitrogen, and nitrate plus nitrite cause algae blooms and serious oxygen depletion below the hypolimnion. Action is needed to reduce nutrient loading to this huge and immensely important natural resource before the impacts are irreversible, which directly relates to the mission of the DNRC Renewable Resource Program.

The lake water quality shows clear signs of excess nutrients entering the water column. Substantial lake and synoptic stream water quality monitoring data show nonpoint source pollution is impacting water quality and beneficial uses, and is causing violation of state water quality standards. As a result, Flathead Lake is included on the Section 303(d) list of water quality impaired waterbodies, and is designated a high priority for developing an approved Total Maximum Daily Load (TMDL), which is close to being completed. The probable sources of impairment include atmospheric deposition, domestic wastewater lagoons, flow regulation/modification, municipal point sources, on-site wastewater treatment systems (septic tanks), urban sprawl, overland runoff, agriculture, silvaculture, and an upstream impoundment. Only 2 percent of the nutrient load in Flathead Lake is estimated to come from point sources. The vast majority of nutrients, or 98 percent, are the result of natural and human nonpoint source pollution.

To address nonpoint source pollution, the Flathead Basin Commission (FBC) developed the Voluntary Nutrient Reduction Strategy (VNRS), and has linked the program to the TMDL process. A target TMDL was developed with the goal of achieving the 1978 primary productivity level of 80 grams C/M2/year. This target is anticipated to improve Flathead Lake water quality and ensure the lake meets human health, aquatic life and beneficial use requirements, and meets water quality standards. To meet the target TMDL for primary productivity, the FBC determined that nitrogen, nitrate plus nitrite, and phosphorus loading into the lake must be reduced by 15 percent basin wide. Implementation of the VNRS program was initiated in 1999, but funding is needed to keep the effort underway. Six principal

components are identified for successful implementation of the VNRS/TMDL program, and include: (1) coordination and planning, (2) grant funding and contributions to complete projects, (3) partnerships and public outreach, (4) watershed groups, (5) identification of opportunities, and (6) monitoring. Funding from the Renewable Resource Program and in-kind contributions from private entities, tribal partners, local government, state government, federal agencies and British Columbia Environment are proposed to implement the VNRS and address excess nutrient loading in Flathead Lake and upstream tributaries.

Technical Assessment:

Project Background:

The Flathead Basin encompasses 8,572 square miles in northwestern Montana and southern British Columbia. Included in the drainage are virtually all of Flathead and Lake counties and the Flathead Indian Reservation; the portion of Glacier National Park west of the continental divide; parts of three wilderness areas; millions of acres of forest land under federal, state, provincial, tribal, and corporate management; and thousands of acres of private property.

Flathead Lake water does not meet the State water quality standards (ARM 17.30.637(1)(e) General Prohibitions) and is undergoing the eutrophication process at an accelerated rate. The lake is included in the Section 303(d) list of water quality impaired waterbodies and is designated a high priority for developing an approved TMDL, which is close to being completed. Nutrient loading in Flathead Lake is a multi-faceted, basin-wide problem. Substantial data have been collected since the early 1970s to define the point and nonpoint nutrient pollution problems. The Flathead Basin Commission (FBC) and a technical committee comprised of a cross-section of basin professionals and stakeholders identified targets for the voluntary nutrient reduction strategy and linked the target to the TMDL process. A target TMDL was developed with the goal of achieving 1978 primary productivity level. The FBC determined that nitrogen, nitrate plus nitrite, and phosphorous loading into the lake must be reduced by 15 percent basin wide.

Implementation of the VNRS program was initiated in 1999. Additional funding is required to continue the program.

Technical Approach:

Six components have been identified for successful implementation of this program: coordination and planning, grant funding and contributions to complete projects, partnerships and public outreach, watershed groups, identification of opportunities, and monitoring. The coordinator identifies projects, prepares grant applications, establishes partnerships to conduct large-scale projects, acts as a hub for communication and nutrient reducing efforts and is responsible for adjusting program direction. Partnerships are essential to the success of the implementation effort – no single entity can reduce nutrient loading in the lake by 15 percent. Efforts to date have been successful in establishing strong partnerships. Watershed groups have been established in seven of the watersheds in the basin. The remainder of the watersheds need to have similar working groups formed and activities tailored to local issues and impacts. The coordinator, with support of other stakeholders, is key in the identification of opportunities to meet TMDL goals. The feasibility of proposals must be evaluated in order to propose defensible actions that make significant gains in reducing nutrient load. Monitoring is essential in documenting water quality trends. The FBC, the University of Montana Biological Station and the Confederated Salish and Kootenai Tribe (CSKT) are leading this effort.

The coordinator role will be put out for competitive bid. Funding from this grant will provide two years of support for the coordinator position. An action plan will be prepared that will include more detail on projects and opportunities and will identify the anticipated gains once the projects are completed. Adaptive management is an essential part of the implementation plan and will help ensure long-term success. Periodic checks on progress of meeting TMDL levels will be used to determine if current actions and funding are adequate, gauge the success of ongoing and completed actions, and develop contingency plans.

Project Management:

The FBC, a 21-member commission, provides direct input into the implementation of the study through its executive committee and regular meetings held every two months. The public information officer for the FBC will provide project management services. He will work directly with the Governor's Office on the required contractual elements. The contracted coordinator will be managed through direct oversight from the public information officer, frequent communications and monthly updates.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$ 8,640	\$0	\$ 7,800	\$ 16,440
Professional & Technical	\$91,057	\$0	\$58,922	\$149,979
Construction	\$0	\$0	\$0	\$0
Total	\$99,697	\$0	\$66,722	\$166,419

Current funding for the VNRS will expire in December 2000. Proposed professional and technical costs include services contracted through an open bid process or selection of a contractor from the "Qualified Vendors List" focused on implementing the study. The contractor(s) will work a total of 802 hours the first year (\$54,404) and 620 hours the second year (\$46,293). First-year costs include preparation and graphic support for the TMDL action plan. The estimates for costs appear reasonable, are well documented, and are based on current costs.

Professional and technical costs also include in-kind contributions from FBC members. In addition, FBC members, citizens and partners provide in-kind support for water quality monitoring. CSKT provides general support to assist in implementation of the study. These supporters are currently actively involved and have committed support for the future. The FBC has active support of the Governor's Office.

Benefit Assessment:

There are significant renewable resource benefits realized by implementing the Flathead Basin VNRS. The benefits include resource conservation, citizen benefits, resource enhancement, regulatory compliance and continuation of a program that has shown effectiveness in getting good projects and watershed initiatives underway. Furthermore, the VNRS helps implement the State Water Plan in terms of ensuring excellent water quality, maintaining beneficial uses, and providing local education, and will directly help plan construction projects that restore impacted waterways. The following text provides a more detailed description of these public benefits.

Future monitoring will be used to quantify improvements in Flathead Lake water quality as resource conservation projects are completed. The VNRS focuses on protecting basin natural resources, such as soil, riparian corridors, terrestrial and fisheries habitat, wetlands, air quality, and other resources. The actual completion of projects are quantifiable milestone events that show progress toward improved water quality. Water quality monitoring under the volunteer monitoring program and the U of M Biological Station will provide documentation needed to quantify the water quality improvement under VNRS. In terms of scale, the monitoring efforts are significant in that Flathead Lake covers more than 126,000 acres, and is the largest freshwater lake in the contiguous United States west of the Mississippi.

A basin-wide survey was conducted during the development of the study and the results identified water quality as the single biggest concern in the Flathead. The public has requested that DNRC identify impacts in Flathead Lake as a crucial state need that must be addressed now before irreversible impacts occur. Public support has noted the study is an ongoing effort that must be implemented in order to address impacts from increased population.

The main goal of this study is to enhance basin water quality and help preserve water quality in Flathead Lake once targets are met. Flathead Lake is at a crossroads where actions implemented now can prevent irreversible impacts. Implementation of this plan will mean use of better management practices

(BMPs) on agricultural lands and on silvaculture operations, partnerships between industry to minimize nutrient loading, habitat enhancement that benefits both water quality and terrestrial and aquatic animals, and protection of natural resources such as streamside soils.

Environmental Evaluation:

The study is focused on improving Flathead Lake water quality. Both upstream tributary water quality and lake water quality will be improved through coordination and planning under the proposed project. There are cumulative benefits associated with reducing the nutrient load in Flathead Lake: improved air quality, implementation of BMPs on agricultural and other lands, improved habitat for many species, and improved wetlands/riparian zones providing improved floodplain management.

There are no long-term adverse environmental impacts as a result of this project.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 8

Applicant Name:	Cascade County Conservation District
Project Name:	Sun River Valley Ditch Company's Water Conservation & Improvement Project

Amount Requested:	\$ 99,230	Grant
--------------------------	-----------	-------

Amount Recommended:	\$ 99,230
----------------------------	-----------

Other Funding Sources:	\$ 2,100	Cascade County Conservation District
	\$ 38,150	Sun River Valley Ditch Coompany
	\$ 14,000	Natural Resource Conservation Service
	<u>\$ 14,100</u>	Sun River Watershed Group

Total Project Cost:	\$167,580
----------------------------	-----------

Project Abstract: (Prepared and submitted by applicant.)

The Sun River Valley Ditch Company is the oldest irrigation project on the Sun River and distributes water to approximately 3,200 acres on 67 farms between Sun River and Vaughn. The project was originally completed in 1868 to supply a small flourmill. The project added more acres and was incorporated in 1921. The aging headgates and canal delivery system of 12 miles are in dire need of repair to reduce significant water loss and water quality degradation. The water loss impacts can be seen along the entire canal system, with approximate losses of 18,000 acre-feet per year, which is 50 percent of the water removed from the Sun River by the district. These seeps also mean loss of productive land and water quality degradation from return flows into the Sun River. The required major diversion installation in 1997 on the Sun River depleted all district funds.

This project will install gages to monitor water use, enable remote headgate operation, implement phase 2 of the diversion structure, start a ditch lining program to reduce the seep problem, and evaluate future water conservation options through the Natural Resource Conservation Service's (NRCS) water conservation program. These improvements will reduce seep, which will improve the efficiency of the system, divert less water, allow more water to remain in the Sun River and improve water quality by reducing chemicals and silt in return flows.

The goals of this project are to: (1) improve overall irrigation efficiency, and (2) improve water quality and quantity in the Sun River.

The objectives to reach this goal are to: (1) install remote operated gates and gaging stations, (2) install a diversion structure, (3) line the canal and laterals, and (4) conduct extensive water conservation review with NRCS and others.

Technical Assessment:

Project Background:

The Sun River Valley Ditch Company system is located 15 miles northwest of Great Falls. The system parallels Montana Highway 200 between the towns of Sun River and Vaughn. The application indicates that the irrigators have been participating with conservation agencies and entities over the past several years to determine needed water-use efficiency improvements to the system. This project will address at least a portion of the identified improvements.

Technical Approach:

The project will entail:

- installing remote operated headgates at the three diversion inlet conduits
- installing one gauging station at the headgates and one at the discharge to Muddy Creek
- lining approximately 300 feet of canal
- performing work on the diversion structure to improve operation
- installing river bank stabilization near the diversion structure
- conducting a water conservation review of the system

The application states that accomplishing these objectives will meet the goals of improving overall irrigation efficiency and improving Sun River water quality and quantity.

Although documentation that is more technical could have been provided regarding the selected approach and alternative for each part of the project, the approaches and alternatives selected are common solutions to common problems associated with these types of irrigation systems. Moreover, the application indicates that NRCS will provide technical input on design and project implementation. Comments from NRCS indicate that the type of work to be done on the diversion structure is still to be decided. The application indicates that the work will be done on selected parts of the project by contracted professionals. Other work will be done by ditch company staff/members, NRCS, the Sun River coordinator and Cascade County Conservation District staff. Work is expected to begin in July 2001.

Project Management:

The application indicates that the project will be managed and administered by a combination of the Sun River Valley Ditch Company and the conservation district. Input and assistance from NRCS and the Sun River Coordinator will be provided. Coordination with the Sun River Watershed Group (Group) will take place through the Sun River Coordinator and participation in the Group.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$1,000	\$0	\$13,600	\$14,600
Professional & Technical	\$0	\$0	\$24,600	\$24,600
Construction	\$98,230	\$0	\$30,150	\$128,380
Total	\$99,230	\$0	\$68,350	\$167,580

The project sponsor will contribute \$2,100 for administration costs. The Sun River Valley Ditch Company will contribute in-kind services of \$8,300 for administration costs, \$27,750 for construction costs, and \$2,100 for materials costs. The ditch company has a total annual revenue of \$86,000 and no funds in its

reserve account. NRCS will contribute \$13,100 for professional/technical costs and \$900 for administration. The Sun River Watershed Group will contribute \$11,500 for professional/technical costs, \$2,300 for administration costs, and \$300 for construction costs.

The application included contractor and supplier estimates for the remote control headgate, diversion facility and river bank stabilization portions of the project. All project costs appear reasonable and adequate. The project should have no effect on ditch company user fees because all matching funds and contributions are provided as in-kind services by the ditch company and from outside sources.

Benefit Assessment:

Long-term renewable resource benefits will be increased water-use efficiency and water conservation in the irrigation system. Increased water quality and quantity in the Sun River will result in resource enhancement and citizen benefits. Remote control headgates and measuring devices (gaging stations) will provide better water-use management and quantification.

The project will complement other ongoing efforts by the Sun River Watershed Group to improve water quality and quantity in the Sun River.

Environmental Evaluation:

An environmental assessment must be completed before conducting any activities that will affect wetland resources, and appropriate mitigation measures must be taken. The assessment should also evaluate the possible presence of threatened or endangered species and cultural resources.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 9

Applicant Name: Town of Virginia City
Project Name: Virginia City and Nevada City Wastewater Improvements

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 100,000	
Other Funding Sources:	\$ 500,000	Treasure State Endowment Program
	\$ 500,000	Environmental Development Administration Grant
	\$ 724,000	State Revolving Fund Loan
	<u>\$ 23,460</u>	Local Enterprise Fund
Total Project Cost:	\$1,847,460	

Project Abstract: (Prepared and submitted by applicant.)

Wastewater generated by the Town of Virginia City is centrally collected and transported by gravity to two facultative lagoons for treatment. The treated wastewater is discharged to a single infiltration cell for groundwater disposal. The collection system and treatment facility were constructed and put into operation in 1974. DEQ has been working with the town to address deficiencies present with the treatment facility. The State of Montana purchased historic properties in Nevada City and Virginia City in 1997. This purchase has resulted in current and expected further increases in commercial and residential growth in the area, further compounding the wastewater problem. The purchase also resulted in the State assuming properties in Nevada City not currently on a common system, but rather on failing individual systems.

The existing treatment pond total detention time is 90 days, well under the design standard of 180 days, resulting in insufficient treatment. The existing facultative lagoons are located immediately adjacent to and between two branches of Alder Creek, which severely limits space for pond expansion. The treatment ponds rarely discharge to the infiltration cells despite the fact that water balance calculations suggest that the ponds should be discharging to the groundwater infiltration cells. Field inspections document no flow from the effluent of the ponds, demonstrating that all of the measured inflow into the lagoons (less evaporation) is leaking into the groundwater system. Water balance calculations suggest that this amounts to an average of approximately 35,000 gpd; less in the winter and more in summer. Ground and surface water quality degradation is highly probable; without improvements to the wastewater treatment facilities, substantial degradation of groundwater will continue, and residential and commercial growth will continue to be severely limited. The facility plan has documented that the BOD loading exceeds state standards, which explains the periodic odor problems experienced by the lagoons. The lagoon embankments are immediately adjacent to the two branches of Alder Creek and subject to erosion at the toes of the embankments. The embankments exceed the DEQ 3:1 slope requirement. DEQ has expressed concern over the condition of the lagoons and is requesting that corrective action be taken.

It is recommended that a new wastewater treatment facility be constructed to service the current and future users of Virginia City and Nevada City. The new facility will be constructed immediately northwest of Nevada City. The new system will reduce the groundwater and public health problems associated with the condition of the existing wastewater systems. The wastewater treatment ponds currently serving Virginia City will be abandoned. The ponds will be dewatered, allowed to dry, the embankments lowered, the bottoms covered with soil, and the entire area revegetated. The analysis presented in the facility plan considered regulatory requirements, operational simplicity, capital and O&M costs, reliability and treatment performance of various central wastewater treatment technologies. In consideration of these factors, the most viable treatment technology for the Town is the construction of two wastewater ponds for treatment and winter storage. Treated wastewater effluent will be disposed of by irrigation on nearby cropland. The recommended primary treatment pond size is 3.3 acres and the storage pond is 3.3 acres. Center pivot irrigation of grass hay or pasture is recommended. Sufficient wastewater is available to irrigate 15 acres of grass hay or pasture.

Technical Assessment:

Project Background:

The existing Virginia City facility was constructed in 1974 and has reached its capacity. Evidence indicates that the facility leaks substantially and could be contaminating local groundwater and surface water. The Montana Department of Environmental Quality (DEQ) issued a Notice of Violation in October 1996 regarding an unpermitted discharge resulting from an obstruction in the facility's influent manhole. DEQ also expressed concerns about leakage and system capacity.

Technical Approach:

The project goal is to rectify the treatment facility leakage, provide adequate capacity in the treatment system, comply with applicable regulatory requirements and provide a system that allows Virginia City and Nevada City to remain viable communities. The applicant has provided an in-depth evaluation of three treatment/disposal alternatives and concluded that a two-cell, facultative treatment lagoon with storage and spray-irrigation disposal is the most favorable alternative to address the Virginia City and Nevada City wastewater problems. All alternative evaluations included detailed explanations of regulatory compliance, and the recommended alternative will comply with current requirements/standards. The project schedule anticipates design in 2001 and construction in the 2002 season. DEQ confirms that the facilities plan has been approved, and the "Finding of No Significant Impact" was published and no comments were received. DEQ has minor concerns about questionable Nevada City participation and possible resultant rate impacts for Virginia City users.

Project Management:

Proposed staffing and the project management budget appear adequate and justified. Individual programmatic timing and requirements are adequately identified and coordinated. The town has shown a history of public involvement in the planning process and intends to continue with this approach.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$119,300	\$119,300
Professional & Technical	\$100,000	\$0	\$159,460	\$259,460
Construction	\$0	\$0	\$1,468,700	\$1,468,700
Total	\$100,000	\$0	\$1,747,460	\$1,847,460

All administrative costs appear reasonable, with adequate loan reserves and costs for funding source administration. The construction contingency appears reasonable in light of construction anticipated for 2002-2003.

Funding structure is currently being assembled. Economic Development Administration (EDA) funding will not be known until January 2001. If successful with EDA, funds would likely not be available until 2002; about the time construction is anticipated to begin. The funding strategy appears reasonable. One concern is that Nevada City might choose not to participate in the project. If this happens, Virginia City residents could pay between 10 and 15 percent higher rates than expected. The likelihood of Nevada City (with a high percentage of state-owned buildings) pulling out is unknown. First expenditures are expected to occur in the third quarter of 2001. If the applicant is successful in all grant programs and passes a bond for the local share (SRF), Treasure State Endowment Program (TSEP) or DNRC funds could be available. An application to the TSEP program was submitted.

User rates are expected to go from the current \$7.00/month to over \$32.00/month. This is a significant increase in rates, although it appears to have community support, according to the information submitted by the applicant.

Benefit Assessment:

The relocation of Virginia City's wastewater treatment and disposal system will eliminate discharge to the Alder Creek drainage and result in higher quality effluent being returned to the environment through irrigation of currently non-irrigated rangeland. The agricultural use of treated effluent represents an improvement in the efficiency of use, in comparison to discharging poorly treated effluent to the groundwater. The project should protect air quality by reducing offensive odors, surface water quality (presuming that the existing facility was or could have impacted Alder Creek) and the Alder Creek fishery. This project will result in the development of effluent-irrigated cropland from currently under-used rangeland. This represents the management and development of a renewable natural resource for future benefit to Montanans. The existing coldwater fishery and associated recreational resource could realize a benefit, but this may not result in further development of natural resource based recreation. Providing a sound infrastructure in Virginia City and Nevada City will allow the community to continue offering the public a unique historic and cultural experience. This represents a valuable public benefit to all Montanans and to those residents and commercial establishments in Virginia City.

Environmental Evaluation:

The "Finding of No Significant Impact" was published March 2000 in the *Madisonian*. As of the review date, there have been no comments received, either negative or positive. One concern that exists on this project is the possibility of encountering cultural or historic resources during construction. A resource survey by a trained specialist is anticipated to identify, inventory and prepare a mitigation plan for any

resources that may be impacted. Based on the information presented, it cannot be concluded that long-term adverse impacts would result.

Funding Recommendation:

DNRC recommends grant funding of the total amount requested, \$100,000, upon DNRC approval of the project scope of work, administration and budget.

Project No. 10

Applicant Name: Whitefish Water and Sewer District

Project Name: Revisit to the Limnology of Whitefish Lake

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$ 18,710 Applicant in-kind contribution

Total Project Cost: \$118,710

Project Abstract: (Prepared and submitted by applicant.)

Whitefish County Water and Sewer District is a public entity devoted to "maintaining and/or enhancing water quality in the District." The district sponsored the original Limnology (Water Quality) of Whitefish Lake research project, 1982-83, establishing a water quality baseline for the lake and watershed in general. A revisit to those baseline parameters is due, as a management tool, and is also extremely timely because of two closely related projects:

- 1) The State of Montana (DEQ) is conducting an EPA generated study of watersheds statewide to establish recommended Total Maximum Daily Loads, or TMDLs; this is a nationwide effort to protect water quality. DEQ's schedule calls for its data collection effort to concentrate on the Swift Creek-Whitefish Lake drainage during 2001-2002.
- 2) An assemblage of drainage stakeholders have recently formed the Swift Creek Coalition, and that group is embarked on the task of conducting a watershed analysis of the Swift Creek drainage. Swift Creek is the primary source water stream feeding Whitefish Lake.

The revisit will disclose, foremost, the trophic status of the lake. The 1982-83 research classified the lake as oligomesotrophic, or somewhat less than pristine, with "signs of a chronic trend toward eutrophy." The report concluded, "The lake must be protected from additional nutrient loading, if present conditions are to be maintained or improved." Specific objectives of this project will be to quantify, compare and evaluate the following limnological relationships:

- temperature, water clarity, dissolved oxygen dynamics
- nutrient (nitrogen and phosphorus) sources and dynamics
- phosphorus and nitrogen mass balance (mass flux, includes loading)
- algae biomass, composition, and primary productivity
- distribution of shoreline algae
- trophic status of the lake as compared to 1983.

The research project, or revisit, will become a critical management milestone in the course of development of this extremely popular region of the state. Of equal importance is the educational aspect of this comparison of then and now. Water quality has been identified in recent polls as the foremost concern of Flathead residents. Results of this project will be widely acclaimed.

Technical Assessment:

Project Background:

The project is located in the Whitefish Lake watershed, Flathead County, Montana. This study would follow the same proven scientific methods and sampling locations that were used during a study of the lake in 1982, allowing a “then vs. now” comparison of the water quality of Whitefish lake. The 1982 study was also funded by this grant program.

Technical Approach:

Project details were well developed, including maps with sampling locations, sampling frequencies, parameters to be analyzed, and a direct connection between the technical work and the budget. The goals and objectives were clearly outlined and are attainable using the methods that are proposed.

The principal researcher, who also directed the 1982 study, is one of the best limnologists in the nation. The proposed methods are proven (not experimental) and very quantitative (not qualitative or unable to stand on their own). The results of this study will be instrumental in developing management policies for protecting the quality of Whitefish Lake and downstream waters, including Flathead Lake.

This study also sets a standard regarding ways that the applicant, local citizens, and high school students can enhance and expand the technical and scientific effort. Whitefish Water & Sewer District personnel will spend 350 hours conducting water sampling. Volunteers will donate time (485 hours), boats, and vehicles to assist the field study. High school students will also help with data collection and plan to establish a project website to announce the project plan and provide periodic updates on the progress of the study.

Project Management:

The general manager of the Whitefish Water and Sewer District, or, in his absence, the board president, would be responsible for the management of the grant and for coordination of most logistical matters associated with the field study. The district will provide \$6,720 in in-kind contributions (an average of about four hours per week) to administer and manage the grant, which should be sufficient since the applicant and contractor have successfully worked together on projects in the past. The district's general manager has previous experience in the administration of an RRGL grant (the Swift Creek Clay Bank Project in 1991).

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 6,720	\$ 6,720
Professional & Technical	\$100,000	\$0	\$11,990	\$111,990
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$18,710	\$118,710

The budget was well-developed and accurately reflected project costs. The project funding strategy was adequately developed. Hourly/daily rates for both the fieldwork and report preparation were reasonable, and the time (effort) allocated to conduct this work was adequate. The budget, both for the grant dollars and the in-kind contributions, was clearly linked to specific study tasks. Proposed laboratory (analytical) costs were also reasonable, and in fact, are less than what private analytical laboratories would charge.

Benefit Assessment:

The purpose, goals and objectives of this project are totally directed toward the conservation, management and protection of the water quality of Whitefish Lake. This renewable resource is a source of drinking water for the City of Whitefish and supports viable populations of native cutthroat and bull trout

(the latter a threatened/endangered species). The near-pristine waters of the lake support a significant recreational industry. The project will result in a quantifiably significant contribution to the management of the lake's water quality.

The study will re-measure the trophic status of the lake using methods and locations that were used during the 1982 study. As such, the study will provide a basis to evaluate the effectiveness of the land and water conservation activities that have been advocated by the applicant, the Flathead Conservation District, The Flathead Basin Commission (FBC) and other public entities. These prior implementation activities have resulted in improvements in the preservation of Whitefish Lake's water quality. The study will provide these decision-makers with the scientific support needed to advocate additional conservation activities to protect the quality of the lake, therefore providing future benefits to Montanans.

The efforts of this project would indirectly result in significant benefits to the development of natural resource-based recreation. The protection of the quality of Whitefish Lake would allow the continued development of the lake's fishery and clean-water based recreation.

The project would protect multiple uses such as clean drinking water, viable fisheries, water clarity (which enhances the lake's tourist-based recreational industry), etc. The project would provide a quantifiable benefit to the public in the form of a management tool advocating the protection of a renewable natural resource. The project is well supported, as evidenced by nine letters of support from local and state agencies and citizen groups included with the application. The public involvement and technical effort of this project will serve as a model for the management of other lake basins in Montana.

Environmental Evaluation:

There would be no significant short- or long-term environmental impacts resulting from this project.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of project scope of work, administration and budget.

Project No. 11

Applicant Name: Florence County Water & Sewer District
Project Name: Wastewater Improvements

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 500,000 Treasure State Endowment Program
\$ 400,000 Community Development Block Grant
\$4,440,000 undetermined RUS and EPA

Total Project Cost: \$5,440,000

Project Abstract: (Prepared and submitted by applicant.)

Florence is an unincorporated community located about 20 miles south of Missoula with about 650 residents, a school and a number businesses. All residents utilize on-site septic systems and individual wells, with the exception of a few subdivisions on small public water systems. The district is about 400 acres in area. Some areas are densely developed, whereas other areas are open spaces.

Two methods of technically assessing the existing situation indicate that public water supplies are at risk from contamination from the septic systems. The Montana Bureau of Mines and Geology did a study on the area and concluded that some measurable impacts to water supplies are occurring and drinking water

supplies may be at risk, particularly as additional development occurs. A risk assessment methodology used in Missoula County was applied to the Florence area, with consideration given to aquifer characteristics, septic density, problems, well density, commercial density and other factors. This analysis, when comparing Florence to other unsewered areas in Missoula County, indicated that the Florence area had the second highest priority in potential risk out of a total of 9 areas considered. Many of the other areas are now being sewerred or will be soon, given their apparent public health risk.

The proposed solution includes the construction of a centralized sewer system and lift stations, and discharge to a lagoon treatment system with wetlands for effluent polishing and nutrient with final discharge to infiltration basins. Storage is provided for adverse winter operating conditions and to improve process flexibility.

Technical Assessment:

Project Background:

Florence is an unincorporated community located about 20 miles south of Missoula with about 650 residents, a school and a number of businesses. All residents utilize on-site septic systems and individual wells, with the exception of a few subdivisions on small public water systems. The water and sewer district is about 400 acres, some of which are densely developed while others are open spaces.

Two methods of technically assessing the existing situation indicate that public water supplies are at risk from contamination from the septic systems. The Montana Bureau of Mines and Geology did a study on the area and concluded that some measurable impacts to water supplies are occurring and drinking water supplies may be at risk, particularly as additional development occurs. A risk assessment methodology used in Missoula County was applied to the Florence area, with consideration given to aquifer characteristics, septic density, well density, commercial density and other factors. This analysis, when comparing Florence to other unsewered areas in Missoula county, indicated that the Florence area had the second highest priority in potential risk out of a total of 9 areas considered. Many of the other areas are now being sewerred or will be soon, given their apparent public health risk.

The proposed solution includes the construction of a centralized sewer system and lift stations, and discharge to the lagoon treatment system with wetlands for effluent polishing and nutrient removal. Final discharge will be to infiltration basins. Storage is provided for adverse winter operating conditions and to improve process flexibility.

Technical Approach:

The location of the lagoon facilities has not yet been identified. The goal of the project is to protect groundwater and surface water quality and thereby protect public health by preventing drinking water well contamination. The specific objective is to design and construct a central wastewater collection, treatment and disposal system that meets current standards and protects the groundwater and surface water supplies of the area. A detailed evaluation of three treatment alternatives was conducted:

1. aerated pond, wetlands polishing, storage, and discharge to IP cells
2. aerated ponds, storage and effluent disposal by irrigation
3. SBR package plant, storage and effluent disposal to IP cells

The selected alternative was aerated ponds with effluent polishing by wetlands followed by disposal to IP cells. This is a feasible technology and will completely solve the identified problems. The selected alternative is the least-cost alternative. Collection system alternatives were discussed, but only one collection system alternative was evaluated in detail, and no comparative evaluation for collection system alternatives was prepared.

Project Management:

The applicant has retained a professional consultant with experience in grant administration and project management to assist with management of the project. The applicant has outlined the responsibilities of each individual and developed an overall management strategy. The budget includes sufficient funds to manage the project. The district's engineering contract requires the engineer to perform certain tasks to keep the public informed. Consultants will be contracted with and will be held accountable to the contract requirements by the district board. Consultants will be required to provide periodic progress reports.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 154,500	\$ 154,500
Professional & Technical	\$0	\$0	\$ 655,000	\$ 655,000
Construction	\$ 100,000	\$0	\$ 4,530,500	\$ 4,630,500
Total	\$100,000	\$0	\$5,340,000	\$ 5,440,000

A funding structure is not yet in place to fully fund the project. A general funding strategy has been described in the uniform application, but the total grant funding and sources are not yet available. The applicant plans to pursue a \$500,000 TSEP grant, a \$100,000 DNRC grant, an undisclosed combination of RD grant and loan and a \$400,000 CDBG grant. The area does not meet the Low-to-Moderate Income (LMI) requirements for CDBG, so the applicant suggests targeting improvements for LMI users, such as service line installation. This represents only 20 percent of the total project costs and would result in user costs in the range of \$90/month based on the funding scenarios table on page VI-5 of the PER. To help lower this cost, the applicant suggests breaking the project into two phases, such that grant funding could be extended to at least two grant cycles. If successful, the phased strategy could allow grant funding to approach 40 to 50 percent of total project costs. The user cost would range between \$60 and \$70/user/month with the two-phased approach. The applicant feels that additional grant funding is needed. An RD grant share was not discussed. However, the LMI for this area as presented in the application is \$28,022 and the project may not be eligible for RD grants. The funding strategy recommends going to Congress for a special appropriation under the Construction Grants Program. The potential success of such an approach is unknown, other than to say it has worked for some communities. Total project costs appear to be reasonable and sufficiently documented, but it is not clear how the costs would be distributed between the two proposed phases. No spending has occurred to date other than for engineering studies. Because the funding plan is not fully developed, funding coordination needs are not yet known.

Benefit Assessment:

The primary benefit of the project is the protection of groundwater and surface water supplies to ensure the long-term quality of Montana's renewable resources. The development of a central collection system will discourage urban sprawl, which in turn will conserve land resources. The project will result in the construction of a storage pond and will improve groundwater and surface water quality. The project will provide a quantifiable benefit to the public and has received significant public support.

Environmental Evaluation:

Overall the project is likely to have a net positive impact on the environment by reducing groundwater and surface water pollution. Population density in the area is increasing, and siting of the lagoon facilities could be difficult from an aesthetics, odor and social acceptance perspective. The lagoons are likely to have a localized social and aesthetic impact to several nearby homeowners. A final lagoon site has not been selected, so site-specific environmental impacts are not known.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of project scope of work, administration and budget.

Project No. 12

Applicant Name: Bitterroot Irrigation District

Project Name: Bitterroot River Water Quality Improvement – Phase II

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$111,000 U.S. Bureau of Reclamation
\$ 99,750 Bitterroot Irrigation District

Total Project Cost: \$310,750

Project Abstract: (Prepared and submitted by applicant.)

This project is Phase II of a multi-year effort to improve water use and water quality at the Bitterroot Irrigation District (BRID). Phase I was funded by a Renewable Resource Grant (RRG), a U.S. Bureau of Reclamation (USBR) grant and Bitterroot Irrigation District (BRID).

Phase II has four tasks that would improve flow management throughout the extensive BRID system, reduce canal leakage in a high-hazard section, and evaluate projects for Phase III.

1. TASK 1 would add flow sensors and radio units to 8 calibrated flow measurement sites along the BRID canal, feeding continuous information into BRID headquarters. Knowing the precise flows throughout the system, BRID managers would be able to divert less water from Como Lake and Lost Horse Creek, leaving more for fish, wildlife and other uses. Diverting less water means less tailwater discharges to state waters (excess water at the end of the canal system). Tailwater discharges have caused significant erosion and sedimentation, especially in the Threemile Creek drainage.
2. TASK 2 would line approximately 5,000 feet of canal that has a history of problems, including severe leakage, bank failure and roadway damage. Residential construction below this ditch section has added new concerns for safety and property damage.
3. TASK 3 would evaluate options for the proposed Dry Gulch Siphon, which would replace 3 miles of leaky ditch. The evaluation would include ditch leakage measurements, ditch lining, and siphon construction. The siphon evaluation will include costs, easements, feasibility and comparison to other alternatives. The proposed solution would be implemented in Phase III of the BRID project.
4. TASK 4 would provide a design for refurbishment of the Skalkaho Creek diversion structure to allow better water management, flow releases for fisheries, fish screens and improved fish passage. Alternatives would be identified in cooperation with USBR and Montana Department of Fish, Wildlife and Parks (DFWP).

Technical Assessment:

Project Background:

The project is located in the Bitterroot Valley of western Montana. It includes almost 17,000 irrigated acres fed by a canal system more than 70 miles long extending from southwest of Hamilton to northeast

of Florence. The project is Phase II of a multi-year effort to improve water use and water quality related to the operation of the Bitterroot Irrigation District (BRID). Phase I is in progress and was funded in part by a Renewable Resource Grant as well as funding from U.S. Bureau of Reclamation (USBR) and BRID. The need for the project has resulted from:

1. a USBR requirement that all federal irrigation projects complete a water management plan and work to implement its recommendations
2. a series of canal leaks and failures that have affected natural resources and threatened public infrastructure
3. an increasing concern over fish resources and the effects of irrigation system management

Technical Approach:

The overall goal of the project is to ensure the continued efficient and economical operation of the BRID system. The specific goals of Phase II, as described in this proposal, are to improve water management, reduce water loss and improve fish resources. The objective of Task 1 is to improve water management through the installation of sensors and radio units to provide BRID managers with instant access to flow information throughout the system. Eight calibrated flow measurement sites will be established along the main canal where sensors will be located, and radio signals will transfer information to a base station installed at BRID headquarters. Instantaneous, precise flow measurements will enable BRID managers to divert less water from their main sources at Como Lake and Lost Horse Creek.

Task 2 will reduce canal leakage along a 5,000-foot section through the installation of ditch lining materials. BRID is working closely with USBR to identify the most effective and cost-efficient lining materials available. USBR is currently testing a wide range of ditch lining materials and methods.

The objective of Task 3 is to complete an evaluation of options for the proposed Dry Gulch Siphon that would replace 3 miles of leaky ditch. The evaluation includes ditch leakage measurements and addresses alternatives, including ditch lining and siphon construction. The proposed solution is planned for implementation in Phase 3.

The objective of Task 4 is to design a new Skalkaho Creek diversion structure to reduce numbers of fish killed in the irrigation system. Alternatives will be identified in cooperation with USBR and Montana Department of Fish, Wildlife and Parks. The proposed solution is planned for implementation in Phase 3.

BRID has provided adequate documentation to show the objectives and rationale for the proposal. The approach is feasible and can be accomplished within the timeframe and schedule provided. Alternatives have been clearly considered for Task 1, and a rationale for selecting the proposed alternative has been explained. Tasks 2, 3 and 4 have an alternative selection component defined as part of each task.

Project Management:

The project will be managed by the BRID manager under the direction of the irrigation district board. A consultant who has a long history of work on similar projects and successful project management experience will provide project management assistance. USBR will be providing some level of project management support because the agency is providing funding.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 9,750	\$ 9,750
Professional & Technical	\$19,000	\$0	\$ 4,500	\$23,500
Construction	\$81,000	\$0	\$196,500	\$277,500
Total	\$100,000	\$0	\$210,750	\$310,750

Unit costs for the project are itemized and appear reasonable. These costs are based on expenditures for similar work in Phase I of the project as well as previous experience with similar projects. The alternative for Task 1, utilizing ditch riders, did not meet the same management objectives. Cost comparisons for sensor and radio equipment were made, and the equipment chosen was determined to be the least expensive and most dependable of its type. Tasks 2, 3 and 4 will be evaluating alternatives, including the cost factor. Matching funds and in-kind contributions have been committed.

Construction costs will be paid for by grant money, funds and in-kind contributions by the applicant (\$99,750), funds from USBR through the Water Conservation Field Service Program for the Upper Columbia Area (\$50,000/yr), and in-kind services (valued at \$11,500) provided by USBR. Future operation and maintenance costs for Tasks 1 and 2 will be provided from district fees. A majority of the district's current budget of \$408,300 per year is used for system operation and maintenance. This revenue is raised by an annual assessment of \$20/acre on 16,665 acres, plus \$75 for each of the 1,000 accounts.

Benefit Assessment:

This project has clear resource conservation benefits. The installation of a flow measurement system will conserve water, providing increased instream flows and improved tailwater management. Better tailwater management will reduce sediment discharges into state waters. Water losses through existing leaks are estimated to be 50 to 75 cubic feet per second, which is about 25 percent of the flow. Past leaks have resulted in bank liquification and collapse, bank and tree movement downslope and gully erosion. Both of these efforts will result in measurable water conservation, which will have immediate and long-term benefits.

Tasks 3 and 4 will evaluate and design alternatives for future resource conservation efforts through leakage control and the design of a diversion structure to reduce fish kills.

Any resource enhancement that will occur is an indirect benefit from water conservation measures and prevention of erosion. These are likely to result in some long-term enhancement of fish and wildlife habitat.

The public that will benefit directly from the project will be the BRID project members (about 1,265 parcels on 16,665 acres). Other beneficiaries include the 8,000 residents of the valley near BRID lands. Downstream water users in the Missoula area will benefit from increased water quality and quantity.

Environmental Evaluation:

This project does not have any long-term or potential adverse environmental impacts.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 13

Applicant Name: Town of Manhattan
Project Name: Wastewater System Improvements

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 500,000 Community Development Block Grant
\$ 500,000 Treasure State Endowment Program
\$1,623,318 State Revolving Fund
\$ 2,750 Local Reserves

Total Project Cost: \$2,726,068

Project Abstract: (Prepared and submitted by applicant.)

The incorporated Town of Manhattan is located in the Gallatin Valley, approximately 19 miles west of Bozeman. The Town was established in 1891 and legally incorporated in 1911. The original wastewater system was constructed in 1916 and consisted of a collection system, septic tank and discharge to the Gallatin River. The existing facultative lagoon was constructed in the early 1960s, with collection system upgrades implemented in 1977, and piping modifications and other upgrades being made in 1985. In 1995, DEQ noted that the lagoons leaked, and the Town was advised to assess the leakage and remedy the situation. In 1998, DEQ issued a letter stating that leaking lagoons constitute unpermitted discharge to groundwater and the Town needed to obtain a groundwater discharge permit or line the lagoons. Additionally, repeated violations of the MPDES Discharge Permit have occurred.

In the fall of 1999, the Town Council voted to solicit proposals from engineering firms to prepare a Preliminary Engineering Report (PER) for the wastewater system. Stahly Engineering and Associates was hired in January 2000 to prepare the PER in anticipation of completing the draft PER prior to grant application deadlines.

The Town's wastewater management system has the following documented deficiencies.

1. Wastewater Collection System Deficiencies

- a. High groundwater infiltrating into deteriorated collection lines
- b. Gaps in joints of vitrified clay pipes
- c. Severe root intrusions in the older collection lines
- d. Deteriorated manholes
- e. Abandoned flush tanks in collection lines which prevent pipe maintenance
- f. High maintenance requirements associated with repeated line back ups and basement flooding

2. Wastewater Treatment Deficiencies

- a. Violations of the MPDES discharge permit limits of Biochemical Oxygen Demand (BOD) and fecal coliform
- b. Above domestic design capacity
- c. Excessive seasonal leakage out of treatment cells
- d. Leaky lagoons as noted by DEQ
- e. Inadequate sewage treatment due to hydraulic overloading
- f. Inadequate sewage treatment resulting from overloading the design BOD and Total Suspended Solids (TSS)
- g. Elevated nitrates in the shallow aquifer in the vicinity of the lagoon

The overall project consists of two phases and involves the following improvements:

Phase I - (1) replacing deteriorated collection lines and manholes, thereby reducing groundwater infiltration; (2) removal and disposal of large amounts of accumulated sludge in the lagoons; (3) land acquisition for wastewater treatment expansion

Phase II - (1) modifying the existing facultative treatment system into aerated lagoons for expanded treatment; (2) providing storage and spray irrigation for incremental design flows to meet non-degradation requirements; (3) lining the wastewater treatment system to prevent groundwater contamination.

Phase I will be accomplished with an SRF loan. TSEP grant funds are proposed for Phase II of the overall project, in conjunction with CDBG grants, DNRC grants and SRF loan monies.

Technical Assessment:

Project Background:

The Town of Manhattan is located in the Gallatin Valley, about 19 miles west of Bozeman. The Town's original wastewater system was constructed in 1916 and consisted of a collection system, septic tank and discharge to the Gallatin River. A facultative lagoon was constructed in the early 1960s, and the collection system was upgraded in 1977. Piping modifications and other upgrades were made in 1985. In 1995, DEQ noted that the lagoons leak, and the Town was advised to assess the leakage and remedy the situation. In 1998, DEQ issued a letter stating that leaking lagoons constitute unpermitted discharge to groundwater and required the Town to obtain a groundwater discharge permit or line the lagoons. Repeated violations of the MPDES Discharge Permit have also occurred.

To address these concerns, the Town proposes to improve its wastewater system. This project will consist of two phases.

Phase I will replace deteriorated collection lines and manholes, remove and dispose of large amounts of accumulated sludge in the lagoons, and acquire land for wastewater treatment expansion.

Phase II will modify the existing facultative treatment system into aerated lagoons for expanded treatment, provide storage and spray irrigation for incremental design flows to meet non-degradation requirements, and line the wastewater treatment system to prevent groundwater contamination.

Technical Approach:

The goals of the project are to reduce groundwater and surface water pollution and reduce the public health risk associated with BOD and fecal coliform exceedances. The specific objectives are to line the existing ponds and expand the organic and hydraulic capacity of the treatment system. Lining the ponds will eliminate or significantly reduce groundwater pollution and any subsequent surface water pollution. The increased organic and hydraulic capacity of the proposed treatment system will improve effluent quality and allow the system to come into compliance with BOD and fecal coliform permit limits. This will significantly reduce the public health risks associated with these contaminants. TV inspection of some of the collection system was performed and forms the basis for recommended improvements to the collections system. The goal of the collection system improvements is to reduce groundwater inflow and thereby reduce inflow into the plant.

A detailed evaluation of appropriate treatment alternatives has been presented. The treatment alternatives evaluation is adequate to support the selection of the recommended alternative. The least-cost alternative was selected. The alternatives considered include mechanical aeration, package mechanical plants, and facultative lagoons, each combined with disposal by irrigation or by selective surface water discharge and storage. TV inspection reports were used to identify and justify the recommended collection system improvements. The plan proposes to replace 7,200 lineal feet of sewer main. The two existing ponds would be rehabilitated into mechanically aerated ponds with periodic discharge and periodic irrigation for disposal. A storage pond would be provided to provide better plant flexibility. The irrigation is needed to reduce the load discharged to the river such that nondegradation requirements are satisfied. An appropriate cost-effective alternative will be pursued.

Project Management:

Manhattan's town clerk will administer the grant with assistance from the project engineer. The role of each person in the project was reasonably outlined in the application. A public relations and agency coordination strategy was described and appears to be feasible.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 16,500	\$ 16,500
Professional & Technical	\$0	\$0	\$ 86,000	\$ 86,000
Construction	\$ 100,000	\$0	\$2,523,568	\$2,623,568
Total	\$ 100,000	\$0	\$2,626,068	\$2,726,068

All necessary costs have been included, are well documented, and appear to be reasonable and consistent with other projects of a similar nature. The strategy and timing of the funds is feasible and the likelihood of successfully competing for the identified grant funds is good. The final user rate after implementation of the proposed project is \$29.37/user/month. This appears to be reasonably affordable to the residents of Manhattan.

Benefit Assessment:

The proposed project will line the lagoons and thereby reduce groundwater pollution and improve the quality of the groundwater for other uses. The lined lagoon will also improve surface water quality by improving groundwater quality, which eventually discharges to surface waters. The expanded treatment capacity and improved efficiency of the treatment process will improve effluent quality, which will reduce surface water pollution. Irrigation of a portion the effluent for disposal represents resource conservation by re-using a renewable resource.

Environmental Evaluation:

The majority of the proposed work would occur in the existing lagoon footprint or immediately adjacent to the existing lagoons. No serious adverse environmental impacts are expected. The project will have a net positive impact on the environment by eliminating wastewater leakage from the lagoons and improving effluent quality discharged to the river. Both groundwater and surface water pollution will be reduced. The project will result in a net increase in energy use.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 14

Applicant Name: Glen Lake Irrigation District
Project Name: Therriault Creek Point of Diversion Infrastructure and Fish Habitat Improvement Project

Amount Requested: \$ 94,500 Grant

Amount Recommended: \$ 94,500

Other Funding Sources: \$ 5,195 Glen Lake Irrigation District
\$ 9,950 U.S. Fish and Wildlife Service
\$ 3,000 NRCS Lincoln Conservation District

Total Project Cost: \$112,645

Project Abstract: (Prepared and submitted by applicant.)

In September 1999, the Glen Lake Irrigation District (GLID) applied for and received funding through the DNRC Project Planning Grant program to develop a water conservation and capital improvement plan for portions of its 30-mile irrigation system. In conjunction with GLID and the U.S. Bureau of Reclamation (USBR), Land & Water Consulting, Inc. (LWC) initiated a comprehensive review of GLID's current and future needs and developed a preliminary strategy for water conservation, water quality improvements, and other capital improvements. Based on the results of this preliminary technical review, GLID identified a project that will achieve multiple goals including:

- Improve canal efficiency at the primary point of diversion (Therriault Creek); conserve water through improved infrastructure.
- Improve surface water quality.
- Eliminate an existing fish barrier impeding upstream migration by threatened and endangered bull trout and westslope cutthroat trout.
- Increase recruitment stock of juvenile and adult bull trout to the larger Kootenai River drainage through installation of a fish screen at the primary point of diversion.

To accomplish these goals, the following tasks have been identified and are the focus of this grant application:

1. Complete an engineering design for the Therriault Creek point of diversion (POD).
2. Install a McKay fish screen at the POD to prevent access of juvenile and adult bull trout to the irrigation system (population bottleneck).
3. Replace and upgrade the existing diversion structure that is impeding upstream migration of bull trout and westslope cutthroat trout to upstream spawning and rearing tributaries.
4. Reconstruct approximately 400 feet of Therriault Creek at the POD to improve fish habitat and water quality.
5. Reconstruct and seal approximately 200 feet of irrigation ditch at the POD using a high density poly-ethylene liner (HDPE) or equivalent.

Technical Assessment:

Project Background:

The Glen Lake Irrigation District (GLID), established in 1910, is located in Lincoln County near the town of Eureka, Montana. It serves 153 users on 3,228 acres. Water is diverted from Grave Creek and Therriault Creek south and east of Eureka into a 30-mile irrigation canal. Artificial impoundments, including Costitch Lake and Glen Lake, temporarily store water for controlled release. A recently completed study, financed by a DNRC Planning Grant, reached the conclusion that the scope of work should concentrate on critical areas of the ditch system, in particular, the primary points of diversion. The proposed project includes reconstruction of the canal and point-of-diversion structure (POD), extensive channel and floodplain

construction, ditch lining, and installation of a fish screen to prevent loss of juvenile bull trout to the irrigation canal.

Technical Approach:

The primary goal of this project is to improve water management and protect and conserve bull trout populations associated with the Tobacco River watershed of northwestern Montana. Project sponsors include the Natural Resource Conservation Service, U.S. Fish and Wildlife Service, and GLID.

A new POD for Therriault Creek will be designed and installed. The new POD will include a McKay fish screen and a water-measuring device. About 400 feet of Therriault Creek at the POD will be reconstructed, and about 200 feet of the irrigation ditch at the POD will be reconstructed and lined.

If left untreated and in its current configuration, the irrigation canal and associated infrastructure would remain a barrier to migrating bull trout and other fish species. The proposed channel-floodplain restoration activities would reclaim miles of bull trout and other fish species habitat.

Project Management:

The GLID manager will provide project coordination under direction from the district board. The Lincoln County Conservation District will provide bookkeeping support, and GLID and the contractor selected for the project will provide administrative support.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$ 5,800	\$0	\$ 2,000	\$ 7,800
Professional & Technical	\$ 14,450	\$0	\$ 2,500	\$ 16,950
Construction	\$ 74,250	\$0	\$ 13,645	\$ 87,895
Total	\$ 94,500	\$0	\$ 18,145	\$112,645

The scope and the budget for this project were developed based on the limited financial capabilities of the irrigation district. The proposed funding sources include dollars provided by USFWS, in-kind technical support offered by NRCS and the Lincoln conservation district, and the requested DNRC grant dollars. The funding structure is in place, and all costs seem reasonable.

GLID has agreed to incorporate future maintenance costs in its annual operations budget. This cost should be significantly less than the cost to maintain the existing facility, given the efficiency of the new system.

GLID's current operating budget of \$63,000 is used for general system maintenance and operation. This revenue is raised by an annual assessment of \$20/acre on 3,228 acres. There will be 153 families served by the project. The district's cash reserve has been practically exhausted due to unexpected costs associated with improvements at the Costitch Lake spillway.

Benefit Assessment:

The project is part of a larger watershed effort to improve water management and protect and conserve bull trout populations in the Tobacco River watershed. The new POD will improve the delivery of water to irrigators. The installation of a water measuring device in the reconstructed ditch will ensure that water is diverted efficiently, and that water demand and conservation goals are met. A water rights evaluation will also be completed. The channel and ditch improvements will enhance water quality by reducing the sediment load and will create additional wetland acreage. The fish screen and stream channel improvements will significantly improve the habitat for bulltrout and westslope cutthroat, both threatened species in Montana.

There is documented citizen support. Numerous agencies including USFWS, NRCS and the Lincoln conservation district have expressed support of this project through in-kind and financial contributions.

Environmental Evaluation:

Project implementation will not result in any known long-term adverse environmental impacts. Detailed information on wetlands, threatened and endangered species, soils and water quality must be addressed in the final design report. The proposed project will require several permits from various county, state and federal agencies and must be secured before construction begins. These include the following:

1. U.S. Army Corps of Engineers Section 404 Permit
2. 318 Authorization, or Short-Term Water Quality Standard for Turbidity
3. 310 Permit, or Montana Natural Streambed and Land Preservation Act
4. Biological Opinion (USFWS) for potential effects on threatened and endangered species

Funding Recommendation:

DNRC recommends grant funding of \$94,500 upon approval of a project scope of work, administration and budget.

Project No. 15

Applicant Name: City of Whitefish, Montana
Project Name: Wastewater System Improvements

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 500,000 Treasure State Endowment Program Grant
\$ 508,040 DEQ State Revolving Fund Loan
\$ 10,000 DNRC Technical Assistance Grant
\$ 14,650 Project Sponsor

Total Project Cost: \$1,132,690

Project Abstract: (Prepared and submitted by applicant.)

The Whitefish wastewater treatment facility was modified from "Phase Isolation" treatment to an aerated lagoon facility in 1978. The aerated lagoon consisted of three cells, the first being approximately 5 acres and the following two cells being 2.5 acres each. The aeration system consists of three 40-horsepower blowers, buried delivery piping and valves, and 126 Schramm Bioweave diffuser units. In 1988, the plant was upgraded to include a phosphorus removal process following the lagoons. Alum was mixed with lagoon effluent, and phosphorus was precipitated out with a flocculating clarifier. Clarified effluent was discharged to the Whitefish River, and the alum sludge went to a belt-filter press.

Since installation of the phosphorous removal process, the City has had difficulty with dewatering the alum sludge generated by the flocculating clarifier. The existing belt-filter press was unable to produce a consistent sludge cake with reasonably high solids content. Consequently, the liquid sludge was routinely wasted to the plant influent stream and introduced to the aerated lagoon basins. Over the ensuing years, this sludge accumulated in the basins and resulted in increased oxygen demands and reduced lagoon volumes, and contributed to diffuser fouling. In 1998, the City implemented a project to re-direct the alum sludge to three new de-watering beds and prevent continued accumulation in the aerated basins.

The main problems at the Whitefish treatment facility are associated with poor operability and performance of the existing aeration system and the accumulated lagoon sludge. The existing aeration diffusers suffer from frequent fouling and are very difficult and dangerous for the operators to remove, clean, and put back into service. Also, the blowers and some aeration piping are in need of replacement

and up-sizing. More advanced aeration system technologies are being explored that allow for easier operation, energy savings, and enhanced treatment.

Sludge depths in the first treatment, cell are as much as 12 feet in some locations, and the average is almost 8 feet. Overall lagoon depth is 15 feet. Not only do the heavy accumulations reduce detention times for the incoming wastewater, but the sludge also exerts an oxygen demand that depletes available oxygen for wastewater treatment. In the mid-1990s, this added oxygen demand resulted in dissolved oxygen levels at 0 mg/l in the treatment cells, causing extremely offensive odors at the plant, poor effluent quality and numerous odor complaints from surrounding residents.

The proposed project involves installing new blowers, replacing and up-sizing aeration lines, adding control valving, and installing new, fine-bubble diffuser units in all three aeration cells. Concurrent with the aeration system improvements, the project will also involve the removal, de-watering and disposal of accumulated sludge from the treatment basins. The plan is to take each cell out of service, pump out the sludge, clean out the cell, install new aeration equipment and place the cell back into service. In order to maintain the highest degree of effluent quality, it is anticipated that the project will take 2 to 3 years to complete.

Technical Assessment:

Project Background:

The City of Whitefish is requesting funds to improve effluent quality by making improvements to the wastewater treatment facility aeration system and through the removal and disposal of sludge, which currently takes up valuable treatment volume in the lagoon cells. To achieve this goal, a Preliminary Engineering Report (PER) was developed that identified and evaluated many aeration system and sludge removal and disposal alternatives.

Technical Approach:

A thorough assessment of potential aeration system improvements and sludge removal and disposal alternatives was completed. The capital and operational cost estimates appear to be adequately and comprehensively developed with one exception noted below. Three aeration system improvement alternatives, three sludge removal alternatives and four sludge disposal alternatives were comprehensively evaluated. The level of detail for the aeration system and sludge removal alternative analysis was appropriate for this level of study.

Reviewers have several concerns. The first is related to the recommended sludge disposal alternative. The recommended alternative includes removing sludge from the existing lagoons and temporarily storing this sludge while it is de-watered in existing phase isolation cells that are not currently being used. Ultimate disposal of the de-watered sludge will be through land application, but no land application sites were identified. When contacted about this issue, Montana Department of Environmental Quality (DEQ) personnel felt that this should be a key element of the planning document because costs could vary greatly depending on how far the sludge must be hauled before being land applied. Furthermore, the PER states that the sludge contains high levels of arsenic and other metals, making it unsuitable for land application. The PER suggests that after the sludge is dried, it will be sampled again for compliance with U.S. Environmental Protection Agency 503 "Clean Sludge" requirements. There is, however, no indication that the new sampling will reveal results different from those presented in the PER. At this time, it appears that the sludge cannot be land applied as recommended in the PER.

According to the applicant's narrative, the cost to landfill the sludge (the next lowest cost alternative) is only \$2,000 (about 1 percent) more expensive than land application. However, the detailed cost estimates also included in the application suggest that the difference in cost may actually be \$27,550. The applicant could borrow the additional money either from the U.S. Department of Agriculture Rural Development (RD) program or from the DEQ SRF program. As a result, there is a high likelihood that the applicant will be able to secure matching funds sufficient to complete the project.

Finally, the lagoon cells must be de-watered to remove sludge and to install the new aeration equipment. The existing lagoon cells are currently sealed by a bentonite (clay) liner to prevent leakage. There is concern that while the lagoon cells are de-watered, the clay liner may dry, crack, and leak partially treated wastewater to the ground.

The selected alternative would achieve compliance with all state and federal standards. The proposed schedule is to begin design of the facilities in late 2000 and initiate construction of Phase 1 of the project in August 2001 and Phase 2 in August 2002.

Project Management:

The applicant has prepared a detailed project management and implementation plan. The plan has identified the staff required for successful project management. Staff includes the director of public works, the city clerk, the city finance officer, the city attorney, a professional administrative consultant and a design consultant. There appears to be adequate funding in the project budget to effectively manage the project. \$3,000 has been budgeted for personnel costs and \$8,000 for professional services related to project management. The applicant has prepared a comprehensive Preliminary Engineering Report in which the public had the opportunity to participate.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$67,000	\$67,000
Professional & Technical	\$0	\$0	\$193,650	\$193,650
Construction	\$100,000	\$0	\$772,040	\$872,040
Total	\$100,000	\$0	\$1,032,690	\$1,132,690

The project budget presented in the application appears to be well documented, complete and reasonable. Construction costs are based on best engineering judgment and past projects for technical development at the preliminary engineering report level.

The City of Whitefish currently provides service to 2,502 residential and 520 commercial and industrial hookups with an estimated population of 5,682. The application proposes to fund wastewater improvements using about \$0.600 million in grants from the Montana Department of Commerce Treasure State Endowment (TSEP) and the Montana Department of Natural Resources and Conservation Renewable Resource Grant and Loan (DNRC RRGL) Program. The applicant will also pursue a \$0.508 million dollar loan from the DEQ SRF program and will use \$14,650 from the City's own reserve account. The City has already received a \$10,000 Planning Grant from the DNRC RRGL Program for the preparation of the Preliminary Engineering Report. With this proposed funding package, the City's monthly residential rate will increase from \$18.65 to \$23.88.

Not all funding for this project has been secured. The applicant submitted applications for grants from the TSEP and DNRC RRGL programs in May 2000 and funds will not be available until 2001. The DEQ SRF Program operates on an open cycle. Should one or more of the grant applications be unsuccessful, the applicant could borrow the additional money either from the U.S. Department of Agriculture Rural Development (RD) program or from the DEQ SRF program. As a result, there is a high likelihood that the applicant will be able to secure matching funds sufficient to complete the project.

Benefit Assessment:

The project will eliminate local surface water pollution within the Flathead Lake drainage area. Resource enhancement will result from the wastewater treatment facility more efficiently treating the wastewater, improving the quality of about 657 million gallons per year of wastewater effluent discharged to surface water in the Flathead Lake drainage. Citizens will directly benefit through protection of a major source of

recreation and elimination of the potential for contact with partially treated wastewater in nearby drainages.

The benefits of the project include reduction of surface water pollution. The benefits will be long term and will be quantifiable through continued effluent monitoring. Public support for the project is stated, but not well documented.

Environmental Evaluation:

Currently wastewater from the City of Whitefish is disposed of by an inadequate wastewater treatment facility that is full of sludge. Because of the poor condition of the facility, the wastewater is inadequately treated before being discharged into surface water, resulting in water quality permit violations. The proposed project, which consists of the removal and disposal of sludge and installation of a new aeration system, will increase treatment efficiency, resulting in improved effluent quality. This project is expected to result in an overall long-term positive environmental impact. There will be short-term negative aspects during construction due to noise, dust and stormwater run-off, all of which can largely be mitigated. The only long-term potentially negative aspect is the opportunity for periodic odors from the lagoons. The wastewater treatment facility has been sited such that the odors will impact a minimal amount of residents.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 16

Applicant Name:	Ruby Valley Conservation District	
Project Name:	Lower Ruby Valley Groundwater Management Plan	
Amount Requested:	\$ 98,352	Grant
Amount Recommended:	\$ 98,352	Grant
Other Funding Sources:	\$ 3,840	Ruby Valley Watershed Council
	\$ 13,720	Natural Resource Conservation Service
	\$ 4,583	U.S. Forest Service
	<u>\$ 1,440</u>	Ruby Valley Conservation District
Total Project Cost:	\$121,935	

Project Abstract: (Prepared and submitted by applicant.)

The purpose of this project is to develop a planning tool for groundwater resources in the lower Ruby Valley. Substantial groundwater resource data exist for the Ruby Valley and are available from area experts and from local, state and federal agencies. However, these data and findings are not adequately compiled for planning and local decision-making purposes. The Ruby Watershed Council (Council), in association with Ruby Valley Conservation District, developed this project because everyone in the Ruby Valley relies on a clean and dependable groundwater supply, and protecting area water resources is important. Development of rural and agricultural tracks to subdivision housing is at an all-time high in the watershed. Potential changes and impacts to groundwater resources are poorly understood and should be evaluated. In addition, general baseline conditions need to be documented, and management alternatives developed to protect, preserve and conserve groundwater and surface water resources.

The district completed a pilot project on the basin fill sediments in the Mill Creek and Indian Creek sub-watersheds. One of the primary goals of the pilot project was to determine the practicality of completing a large-scale effort for the lower Ruby watershed, and integrating management elements into the data

compilation effort. The results of the pilot study clearly show that valuable groundwater resource data exist for the area, and that custom groundwater management recommendations, approaches and best management practices (BMPs) should be integrated into a watershed-scale effort.

The proposed project focuses on identifying baseline data, similar to the Mill Creek and Indian Creek pilot project, and conveying these findings into a management plan that includes large-scale and user-friendly graphical displays, or planning tools, designed to aid decision making and future planning. The project includes three primary goals, including:

- watershed data compilation and limited field testing/analysis,
- developing a comprehensive data report and groundwater management plan, and
- developing watershed-scale recommendations for future water resource conservation and protection.

The final product of this effort will be a watershed-scale management plan that describes baseline groundwater conditions and prescribes methods to conserve, protect, and manage watershed groundwater resources and, to a limited degree, surface water resources.

Technical Assessment:

Project Background:

The Lower Ruby Valley is located in southwest Montana and includes the towns of Sheridan, Alder and Virginia City. The Lower Ruby Valley is a patchwork of planned and established subdivisions, and the loss of agricultural and rural tracks to home development is on the rise. The Ruby Valley Conservation District and the Ruby Watershed Council have had to rely on limited data and studies from a variety of sources in order to make informed decisions concerning development. The proposed project includes the collection and evaluation of groundwater resource information for the basin fill sediments located in the Lower Ruby Valley watershed. The water resource information will be compiled into a user-friendly groundwater management plan and database for use as an effective tool for groundwater resource and watershed planning purposes.

Technical Approach:

The Ruby Valley Conservation District, along with support from the Ruby Valley Watershed Council, the Natural Resources Conservation Service (NRCS) and the U.S. Forest Service (USFS) – Sheridan Work Station, proposes to compile existing data along with new field data and water quality analytical results into a groundwater resource management plan.

The goals of the proposed project include:

- Complete watershed data compilation and limited field testing/analysis.
- Develop a comprehensive data report and groundwater management plan.
- Develop watershed-scale recommendations for water resource conservation and protection.

The initial project focus will be to identify and compile groundwater resource data in the defined study area. Limited groundwater data will be collected in the field as part of this project. Groundwater elevation data and general water quality data will be collected at selected locations. A comprehensive data report and groundwater management plan will be developed for the basin fill sediments and will describe the watershed groundwater resources within the study area. The management plan will identify best management practices and provide recommendations for different land uses, with a focus on protecting and conserving water resources and preserving the current (excellent) quality of the groundwater.

Project Management:

The proposed project will be managed and administered by the Ruby Valley Conservation District administrator. Additional staffing requirements include contracting with a graduate level student for data

collection and fieldwork, contracting with a professional hydrogeologist to oversee the technical aspects of the project, and contracting with a specialist to provide graphic support. In addition, federal, state, and county level organizations, as well as public input, will provide various levels of support for the project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$8,640	\$0	\$0	\$8,640
Professional & Technical	\$89,712	\$0	\$23,583	\$113,295
Construction	\$0	\$0	\$0	\$0
Total	\$98,352	\$0	\$23,583	\$121,935

The budget appears to be sufficient to fund the proposed project. Material, labor and equipment costs used to develop the budget appear to be reasonable and adequate. The various alternatives evaluated in the application appear to have been developed in a consistent manner, and the preferred alternative was determined to be the most viable and cost-effective alternative.

The proposed funding package appears to be a reasonable mix of state funds and in-kind contributions. In addition to the requested DNRC grant, in-kind contributions will be obtained from the following:

1. Ruby Valley Conservation District has committed \$1,440 for project oversight and direction responsibilities
2. NRCS has committed \$3,270 to the project for technical consultation, student travel costs, and report printing costs
3. USFS has committed \$4,583 for technical consultation and student travel costs
4. Ruby Watershed Council has committed \$3,840 for technical consultation and project oversight

Benefit Assessment:

The project would provide direct, quantifiable benefits and would directly promote the protection and management of the natural groundwater resource in the Lower Ruby Valley. The proposed project would provide a resource for access to the hydrogeologic data necessary to evaluate and plan for growth. Compilation of existing data into a groundwater resource management plan, collection of a limited amount of groundwater quality data to supplement the existing data, evaluation of the groundwater resource conditions of the Lower Ruby Valley, and providing access to the data for decision makers are realistic short-term and long-term benefits to the community. The technical information provided through this project will help decision makers to effectively manage the groundwater resource and to make informed decisions that have significant implications for the quality of life in the valley.

Environmental Evaluation:

This project does not have any long-term environmental impacts or any potential adverse impacts.

Funding Recommendation:

DNRC recommends grant funding of \$98,352 upon approval of a project scope of work, administration and budget.

Project No. 17

Applicant Name: Charlo Sewer District
Project Name: Wastewater Treatment and Collection

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 400,000 Community Development Block Grant
\$ 500,000 Treasure State Endowment Program
\$ 198,758 RD Grant
\$ 258,771 RD Loan
\$ 52,500 (District Equity)

Total Project Cost: \$1,510,029

Project Abstract: (Prepared and submitted by applicant.)

Charlo was named in honor of Chief Charlo, a leader of the Salish tribes in the last century. The town is an unincorporated community in central Lake County in western Montana. The community is on the Flathead Indian Reservation 50 miles north of Missoula in the Mission Valley. The surrounding area is primarily agricultural and dominated by the Mission Mountains to the east.

The sewer treatment system was constructed in the late 1940s using concrete pipe for the collection system and a single storage/treatment cell south of town. The only major upgrade to the system since it was constructed was the addition of small lift station. This allowed an increased effluent level and more storage in the cell. A wind driven aerator was also added about that time.

The system was operated and maintained by the Lake County Land Services Department until 1997, when the district was formed. With the increasing maintenance and inflow problems in the collection system, the new district realized that it was time for a major rehabilitation and engaged the engineering firm of Neil Consultants to develop a facilities plan for the system.

The draft facility plan (included as a separate attachment) was completed recently and identified the following deficiencies:

1. The existing cell has inadequate volume.
2. The single cell allows very limited process control or flexibility.
3. The cell banks are eroded.
4. There are no primary measuring devices.
5. The existing lift station cannot pump the required volume at peak flows.
6. An accumulation of 50 years of sludge has decreased the effective volume of the cell.
7. Discharges often violate the limits of the current NPDES permit.
8. The collection system has inadequate slope, pipe erosion, root penetration and infiltration.
9. The primary regulating agency is changing permitting requirements to include ammonia regulation. The current system cannot meet the new requirements.
10. Seepage of effluent through the cell banks was noticed for the first time this spring.

The recommended alternative is construction of an aerated cell and addition of a constructed wetlands system with a periodic discharge that uses the current cell for winter storage. The collection main from town to a new lift station would be replaced.

The wetlands would meet the ammonia removal requirements from about April to December, and the existing cell would store the effluent through the winter months. The aeration cell will treat the effluent prior to storage and discharge. The new main would eliminate some of the plugging problems in the collection system, and the lift station would be sized to adequately handle the infiltration problems.

The rates will be raised enough not only to finance the debt portion of this project, but also to build a reserve fund for incremental reconstruction of the aging collection system. A capital improvement plan based on the facility plan will be used to plan this long-term replacement.

Technical Assessment:

Project Background:

The Charlo Lake County Sewer District is located in Lake County south of Ronan, Montana, west of U.S. Highway 93. The area is primarily agricultural.

The sanitary sewer system was constructed in the late 1940s. The collection system is constructed of concrete pipe, and the treatment system consists of a single facultative treatment cell. The district is authorized to discharge under EPA National Pollutant Discharge Elimination System permit 0022551.

- The system was operated by Lake County until 1997 when the Charlo District was formed and ownership was transferred to the district. The district authorized a facility plan to be completed to access the system and identify needed improvements. The following deficiencies were identified in the facility plan:
- The single lagoon cell has inadequate volume, limited process control flexibility, no primary measuring devices and eroded dikes.
- Cell embankment seepage was noted in the spring of 2000.
- Sludge accumulations have decreased the effective volume of the lagoon.
- The lift station is unable to handle the peak flow during storm runoff events.
- Discharge permit violations have occurred on several occasions.
- The collection system has inadequate slope.

The district adopted the facility plan after conducting public hearings and proceeded with funding applications to complete the improvements recommended in the plan.

Technical Approach:

The stated project goals were to evaluate the effectiveness of the existing collection and treatment system, identify existing problems, evaluate alternatives for correcting deficiencies, and recommend the most appropriate solution to meet the district's needs.

The consultant developed five alternatives for meeting the treatment system needs. Alternatives included:

- 3-cell facultative system
- aerated lagoon system
- aerated lagoon system with storage and constructed wetlands
- aerated lagoon system with constructed wetlands
- aerated lagoon system with storage and irrigation disposal

The alternatives were evaluated based on the ability to meet the anticipated discharge requirements, environmental effects, system cost and operation and maintenance costs.

The consultant recommended the district construct a new aerated lagoon system with storage and constructed wetlands. This option is most likely to meet the discharge requirements at all times of the year. Storage facilities are recommended so discharges can be eliminated during periods of the year when wetlands do not provide optimal treatment (winter months).

The planners provided good technical documentation of system flows and a detailed analysis of the proposed water quality requirements.

Recommended collection system improvements include replacing the existing lift station and sewer trunk line. These facilities do not provide adequate capacity to pass the peak flow resulting from runoff events. Capacities appear to be adequate for peak sewage flows. The planners assumed that removal of non-sewage flows from the system was not practical and did not evaluate this as an option to replacing the lift station and trunk line. The reviewer recommends the planners evaluate removing non-sewage flows from the system and provide a comparative analysis before proceeding with replacement of the trunk line and lift station. These improvements are estimated to cost \$321,000.

A realistic project schedule is provided in the facility plan. Construction is projected to start in August 2001.

Project Management:

A specific project management and implementation plan was provided by the applicant. The district plans to contract for professional grant administration services.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 78,500	\$ 78,500
Professional & Technical	\$0	\$0	\$ 247,517	\$ 247,517
Construction	\$ 100,000	\$0	\$ 1,084,012	\$ 1,184,012
Total	\$ 100,000	\$0	\$ 1,410,029	\$ 1,510,029

The proposed project budget includes \$1,098,758 in additional grant funding from Rural Development and the Department of Commerce's CDBG and TSEP programs. The proposed budget will allow the district to complete the proposed project.

The funding package is not fully in place. The applicant applied for DNRC and TSEP grant funding in May 2000. The Rural Development application will be submitted in the fall of 2000 and the CDBG application will be submitted in May of 2001.

The applicant has the ability to access fees to pay for system operation and debt retirement. Projected average monthly residential user rates, based on the proposed financial plan, are \$22.54.

The costs of improvements generally appear to be reasonable and adequate. No excessive costs were noted, with the possible exception of the interim interest amount in the administration budget. The interim interest budget is based on borrowing up to \$1,000,000. The loan amount in the proposed budget is \$258,771.

One item in the construction estimate was noted. The sludge quantity and unit cost for removal and disposal may be low. The reviewer's sludge quantity calculation (based on published sludge depths) is 650 cubic yards greater than the estimated budget quantity. This does not include any provision for sludge accumulations that may be on the cell embankments. In addition, sludge removal and disposal costs are estimated at \$16.00 per cubic yard. April 2000 bid prices for sludge removal and disposal in Polson, Montana, were approximately \$19.50 per cubic yard. The planner should review the sludge quantity calculations and make adjustments as appropriate.

Benefit Assessment:

The project will result in a quantifiably significant contribution to renewable resource conservation and management through meeting water quality standards and ensuring long-term quality of Montana's water resources. The project also provides resource enhancement benefits by directly supporting tribal water quality standards. The project provides citizen benefits through continued sanitary sewer collection and treatment services. The applicant provided documentation of strong citizen and agency support.

Environmental Evaluation:

The project will result in numerous long-term environmental benefits relating to water quality. No long-term adverse impacts have been identified.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 18

Applicant Name: Whitewater Water and Sewer District
Project Name: Wastewater Collection and Treatment System

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 100,000	Grant
Other Funding Sources:	\$ 500,000	Treasure State Endowment Program Grant
	\$ 236,895	Community Development Block Grant
	<u>\$ 226,074</u>	State Revolving Fund Loan
Total Project Cost:	\$1,062,969	

Project Abstract: (Prepared and submitted by applicant.)

The Whitewater community is currently being serviced by individual on-site wastewater treatment consisting of standard septic tanks and drainfields. Groundwater in the area is shallow, averaging 17 to 20 feet. The residents of Whitewater depend on a shallow groundwater aquifer for their potable water. The Whitewater school system is currently required by DEQ to treat water supplied to the school drinking fountains because of the high nitrate levels (over 10 mg/l) recorded in the past. A reverse osmosis filter (RO) has been installed to comply with this order. An informal study and water sampling was conducted by the Phillips County sanitarian. The study indicated the groundwater source contains several harmful contaminants. Nitrate levels exceed 4 mg/l and coliform bacteria were also documented. Past records show records of giardia lamblia were detected in one of the school wells that resulted in human illness.

Currently, no central collection and treatment system is in place. Existing wastewater treatment and disposal depends on conventional septic tanks with subsurface drainfields. Many of these systems have exceeded their life expectancy and are in need of replacement. Due to the small lot size, few homes or businesses have the area necessary to site replacement drainfields without violating the State requirement of 100 feet of separation between drainfields and water wells. In addition, over one-third of the existing septic systems currently violate the State requirement for 100 feet of separation between drainfields and water wells. Many of the area wells are only 20 to 30 feet deep. Some of the wells in the area have experienced bacteriological contamination as well as nitrate levels in the 2 to 5 mg/l range.

It has been concluded that a centralized wastewater collection and treatment facility will help improve the quality of drinking water. The proposed project involves the following:

1. Existing septic tanks in the community should be abandoned by draining and filling all tanks with sand. The tanks will be replaced with a standard gravity collection system consisting of 8-inch sewer mains and laterals transporting wastewater to a common point.
2. Installation of gravity outfall lines from the collection system to a new central treatment facility. If topography will not permit the use of gravity flow, a sewer lift station and force main would be installed.
3. Construction of a new central wastewater treatment facility southeast of town consisting of a total retention lagoon.

Technical Assessment:

Project Background:

The project, a new wastewater collection and treatment system, will provide a centralized sewer system for the community of Whitewater, located in Phillips County in north-central Montana. Residents rely on groundwater from shallow wells for drinking water. The existing septic systems are adversely affecting these wells, resulting in bacterial contamination and high nitrates in excess of drinking water standards. The community recently formed a Water and Sewer District to address the problem, including the hiring of an engineer and pursuing grant assistance. A number of public meetings have been held to inform the public of project need and costs, and to garner support. Grant assistance from a number of sources is necessary to make the project affordable.

Technical Approach:

The technical approach provided in the grant application is to abandon the existing septic systems, build a conventional gravity collection system and lift station, and construct a total containment lagoon system. The type of technology suggested is simple to operate and conforms well with regulatory constraints that apply to wastewater systems. As a total containment lagoon, no discharge to surface or groundwater occurs and discharge permits are not necessary. The goal of the project would be to eliminate the source of pollutants to the groundwater, resulting in improved drinking water supplies and compliance with public health standards. The financial plan and project schedule provided for the project is achievable and realistic. Phillips County officials and DEQ have shown strong support for the project. Required permits to build the project have been identified and are obtainable.

Project Management:

A viable and experienced project administration team has been provided for managing the project. With multiple funding agencies involved in the project, good coordination will be required. The proposed management plan readily addresses project needs.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 68,969	\$ 68,969
Professional & Technical	\$0	\$0	\$ 153,380	\$ 153,380
Construction	\$ 100,000	\$0	\$ 740,620	\$ 840,620
Total	\$ 100,000	\$0	\$ 962,969	\$1,062,969

Total project costs are estimated to be \$1,062,969, with funding provided by the DNRC grant program, the TSEP grant program, an SRF loan, and a CDBG grant to benefit low and moderate-income users. The application intends to secure the loan on the project with issuance of a revenue bond, repaid through assessments. The town has 60 users who will repay the debt, although the CDBG grant will prepay the assessments for qualifying low-income users. Even with the grant assistance, user costs for those users not qualifying for CDBG assistance are estimated to be over \$47 per month for debt payment and operational expenses. Most users will also be required to pay initial costs for service line installation.

The costs for project administration, engineering and construction are reasonable and consistent with current bidding practices for small communities not requiring complicated construction practices. Unit costs were derived from recently bid projects, and the engineering or administration fees are consistent with projects of this size and scope.

The funding strategy relies on a number of funding sources. The schedule for application to the various programs provides an appropriate approach. Matching funds are not secure, but the applicant is a good candidate to obtain funding from all identified sources. The project budget must be maintained for the project to be affordable, given the limited number of users.

Benefit Assessment:

The project is designed to protect and improve groundwater resources to improve the drinking water supplies for all of the community's residents. Indirectly, surface water quality should also improve as a result of the project because nearby intermittent streams are thought to be fed by groundwater. This may enhance recreational opportunities. All of the citizens in the community will benefit from improved drinking water that should be free of bacterial contamination. Citizen support for the project has been demonstrated. County and State officials have also indicated support for the project.

Environmental Evaluation:

The proposed project will result in no adverse long-term environmental impacts. About 10 acres of land will be required for the treatment system, and the system will be located outside of floodplains and wetlands, and will be designed to leave any cultural resources undisturbed.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 19

Applicant Name: Glasgow Irrigation District
Project Name: Vandalia Diversion Dam - Phase II – North Bridge Pier

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$ 24,450 In-kind

Total Project Cost: \$124,450

Project Abstract: (Prepared and submitted by applicant.)

This proposal is for a grant to repair the Vandalia Diversion Dam. Constructed between 1913 and 1917, Vandalia Dam is the diversion structure for Glasgow Irrigation District (GID). After more than 80 years of continuous operation, the facility is in need of significant repair and rehabilitation. Phase I rehabilitated the canal inlet and tunnels. Phase II will be rehabilitation of the north bridge pier.

The district includes approximately 105 operational farm units covering 18,011.47 acres. A rural population of approximately 424 rely on project facilities for irrigation water delivery, and numerous others rely on the reservoir created by Vandalia Dam for irrigation pumping. Anglers also enjoy use of the reservoir. The project facilities are the economic backbone of our agricultural community, and the key to the economic stability of Vandalia, Tampico, Glasgow and Nashua.

GID has aggressively worked toward modernization, rehabilitation and repair of project facilities. The district completed a \$2.2 million federal Rehabilitation and Betterment (R & B) loan project to repair and modernize the main conveyance system. The district also used cost-share grants with DNRC to replace 128 of the 300 on-farm delivery diversion structures in the district, test repairs at the dam, and rehabilitate the canal inlet and tunnels. These loan and cost-share projects have caused a considerable financial strain on GID. With the R & B loan program, district taxpayers had to reduce their annual economic return in order for GID to meet financial responsibilities.

The structural integrity of the dam is vital to delivery of water to district members. GID plans to initiate the rehabilitation of the north bridge pier in the fall of 2001. Funds from this grant will supplement the effort.

GID will continue to pursue grant sources to provide funding for future phases of the repair and rehabilitation.

Technical Assessment:

Project Background:

Vandalia Diversion Dam is the primary diversion structure for the Glasgow Irrigation District (GID). The U.S. Bureau of Reclamation (USBR) constructed the dam between 1913 and 1917 as part of the Milk River Project. The dam has been in continuous service since 1917.

Because of extensive deterioration throughout the structure, GID contracted with an engineering firm to complete a comprehensive engineering analysis and rehabilitation plan. Significant erosion and freeze-thaw deterioration has occurred to the concrete piers that support the dam. This project implements specific recommendations from the study.

Maintenance repairs were completed in 1960, a \$2.2 million federal R & B loan was obtained to accomplish repairs in 1995, and grant money was used to repair the canal inlet and canal tunnels in 1999. The dam is currently in operable condition.

Technical Approach:

The goal of the project is to rehabilitate the lower portion of the north bridge pier of Vandalia Diversion Dam. This project (Phase II) is the second step toward complete rehabilitation of the dam. Repair and rehabilitation of the north pier is a high priority. The repair is necessary to protect the pier and replace unsound concrete.

The project consists of removal of about 105 cubic yards of loose concrete. All damaged, deteriorated, loosened and unbonded concrete will be removed through jack hammering and sand and water blasting. Reinforcing steel will be replaced, and epoxy dowels will be placed to achieve maximum strength. Poured concrete will be sampled for testing to ensure that it meets the required USBR standards. All repair and rehabilitation will be completed in accordance with USBR guidelines and industry standards for structural concrete projects.

Recommendations for the rehabilitation of the Vandalia Diversion Dam include three alternatives.

1. Do nothing;
2. Rehabilitate in a series of steps out of the district's annual operations budget; or
3. Split the rehabilitation into phases that could be funded with grants and in-kind money.

Alternative 1 is not a reasonable approach. Deterioration will continue to progress and accelerate until repair becomes more costly or failure of the dam occurs. Alternative 2 would take many years, with deterioration continuing and repair costs rising. Alternative 3 splits the rehabilitation into fundable and workable phases. It also maintains the integrity of the dam while providing continued operation and uninterrupted water delivery.

The district will contact the appropriate agencies for permitting and licensing necessary to complete the project. Repair and rehabilitation will require only minimal disturbance to the surrounding area, and no coffer dam will be needed.

Project Management:

In consultation with USBR and MSE-HKM Engineering, the district will complete project management. GID has an excellent track record in the implementation and completion of several projects funded through the Renewable Resource Grant and Loan Program.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	In-kind	\$0
Professional & Technical	\$0	\$0	\$20,500	\$20,500
Construction	\$100,000	\$0	\$3,950	\$103,950
Total	\$100,000	\$0	\$24,450	\$124,450

The identified cost of the project includes engineering, concrete testing, materials, construction, and a contingency. A total of 15 percent was added for contingency due to the highly variable nature of rehabilitation work. Typically for construction projects, DNRC allows 10 percent for contingency. The project sponsor will provide \$24,500 in matching contributions in the form of labor and equipment.

The district assesses fees based on land class. There are five classes, with fees ranging from \$18.01 per acre to \$16.21 per acre. Additional water is assessed at the rate of \$3.00 per acre for an additional acre-foot of water. Completion of the proposed will not affect water user fees.

Benefit Assessment:

About 424 people living on 105 operational farms rely on the Vandalia Diversion Dam to provide water for 18,000 acres. Additional, numerous "river pumpers" rely on the reservoir created by the dam. The economies of Glasgow and Nashua depend primarily on agriculture and related activities. Benefits to resource management that stem from the diversion dam are significant. This project, however, is meant to sustain current activities, and additional improvements in resource management are secondary to the overall project goals and objectives.

Since 1987, the district has expended about \$2.2 million on rehabilitation and betterment of the system. This project is a continuation on ongoing efforts to improve water management and conservation.

Environmental Evaluation:

This project will not result in any long-term adverse environmental impacts. The district will coordinate with various agencies to obtain the necessary permits to complete the work. The district will also coordinate all rehabilitation work with the State Historical Preservation Office. This phase is only a part of the activities necessary to rehabilitate the Vandalia Diversion Dam.

Funding Recommendation:

DNRC recommends grant funding of \$100,000, upon approval of a project scope of work, administration and budget.

Project No. 20

Applicant Name: Town of Geraldine
Project Name: Water System Improvements - Phase I

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 167,460 Treasure State Endowment Program
\$ 67,572 State Revolving Fund Loan

Total Project Cost: \$ 335,032

Project Abstract: (Prepared and submitted by applicant.)

The town presently utilizes a spring source for the major portion of its potable water needs. The springs are essentially two springs, located on the east slope of Square Butte, that have been developed with subterranean horizontal well screen collector piping. The spring is located approximately 9.5 miles away, with approximately 12 miles of gravity feed transmission piping between the developed spring source and the Town of Geraldine. The water users of the system include the Town of Geraldine, Hawarden Users Association, North Geraldine Water Users Association, and individuals located along the transmission piping. The spring source and transmission main were constructed in 1985. A chlorination station, pressure reducing valves, and automatic and manual air release valves are sited between the springs and the Town of Geraldine. A 100,000-gallon water storage structure serves the town and is located in the Town of Geraldine.

When the spring source is not keeping up with the water demands of the system users, the town is forced to supplement its water supply with two existing groundwater wells that are located in town. The artesian wells are greater than 1,900 feet deep and were drilled through multiple shale and sandstone layers.

The existing water system has problems associated with leakage, unaccounted water loss, insufficient chlorination during inclement weather, lack of system controls, insufficient supply, insufficient storage, and undersized piping. The two wells located within the town produce poor water that is very objectionable to the users.

The Water Facility Plan recommends the improvements be prioritized into two phases. The first phase water system corrections will increase the present water system efficiency and upgrade the system in relation to public health concerns. Phase two will upgrade the water system in relation to public safety.

The town will possibly need to develop additional spring sources this summer.

Phase one items include leak detection, metering, "fine tuning" the administrative control of the water system, changing the chlorination station to make it accessible year-round and ensure that it supplies consistent chlorination, and placing adequate controls into the system so that water wastage is eliminated. The capital costs associated with phase one items total \$309,100.

Phase two items include construction of additional storage and replacement of undersized piping. Once the detection program is completed, a more thorough evaluation can be made concerning the actual needs of the community. The total capital costs associated with phase two items may reach \$803,659.

Technical Assessment

Project Background:

Geraldine uses a spring source for the major portion of its potable water needs. The springs are located on the east slope of Square Butte, about 9.5 miles away. A gravity flow transmission main carries water from the spring to a 100,000-gallon storage reservoir located in town. The water is chlorinated between the spring and the reservoir. The distribution system, constructed in 1961, consists primarily of 4-inch and 6-inch asbestos cement pipe. Two backup wells producing low-quality water are used as backup for the spring source.

The existing system experiences leakage and unaccountable water losses; inadequate chlorination during winter; inefficiencies related to a lack of control automation; and insufficient storage, flow, and pressure to provide adequate fire protection.

Technical Approach:

The proposed project has been divided into two phases. This application is for Phase I. Included in Phase I are the installation of water meters, leak detection, the construction of a new chlorination facility to provide year-round treatment capability, and the installation of automated controls to provide an efficient system that will minimize water losses and provide dependable, year-round operation.

Phase II will include 189,000 gallons of additional storage and the replacement of portions of the existing distribution system to provide for increased flows and pressures as required for fire protection and normal usage.

The applicant is also considering alternatives for increasing source capacity. Limited opportunity for expansion at the spring source is a possibility, as is the option of drilling additional wells. Groundwater quality is poor, and the current approach is to improve the efficiencies of the existing system and use the limited supply to its full potential. Additional storage, the elimination of leakage and unaccountable water losses, the installation of automated controls, and the installation of water meters will all contribute to the accomplishment of this goal.

Phase I construction is scheduled for 2002.

Project Management:

Geraldine is an incorporated unit of local government with an elected mayor/council form of government. As proposed, the town clerk will be responsible for the management of grant funds for this project. Project management will be performed by Bearpaw Development Corporation, and design and construction management will be the responsibility of the project engineer. The project will be designed and constructed in compliance with statutory requirements for local governments in Montana.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 33,200	\$ 33,200
Professional & Technical	\$0	\$0	\$ 42,180	\$ 42,180
Construction	\$ 100,000	\$0	\$ 159,652	\$ 259,652
Total	\$ 100,000	\$0	\$ 235,032	\$ 335,032

The project consists of the design and construction of upgrades to the water system for the Town of Geraldine. Included are the installation of water meters for each water user, leak detection throughout the system, a new chlorination facility that will be functional year-round, and the installation of automated controls to efficiently monitor and manage the limited supply of water available to this community. The total cost of this project is \$335,032 as shown in the table above. Phase II, which is not being applied for at this time, will include the replacement of distribution lines as determined from leak test data collected in Phase I, and the installation of an additional 189,000 gallons of water storage to the existing 200,000 gallons. These improvements will primarily address flow capacity and pressure requirements for fire protection and everyday usage.

Residential water users in Geraldine currently pay a flat fee of \$ 23.20 per month for water and \$6.80 per month for sewer services. A wastewater system improvements project is currently being planned in addition to water system improvements, which will increase the sewer rate by an undetermined amount. This water improvements project (Phase I) will increase water rates to \$35.89 per month, based on increases to the current flat fee as necessitated by new debt for the project and increased costs associated with water meters. Based on a 1990 median household income of \$19,732, the combined (water and sewer) average monthly residential target rate is \$36.17, which will be exceeded as the result of this project.

The estimated cost for this project includes adequate contingencies and is reasonable. Administrative and engineering fees are included, and coverages and legal fees necessary for the issuance of a revenue bond through the Drinking Water State Revolving Fund Loan Program are considered in the application. In addition to the Renewable Resource Grant, Geraldine has also requested a Treasure State Endowment Program Grant in the amount of \$167,460. The balance of the project will be funded with a 20-year loan at 4 percent, contributing to a monthly water rate of \$35.89 for 142 residential customers.

Benefit Assessment:

The primary resource benefit of this project is water conservation and management accomplished primarily through the installation of water meters. Water meters have proven to be an effective means of influencing water users to manage their water consumption in an efficient manner that benefits the community. In the case of Geraldine, water-use efficiency is imperative because there are no unlimited sources of quality drinking water available.

The installation of automated controls will also promote water conservation and efficiencies, as will the reduction in line leakage and unaccountable water losses.

Public benefits associated with this project will include not only a dependable water system but also a safe system with improvements in treatment and fire protection.

Environmental Evaluation:

The installation of water meters will cause temporary inconveniences and adverse impacts normally associated with a utilities construction project. There will not be other construction or any long-term adverse impacts associated with this project.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 21

Applicant Name: Ashland County Water and Sewer District

Project Name: Wastewater System Improvements

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000	
Other Funding Sources:	\$500,000	Community Development Block Grant
	\$500,000	Treasure State Endowment Program Grant
	\$116,750	DEQ SRF Loan
	\$111,000	Coal Board Grant
	\$111,000	EDA Grant
	<u>\$28,750</u>	Project Sponsor

Total Project Cost: \$1,467,500

Project Abstract: (Prepared and submitted by applicant.)

The Ashland Water and Sewer District was created in 1974, and the sewer system was completed in 1976. The intended method of disposal was evaporation, but the lagoons have not been able to evaporate the wastewater at a sufficient rate. The operator has had to pump or siphon wastewater out of the lagoon and onto adjacent property in order to avoid overflow. Noting the serious nature of the problem, the district is not allowing further proposed growth until the problem is addressed.

The operator has had to pump or siphon wastewater out of the lagoon and onto adjacent property in order to avoid overflow. This is despite the fact that the lagoons are leaking at a rate of at least 70 percent to 80 percent. The area of the existing lagoons is far too small for them to serve as total retention lagoons. The District has never had a discharge permit and would have to meet the state's nondegradation standards in order to obtain a discharge permit. In addition to creating a health hazard, the lack of a

proper treatment system is preventing the development of the Heritage Assisted Living Center, already designed by Soaring Eagle.

The engineer proposes installing a new treatment system using aeration to treat the water sufficiently to where it may be applied to alfalfa using spray irrigation. The St. Labre Catholic Mission, the owner of the adjacent property (estimated 138 acres), has agreed to allow the district to use that land for irrigation (only 58 acres required). This solution will provide a beneficial use of the wastewater and end health threats and violations of state standards. Since the landowner is also by far the heaviest contributor of the wastewater, there should be no problem maintaining this land-use agreement into perpetuity.

Technical Assessment:

Project Background:

The Ashland county sewer system was originally constructed in 1976. The existing treatment facility consists of a total retention lagoon and relies on evaporation as the only means of effluent disposal. The facility is undersized, and the operator must occasionally pump or siphon wastewater from the lagoons onto adjacent property to keep the wastewater from overtopping the lagoon dikes. It has also been discovered that about 70 to 80 percent of the wastewater that enters the treatment facility leaks into the groundwater before receiving adequate treatment. The district is proposing to construct a new wastewater treatment facility consisting of mechanically aerated lagoons and effluent disposal through spray irrigation.

Technical Approach:

The goal of this project is to eliminate the discharge of all partially treated wastewater to the groundwater and adjacent land by upgrading the existing wastewater treatment facility. A Preliminary Engineering Report was developed which identified and evaluated many treatment alternatives, ranging from advanced mechanical systems with spray irrigation to total retention systems. Based on a preliminary analysis, four treatment systems were evaluated in detail. Alternative evaluation included consideration of capital costs and ongoing operation and maintenance costs. The recommended alternative is to convert the existing total retention lagoon to an aerated lagoon with spray irrigation. This system achieves a high level of treatment at a relatively low capital and operating cost. It also has the benefit of putting an additional 58 acres of agricultural land into irrigated use.

The Preliminary Engineering Report does not discuss the removal of sludge from the existing lagoon even though costs were provided. The installation of a new impermeable liner is an improvement common to all alternatives considered and would require the removal of sludge. Sludge removal could add significantly to project costs, depending primarily on sludge quality with respect to the EPA 503 Clean Sludge Regulations.

The selected alternative would achieve compliance with all state and federal standards. The proposed schedule is to begin design of the facilities in late 2001 and initiate construction in May 2002, with completion and start-up later that fall.

Project Management:

A detailed project management and implementation plan has been developed. The applicant has identified the staff required for successful project management, including: the district manager, the district, a professional administrative consultant and a design consultant. There appears to be adequate funding in the project budget to effectively manage the project. The applicant has prepared a comprehensive facility plan in which the public had the opportunity to participate.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$68,500	\$68,500
Professional & Technical	\$0	\$0	\$182,000	\$182,000
Construction	\$100,000	\$0	\$1,117,000	\$1,217,000
Total	\$100,000	\$0	\$1,367,500	\$1,467,500

In the cost estimate, the applicant did consider the removal of sludge from the existing lagoon cells, which will be required for installation of a new impermeable liner. There is no basis for this cost, however. Sludge has not been measured or sampled, and there is no indication of the quality and quantity of the sludge, two factors that significantly impact sludge removal and disposal costs. As a result, construction costs presented in the preliminary engineering report could be low. Otherwise, the project budget presented in the application appears to be well documented, complete, and reasonable. Construction costs are based on best engineering judgment and technical development for past projects at the preliminary engineering report level.

Not all funds have been secured because this project requires commitment from several agencies, but the applicant has presented a detailed and realistic funding strategy. The applicant proposes to fund wastewater improvements using about \$1.557 million in grants from the \$1.322 million in grants from the Montana Department of Commerce Treasure State Endowment (TSEP) and Community Development Block Grant (CDBG) Programs, the Montana Department of Natural Resources and Conservation Renewable Resource Grant and Loan (DNRC RRGL) Program, the Montana Coal Board, and the U.S. Economic Development Administration. The applicant will also pursue a \$0.117 million dollar loan from the RD program. With the proposed funding package, the district's monthly residential rate will increase from \$8.26 to \$13.91. This rate increase, however, does not include the additional cost for sludge removal.

Benefit Assessment:

The project will eliminate local groundwater contamination and the discharge of partially treated wastewater to adjacent land. Resource conservation will benefit by 46 million gallons/year of wastewater being directly applied to agricultural land. This wastewater is currently discharged to the groundwater, degrading water quality. Citizens will directly benefit through protection of their current source of potable water and elimination of the potential contact with partially treated wastewater on adjacent land.

The benefits of the project will be long term and will be quantified through continued groundwater monitoring and the measurement of reduced nitrate concentrations and bacterial levels. Public support for the project is significant. Voter approval created the district specifically to address the described problems. Several letters of support by state and county officials were included in the application.

Environmental Evaluation:

Currently, the community of Ashland is required to discharge partially treated wastewater onto adjacent land to keep its existing total retention lagoon from overtopping. Additionally, 70 to 80 percent of the wastewater that enters the lagoon now leaks out, polluting groundwater. The proposed project, which consists of major wastewater treatment facility improvements, will prevent the discharge of partially treated wastewater to nearby lands or the groundwater. This project is expected to result in an overall long-term positive environmental impact.

The project will produce short-term adverse environmental impacts typical during construction due to noise, dust and stormwater run-off. Mitigation measures will be further developed during detailed design and enforced during construction. The only long-term potentially negative aspect is the opportunity for periodic odors from the lagoons. The wastewater treatment facility has been sited such that the odors will impact a minimal number of residents.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 22

Applicant Name: Milk River Project Joint Board of Control
Project Name: Saint Mary River Siphon Repair – Phase II

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$ 0

Total Project Cost: \$100,000

Project Abstract: (Prepared and submitted by applicant.)

The irrigation districts in the Chinook, Malta and Glasgow Divisions of the Milk River Project are requesting a Renewable Resource Grant from the State of Montana in the amount of \$100,000. The funds will be used to replace and raise an additional 60 feet of the left barrel of the Saint Mary River siphon.

In Phase 1, the districts applied and received a Renewable Resource Grant of \$100,000 and matched in part with \$33,000 of water user operation and maintenance assessment funds. The total project amount was originally \$133,000.

Realizing the magnitude of repairs that were necessary to stabilize the left siphon, the Montana Legislature allowed the districts to apply an unused portion of a Renewable Resource Grant, originally for the Chinook Division, toward the rehabilitation of the Saint Mary facilities. DNRC processed an amendment in April 2000 to allow the \$100,000 to be utilized for Phase I construction work on the Saint Mary River siphons. Furthermore, water users applied an additional \$80,000 of operation and maintenance funds toward the repairs. The Saint Mary Siphon Repair Phase I consist of cathodic protection, geologic investigation, replacement of buckled sections of the left barrel, anchors, new expansion joints, new seals at the outlet transition, and raising 60 feet left barrel above ground.

The eight districts applying for the Renewable Resource Grant serve a total of 99,000 project acres with 666 farms. The water from the St. Mary inter-basin transfer provides a stable water supply for Milk River Project Water Users, Bowdoin National Wildlife Refuge, Nelson and Fresno Reservoirs, and municipal water supplies for the cities of Chinook, Havre, and Harlem, and Hill County Water District. The reliability of the Milk River water supply is economically vital to agriculture and the communities within the Milk River Basin.

The Milk River Irrigation Districts have been working toward modernization, rehabilitation, repairs and improvements to ensure reliability and reduce operational water losses in each of the respective districts. The districts are not subsidized by the U. S. Bureau of Reclamation (USBR). The districts pay a prorated share to USBR for project operation and maintenance. This has placed a financial strain on the districts' ability to repay. Currently there is no other funding available.

The need to repair the St. Mary siphon is imperative. Augmentation of the Milk River water supply is vital to agricultural based economy of the region. Delays will increase the cost of repairs or ultimately lead to failure of the structure.

Technical Assessment:

Project Background:

The proposed project consists of completing improvements to the St. Mary siphon, part of the inter-basin diversion facilities of the St. Mary Division of the Milk River Project. The project will primarily address recommended improvements to the St. Mary siphon to maintain the existing level of service to the Milk River Project.

The St. Mary siphons deliver irrigation water to 666 farms comprising 110,306 acres throughout the Milk River system, including Bowdoin National Wildlife Refuge, Fresno Reservoir, and Nelson Reservoir. The highline communities of Chinook, Havre and Harlem draw a portion of water from the Milk River for drinking water supplies.

The St. Mary Division annually transports about 150,000 acre-feet of water from the St. Mary River drainage to the North Fork of the Milk River. Major maintenance repairs have been completed in 1924, 1935-1937, 1940, 1954 and 1986. The existing water transfer system is currently in operable condition.

Phase II is a continuation of the Phase I construction.

Technical Approach:

The primary goal of this project is to maintain existing services of the St. Mary Diversion and continue serving the agricultural, recreational, and community water supply needs in the Milk River Project. The applicant identified immediate needs to ensure continued system service. An additional 60 feet of 90-inch pipeline needs to be raised above ground to prevent pipe buckling due to groundwater interference. Three new support saddles would be added to support the raised pipeline. These needs are immediate and are necessary to prevent failure of the siphon.

The applicants propose to complete proposed improvements by December 2001. The U.S. Bureau of Reclamation (USBR) will complete the design of the system improvements. USBR will also provide project management and crews to complete much of the work.

Project Management:

The project management team consists of elected members of the Milk River irrigation districts, USBR, and the project engineer. USBR is familiar with public bidding and procurement statutes and will advertise and bid any outside services for this project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$	In-Kind	\$
Professional & Technical	\$0	\$	\$0	\$0
Construction	\$100,000	\$	\$0	\$100,000
Total	\$100,000	\$	\$0	\$100,000

The identified cost of the project includes materials, construction and a 10 percent contingency.

Specific information on water user rates varies according to each of the seven irrigation districts served by the system. The water users pay about \$500,000 annually to USBR for operation and maintenance costs, or an average of \$4.53 per acre of agricultural land served by the system. This amount is reflected in the operation and maintenance costs of each one of the districts.

Benefit Assessment:

Completion of improvements will allow continued operation of the St. Mary Diversion and Milk River Project at current levels. The project will directly benefit 666 irrigation district members. Benefits are immediate and long term. The project will also benefit communities that obtain drinking water from the Milk River system, people that use the Milk River system for recreation, and fish and wildlife.

Environmental Evaluation:

This project will result in typical short-term adverse environmental impacts that cannot be entirely avoided in any construction project. Construction impacts must be identified and mitigated to the extent possible. No long-term adverse environmental impacts are anticipated.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 23

Applicant Name: Town of Stanford, Montana
Project Name: Wastewater System Improvements

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 500,000 Treasure State Endowment Program Grant
\$ 350,000 Community Development Block Grant Grant
\$ 689,000 MDEQ SRF Loan
\$ 16,500 Project Sponsor

Total Project Cost: \$1,655,500

Project Abstract: (Prepared and submitted by applicant.)

The Town of Stanford owns and operates a collection system and a one-cell facultative lagoon system that serves a population of approximately 530 persons. The collection system was constructed in 1928 and the lagoon system was constructed in 1963. This system discharges to Skull Creek under the authority of a Montana Pollution Elimination Discharge System (MPDES) permit. The lagoon is 6 acres in area and 5 feet deep. The town used to discharge some wastewater effluent to the cemetery via irrigation. This was discontinued in 1984 by order of DEQ. The lagoon system has experienced significant discharge permit violations for both BOD and TSS in the last several years. The collection system consists of nearly 20,000 lineal feet of sewer main, the majority of which is clay tile pipe. 80 percent of the sewer mains are 8-inches in diameter with the remainder being 10-inch and 12-inch diameter pipe.

Both existing collection system and lagoon system are aging, outdated, and in a dilapidated condition. These systems are plagued by numerous problems.

- The detention time (treatment capacity) is 79 days, less than half the time required by State design standards.
- The single cell design configuration does not meet State design standards of a minimum of three cells.
- The existing lagoon is nearly full of sludge. The average sludge depth in the lagoon is 2.8 feet and approaches and exceeds 4 feet in certain places.

- The system often exceeds BOD & TSS limits in violation of its MPDES Permit.
- The outlet control provides inadequate control of flow rate and pond level.
- The 70-year-old clay sewer pipe is structurally inadequate and at risk of imminent failure. Failure may cause plugging and sewage backup into basements.
- Identified sewer main defects such as holes and cracks may allow sewer exfiltration and associated groundwater pollution.
- Future growth is limited by sewer capacity.

The community has attempted to address these problems via low cost capital improvements and improvements to system operation and maintenance. While some of these efforts have improved system performance, it is clear the town has exhausted all low-cost alternatives and must implement significant capital improvements to both its collection and lagoon system. The town proposes to replace 2,800 lineal feet of outfall pipe to the lagoon and another 5,800 lineal feet of 8-inch and 10-inch diameter sewer trunk lines. This will eliminate the risk of losing collection system service to the entire town. The treatment lagoon will have sludge removed and be upgraded to a 3-cell system with 180 days of detention. This will bring the lagoon system into compliance with state standards and will eliminate permit violations.

Technical Assessment:

Project Background:

Stanford's wastewater collection system was originally constructed in 1928, and the current lagoon-based treatment facility was constructed in 1963. Both the collection system and treatment facility are aging, outdated, and in a dilapidated condition. Much of the collection system consists of 70-year-old clay sewer pipe that is cracked and structurally inadequate. The wastewater treatment facility is undersized and full of sludge, two factors that control the treatment efficiency. The town proposes to upgrade the single-cell facultative lagoon to a three-cell facultative lagoon and replace about 8,600 lineal feet of sewer main.

Technical Approach:

The goals of this project are to eliminate the discharge of all partially treated wastewater to Skull Creek and untreated wastewater to the groundwater, through exfiltration from the wastewater collection system, by designing and constructing an upgrade to the community collection and treatment facility. A facility plan was developed that identified and evaluated many alternatives. Based on a preliminary analysis, collection and treatment systems were evaluated in detail. The evaluation was comprehensive and the conclusions reached were well reasoned. The recommended treatment alternative is to install a three-cell facultative lagoon with direct discharge to Skull Creek. This system achieves a high level of treatment at a relatively low capital and operating cost.

There were some concerns, however, with regard to the lack of an alternative analysis for the removal and disposal of sludge from the existing lagoon cells. Sludge removal can often be the most difficult regulatory challenge during the construction phase of a project and represents roughly one-fifth of the total treatment facility improvement cost for this project. The recommended sludge removal and disposal option appears viable, but a more detailed analysis should have been presented.

The selected alternative would achieve compliance with all state and federal standards. The proposed schedule is to begin design of the facilities in early 2002 and initiate construction in April 2003, with completion and start-up later that fall.

Project Management:

A detailed project management and implementation plan has been developed. The applicant has identified the staff required for successful project management, including the town mayor, the town clerk, a professional administrative consultant, a design consultant and the town attorney. The applicant has prepared a comprehensive facility plan, and the public had the opportunity to comment on the plan.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$101,500	\$101,500
Professional & Technical	\$0	\$0	\$235,000	\$235,000
Construction	\$100,000	\$0	\$1,219,000	\$1,319,000
Total	\$100,000	\$0	\$1,555,500	\$1,655,500

The project budget presented in the application appears to be well documented, complete and reasonable. Construction costs are based on best engineering judgment and past projects for technical development at the preliminary engineering report level .

The Town of Stanford currently provides service to 217 residential and 70 commercial hookups, and an estimated population of 529. The application proposes to fund wastewater improvements using about \$0.950 million in grants from the Montana Department of Commerce Treasure State Endowment (TSEP) and Community Development Block Grant (CDBG) Programs, and the Montana Department of Natural Resources and Conservation Renewable Resource Grant and Loan (DNRC RRGL) Program. The applicant will also pursue a \$0.689 million dollar loan from the Montana Department of Environmental Quality State Revolving Fund (DEQ SRF) program and use \$16,500 from the Town's wastewater system reserve account. The monthly residential rate charge assessed as a result of this loan will increase from \$5.60 to \$23.60.

Not all funding for this project has been secured. The applicant submitted applications for grants from the TSEP and DNRC RRGL programs in May 2000, but will not be able to submit an application to the CDBG program until May 2001 because CDBG funds must be expended within 6 months of being approved. The DEQ SRF Program operates on an open cycle. Should one or more of the grant applications be unsuccessful, the applicant could borrow the additional money from either U.S. Department of Agriculture Rural Development (RD) program or from the DEQ SRF program. As a result, there is a high likelihood that the applicant will be able to secure matching funds sufficient to complete the project.

Benefit Assessment:

The project will eliminate the discharge of only partially treated wastewater to Skull Creek and prevent the exfiltration of untreated wastewater from the town's collection system. Resource enhancement will result from the improved quality of 27 million gallons per year of wastewater effluent currently discharged to surface water. Citizens will directly benefit through the elimination of untreated wastewater currently exfiltrating into the groundwater and subsequent protection of their current source of potable water.

The benefits of the project include elimination of groundwater and surface water contamination. The benefits will be long-term and will be quantified through continued groundwater monitoring and the measurement of reduced nitrate concentrations and bacterial levels. Public support for the project is significant.

Environmental Evaluation:

Currently, wastewater within the town is disposed of by an inadequate and undersized wastewater treatment facility. Because of the poor condition of the facility, wastewater is inadequately treated before being discharged into Skull Creek, resulting in water quality permit violations. Untreated, undisinfected wastewater is also leaking from the deteriorated wastewater collection system. The proposed project, which consists of upgrading the existing wastewater treatment facility and replacement of the wastewater collection system, is expected to result in an overall long-term positive environmental impact. There will be short-term negative aspects during construction due to noise, dust, and stormwater run-off, all of which can largely be mitigated. The only long-term potentially negative aspect is the opportunity for periodic odors from the lagoons, but the wastewater treatment facility has been sited such that the odors will impact a minimal number of residents.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of the scope of work, administration, and budget.

Project No. 24

Applicant Name: LaCasa Grande Water & Sewer District
Project Name: New Water System

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 500,000 Grant (Treasure State Endowment Program)
\$ 635,250 Loan (SRF)

Total Project Cost: \$1,235,250

Project Abstract: (Prepared and submitted by applicant.)

LaCasa Grande Estates is a residential subdivision located adjacent to the City of East Helena. The population of LaCasa Grande Estates is estimated at 500 to 600 people.

Presently, the community is served by a private water system built during the initial development, which has inadequately sized lines, marginal storage and is incapable of providing adequate water during high demand periods. Water restrictions are regularly in effect and landscape irrigation is restricted, which aggravates a public health problem with dust contaminated with lead from a nearby smelter. The high residual lead levels may result in adverse health impacts to young children. The system also cannot provide adequate flows and/or pressures for fighting fires. The East Valley Volunteer Fire Department does not recognize this water system as a useable source for fire suppression. The current system only marginally complies with existing State requirements. Negotiations for improvements with the current owner of the system have been fruitless. The owner is not willing to make any improvements to the system or to sell to the district.

The problem could be solved by building a new distribution system and a storage tank. New service lines and fire hydrants would be included in the project. The new system would meet all anticipated demands, including requirements for adequate fire protection. The district would implement the use of water meters to ensure water would not be wasted. Connection to the City of East Helena has been denied by officials. The residents of the district would like a sufficient water supply for personal use as well as needed pressure for adequate fire protection for public safety and are in favor of construction of a new water system. The district's attorney is currently working on the legal issues regarding the water rights and possession of one existing well.

Technical Assessment:

Project Background:

LaCasa Grande Estates is a residential subdivision located adjacent and north of the City of East Helena. The population of LaCasa Grande Estates is about 500 people.

The existing water system was constructed about 20 years ago, during the initial development. The water system has proven to be inadequately sized and does not provide enough water to meet the demands of the users. Negotiations with the current owner of the system, to provide improvements, have led to a dead end. The owner is not willing to make additional improvements or sell the system to the district.

The project proposed would provide a public water system that can provide enough water to meet current demands. This would eliminate the need for the water users to purchase water service from the current private owner.

There are many legal issues to be resolved regarding this project. The issues could include but not be limited to water rights, rights-of-way conflicts and the issue of whether or not an individual water user could remain with the privately owned water system. The district's attorney is currently working on these issues.

Technical Approach:

The project goals and objectives are to provide a new public water system that will supply the users with adequate water supply and pressure. The existing system can not provide enough water to satisfy current demand. The private owner of the current system is not willing to upgrade or sell the system. The replacement of the water system, as proposed, would eliminate suspected leakage and provide a new water system that would meet the needs of the users.

The selected alternative is to construct a new water system consisting of two new wells, pumps and controls, water distribution main, 100,000-gallon storage tank, water meters, and a pump station. Further effort should be made to work with the current owner so the existing system can be used. If this is not possible, it appears the best alternative would be the one selected. The technical aspect of this project is well presented. Phone conversations with the DEQ reviewer confirm this conclusion. The selected project should be able to meet all regulations, standards, and permitting, and the project schedule should easily be met.

Project Management:

The LaCasa Grande Estates Water & Sewer District is an incorporated county water and sewer district. The project management team will consist of the district president, district treasurer, an attorney, a private consulting engineer and a private grant administrator.

The consulting engineer will have the responsibility of design, bidding, construction supervision and inspection. The engineer has been retained through an approved procurement process. The grant administrator will be subcontracted through the consulting engineering firm. This consultant will be responsible for overall project management, ensuring compliance with applicable federal and state requirements for the project, and serving as the district's liaison with DNRC for the project.

The project management plan seems to be well thought out and presented. It appears qualified personnel have been selected to manage the project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$1,000	\$0	\$44,000	\$45,000
Professional & Technical	\$5,000	\$0	\$108,950	\$113,950
Construction	\$94,000	\$0	\$982,300	\$1,076,300
Total	\$100,000	\$0	\$1,135,250	\$1,235,250

The LaCasa Grande Water and Sewer District is applying for a TSEP grant of \$500,000 (40 percent of the necessary funding). This Renewable Resource Grant of \$100,000 and an SRF loan of \$635,250 will provide funding for the rest of the project. It appears the funding strategy for this project is sound.

The existing system serves 158 households (population about 500 people). Currently the users pay a flat rate of \$22 per month. It is expected, should all funding be approved, that the user rate will increase to about \$40.40 per month. Without both grants, the user rates would be close to \$70 per month.

Cost analysis of two alternatives was presented in the preliminary engineering report. The costs presented appear to be reasonable and complete. Equipment costs were based on similar projects that have been constructed recently.

Matching funds are not required for this grant. The applicant has applied for a TSEP grant, and an SRF loan can be applied for after grants have been awarded. It appears the applicant has thoroughly considered its funding options and has taken steps to acquire that funding.

Benefit Assessment:

The primary benefactors of this project are the water users within the water district. The 500 residents of LaCasa Grande will benefit from the project by owning a system that produces sufficient water for current use. The system will meet all DEQ regulations for a public water system. Water will be conserved by the installation of water meters placed on each service. General public health and welfare will be enhanced by the increased landscaping and resultant dust abatement capability provided by the additional water capacity of the new system.

The resource benefits of this project will include water conservation and improved water-use efficiency. This will occur due to the installation of water meters on each service. This project promotes beneficial use of a natural resource (groundwater) by providing adequate water supply and pressures to the users. This additional capacity will allow additional landscaping and fire-fighting capacity, which will enhance the public's health and well being.

Environmental Evaluation:

There will be some long-term impacts to the groundwater source. Additional water will be drawn from the aquifer. This impact will be offset by the benefits. Through the permitting process, the system will be thoroughly evaluated.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon DNRC approval of project scope of work, administration and budget. All legal issues regarding the rights of the district versus the rights of the existing system owner must be resolved prior to issuance of funds.

Project No. 25

Applicant Name: Town of Clyde Park
Project Name: Water System Improvement Project

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000	
Other Funding Sources:	\$500,000	Community Development Block Grant
	\$1,358,003	Rural Development Grant
	<u>\$452,668</u>	Rural Development Loan
Total Project Cost:	\$2,410,671	

Project Abstract: (Prepared and submitted by applicant.)

Clyde Park's water system consists of two springs as the sole water source, a 175,000-gallon concrete storage tank; and a gravity-fed distribution system. The town owns only a portion of the water rights for the two springs. The town is currently working with legal counsel to have the historic rights clarified. The majority of the present water system, including supply, storage, and transmission facilities, dates back to 1915. Records indicate that a water system inventory was completed in 1944.

The town's water system has the following deficiencies:

- impending loss of majority water supply;
- leaking water mains;
- undersized distribution lines;
- dead-end distribution mains
- undersized storage tank;
- inadequate fire flows; and
- no water meters.

Negotiations for water rights to the two springs have failed. The town is unable to secure the needed 155 gpm right. The town must develop wells as a new primary water source. Because of the current leakage rates in the town's distribution system, more than half of the water supply is being lost. The deficiencies in the distribution system impede the town in providing an adequate quantity of safe drinking water to its current and future residents, and in providing at least the minimum recommended fire flows to the community.

The town's only alternative is to develop two to three wells for the community's primary water supply. The current gravity-fed supply will continue to be utilized ahead of the supply provided by the wells. The town also intends to abandon the existing storage tank and install a new 450,000-gallon tank. In conjunction with the installation of new, adequately-sized piping, dead-end mains will be eliminated to improve distribution pressures. In order to more aggressively manage its water system, and to accurately monitor water distribution and usage, the town intends to install water meters for all users. A meter-based rate structure will also promote user equitability with the ability to allocate costs based on use.

Technical Assessment:

Project Background:

The Town of Clyde Park water system includes two developed springs, a distribution system and a water storage tank. The water system dates back to 1915. The town's water rights to the springs are in jeopardy due to a legal dispute, and the town wishes to develop wells for a new water source. The distribution system is leaking, undersized, and has dead-end water mains. The existing water storage tank is undersized for the system.

Technical Approach:

The goal of the project is the upgrade of the potable water system by securing a reliable water source, providing adequate water storage and reducing water loss due to leakage. The specific objectives have been identified as new water wells, a new water storage tank, and replacement of leaking water pipes. The community needs to secure a new water source due to the pending loss of the town's existing water source.

The Preliminary Engineering Report (PER) has addressed appropriate alternatives for water source development and distribution system improvements. Spring development, surface water development and groundwater development were evaluated as options to meet the community water supply needs. The groundwater development alternative was chosen as the best alternative. Replacement of water pipes is the only reasonable alternative to correct the distribution system deficiencies and will help meet the supply needs through elimination of water losses.

The identified deficiencies are common to older water systems. The solutions offered are sound and the remaining questions are minimal. The number and location of wells can be determined during test drilling and final design. The final size of the water tank and type of construction should be reconsidered after completion of a life cycle cost analysis. The proposed solution should resolve the problems of the water system and the details can be worked out during final design.

Water rights, permit requirements and property easements have been addressed in the application. These issues must all be resolved and do not appear to be insurmountable.

The project schedule appears to be reasonable. As is true with any project, delays in funding will impact the project schedule. However, the completion of any segment of the project will improve the town's water system.

Project Management:

The applicant has identified a project management plan and key members of the project team to handle the major tasks of the project administration. The engineer will be responsible for the oversight of construction activities and contractors. The clerk will be responsible for record keeping. A contractor will be responsible for grant administration requirements. The mayor will have overall responsibility and oversight of the project team and report to the town council.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$28,160	\$28,160
Professional & Technical	\$10,000	\$0	\$142,993	\$152,993
Construction	\$90,000	\$0	\$281,515	\$371,515
Total	\$100,000	\$0	\$452,668	\$552,668

The project budget has identified sources of funding for this project, including a Community Development Block Grant, a Rural Development loan, a Rural Development grant, and a Department of Natural Resources and Conservation Renewable Resource Grant. The funding structure appears adequate for the proposed project. Based on this application, none of the funding has been secured.

The budget is based on preliminary layouts and quantity estimates. The unit prices for the items look appropriate for this type of project. A 10 percent contingency has been included and is appropriate. The existing system uses a flat rate system with an existing average rate of \$25.00 per month. The estimated average water rate will be \$31.26 (based on meter readings) with the completion of this project. Water meters will be installed as part of this project.

The estimated construction cost of the project is based on reasonable unit prices for the different components of the project. The project budget also includes appropriate professional costs to cover grant administration, engineering, and inspection budgets that are appropriate for this type and size of project. The budget also includes line items for land acquisition and a 10 percent contingency on the estimated construction budget. All of the line items presented in the budget appear to be appropriate.

The applications for CDBG, RUS/RD, and RRGL grants as well as a project loan have been submitted. The project sponsor has applied for a 40-year 4.5 percent loan through the RUS/RD program.

Benefit Assessment:

This project will enhance the drinking water system and enhance fire protection for the 356 residents of this community. It will greatly reduce the loss of water from a leaking distribution system. The project also includes the installation of water meters and a rate structure to encourage a reduction in water usage through user conservation. By eliminating the leaking water mains and by installing water meters, the town will be able to better manage its water system.

Environmental Evaluation:

This project includes the construction of new water wells, a new water storage tank and the replacement of existing water mains. As with any construction activity, some erosion, runoff and dust may be possible. With erosion control and dust control measures in place, however, potential impacts will be minimal.

There do not appear to be any long-term adverse environmental impacts associated with this project. Any short-term environmental impacts should be minimal and acceptable.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 26

Applicant Name: Town of Nashua
Project Name: Wastewater Improvements Project

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 500,000 Treasure State Endowment Program Grant
\$ 450,000 Community Development Block Grant
\$ 276,200 State Revolving Fund Loan
\$ 7,800 Local Reserves

Total Project Cost: \$1,344,000

Project Abstract: (Prepared and submitted by applicant.)

The town's lagoons were built in 1965. By 1970, the town began receiving notices about the leakage through the bank of the second lagoon cell, which was accelerating erosion of the bank and allowing sewage into the Milk River. The town made several attempts for help through the U.S. Army Corps of Engineers, but without success, even after the flood of 1986 took an additional 20 feet of lagoon bank, bringing the recorded loss up to 45 feet total.

The lagoons leak through the side and bottom, accelerating erosion of the bank and creating a health hazard. At times the lagoon has had to be pumped out to an adjacent field to avoid overflow and complete loss of the bank. The lift station, just before the lagoon, has an overflow that falls into the city storm sewer, which takes the waste directly to the river. Without any power back-up, this causes raw sewage to flow to the river during some power outages or when the system becomes temporarily overloaded. The lagoon bank has been eroding into the Milk River by a combination of seepage from the lagoon through the bank and natural meandering of the river.

The town and the Department of Environmental Quality (DEQ) have each accepted the selected alternative as proposed by Neil Consultants in the facility plan. This alternative calls for expanding the treatment system to include several primary and aeration cells to be located farther away from the river (the town purchased this land in 1995 in anticipation of these improvements). The cell in danger of losing its bank would be abandoned in conformance with DEQ guidelines. A generator would be purchased for use at the lift station and new pumps installed.

Technical Assessment:

Project Background:

The Town of Nashua is located in Valley County about 14 miles east of Glasgow. The town's wastewater lagoons were built in 1965. By 1970, the town began receiving notices about the leakage through the bank of the second lagoon cell, which was accelerating erosion of the bank and allowing sewage into the Milk River. The town made several requests for help through the U.S. Army Corps of Engineers, but the problems continued. A flood in 1986 took an additional 20 feet of lagoon bank, bringing the recorded loss

up to 45 feet total. The town proposes to locate several new primary and aeration cells farther from the river, abandon the eroding cell, install a new generator at the lift station, and install new pumps.

Technical Approach:

The project goals are to bring the wastewater treatment and collection system up to current standards, to eliminate groundwater and surface water pollution, and to protect the river embankment. The specific objectives are to prevent leakage from the pond bottom and embankment sides by providing the appropriate lining of the lagoons; improving the structural integrity of the embankments to eliminate the risk of failure; providing sufficient detention time and treatment efficiency to allow discharge to the Milk River under specific permit limits or to eliminating the need for discharge at all; and eliminate the overflow of raw sewage from the lift station.

A detailed evaluation of appropriate alternatives has been presented. The evaluation is adequate to support the selected alternative and the selected alternative is the least-cost alternative. Alternatives considered include a three-cell discharging facultative lagoon system; a three-cell mechanically aerated discharging lagoon system; a total containment non-discharging lagoon system; and a non-discharging storage and irrigation system. The south embankment and lagoon are abandoned in all four alternatives considered. Overflow from the lift station will be eliminated by rehabilitating the existing lift station with redundant pumps and backup power. No other lift station alternatives were evaluated, such as replacement with a new package lift station or a custom built lift station. The lift station represents a small overall cost component of the project, and any lift station alternatives that may be pursued would not vary significantly in cost or performance. The entire collection system will be TV inspected to assess its condition for future repair. The selected alternative will solve all of the problems and meet the goals and objectives of the project entirely. The collection system is not brought up to current standards under this project and remains in a dilapidated condition. TV inspection is planned as a first step in addressing collection system problems

The proposed lagoons would be constructed on recently purchased town property. DEQ NPDES permit staff were contacted, and permit limits for secondary standards, non-degradation, and water quality based standards (ammonia and fecal coliform) were established. It appears that DEQ will issue a discharge permit and the anticipated permit limits are achievable with the proposed treatment system. The Town has applied for an NPDES permit. DEQ is in the process of preparing the permit requirements. It is unknown when the permit will be officially issued.

Project Management:

The applicant has retained a professional consultant with experience in grant administration and project management. A detailed management plan has been prepared that assigns specific responsibilities and tasks to each person involved in the project. Critical meetings have been identified, progress meeting and report procedures have been outlined. The Uniform Tracking Sheet will be used by the grant administrator to track project expenditures. The town clerk will be responsible for project accounting and fiscal management.

Financial Assessment:

All necessary costs have been included, and most are well documented and appear to be reasonable and consistent with other projects of a similar nature. The operation and maintenance (O&M) cost seems a little high. It is not clear how the new O&M budget integrates into the existing O&M budget to ensure there is no overlap of required services. The funding strategy has outlined a strategy for the use of all funds such that all of the grant funds would be available about the same time.

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$82,406	\$82,406
Professional & Technical	\$0	\$0	\$192,543	\$192,543
Construction	\$ 100,000	\$0	\$958,987	\$1,058,987
Total	\$100,000	\$0	\$1,233,936	\$1,333,936

Benefit Assessment:

The proposed project will eliminate a source of riverbank erosion (lagoon leakage) and allow the bank to heal itself and thereby improve land and water. A small amount of riparian habitat would be improved. The proposed project will eliminate the use of an unstable lagoon embankment and eliminate the risk of catastrophic failure of the lagoon and associated flood damage to river banks, the streambed and water quality. Reduced erosion improves water quality and thereby improves, preserves and protects renewable resources. Elimination of lagoon leakage improves and protects groundwater and surface water quality. Increased treatment efficiency improves wastewater effluent quality and improves surface water quality. Elimination of lift station surcharging and associated raw sewage discharge to the river improves water quality and public health.

Environmental Evaluation:

No adverse environmental impacts are expected. The project will have a net positive impact on the environment by eliminating wastewater leakage from the lagoons and eliminating the raw sewage overflows at the lift station. This will eliminate groundwater and surface water pollution. Treatment efficiency will be improved, which will also reduce surface water pollution. There will be short-term negative aspects during construction due to noise, dust, and stormwater run-off, which can all be mitigated.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 27

Applicant Name: Park City County Water and Sewer District
Project Name: Wastewater System Improvements

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 500,000 Treasure State Endowment Program Grant
\$ 347,340 DEQ State Revolving Fund Loan
\$ 10,000 EPA T.A. Grant
\$ 10,000 Community Development Block Grant T.A. Grant
\$ 500,000 Community Development Block Grant
\$ 115,850 Project Sponsor

Total Project Cost: \$1,583,190

Project Abstract: (Prepared and submitted by applicant.)

The wastewater system in Park City consists of conventional gravity collection mains, a dual suction lift pump station located in the center of town, a short length of force main, approximately 4,000 lineal feet of 10-inch diameter outfall pipe, and a quasi-two-cell lagoon with discharge to a drainage ditch (Vandenberg

Drain) that eventually flows into the Yellowstone River. The system was designed and constructed in 1968 to accommodate approximately 450 people. The wastewater facility was owned and operated by Stillwater County until early 1998 when Park City formed a Water and Sewer District that took over the ownership and operation of the facility. The district imposed a moratorium on new sewer hook-ups shortly after assuming ownership of the system in an effort to address the trend of effluent permit violations.

The primary problems facing the Park City wastewater treatment facility are related to existing performance, facility capacity, structural/physical problems, and community growth. Since the fall of 1998, there has been a self-imposed moratorium on new hook-ups to the system. Current residential population is approximately 830 people, but the wastewater facility was designed to handle approximately 450. The wastewater system is beyond its capacity and the moratorium is inhibiting growth in Park City. An evaluation of the existing lagoon shows that it is too small, detention time is insufficient, and system hydraulics are inhibiting treatment capabilities, even at existing flows. The reduced detention times and poor hydraulics contribute to water quality permit violations. A mass-balance found that the lagoon also has leakage at roughly ten times the allowable standard. Furthermore, the Department of Environmental Quality (DEQ) has begun the process of classifying the Vandenberg Drain as state water. The Vandenberg drain currently carries Park City's effluent to the Yellowstone River. This will necessitate specific ammonia and fecal coliform limitations that the existing Park City facility cannot meet. The district has no choice but to implement improvements to the wastewater facility. Less critical problems were also identified with the district's main lift station located in the center of town.

Park City County Water and Sewer District plans to address the existing problems by constructing a new wastewater treatment system. The improvements will include a new lift station at the treatment site, a 3-cell aerated lagoon to accommodate existing users and a reasonable growth rate. Discharge will be directed to bypass the Vandenberg Ditch via a new 1.2-mile conveyance line directly to the Yellowstone River. This new discharge strategy is in response to the district's and DEQ's requests to remove Park City's effluent discharge from the ditch, and will allow the district to comply with the proposed classification of the Vandenberg Ditch.

Technical Assessment:

Project Background:

Park City's existing wastewater facility was owned and operated by Stillwater County until early 1998, when the Park City County Water and Sewer District was formed and took over ownership and operation of the facility. The system, originally designed and constructed in 1968, was sized to serve 450 people, or about 380 people fewer than the current population of 830. The wastewater system is undersized and cannot effectively treat wastewater, resulting in water quality permit violations. It has also been discovered that the lagoon leaks roughly ten times the amount allowed by DEQ. Finally, the treatment facility's discharge point, the Vandenberg Drain, will soon be classified as state water, and it is unlikely that the treatment facility will be able to meet future effluent standards even after treatment improvements are made. To address these issues, the district proposes to construct a new wastewater treatment facility consisting of a mechanically aerated lagoon with discharge directly to the Yellowstone River.

Technical Approach:

The goals of this project are to eliminate the discharge of all partially treated wastewater to the Vandenberg Drain and to the groundwater by designing and constructing a new community treatment facility. To achieve this goal, a facility plan was developed that identified and evaluated many treatment alternatives, ranging from an aerated lagoon system followed by wetlands to a facultative lagoon system with effluent disposal through spray irrigation. Treatment systems were evaluated in detail. The recommended alternative is to install aerated lagoons with direct discharge to the Yellowstone River in lieu of the existing discharge point (Vandenberg Drain). This system achieves a high level of treatment at a relatively low capital and operating cost.

Some of the concerns noted by reviewers include the district's ability to meet its MPDES discharge permit during construction, and DEQ's acceptance of this plan. When presented with this concern, DEQ personnel agreed that there could be a problem and the applicant would have to prepare a plan for DEQ approval before construction began. Though this concern may not delay or prevent the project from being implemented, it could add significantly to project costs. Another concern noted is that of sludge removal. Reviewers commented that alternatives need to be explored for sludge removal and disposal.

The selected alternative would achieve compliance with all state and federal standards. The proposed schedule is to begin design of the facilities in late 2001 and initiate construction in May 2002, with completion and start-up later that fall.

Project Management:

The applicant has prepared a detailed project management and implementation plan. The applicant has identified the staff required for successful project management. Staff include the district manager, the district clerk, a professional administrative consultant and a design consultant. There appears to be adequate funding in the project budget to effectively manage the project. \$3,000 has been budgeted for personnel costs and \$23,000 for professional services related to project management. The applicant has prepared a comprehensive wastewater facility plan in which the public had the opportunity to participate.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$85,000	\$85,000
Professional & Technical	\$0	\$0	\$221,150	\$221,150
Construction	\$100,000	\$0	\$1,177,040	\$1,277,040
Total	\$100,000	\$0	\$1,483,190	\$1,583,190

The project budget presented in the application appears to be well documented, complete and reasonable. Construction costs are based on best engineering judgment and past projects for technical development at the preliminary engineering report level.

The Park City County Water and Sewer District currently provides service to 322 residential and 17 commercial hookups and an estimated population of 830. The application proposes to fund wastewater improvements using \$1.12 million in grants from the Montana Department of Commerce Treasure State Endowment (TSEP) and Community Development Block Grant (CDBG) programs, the Montana Department of Natural Resources and Conservation Renewable Resource Grant and Loan (DNRC RRGL) Program, and from an Advance of Allowance grant from the Montana Department of Environmental Quality State Revolving Fund (DEQ SRF) program. The applicant will also pursue a \$0.276 million dollar loan from the DEQ SRF program and will use \$0.116 million from the district's own reserve account. With this proposed funding package, the district's monthly residential rate will increase from \$14.00 to \$24.83.

Not all funding for this project has been secured. The applicant submitted applications for grants from the Treasure State Endowment Program and DNRC RRGL programs in May 2000, but will not be able to submit an application to the CDBG program until May 2001 because CDBG funds must be expended within 6 months of being approved. The DEQ SRF Program operates on an open cycle. Should one or more of the grant applications be unsuccessful, the applicant could borrow the additional money from either the U.S. Department of Agriculture Rural Development (RD) program or from the DEQ SRF program. As a result, there is a high likelihood that the applicant will be able to secure matching funds sufficient to complete the project.

Benefit Assessment:

The project will eliminate local groundwater contamination and contamination of the Yellowstone River. Resource enhancement will result because 7.7 million gallons/year of partially treated wastewater

currently discharged to the groundwater will be eliminated. Citizens will directly benefit through protection of their current source of potable water and elimination of the potential contact with partially treated wastewater in nearby drainage areas and the Yellowstone River.

The benefits of the project include elimination of groundwater and surface water contamination. The benefits will be long-term and will be quantified through continued groundwater monitoring and the measurement of reduced nitrate concentrations and bacterial levels in nearby private and public wells. Public support for the project is significant.

Environmental Evaluation:

Currently wastewater within the district is disposed of by an inadequate and undersized wastewater treatment facility. Because of the poor condition of the facility, wastewater is inadequately treated before being discharged into the Yellowstone River, resulting in water quality permit violations. Partially treated, undisinfected wastewater is also leaking from the wastewater treatment lagoons at about ten times the amount currently allowed by DEQ. The proposed project, which consists of a new wastewater treatment facility, will replace the existing failing system. This project is expected to result in an overall, long-term, positive environmental impact. There will be short-term negative aspects during construction due to noise, dust and stormwater run-off, all of which can largely be mitigated. The only long-term potentially negative aspect is the possibility of periodic odors from the lagoons, but the wastewater treatment facility has been sited such that the odors will impact a minimal amount of residents.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 28

Applicant Name: Lower Willow Creek Drainage District
Project Name: Lower Willow Creek Dam Rehabilitation

Amount Requested: \$ 100,000 Grant
\$ 1,350,000 Loan

Amount Recommended: \$ 100,000 Grant
\$ 1,350,000 Loan

Other Funding Sources: \$ 3,000,000 USDA/NRCS Aging Infrastructure Funds
\$ 14,200 NRCS Technical Assistance

Total Project Cost: \$ 4,364,200

Project Abstract: (Prepared and submitted by applicant.)

Lower Willow Creek Dam is a high-hazard dam, which was constructed in 1962. It is located in Granite County near the town of Hall, Montana. It provides irrigation water to fourteen ranches on 6,745 acres. The first signs of abutment seepage from the dam were first observed in 1981.

In 1996 an intensive-monitoring program was initiated after an inspection of the dam by Natural Resources and Conservation Service (NRCS) engineering staff, and staff of the Dam Safety Section of the Montana Department of Natural Resources and Conservation.

In 1999, NRCS requested the appointment of a National NRCS investigation committee. The committee reviewed all data and made detailed recommendations, which is the basis for this Renewable Resource Grant and Loan application.

Lower Willow Creek Dam Rehabilitation is a three-phase project. Renewable Resources grant funds are being requested to perform an intensive engineering monitoring analysis and data gathering to monitor the seepage and internal erosion from the dam. This monitoring will enable the district to lower the cost of rehabilitation by identifying the source of the seepage, and provide monitoring activities for safe operation of the dam.

Final design costs and portions of the rehabilitation costs are being sought through the NRCS Aging Infrastructure Program. Renewable Resource loan funds would provide the districts share of final rehabilitation costs.

The benefits of this project include:

The fourteen ranches served by the Willow Creek Dam are dependent on the irrigation water provided by the project. Loss of this dam would mean the loss of irrigation water for 6,745 acres.

The Montana Department of Natural Resources and Conservation classifies Lower Willow Creek Dam as a high-hazard dam. Failure to address the seepage presents a safety issue for those communities and residents below the dam.

Technical Assessment:

Project Background:

Lower Willow Creek Dam is located about six miles southwest of the town of Hall, in Granite County. Lower Willow Creek drains the John Long Mountains, a small range lying between the Sapphire Range to the west and the Flint Creek Valley to the east. The reservoir is located one mile downstream from the confluence of the north and south forks of Lower Willow Creek.

Although the dam has been known to have seepage surfacing on its downstream face since 1981, the volume of seepage first became alarming in 1996. Since that time, seepage flow monitoring by the Natural Resource Conservation Service (NRCS) indicates that the seepage situation is becoming more critical. Measured seepage increased by about 20 percent between 1996 and 1998, and the quantity of fines measured in the seepage indicates that soil is being removed from the embankment or from fractures in the abutment rock. NRCS considers the immediate risk of sudden failure of the dam to be low. The DNRC Dam Safety Section has classified the dam as high-hazard, implying that there is a potential for loss of life if the dam were to fail.

Technical Approach:

The application discusses efforts made in the past to study the problem and identify its cause. It is the recommendation of both DNRC and NRCS that an additional two to four years of monitoring be conducted to adequately define the source and potential consequences of the seepage, and then proceed with the design and construction of repairs or modifications.

As proposed, the project has been phased to include two to four years of additional monitoring prior to the design and construction of modifications or repairs. This first phase will include the installation of additional monitoring wells, automated monitoring and data recording equipment, the development of an updated monitoring plan, and the installation of a remote snowpack monitoring site to better manage the reservoir pool during the seepage monitoring phase of the project and in the future. Phase 1 of the project is to be funded by this grant.

Phase 2 will consist of the procurement of a consulting engineer to analyze the data collected to date and during the next two to four years, consider feasible alternatives and prepare cost estimates, and advise the district in selecting the preferred alternative for rehabilitating the dam.

Phase 3, to be implemented by April 2004, will consist of the design and actual construction of modifications to the dam as determined in Phase 2.

The proposed schedule is reasonable as long as seepage does not significantly increase. The data suggest, however, that further increases should be anticipated or at least considered. Delays in funding from this program or from the USDA/NRCS Aging Infrastructure Program could result in emergency repairs being needed prior to project implementation.

Project Management:

As proposed, the project will be managed by the Lower Willow Creek Drainage District, working closely with the Granite County Conservation District, DNRC and NRCS. This grant application includes funding for grant administration by the conservation district.

Technical review and oversight will be the responsibility of NRCS working with the DNRC Dam Safety Section. Technical responsibilities will include assistance in the selection of preferred alternatives, the design of the rehabilitation project, the preparation of bid documents and the actual bid and construction process.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$8,000	\$	\$	\$ 8,000
Professional & Technical	\$14,000	\$	\$114,200	\$128,200
Construction	\$78,000	\$1,350,000	\$1,950,000	\$ 3,378,000
Total	\$100,000	\$1,350,000	\$2,064,200	\$ 3,514,200

The project has been organized into three phases consisting of continued monitoring, data analysis and alternative selection, and design/construction. The grant being applied for in this application will be to fund Phase 1, continued monitoring and the installation of monitoring and recording equipment. The budget for this phase is adequately justified in the application. These funds may also be used for emergency repairs.

At the time of this application, and until Phase 1 is complete, it is not possible to accurately estimate the costs associated with subsequent phases of the project, particularly Phase 3 - design and construction. It is unlikely that total costs will exceed the funding scenario presented. Engineering costs typically exceed 10 percent of the total project cost, however, engineering costs presented in the table above are significantly low.

Water stored by Lower Willow Creek Dam provides irrigation to 6,745 acres. Fourteen users currently pay \$3.65 per acre for water provided by this system. Ability-to-pay data presented in the application indicates that \$12.16 per acre is the maximum assessment that should be considered for the district. At 4.5 percent, the debt service on a \$1,350,000 loan for 20 years would be \$15.39. Assuming \$3.65 per acre is required to operate the district, to maintain assessments at \$12.16 per acre would limit debt service on this new loan to \$8.51 per acre, or \$57,400 annually. To maintain this annual debt service, and assuming a 4.5 percent loan for 30 years, the maximum loan amount would be \$935,000. The maximum 3 percent loan for 30 years would be \$1,125,000.

Benefit Assessment:

Assuming the ability of Lower Willow Creek Dam to maintain reliable service is threatened by the seepage problems presented in this application, repair of the dam will result in a significant contribution to water management and conservation and will maintain existing uses that benefit agriculture, wildlife and the general public. Classified as high-hazard, it is imperative that the dam be maintained and operated safely.

Environmental Evaluation:

Other than short-term impacts during construction, the environment will benefit from this project. In addition to the benefit of public safety, Lower Willow Creek Reservoir will continue to provide flood control, irrigation water storage, fish and wildlife habitat, and recreation. Short-term impacts should be minimized during construction by the installation of silt barriers, dust and noise abatement, and care in the maintenance and operation of construction equipment.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

The district also requested a loan authorization in the amount of \$1,350,000. The proceeds from this loan, in combination with federal grant money, will be used to design, bid and construct repairs or modifications to Lower Willow Creek Dam to alleviate a potentially critical and dangerous seepage problem that is occurring. The cost estimate for design and construction is unknown at this time because the scope of work has not been determined. A \$1,350,000 loan will require an interest rate of 1.65 percent if Operation and Maintenance costs remain as they are at \$3.65 per acre and the maximum assessment is limited to \$12.16 per acre. Because of its status as a high-hazard dam, and because of the economic and environmental benefits that this facility provides not only to the ranchers involved but also to the general public, DNRC recommends that the district be authorized a loan in the amount of \$1,350,000. Depending on the actual amount borrowed, the interest rate will be determined at the time of loan closing to maintain acreage assessments within the district's ability to pay. As presented in this application, that amount is \$12.16 per acre, but may be re-evaluated prior to loan closing.

Project No. 29

Applicant Name: City of Deer Lodge
Project Name: Clark Fork River Water Quality Protection Project

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 100,000	
Other Funding Sources:	<u>\$ 100,000</u>	Project Sponsor
Total Project Cost:	\$ 200,000	

Project Abstract: (Prepared and submitted by applicant.)

The City of Deer Lodge straddles the Clark Fork River. The wastewater from the area west of the river is collected in a gravity system and accumulates in a manhole located on the west bank of the Clark Fork River about 200 feet north of the Milwaukee Avenue Bridge. From this manhole, it crosses under the Clark Fork River in an 8-inch steel pipe a distance of 120 feet to a sewage lift station on the east bank of the river. From this lift station the sewage is pumped northerly 2,100 feet through a 6-inch steel force main to a manhole in the gravity system. The river crossing, sewage lift station and force main were constructed in 1960.

The river-crossing pipe is in very poor condition. In 1998, a camera inspection of the 8-inch steel main across the river was video taped. The tape shows the line to have many cracks, which are infiltrated when the groundwater elevation exceeds the pipe elevation. Also, the pipeline seems to be "bellied" with most of the pipe likely lower in the middle than at either end. Most of the 120 feet of pipe has water standing to full pipe depth, which is then overwhelmed when flows during high water periods occur. A manhole was constructed on the west side of the river. This manhole has an overflow pipe to the river.

On occasion, during high-water periods, this overflow pipe has discharged untreated sewage into the Clark Fork River.

The lift station is a wet well/dry pit type of concrete construction with duplexed line-shaft and 7.5 horsepower pumps located below grade in a vault. The motors and controls are above in a small building. The pump does not have emergency generator power. The State of Montana's Water Quality Bulletin-2 standards, require the sewage pumping station structures and electrical and mechanical equipment be protected from physical damage by the 100-year flood. Lift stations should also remain *fully* operational and accessible during a 25-year flood. Deer Lodge's existing lift station meets neither of these criteria. The existing lift station is nearing capacity. It is also reaching the end of its design life, and does not meet the requirements for operation in a floodplain.

Considering the condition of the river crossing line, it possesses a genuine threat of rupturing and releasing raw sewage into the Clark Fork River. The existing river crossing and lift station threatens the water quality of the Clark Fork River and needs to be replaced.

Technical Assessment:

Project Background:

The City of Deer Lodge is located in Powell County in southwestern Montana. The current city population is about 3,500. It is projected that the population will increase 9 percent over the next 20 years. The city is located adjacent to Interstate 90 and is bisected by the Clark Fork River. The entire community is served by a wastewater collection system that collects and transports sewage to a system of lagoons located one mile north of the community. The collection system includes a badly deteriorated 8-inch pipe that crosses the river between a manhole and a lift station. This portion of the collection system was constructed in 1960.

The pipe under the river is in very poor condition, as evidenced by a video camera inspection performed in 1998. The line is cracked, allowing infiltration to occur, which contributes to a reduced capacity for the system. Additionally, the line sags at mid-stream and operates as an inverted siphon, also reducing system capacity and reliability.

The lift station is a wet well/dry pit facility, and does not have a standby emergency generator. Additionally, the structure lies within the 100-year floodplain and could not function during the 25-year flood event as required by Department of Environmental Quality (DEQ) design standards.

Technical Approach:

The proposed project goals are to protect the Clark Fork River from a potential raw sewage spill and to provide the community of Deer Lodge with a safe and reliable wastewater collection system that will function during a flood or power outage. The current lift station is nearing capacity, and growth in the service area will exceed the station's ability to handle the increased flows. The pipe beneath the river is badly deteriorated, has a limited capacity and is the major source of infiltration for the collection system.

The project has considered several alternatives and has determined that, in addition to replacing the pipe beneath the river, the manhole on the west side of the river and the existing lift station should also be replaced. Options for installing the pipe include open-cutting the river bed with the use of an earthen cofferdam, or boring under the channel and installing a casing pipe through which the new carrier pipe would be inserted.

The project will require a number of state and federal permits that will necessitate an environmental assessment. To prevent the disturbance of the river bed, contaminated with mine waste for over 100 years, the option of boring instead of open-cutting should be investigated in detail. Construction lasting approximately 45 days is tentatively scheduled for late summer 2001.

Project Management:

The City of Deer Lodge Department of Public Works will coordinate with an engineering consultant in the construction management of this project. The project will be designed in accordance with current standards including DEQ Circular 2, Design Standards for Wastewater Facilities, by a registered professional engineer. The public will be informed of the project and will have the opportunity to voice any concerns as part of the environmental review process. State of Montana procurement statutes will be followed in the selection of an engineer and during the bidding and contracting phase of the project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$	\$	\$ 6,800	\$ 6,800
Professional & Technical	\$ 15,000	\$	\$ 8,200	\$ 23,200
Construction	\$ 85,000	\$	\$ 85,000	\$170,000
Total	\$100,000	\$	\$100,000	\$200,000

The project consists of the design and construction of upgrades to the wastewater collection system for the City of Deer Lodge. Included are the replacement of a large manhole, a gravity sewer main across the Clark Fork River and an existing sewage lift station. The total estimated cost for the project is \$200,000 as shown in the table above. The remainder of the cost is to be provided by a loan. The proposed loan is a commercial loan at 5 percent for 10 years. Also available to the community is the Drinking Water State Revolving Fund Loan Program offering funds at 4 percent for up to 20 years.

The average residential water user in Deer Lodge currently pays \$7.97 per month. Borrowing the entire \$200,000 required for this project at 4 percent for 20 years would increase this average by \$ 0.97 per month. A ten-year loan would raise the average monthly charge by \$1.63. A \$100,000 loan at 4 percent for ten years would raise the average monthly rate by \$ 0.81.

The project's estimated cost includes a 10 percent contingency, adequate for a project of this scope. The selected alternative is to install an earthen cofferdam and trench across the Clark Fork River. To bore under the river channel would cost an estimated additional \$22,400. It is recommended that this method be carefully considered because open-cutting would disturb the river channel, which is contaminated with over a century of mine waste.

Benefit Assessment:

Montana law requires that water policy consider the general welfare of the people of the state. Deer Lodge's improvements to its lift station and the replacement of its river crossing will meet this objective. The Clark Fork River has been subject to environmental abuse for many years, and efforts are currently underway to mitigate some of the damage that has occurred. The river has been polluted with metals, sediment and nutrients. The consequences are an impaired fishery, excessive algae and contaminated public water supplies.

This project will provide a public benefit not only by ensuring a dependable wastewater collection system for the City of Deer Lodge, but also by protecting a major river system and its downstream users and inhabitants from an impending and very adverse environmental impact should the existing river crossing ever fail and release raw sewage into the stream.

Environmental Evaluation:

With the exception of the short-term impacts always associated with heavy construction, this project will provide positive resource benefits to the citizens of Deer Lodge, the Clark Fork River, and all of its users downstream. The preferred alternative should be based on a very thorough evaluation of open-cutting versus drilling or boring as a method of pipe installation. To bore under the channel would cost an additional \$22,400. But open-cutting would almost certainly disturb contaminants in the river bed, with potentially adverse effects to the river and its fishery.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of scope of work, administration, and budget.

Project No. 30

Applicant Name: Lewis and Clark Conservation District
Project Name: Willow Creek Water Quality Improvement Project

Amount Requested:	\$ 98,636	Grant
Amount Recommended:	\$ 98,636	
Other Funding Sources:	\$ 3,500	Lewis and Clark Conservation District
	\$ 74,000	Greenfields Irrigation District
	\$ 1,800	NRCS
	<u>\$ 16,700</u>	Willow Creek Task Force
Total Project Cost:	\$194,636	

Project Abstract: (Prepared and submitted by applicant.)

The Willow Creek water supply system near Augusta, Montana, has experienced significant degradation and manipulation for the past 50 years. Currently, the system has a major erosion problem from a variety of reasons which impact the Sun River Game Range, private property, and Willow Creek Reservoir. This erosion through the game range resembles a miniature Grand Canyon as it cuts through the fine soils. The impacts include loss of property and wildlife habitat, water quality degradation, fisheries impacts, and aesthetic impacts.

Recently, a Willow Creek Task Force was established by the Lewis & Clark Conservation District (LCCD) at the request of several landowners and key players in the area. After several studies and on-site review, the group is now ready to implement a game plan.

The game plan will include several phases and actions to achieve the overall goal of a Willow Creek erosion and water quality improvement project. Phase 1 will be to work on the worst erosion problem in the Sun River Game Range. Phase 2 will be to resolve the erosion problem on the private lands.

The goals of this project are: Willow Creek erosion and water quality improvements.

The objectives to reach this goal are: Stabilize the banks of the Willow Creek water supply system.

Technical Assessment:**Project Background:**

The Willow Creek system is located near Augusta, along the Rocky Mountain front near the mouth of the Sun River. This area has experienced degradation and manipulation over the past 50 years. The system has a major erosion problem that impacts the Sun River Wildlife Management Area, private property and Willow Creek Reservoir. The Willow Creek Task force was established by LCCD at the request of several landowners and key stakeholders in the area. After several studies and on-site review, the group, along with LCCD, has developed goals and objectives for improvements.

Technical Approach:

The first goal of the project is to reduce erosion in the Willow Creek system. The objective is to stabilize banks in the game range segment through the following tasks: haul rock to sites, install structures to slow erosion and revegetate banks. Rock will be transported to the sites, and longitudinal peaked stone toe protection, barbs, and headcut stabilization structures will be constructed. Rubber wheeled trucks or loaders will be used on the top bank to deliver rock to a tracked excavator. Existing bank vegetation will be protected. In-kind services will construct a new access road, establish the new stock rock pile, and construct ramps from the bottom of the gorge to the top of the bank for construction access in two to four locations.

The second goal is to improve water quality in the Sun River. The objective is to reduce sources of erosion originating in Willow Creek through the accomplishment of Goal 1 and to monitor water quality in the Sun River and its tributaries.

Other alternatives considered included no action, installing a lined canal around the canyon area, and/or eliminating irrigation. The evaluation of these alternatives determined them to be ineffective or too costly, either due to direct construction costs, or due to lost local economic value. More consideration of alternate ways to complete the desired construction activities would have been useful.

The construction schedule outlined in the application proposes incremental phases beginning in 2001 and ending in 2003. Monitoring of water quality will occur beyond the construction phase. The Sun River Wildlife Management Area proposes a limit on the timing of construction to reduce potential conflict with wintering elk and/or recreation use. The proposed construction schedule would be May 15 through October 15.

Reviewers expressed concern that a new bladed road would result in the introduction and spread of weeds and potential erosion. A suggestion was made to look at an alternate point of entry, possibly from the eastern neighbor, which may not require a bladed road. Details were not provided on plants to be used for revegetation. The Sun River Wildlife Management Area has requested an opportunity to review, comment on, and approve seed mixtures to be used.

The district has the necessary easements to accomplish the proposed activities and improvements.

Project Management:

The project will be coordinated primarily by LCCD and the Willow Creek Task Group will coordinate the project. LCCD will be responsible for administration of the project. The Natural Resource Conservation Service (NRCS) and U.S. Bureau of Reclamation (USBR) will provide additional guidance. Further coordination needs to be completed with the Sun River Wildlife Management Area to ensure the project is compatible with its management objectives.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$ 1,000	\$	\$11,000	\$12,000
Professional & Technical	\$	\$	\$10,600	\$10,600
Construction	\$97,636	\$	\$74,400	\$172,036
Total	\$98,636	\$	\$96,000	\$194,636

The focus of this project is construction work to stabilize banks and reduce erosion sources. The labor and professional services are provided by Greenfields Irrigation District, NRCS and Willow Creek Task Force and are not to be paid for out of the grant money. The administration costs will be for direct contract administration. The administration cost was estimated from administering existing work within the Sun River Watershed. Professional and technical cost estimates are for professionals within agencies with a rate of \$20/hr. Services are committed for a two-year period. Construction costs were estimated from similar work on Muddy Creek in the Sun River drainage. Detailed cost estimates were not

completed for the other alternatives because cursory estimates showed them to be more costly. Greenfields Irrigation District will incur future maintenance costs.

Benefit Assessment:

The primary benefits of this project will be the improvement of water quality and the conservation of soil in Willow Creek Reservoir and basin. Water quantity will also be conserved as a result of the project. These long-term improvements will enhance fisheries, recreational use, waterfowl habitat and will improve drinking water for area residents and reduce maintenance costs of irrigation systems. About 650 residents and farmers will directly benefit from this project. Over 100,000 acres in the basin will benefit.

Simultaneous to this project, new water measurement devices are being installed by LCCD and NRCS. These will allow for long-term monitoring.

This project also fits within the larger Sun River Watershed improvement area, which is the focus of three conservation districts (including LCCD) and 34 agencies and organizations. The Willow Creek Project and the larger Sun River Project are emphasizing teamwork and stakeholder participation, which will provide long-term community benefits in these and future projects.

Environmental Evaluation:

There are no long-term adverse environmental impacts resulting from this project if the district works closely with stakeholders to prevent the spread of weeds through new access points.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 31

Applicant Name: Town of Hot Springs
Project Name: Water System Improvements Project

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 100,000	
Other Funding Sources:	\$ 500,000	TSEP Grant
	\$ 400,000	Community Development Block Grant Grant
	\$ 1,326,336	RUS Grant
	\$ 491,255	RUS Loan
	<u>\$ 6,000</u>	Local Reserves
Total Project Cost:	\$ 2,823,591	

Project Abstract: (Prepared and submitted by applicant.)

The first portions of Hot Spring's water system were installed in 1933. The water flowed from Hot Springs Creek through wood stave piping to the homes and businesses. Wells drilled in 1939, 1963 and 1978 replaced the surface source, and the wooden pipes were traded for various diameters of cast iron and galvanized pipe about 40 years ago. The last major upgrade was completed in 1987 when some of the mains were replaced, and two of the wells were improved. The town has had one detection of coliforms in 1997 that resulted in a DEQ imposed boil order. The source of the contamination was never determined. As a result, the town commissioned a water study that has identified several serious deficiencies in the system. The deficiencies identified in the study include:

1. water hammer problems with the submersible pumps
2. worn pumps and lack of adequate disinfection equipment
3. aging and an inadequate distribution of fire hydrants
4. 10,600 feet of undersized (2-inch and 4-inch) distribution mains
5. leaking distribution lines (30 percent of the water pumped is lost to leaks)
6. aging galvanized service lines that are also contributing to the leaking problem
7. aged cast iron pipe, much of it installed in the late 1930s (140 breaks in 10 years)
8. dead end mains
9. inadequate isolation valving
10. negative water pressure in some parts of town when using fire hydrants

The water system has a high potential for contamination problems due to continual leaks, exposure of the system to impurity during repairs, the possibility of tainted inflows due to negative pressure problems and dead-end distribution lines.

The engineer proposed three phases of rehabilitation to repair the deficiencies in the system.

Phase I should begin as soon as possible and will concentrate on the distribution system by:

1. replacing all the galvanized services
2. replacing 25,700 feet of aging cast iron mains with appropriate PVC
3. installing 60 isolation valves
4. replacing or add 55 fire hydrants

Phase II can be delayed for several years and will focus on the supply system:

1. update control systems for the pumps
2. correct deficiencies in the well houses to adapt to disinfection requirements.
3. maintain the storage tank.

Phase III is for potential population growth and can be postponed until growth forces the system to expand.

Technical Assessment:

Project Background:

The Town of Hot Springs is located in western Montana about 30 miles east of Thompson Falls. The town has a population of about 566 residents and includes a school and a few businesses. The town is served by a community water system. The first portions of Hot Spring's water system were installed in 1933. The water flowed from Hot Springs Creek through wood stave piping to homes and businesses. Wells drilled in 1939, 1963, and 1978 replaced the surface source, and the wooden pipes were traded for various diameters of cast iron and galvanized pipe about 40 years ago. The last major upgrade was completed in 1987 when some of the mains were replaced, and two of the wells were improved. The Town had one detection of coliforms in 1997 that resulted in a DEQ imposed boil order. The source of the contamination was never determined. As a result, the Town commissioned a water study that has identified several deficiencies.

The deficiencies identified in the study include: aged distribution piping (much of it installed in the late 1930s) that has experienced about 140 breaks in the past ten years; loss of 30 percent of the water pumped into the system is lost due to leaks in the distribution piping and galvanized services; an undersized distribution system that does not allow for adequate fire protection; aging and inadequate distribution of fire hydrants; dead-end mains; inadequate isolation valving; and, negative water pressure in some parts of the system when using fire hydrants.

The water system has a high potential for contamination problems due to continual leaks, exposure of the system to impurity during repairs, the possibility of tainted inflows due to negative pressure problems, and

dead-end distribution lines. In addition, the leaks in the system result in inefficient use of the water and unnecessary pumping costs.

Technical Approach:

The goals of the project are to more efficiently use the water being pumped into the distribution system, and to reduce the public health and safety risks associated with a dilapidated distribution system. The specific objectives of the project are to reduce the amount of leakage in the distribution system, to reduce the risk of contamination due to exposure to impurities during repairs, to increase fire protection for the community, to eliminate negative pressures occasionally experienced in portions of the system, and to allow for future growth within the community. The objectives will be met by replacing a sizable portion of the distribution system with new adequately sized water mains, replacing services, and adding new isolation valves and fire hydrants.

A detailed evaluation of appropriate alternatives has been presented. The evaluation is adequate to support the selected alternative. The chosen alternative will use "open-cut" methods to install new distribution piping and services. This alternative was found to be the most cost-effective and feasible option and is the selected alternative. The selected alternative will solve all of the problems and meet all of the goals and objectives of the project.

Project Management:

The applicant has retained a professional consultant with experience in grant administration and project management. A detailed management plan has been prepared that assigns specific responsibilities and tasks to each person involved in the project. The town clerk will be responsible for project accounting and fiscal management.

Financial Assessment:

All necessary costs have been included, and most are well documented and appear to be reasonable and consistent with other projects of a similar nature. The funding strategy is designed so that all of the grant funds would be available about the same time.

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$107,000	\$107,000
Professional & Technical	\$0	\$0	\$469,786	\$469,786
Construction	\$100,000	\$0	\$2,146,805	\$2,246,805
Total	\$100,000	\$0	\$2,723,591	\$2,823,591

Benefit Assessment:

The proposed project will improve water-use efficiency by significantly reducing the amount of pumped water that is currently being lost due to severe leaking in the system. The project will reduce the demand on the aquifer underlying Hot Springs and will reduce the power demands of the pumps. Public safety will be enhanced by improved fire protection.

Environmental Evaluation:

Long-term adverse environmental impacts are not anticipated as a result of this project. Short-term disturbances such as noise, dust and vegetation disruption will likely occur during the construction period but should be tolerable if proper precautions are taken. Most disturbances will be in areas already impacted during original installations. The project has potential benefits due to improved water-use efficiency, improved public health and safety, improved fire protection and increased water system reliability.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 32

Applicant Name: Wisdom Sewer District

Project Name: Wastewater System Improvements Project

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 13,500 INTERCAP Loan
\$ 235,120 Community Development Block Grant
\$ 201,000 SRF Loan

Total Project Cost: \$ 549,620

Project Abstract: (Prepared and submitted by applicant.)

The original sewer system, built in 1973, consists of conventional gravity sewers, 2 lift stations, a force main to the lagoon site, and two 1.5-acre containment lagoons. A 1995 inspection by the DEQ Water Quality Division of the wastewater lagoon showed inadequate storage capacity under current influent flows. Neil Consultants was subsequently hired to prepare the Draft Facility Plan. DEQ issued a Violation Letter 3-31-99 to the Wisdom Sewer District. The district has recently repaired the leaks in its distribution lines at a cost of \$16,000 and is moving forward to develop the Final Facility Plan and secure construction financing.

The Wisdom Wastewater Facility has the following deficiencies:

1. it is undersized to handle current flows
2. it was designed as a total retention facility, but overflow discharges have occurred
3. losses to the system also occur through leakage out the bottom of the lagoons

There is a potential for contamination of the groundwater that serves as the source of the community's water supply. In addition, discharges from the system are onto the floodplain of the Big Hole River and have the potential to contaminate surface water as well.

Final project design will be complete by Spring 2001. The board has chosen Alternative #4 from the Draft Facility Plan as its preferred alternative. This calls for the construction of facultative lagoons with infiltration cells. The final design will, in all likelihood, modify the original system of total retention to a system more reflective of what is presently occurring with the large discharge of partially treated wastewater to the groundwater. It will be designed to better address current standards and will provide good treatment of wastewater without excess leakage losses.

Technical Assessment:

Project Background:

The community of Wisdom is located in southwest Montana along the upper Big Hole River. The town lies in a broad, high mountain valley bordered by the Pioneer Mountains to the east and the Beaverhead Mountains to the west.

The community formed the Wisdom Sewer District in 1971 with the purpose of evaluating and eventually constructing a centralized wastewater system. The existing system, constructed in 1973, consists of a gravity collection system, two lift stations, a force main from the main lift station to the lagoon, and two 1.5-acre lagoon cells that were originally designed to be total containment cells.

Two inspections by DEQ since 1995 have resulted in violation letters to the district, primarily for discharge violations. It has been determined that the existing system:

1. is undersized to handle current flows
2. is unable to function as a total containment facility due to climate and inadequate surface area to provide adequate evaporative action
3. allows untreated wastewater to infiltrate to the groundwater due to ineffective lagoon cell lining

In 1996, an engineering firm was hired to perform a preliminary engineering evaluation of the existing system and produce a facility plan that would address deficiencies and propose improvements. A draft facility was submitted to DEQ for review and approval in 1997. DEQ comments and concerns related to the draft have not been addressed. Still in draft form, that document has been submitted as technical backup to this application.

Technical Approach:

The proposed project goal is to design and construct improvements to Wisdom's existing lagoon facility to bring the system into compliance with state and federal requirements and to provide a system that protects and enhances the aquifer and the Big Hole River.

The facility plan written in 1997 considered several alternatives, the most feasible of which were to add treatment cells to the existing facility and either discharge treated effluent to adjacent land via a spray irrigation system or to the aquifer via infiltration. The least-cost alternative is the infiltration option, and this is the alternative proposed as the preferred alternative by the district in this application.

The project will require further investigation into both groundwater and floodplain issues prior to design. It is probable that the existing facility and the proposed improvements lie within the 100-year floodplain. Layout and design can cope with this condition; however, it is uncertain as to whether, with seasonal flooding and high groundwater, infiltration as a method of effluent disposal will be operationally or environmentally acceptable.

Project Management:

The Wisdom Sewer District will be the administrator of this project. A professional engineer will be selected and hired to continue with preliminary engineering required for preparation of a final facility plan Preliminary Engineering Report (PER). Following approval of the PER by DEQ, the engineer will be responsible for the design, bid evaluation and construction management of the project. Actual construction of the project will be performed by a contractor selected in accordance with local government procurement requirements.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$ 4,000	\$0	\$ 30,420	\$ 34,420
Professional & Technical	\$ 12,600	\$0	\$ 57,900	\$ 70,500
Construction	\$ 83,400	\$0	\$361,300	\$444,700
Total	\$100,000	\$0	\$449,620	\$549,620

The costs associated with this project are based on information prepared in 1996 and 1997. Construction is scheduled for 2002. Consequently, construction cost estimates need to be updated to reflect projected costs. Additionally, it is uncertain as to whether the preferred alternative presented in this application will,

in fact, be operationally or environmentally acceptable. If it is not, land application and associated additional costs may be required.

Residential customers currently pay \$14.50 per month for sewer service. As proposed, this project will result in an increase to \$33.86 per month. The target rate for the community is \$15.50 per month based on a 1990 median household income of \$23,250.

The above projected rate is based on the district's receipt of a Community Development Block Grant (CDBG) in the amount of \$235,120. Application for that grant will be made in the spring of 2001. It is recommended that the district seek additional grant funding to keep the project affordable. The maximum amount currently available through the CDBG Program is \$500,000. That program requires a 25 percent non-grant match on the part of the district. This, in combination with a 3 or 4 percent SRF loan with a 20-year term for 25 percent of the total cost of the project, would result in a more affordable project.

Benefit Assessment:

The primary resource benefits afforded by this project are the protection of both groundwater and surface water resources. The draft facility plan submitted with the application states that about 50 percent of the total flow to the lagoon is lost through infiltration to groundwater. This outflow consists of partially treated or, in the extreme case, untreated sewage. Additionally, due to undersizing, the lagoon has been observed discharging untreated wastewater to adjacent land and eventually to the Big Hole River during two inspections by DEQ in 1995 and 2000. These violations have resulted in violation letters, the most recent on June 28, 2000. Because the primary sources of potable water in Wisdom are shallow wells, it is a serious health hazard to allow continued contamination of the aquifer with untreated wastewater.

The Big Hole River, its fishery and other resources are of value, not only to the residents of Wisdom and Beaverhead County, but to the other citizens of Montana as well. Agriculture depends on Big Hole flows for the river's entire length. Butte relies on the Big Hole River as a source of potable water. To allow it to be polluted with untreated sewage has potentially serious consequences.

The application for this grant is supported by letters from private businesses and citizens, by sportsmen, and by local, state, and federal governmental agencies. Implementation of the project will result in multiple benefits for the community of Wisdom and all who rely on the surface and ground waters in the Big Hole drainage, including livestock and agriculture.

Environmental Evaluation:

Other than short-term impacts during construction, this project will benefit the environment. The project will result in presumably minor adverse impacts to the groundwater aquifer in that treated wastewater will be introduced. The degree of adverse impacts that will be corrected by this project are very significant. The current wastewater treatment lagoon is overloaded. It overflows and leaks and could fail from dike saturation. Preventing leakage will protect the waters of the Big Hole River, the aquifer, and Wisdom's shallow wells, in turn protecting public health. Users of the Big Hole River will all benefit from the positive environmental effects afforded by this project.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 33

Applicant Name: Teton County
Project Name: Burton Bench Aquifer Evaluation

Amount Requested: \$ 99,104 Grant

Amount Recommended: \$ 99,104

Other Funding Sources: \$ 49,439 MBMG
\$ 14,000 Teton County
\$ 8,400 Montana Department of Agriculture (MDA)
\$ 9,900 Teton Watershed
\$ 2,500 Landowners

Total Project Cost: \$183,253

Project Abstract: (Prepared and submitted by applicant.)

Located north of Choteau in the Teton River watershed, the Burton Bench project area encompasses approximately 50,000 agricultural acres.

For over thirty years, residents have struggled with water rights conflicts arising in the Teton-Muddy Creek drainage. Most recently, the primary concern has been the potential water quality effects from subdivision development. The Teton County commissioners are sponsoring this groundwater evaluation in order to comprehensively document water resource influences from all potential land uses.

Local policy makers are hampered in reviewing numerous subdivision proposals for the Burton Bench aquifer because the lack of current water resource information precludes objective decision-making with respect to the protection of surface water and groundwater resources. There is growing concern that as subdivisions encroach on agriculture, groundwater levels will decline and water quality will deteriorate. If agricultural land is taken out of production to make room for subdivisions, groundwater flow through the system will probably decrease because currently, irrigation provides the majority of recharge to the aquifer. Because of increased population density and industry associated with subdivisions, acre-for-acre, subdivisions may degrade water quality more than agriculture. To provide guidance for planning and growth, and to objectively evaluate and manage future water quality changes, it is critical that the current water resource be assessed.

The key water quality issues are possible effects from agricultural chemicals and possible effects from septic system discharges. A local advisory committee will be established to proactively deal with any water resource issue as it may arise during this evaluation. The local advisory committee will also review the work plan and activities of the investigators, helping to identify site-specific investigations of special concern.

The data compiled for this project will complement other water projects in the Teton Watershed, helping to establish better management programs.

The goal of this project is to improve and protect the quality of surface and groundwater in the Muddy Creek and Teton River watersheds.

The objectives are to:

1. utilize data acquired in previous studies without duplication of effort
2. fully understand current conditions and changes that are occurring
3. develop a menu of water resource management planning options for the community.

Technical Assessment:

Project Background:

The proposed project area is located about 20 miles east of the Rocky Mountain Front in Teton County. The project includes the towns of Choteau, Bynum and Farmington and surrounding agricultural lands. The Burton Bench aquifer consists of a highly permeable sequence of sands and gravels overlying less permeable Cretaceous rock. Recharge to the aquifer is mostly derived from irrigation canal leakage and deep percolation through flood irrigated fields. As a result, there are seasonal water table fluctuations in the recharge area up to 10 feet annually. Discharge from the aquifer is by drains, springs, and sub-irrigated fields in the topographically lower parts of the Burton Bench area, east of Farmington, and along Spring Coulee, Foster Creek and portions of Muddy Creek.

Review of subdivision proposals in the project area places a strain on county planners because there is a lack of water resource and water quality information. The Burton Bench area also has a history of water right conflicts. In the 1980s, a study was completed that evaluated water quantity issues affecting local residents and agricultural producers. While this study helped address some of the issues associated with water quantity, it unfortunately did not adequately address water quality issues. In terms of protecting surface water and groundwater resources, there is growing concern in the local community that as subdivisions continue to encroach on agricultural lands, water quality may be impacted and groundwater levels may decline. The Helena and Gallatin valleys are prime examples of where this is happening today. Also, there appears to be relatively strong evidence that if agricultural land is taken out of production to make room for subdivisions, groundwater flow through the system will probably decrease as recharge from irrigation is reduced. In response to current public concern related to potential groundwater contamination and changes in flow through the system, there is a relatively large consortium of individuals who believe it is critical to evaluate potential impacts on water quality, potential for over pumping, and the overall issue of conversion of farmland to subdivisions.

Technical Approach:

The Teton County Commissioners seek RRG funds to assess the Burton Bench aquifer system. The overall goal of the proposed project is to provide unbiased scientific information regarding the complex issues of area hydrogeology, baseline water quality, and flow dynamics of the Burton Bench aquifer in relation to irrigation recharge. Specific project goals and objectives include: 1) characterizing the Burton Bench aquifer hydrogeology using existing information, 2) testing area water quality, dating groundwater, and comparing results to baseline data, and 3) evaluating a host of water resource planning and management options that preserve and protect area water resources. In general, the goals and objectives will be accomplished through inventorying existing wells and conditions in the project area, compiling water resource and water quality data from existing reports and in agency archives, collecting monthly and continuous water level data, conducting aquifer tests on selected wells, sampling water quality on selected wells (50 full-suite inorganic analyses, 12 pesticide analyses, and 10 age dating analyses), and completing a comprehensive alternatives study for protecting area water resources.

The recommendations and findings from this project will help county planners and rural residents make informed decisions on how to ensure their water supply is protected from contamination and over use. A host of options will be evaluated in the alternatives study, which will consider land-use changes and the practicality, costs, and effectiveness of alternatives for protecting water quality, and if necessary, enhancing water quality. The proposed project involves working with local community members in public meetings and watershed meetings, which are very important because many of the proposed actions may be voluntary and implemented by area residents. Other controls, such as institutional controls and new infrastructure, may also be considered or recommended.

The alternatives presented for this project included not funding the proposed project, allowing the existing lack of knowledge to persist. The second alternative presented was to stop all subdivision development in the county. In all cases, the alternatives presented were viewed less desirable, with the second alternative being highly unlikely. However, in a response to a question regarding the alternatives, MBMG identified two additional alternatives focused on voluntary cutbacks of agricultural chemical use and

construction of a centralized water and/or waste water treatment facilities. Other alternatives could also be possible. In either case, the proposed project appears to be the best approach since it is anticipated to provide the county and local residents valuable information that helps them make informed decisions and develop actions that have a high likelihood of protecting and preserving area water resources.

This project is in compliance with all regulations. No permitting is required for this project. The project is scheduled to last two years with no specified start date.

Project Management:

Teton County will administer the project, and MBMG will manage the project. MBMG will help guide the project for the county, ensure data collection efforts are on schedule, ensure the efforts are relevant to the goals and objectives of the project, and communicate with the county on a regular basis. The county will assist in tracking the project schedule and provide DNRC with the appropriate reports for grant administration.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$2,000	\$0	\$18,800	\$20,800
Professional & Technical	\$97,014	\$0	\$65,439	\$162,453
Construction	\$0	\$0	\$0	\$0
Total	\$99,014	\$0	\$84,239	\$183,253

The funding strategy for this project relies on the RRG program with matching in-kind funds from the applicant, MBMG, landowners, MDA and the Teton Watershed group. The funding strategy is straightforward and very feasible considering the matching funds are in-kind contributions. All matching funds appear to be secured. The original application had a relatively broad explanation of the funding specifics, but MBMG provided a more detailed explanation of the proposed costs during the review process. In terms of fees, this is a study, and will not affect fees on any of the county residents in the project area.

In terms of hourly unit costs, the MBMG professional rates (\$16/hour to \$30/hr) are very reasonable, and below typical private sector costs. The actual time that will be spent on the project totals about 19.1 months of professional/technical time. The RRG costs for laboratory analysis (\$37,500), watershed education materials (\$3,000), and small line item costs (\$4,600) appear to be reasonable. The laboratory budget is relatively large because of the large number and type of analyses that will be completed. Travel for this project is \$5,236. The county is providing \$14,000 for project administration and project management costs. Based on MBMG providing project management service on this project, the budget indicates the county will compensate MBMG \$9,600 for its services.

Benefit Assessment:

The project will collect scientific data that are needed by county planners, area residents, and agricultural producers. The final products from the proposed effort include baseline water quality data and identification of alternatives and land-use recommendations that preserve and protect area water resources. The direct benefits of this project will be far reaching both for the people in project area and the environment. Specific resource conservation benefits include managing groundwater availability for existing uses and future uses, and protecting and preserving water quality by developing alternatives that preclude nutrient and agricultural chemical contamination of water resources. This project is part of ongoing conservation efforts spearheaded by the county commissioners, Teton Watershed group and other interest groups. By working together with the watershed group, this project is an essential component needed to address local and larger scale water resource issues. This will benefit people, producers, and aquatic resources and fisheries. Also, clean and plentiful groundwater helps ensure adequate surface water and aquatic resources downgradient of Burton Bench aquifer discharge points.

In terms of resource enhancement, the project will develop alternatives that have the potential to improve water quality, which benefits area agricultural producers and residents. In addition, alternatives for reducing agricultural chemical use will be evaluated. There are about 200 farms or ranches in the 50,000-acre project area. There is a strong community desire to complete this project and address water resources as evidenced by the large number of support letters for the project and partnerships established for the project. The goal is to take a proactive approach, work with landowners and stakeholders, and develop reasonable conservation measures before water resources are significantly impacted by the land-use changes currently underway in the project area.

Environmental Evaluation:

No significant adverse environmental impacts will occur as a result of activities associated with the project.

Funding Recommendation:

DNRC recommends grant funding of \$99,104 upon approval of a project scope of work, administration and budget.

Project No. 34

Applicant Name: Elk Meadows Ranchettes County Water District
Project Name: Water System Improvements Project

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 9,399 Project Sponsor

Total Project Cost: \$ 109,399

Project Abstract: (Prepared and submitted by applicant.)

The Elk Meadows Ranchettes County Water District's original water system was designed to include three water tanks: an upper tank with a 35,000-gallon capacity; a middle tank with a 200,000-gallon capacity; and a lower tank with a 13,000 gallon capacity. During the construction bidding process, all bids received exceeded the initial budget limitations. The district's engineering consultant modified the project design in order to reduce costs. Eliminated were a 200,000-gallon storage tank, a 35,000-gallon storage tank, one well, and chlorination piping. The revised project was constructed in 1978 at a cost of \$200,000. The engineering consultant advised the district's board that operation of the revised project, *"...would give the Board three to five years operation before the storage would be undersized and give them a chance to fund the construction of 'properly sized storage reservoirs.'*" In April 2000, the district installed two new water supply wells during the initial portion of the Phase I water system improvements program. This was priority one to correct substandard well construction. Existing submersible pumps from the original wells were re-installed into the new wells. During the summer of 2000, priority two improvements of this Phase I project will be completed. This includes a new 110,000-gallon tank; a system-wide telemetry control system; central pumps and tank controls; and the installation of corrosion control feed equipment.

The greatest safety issue facing the district is lack of fire protection. This is attributed to not only having just 5 operable fire hydrants; but moreover, the hydrants are served by undersized mains. Another contributing factor is the limited storage capacity.

The water storage capacity relative to domestic use is less than the minimum WQB-1 standards. The system is grossly undersized for adequate storage for fire flow and maximum daily demand. It is also clearly demonstrated that it is extremely unlikely that any storage capacity is available during high

demand periods (summer months). The existing system deficiencies cited in the PER include: inadequate storage capacity; lack of redundant booster pumps; need for surge control; undersized mains; dead-end system configuration; lack of treatment and disinfection; and lack of emergency power.

The balance of the Phase I system improvements are based upon the conclusions derived from the system analysis and review of alternative solutions. The consulting engineer detailed the recommended improvements for the district's water system in the PER. The following information describes the proposed water system improvement project:

- Expansion of the existing middle and upper storage tanks to provide additional storage capacity for acceptable water supply during peak demand;
- Rehabilitation of the existing lower booster station by duplexing pumps and adding hydraulic surge control; and
- Installation of chlorination.

Technical Assessment:

Project Background:

The Elk Meadows Ranchettes County Water District is located in the western part of Missoula County near Huson. The district has a population of 100 people living in 44 homes. The district owns and operates its water system including supply wells, storage reservoirs, and a distribution system. Fire protection is provided by the Frenchtown Rural Fire District.

The water system was originally designed to include three water tanks with a total storage capacity of 248,000 gallons. Due to funding limitations at the time of original construction in 1978, the system was downsized to include only one well, 13,000 gallons of storage, and a limited distribution system. Because of increased development and subsequent demands, the system cannot meet quantity and pressure requirements, and there is virtually no fire flow capability due to undersized lines and inadequate storage. The existing system relies on boost pumps to supply water to its higher elevations, and there are no provisions for emergency power. This situation would be critical if a fire broke out during a power outage.

In 1998, the district applied to both the Renewable Resource Grant and Loan Program and the Treasure State Endowment Program for grants to fund improvements to the existing system. The project was not funded by either program, and the district utilized reserves and borrowed money through the Drinking Water State Revolving Fund Loan Program to construct two new supply wells, a new 110,000-gallon storage reservoir, new tank and pump controls, and a corrosion control system.

This project consists of the design and construction of additional improvements to the system. Included are the expansion of the storage capacity of the system to 238,000 gallons and the rehabilitation of the lower boost pump station, including the addition of a liquid hypochlorination system.

Technical Approach:

The goals of the proposed project are to provide increased storage and system improvements necessary for an adequate and dependable water system. With current improvements in progress, serious deficiencies still exist in the system's ability to meet fire flow requirements and to provide adequate flows and pressures to all properties within the district.

The district has prioritized the project into phases. This project is a continuation of Phase I improvements including storage expansion, construction of new supply wells, and rehabilitation of the lower boost pump station to provide system dependability. The supply wells and a new 110,000-gallon storage tank are being constructed in 2000 with loan proceeds. This project includes an expansion to the new storage tank, reinstallation of a 13,000-gallon storage tank at the upper end of the system, and rehabilitation of the boost pump station, including the addition of hypochlorination. Phase II improvements, to be constructed in the future with funding sources unknown at this time, will include distribution system

improvements including line replacements and looping and installation of an emergency generator to provide power to both supply and boost pumps during power outages.

The project will not involve any unresolvable permitting or environmental issues. Construction is scheduled for the summer of 2001.

Project Management:

The district has developed a plan for ensuring that this project is properly managed. Two district representatives have been appointed the responsibilities for keeping financial records and coordinating the administration of the project with the engineer and DNRC.

The district has procured the services of a consulting engineer for design, inspection and construction contract administration. The project will be advertised and bid in accordance with statutory contracting requirements for a water district.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 2,875	\$ 2,875
Professional & Technical	\$0	\$0	\$ 5,649	\$ 5,649
Construction	\$100,000	\$0	\$ 875	\$100,875
Total	\$100,000	\$0	\$ 9,399	\$109,399

The project consists of the design and construction of upgrades to the drinking water system for 44 homes within the Elk Meadows Ranchettes County Water District. The grant funds being requested will be used for construction activities. The success of the overall Phase I Improvements Project depends on obtaining the necessary grant funding to make the project reasonably affordable. Residential water users are currently charged a monthly fee of \$46.67. There are no commercial users. Based on a 1990 median household income of \$33,967.00, the target rate for water service only for the district is \$39.63 per month.

The district has completed a capital improvements plan and has prioritized improvements that must be made to comply with fire flow and other regulatory requirements, including acceptable working pressures, storage requirements and compliance with federal regulations (such as the Lead and Copper Rule).

The project is supported by a well-prepared Preliminary Engineering Report that addresses and prioritizes the issues at stake. The district has borrowed \$200,000 to begin Phase I improvements and consequently pays above the target rate for water. With rates exceeding the target rate, the strategy of applying for and obtaining a Renewable Resource grant is justified. The priorities that have been established, and the costs estimated to complete them, are also justifiable. The district is attempting to minimize the administrative costs for the project, and the engineering fee is reasonable at only 5 percent of the total project cost.

Benefit Assessment:

The application demonstrates the inadequacies of the district's existing drinking water system, and there is obvious public support for the project. Through the addition of new supply wells, increased storage, efficient chlorination equipment, efficient and dependable tank and pump controls, distribution system improvements including looping, and the installation of emergency power, the district is making efforts to efficiently manage its water resource.

A primary resource benefit of these improvements will be fire protection. The district is located several miles from the nearest town in a semi-arid and forested environment. Adjacent lands to the north are public state lands that exist for the benefit of the state's schools. To provide fire protection will benefit not only the residents of Elk Meadows Ranchettes but also the State of Montana.

Environmental Evaluation:

With the exception of short-term construction impacts usually associated with heavy construction, this project will provide beneficial environmental impacts, including adequate drinking water and fire protection for a residential area and adjacent land, some of which is public. An environmental assessment for the project has been completed as required for the portion of Phase I improvements being made with State Revolving Fund loan proceeds, and a Finding of No Significant Impact, or FONSI, has been determined.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 35

Applicant Name: Carbon Conservation District
Project Name: Whitehorse Canal Reorganization

Amount Requested:	\$ 97,200	Grant
Amount Recommended:	\$ 57,200	
Other Funding Sources:	\$ 70,000	Environmental Quality Incentive Program
	<u>109,000</u>	Whitehorse Canal Land Owners
Total Project Cost:	\$276,200	

Project Abstract: (Prepared and submitted by applicant.)

The Whitehorse Bench is located about five miles south of Laurel in Carbon County. The project area consists of nearly 1,000 acres of irrigated row crops. At this point, about half of the bench is sprinkler irrigated. This project's goal is to reorganize the system to gain higher efficiency of delivery and application. The benefits will be increased water conservation and improved water quality.

The soils of the area are predominantly Alice fine sandy loam. The high intake rate of these soils forces producers to over irrigate their crops. The excess water subs out adjacent landowners and develops a high potential to impact water quality in the neighboring wells. At best, irrigators on the Whitehorse Bench achieve an irrigation efficiency of 55 percent, which is to say 45 percent of the water applied goes someplace besides plant production. The existing sprinkled fields operate at 85 percent efficiency. Converting the remaining acres to sprinklers would save approximately 300 acre-feet of water per year, which could be left in the chronically de-watered Clark's Fork of the Yellowstone River.

This project seeks assistance in reorganizing the Whitehorse Canal irrigation system. The four landowners cannot economically make the needed improvements to the delivery system and on-farm application system without financial assistance. The plan consists of \$276,200 in projects to repair the head works, improve the canal system and install higher efficiency irrigation practices. The landowners have applied for \$70,000 in assistance as an Environmental Quality Incentive Program (EQIP) priority area and are committing \$109,000 of their own funds to the project. This proposal seeks \$97,200 in DNRC grant funds to complete the project.

Technical Assessment:**Project Background:**

The Whitehorse Canal Company was organized in 1907. The acres irrigated are located on an elevated bench between the Yellowstone River and Clark's Fork of the Yellowstone River. The irrigators have

worked with the Natural Resources Conservation Service (NRCS) to identify needed system improvements. This project will address the improvements identified.

Technical Approach:

The project will entail:

- performing work on the diversion structure to protect its integrity
- replacing an old, leaking siphon that is no longer needed with a ditch
- replacing an existing, inadequate water wasteway with a new wastewater pipeline
- converting 318 acres of flood irrigation to high efficiency center pivot sprinkler irrigation
- in conjunction with the conversion of flood to sprinkler - remove 29,000 feet of lateral ditches
- install 2,900 feet of buried pipeline to replace existing lateral canals

The application states that through implementation of these measures, water delivery and water application efficiencies will be improved. The results will be increased water conservation, protection of area groundwater from contamination, and slightly increased flows in the Clark's Fork of the Yellowstone River.

Discussion of alternatives was limited to only selected alternatives. The selected approaches and alternatives are common solutions to problems associated with these types of irrigation systems. NRCS will provide design work and input for the project. Engineering for the diversion structure work will be done by a private engineer. The application indicates that construction work will be done primarily by local contractors. The project schedule is well documented, with completion of all work expected by the 2007 irrigation season.

Project Management:

The project construction will be managed by a combination of the Whitehorse Canal Company board and NRCS. Management and administration will be coordinated between the Carbon County Conservation District and NRCS.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$5,000	\$0	\$0	\$5,000
Professional & Technical	\$2,000	\$0	\$2,000	\$4,000
Construction	\$90,200	\$0	\$177,000	\$267,200
Total	\$97,200	\$0	\$179,000	\$276,200

Whitehorse Canal Company landowners will contribute \$2,000 for professional/technical costs and \$177,000 for construction costs. These contributions include \$70,000 to be obtained by the landowners through the U.S. Department of Agriculture EQIP program. A decision on the landowner application to EQIP is pending. The canal company will assess the four water users to obtain the contribution necessary for this project based on each user's water allocation.

The application included estimates for construction costs compiled by NRCS. Contingency costs were factored into these estimates. All costs appear reasonable and adequate.

Benefit Assessment:

Long-term renewable resource benefits will be increased water use efficiency by converting flood irrigation to a sprinkler system. This increased efficiency should help to prevent contamination of area groundwater by agricultural nitrates and pesticides. A clarification of figures in the application indicated daily flows in the Clark's Fork of the Yellowstone River would not be increased as much as indicated (5 percent to less than 1 percent). Some resource enhancement and citizen benefits will occur, but these

will be minimal. Quantification of water use is possible through an existing gaging device in the main canal. The application indicates that NRCS will assist in monitoring irrigation practices as well as nutrient and pesticide management under the EQIP program for five years, following implementation of the on-farm practices.

Environmental Evaluation:

An environmental assessment must be completed before conducting any activities that will affect wetland resources, and appropriate mitigation measures must be taken. The assessment should also evaluate the possible presence of threatened or endangered species and cultural resources.

Funding Recommendation:

DNRC recommends grant funding of \$57,200 upon approval of a project scope of work, administration and budget.

DNRC recommends that the requested \$40,000 of grant funds for the three center pivot irrigation systems be sought through the DNRC Pollution Control State Revolving Fund Loan Program. Private entities may apply for projects that convert flood irrigation to sprinkler irrigation for up to the cost of project, with a term of up to 20 years at a 4.3 percent interest rate.

Project No. 36

Applicant Name: City of Choteau, Montana
Project Name: Water System Improvements

Amount Requested: \$ 100,000 Grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 301,665 State Revolving Fund Loan

Total Project Cost: \$ 401,665

Project Abstract: (Prepared and submitted by applicant.)

The Choteau water system was originally developed in 1913. The system utilizes four wells and two springs to provide water from the unconfined Teton River aquifer located in the north and northwest end of the city. Water storage in the system is provided by a 500,000-gallon tank and a 250,000-gallon tank.

Water use in Choteau is extremely high, with an estimated average daily use of 579 gallons per capita day and a peak of 1,003 gallons per capita day. A comprehensive water plan was prepared to evaluate the condition of the system and address the high water usage rate. The plan concluded that the high amount of unaccounted for water may be resulting from leakage in old, 1915 cast iron water mains as well as excessive use, in that most users in the system are not metered. Replacement of the old mains was recommended in addition to a number of other capital improvements.

A phased approach to addressing the problem is proposed to make the best use of limited financial resources available to the community. While water main replacement remains a high priority, an initial program of leak detection and city-wide installation of water meters is recommended. This will allow further definition of the cause of the problem, which will enable better use of limited funds in the future. Metering alone should result in reduction in water usage. Grants will be sought in the future for water main replacement work.

Technical Assessment:

Project Background:

Choteau is located 20 miles east of the Rocky Mountain Front in the Teton River Valley in west-central Montana. The public water system was completed after incorporation in 1913. The water system consisted of a shallow well, a distribution system and a 250,000-gallon storage tank. Springs were developed in 1949 and 1961, and the Richem lateral collector was completed in 1969 to supplement the water supply. All supplies originate from the unconfined Teton River aquifer and are of high quality. Additional storage was added in 1949, and the distribution system has been expanded several times.

The water system is metered at the water works pump house through which all water passes. The users are not metered except for a few commercial and residential connections. The average daily water demand in Choteau is 579 gallons per capita day (GPCD). The average daily water demand in Montana is 180 GPCD. The excess demand in Choteau is primarily a result of leakage in the delivery system and a lack of conservation by the users. Unmetered systems tend to have significantly higher water demands.

A Comprehensive Water Plan was completed in August 1999. The plan identified numerous system needs. The most pressing need relates to the system supply capacity. The system supplies are not adequate due to the high water demand. This application has been submitted to enable the city to install meters for all water users and complete a system wide leak detection survey. Installation of meters will encourage water conservation on behalf of the users. The leak detection survey will provide the information needed by the city and engineer to plan improvements necessary to reduce leakage in the distribution system.

Technical Approach:

The goals and objectives of the proposed project are to encourage water use conservation and to obtain necessary data to plan distribution system improvements to reduce leakage. Reducing the water demand will remedy the water supply deficiencies.

The proposed approach is the only reasonable alternative. Users will tend to be more conscious of water use when water bills are based on volume rather than flat rates. The city and engineer cannot realistically plan for distribution system improvements without leak survey data.

There are no outstanding issues with regard to regulations, standards, or permitting that will affect the progression of the proposed project.

Project Management:

The city will administer the project. A reasonable project administration budget has been provided. The administration budget includes loan origination fees and capitalization of the first reserve payment but does not include interim interest. If interim interest is necessary, the amount of the loan may be increased. This should not create an undue hardship on the applicant or cause unnecessary delays in the project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$ 1,000	\$ 0	\$ 30,540	\$ 31,540
Professional & Technical	\$ 28,000	\$ 0	\$ 16,535	\$ 44,535
Construction	\$ 71,000	\$ 0	\$ 254,590	\$ 325,590
Total	\$ 100,000	\$ 0	\$ 301,665	\$ 401,665

Costs of the project for consultants, materials, labor and equipment appear to be reasonable. Administrative costs that have been identified appear to be reasonable.

The matching funds are proposed to be provided via a State Revolving Fund loan. The SRF funding is not in place, but the loan funds are available. The applicant appears to have the authority to incur debt and the capability to repay debt.

The system serves 707 users, of which 557 are residential users. The average monthly residential water bill is currently \$20.08. A \$3.00 monthly increase is projected as a result of this project, for an average monthly residential water bill of \$23.08.

Benefit Assessment:

The primary benefit to the city is that reducing the amount of water pumped and lost will increase the efficiency and capacity of the supply, pumping, and distribution systems. The project will allow the city to better manage the water resource through water conservation.

Environmental Evaluation:

There are no known long-term adverse environmental effects.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 37

Applicant Name: Beaverhead County Board of Commissioners

Project Name: Big Hole Watershed Management Project

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources:

\$ 3,000	Beaverhead County Board of Commissioners
\$ 25,600	MT Bureau of Mines and Geology
\$ 11,850	DNRC Water Resources Division
\$ 6,200	U.S. Geological Survey
<u>\$ 10,000</u>	Big Hole Watershed Committee

Total Project Cost: \$156,650

Project Abstract: (Prepared and submitted by applicant)

Natural and human-induced changes in water resource availability have caused increased concern about how to best manage the limited water resources of the Big Hole River basin. Land in the Melrose area that traditionally has been flood irrigated is increasingly being sprinkler irrigated or used for residential housing. Hay pastures, near Wisdom and Jackson that used to be irrigated only in the spring and early summer, are now irrigated throughout the summer to support increased grazing. Forestry and agricultural practices have altered vegetation patterns and thus altered the hydrology of the basin. Recent droughts and elevated summer temperatures have heightened concern about the survival of fluvial Arctic grayling and other fishery resources in the river.

Changes such as these have drawn together ranchers, business leaders, sporting enthusiasts, outfitters, government officials and others into a group known as the Big Hole Watershed Committee (BHWC). This group, which formed following the drought in 1994, promotes the understanding of the complex interaction between the land, water, people, vegetation, wildlife, and fisheries of the watershed.

Through this proposal, the Beaverhead County Board of Commissioners (BCBC) is seeking funding that will be used to support the BHWC and a computer modeling project to assess how various land- and water-management strategies may affect the basin's hydrology. The funding will help support a coordinator needed by BHWC to organize meetings, manage projects, disseminate information, and to coordinate with natural resource management agencies. The coordinator also represents the group's concerns and interests around the state, and seeks funding for social and scientific endeavors that promote an understanding and awareness of the watershed.

The modeling project will build on the Irrigation Return Flow and Water Budget Study (RRG-98-1058) that will be completed in December 2000. DNRC is collecting additional streamflow data in the summer of 2000 to be included as an attachment to the final report. Modeling is needed to evaluate how possible changes in irrigation practices, recharge patterns, evapotranspiration and groundwater use are likely to affect the hydrologic budget of the basin and the flow in the river. Development of the model will require some additional groundwater and surface-water data collection. This modeling project was identified as a priority by BHWC's Research and Monitoring Plan (1999).

The BCBC will contract with the Montana Bureau of Mines and Geology (MBMG), U.S. Geological Survey (USGS), Department of Natural Resources and Conservation (DNRC), and BHWC coordinator to complete the proposed work.

Technical Assessment:

Project Background:

The Big Hole River basin covers about 2,800 square miles in southwestern Montana. Most of its residents make their livings through ranching, recreation, or forest industries. The highlands surrounding the Big Hole valley lie in the Beaverhead National Forest.

The primary uses of surface water are for irrigation of cropland and pasture, flows for recreation and fisheries, and City of Butte water supply. Because some of the diverted water recharges the basin's aquifer, changes in diversion, transportation, and distribution methods could have unforeseen effects on the groundwater system that provides stream flows and water for crops in the late summer.

Local ranchers formed the Big Hole Watershed Committee (BHWC) during the drought of 1994 to address concerns about dewatering of the Big Hole River. The following organizations also are active in the BHWC:

- Beaverhead County Planning Board,
- Big Hole River Foundation,
- George Grant Chapter of Trout Unlimited,
- Butte-Silver Bow Water Company, and
- Beaverhead County Board of Commissioners.

The group has developed several management plans, including the Big Hole Drought Management Plan. BHWC is an effective force in local management approaches, and was given a Watershed Stewardship Award by the State of Montana.

Technical Approach:

The goals of the BHWC Project are to support community-based watershed management in the Big Hole basin and to supply Big Hole water users with the necessary data to assess how land use, water management, and climate changes might affect the basin so they can develop strategies to deal with current and future fisheries, irrigation, residential, and municipal water use concerns.

To achieve these goals, BHWC will: (1) provide support for a coordinator (50 hours per month) to organize meetings, represent BHWC concerns around the state, and seek funding; (2) gather additional water-resource data (synoptic precipitation, evapotranspiration, groundwater level and streamflow) to

calibrate the proposed computer models; and (3) develop MODFLOW hydrologic models for portions of the upper basin and lower basin. The models will be used to evaluate how changes in irrigation practices, land use, and vegetative cover can impact the basin's water resources.

The proposed project is a continuation of the group's coordination efforts, and an extension of data collection and studies to understand basin hydrology. The end result of the project will be a tool to assist the Big Hole basin water users in water management decisions.

Project Management:

The Beaverhead County Board of Commissioners will be the lead management agency, and will contract with BHWC, DNRC, and USGS to complete the proposed tasks. The Montana Bureau of Mines and Geology will be the lead technical agency, and will assist the Beaverhead County Board of Commissioners in preparing quarterly reports to submit to BHWC and DNRC Resource Development Bureau. USGS will operate and maintain the gaging station at Mudd Creek. Personnel from the DNRC Water Management Division will monitor flows on about 25 tributaries in the upper basin. The Montana Bureau of Mines and Geology will collect water level measurements from about 80 wells in the upper basin, install and maintain 5 to 10 precipitation gages and develop the MODFLOW hydrology model.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$ 0	\$ 0	\$3,000	\$3,000
Professional & Technical	\$100,000	\$ 0	\$53,650	\$153,650
Construction	\$ 0	\$ 0	\$ 0	\$ 0
Total	\$100,000	\$ 0	\$56,650	\$156,650

The budget for the technical work was estimated by Montana Bureau of Mines and Geology, DNRC, and USGS. The matching funds are secure. The unit costs (salaries, travel expenses, supplies) appear reasonable.

Benefit Assessment:

This project will benefit water users and the Big Hole River by supporting the continuing efforts of BHWC in managing water use within the basin, and by providing BHWC with a tool (a basin-wide hydrology model) to better understand how water use and changes in diversion, transportation, and distribution methods might impact flows in the Big Hole River and groundwater storage.

The information provided by the data and watershed model will be used to plan and develop best management practices, ensuring that water is available for domestic, agricultural, recreational, and industrial uses. About 2,000 residents, the City of Butte (pop 34,000), and river recreationists (about 83,408 angler days annually) will benefit.

Short-term benefits will be measured in terms of the additional management plans and projects implemented by BHWC. Long-term benefits will be related to better water and land-use planning and management. However, the benefits from the data collection and modeling might not be obvious after the two-year life of the project. A questionnaire will be distributed to BHWC members to determine whether they found the project insightful and beneficial.

Reviewers noted an additional benefit; the Big Hole Watershed Committee and its successful use of watershed modeling for improved decision-making could be a positive model for other watershed user groups.

Environmental Evaluation:

As discussed above, the project will benefit the environment. Without the study, lack of informed water resources planning might result in many adverse impacts to the Big Hole River Watershed. The stream gages might slightly impact aesthetics. However, gages will generally be installed near roads and bridges that already visually impact the stream.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 38

Applicant Name: The Town of Hobson
Project Name: Water Exploration

Amount Requested: \$70,000 Grant

Amount Recommended: \$40,000

Other Funding Sources: \$0

Total Project Cost: \$70,000

Project Abstract: (Prepared and submitted by applicant.)

The Town of Hobson does not have a municipal water system. Residents use individual wells or spring boxes. During the spring of 2000, at least 15 wells went dry because of a drop in the underlying water table. In addition, many residents have reported that the remaining wells and springs have experienced periodic problems of bacteriological contamination. The Hobson Town council is interested in constructing a municipal water system to overcome the problem of dry and/or contaminated wells.

Review of existing water resource data indicates uncertainty about the availability of a suitable water supply. Water of suitable quality and quantity likely exists in the Kootenai formation, at a depth of approximately 1,200 feet. Less certain, is whether a suitable town water supply could be obtained from the upper Colorado shale formation at a depth of 100 to 150 feet. Exploration is needed to determine where a suitable water supply can be found to supply a municipal water system for Hobson.

Hobson proposes to conduct a groundwater investigation to try to find a suitable water supply for the town. The Town would conduct an assessment of existing wells, which would include test pumping several existing wells. Also, the Town would drill one or more new test wells, probably to a depth of 200 feet, and conduct a 72-hour pump test on the new well(s).

This application for a DNRC Renewable Resources grant is to conduct a groundwater investigation to try to locate a water supply suitable for a municipal water system for the Town of Hobson. If this exploration project is successful, Hobson plans to follow up by constructing a municipal water system. A new municipal water system will achieve water conservation by ensuring a year-round supply of water for residents and businesses in the community, and will improve the water quantity and quality for many users in the community - important objectives of the DNRC program. Without the DNRC grant, the 115 households in Hobson would each have to pay approximately \$610 to fund the exploration. Start-up activities can begin in May or June 2001, and be completed in June or July, 2001.

Technical Assessment:

Project Background:

The Town of Hobson does not have a municipal water system. Residents use individual wells or spring boxes. During spring of 2000, at least 15 wells went dry because of a drop in the underlying water table. In addition, the applicant stated that many residents reported that the remaining wells and springs experience periodic bacteriological contamination. The Hobson Town council is interested in constructing a municipal water system to overcome the problem of dry and/or contaminated wells.

Technical Approach:

Review of existing water resource data indicates uncertainty about the availability of a suitable water supply. The applicant stated that water of suitable quality and quantity likely exists in the Kootenai formation at a depth of about 1,200 feet. Less certain, is whether a suitable town water supply could be obtained from the upper Colorado shale formation at a depth of 100 to 150 feet.

The three alternatives presented in the PER include:

1. no action
2. new public water supply and distribution system
3. groundwater investigation

Alternative 2 is not truly a comparable alternative for achieving the goal. However, the applicant did provide sufficient details in the description of the groundwater investigation alternative 3 and its estimated costs and benefits to justify its selection as the preferred alternative over the no action alternative.

The goal of the proposed water exploration project is to identify and analyze the groundwater resource in and around Hobson. The objectives necessary to achieve this goal include the following:

1. Complete a survey of the existing wells – survey information will be used in the production of a groundwater contour map for the aquifers underlying the Hobson area.
2. Test the water in the existing wells – including 24-hour pump tests and water quality sampling for iron, nitrates, and bacteriological contamination.
3. Construct 2 new test wells – including design of the test wells in accordance with Montana's regulations, construction of 200-foot deep wells, and 72-hour pump tests.
4. Prepare a final Groundwater Investigation Report – The report will incorporate all preceding work and data gathering.

The groundwater investigation and test wells could be used as a basis for future water system construction or as a community source well for such things as an irrigation program or emergency water supply.

It is hoped that the wells may be used as a source of public water in the future, therefore, a number of requirements govern the construction and permitting. Specific requirements for groundwater supply include the following:

- Construction of public water supply by a licensed water well driller.
- Approval of well plans by DEQ prior to construction

Any entity anticipating to use more than 35 gallons per minute or 10 acre-feet per year of groundwater is required to obtain a Permit to Appropriate Water before any development begins or water is used.

In addition, land surrounding one of the test well locations will need to be purchased. The applicant stated that land acquisition requirements for this location would be very minimal. The applicant provided sufficient documentation to evaluate the sufficiency and feasibility of the proposed project to identify and analyze the groundwater resources in and around Hobson.

The schedule included in the PER estimates that the groundwater investigation project will be completed during the last two quarters of 2001.

Project Management:

The Town of Hobson has proposed to contract with a qualified consulting firm for management of the grant program. In addition, the mayor, a treasurer, and legal counsel are identified as active participants in the administration of the project. The PER presented an outline of the project management and financial management responsibilities.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$7,000	\$0	\$0	\$7,000
Professional & Technical	\$30,000	\$0	\$0	\$30,000
Construction	\$33,000	\$0	\$0	\$33,000
Total	\$70,000	\$0	\$0	\$70,000

It appears that the unit costs for engineering, materials and construction are reasonable and adequate. The requested funding of \$70,000 would fully fund the entire groundwater investigation project.

Benefit Assessment:

This project will result in the collection of information that can be used to improve the efficiency of the use of the groundwater resource. The information gathered will also be used to ensure adequate future supplies of a renewable resource for domestic uses. If, as is anticipated, a municipal water supply is constructed, the Town of Hobson will ensure proper management of the resource and will encourage water conservation by installing individual water meters. The proposed project has received documented citizen support and will provide a long-term quantifiable benefit to the public.

Environmental Evaluation:

The project does not have any long-term environmental impacts or any potential adverse impacts.

Funding Recommendation:

DNRC recommends reduced grant funding of \$40,000. The Town of Hobson recently received \$30,000 under DNRC's Emergency Grant program. Grant funds for the project will be provided after DNRC approves the project scope of work, administration and budget.

Project No. 39

Applicant Name: City of Missoula
Project Name: Rattlesnake Stream Restoration and Flood Control Project

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 100,000	
Other Funding Sources:	\$ 40,000	Construction Donation
	\$ 19,000	City of Missoula Cash
	\$ 58,000	City of Missoula In-Kind
	<u>\$ 10,000</u>	DNRC Project Planning Grant
Total Project Cost:	\$ 227,000	

Project Abstract: (Prepared and submitted by the applicant.)

Rattlesnake Creek flows through Greenough Park within the City of Missoula. The park, which was donated to the city by the Greenough family in 1902, has been the center of much debate in recent years. On one side of the debate is the legal mandate for the park to be managed in "its natural state." On the other side, is the City's commitment to protecting city residents and public infrastructure from the impacts of floods.

The exceptionally high flood years of 1996 and 1997 have brought the issue to the attention of the entire community. The residential neighborhoods and city infrastructure which have been built in the Rattlesnake Creek floodplain during the last 60 years were threatened and ultimately damaged by severe flooding. Portions of an asphalt parking lot eroded, causing extensive damage. Adjacent basements were flooded due to increased groundwater flows. The management of Greenough Park as a natural park with natural floodplain dynamics was put in the spotlight as a contributing cause of the flooding. The City of Missoula and the Greenough Park Advisory Committee were put in a position of defending the management of the park without much information on the hydrology or potential compromise solutions to avoid this debate in the future.

With the help of contract consultants, we have developed a design which we feel will satisfy all parties involved in this issue. The enclosed design report is a result of an extensive public involvement process, including many public meetings and a survey. The study was directed by a steering committee made up of representatives from the city, Missoula County, and Montana Department of Fish, Wildlife and Parks. Our plan involves several flood control activities that allow for natural floodplain dynamics while ultimately providing some protection to nearby residents and city infrastructure. As part of this flood control project, our design calls for the restoration of a side channel of Rattlesnake Creek that is actively eroding and is at risk of flooding even in low runoff years. In addition to the flood control steps, we propose to enhance recreational access to the stream by revegetating damaged banks, installing bridges and reclaiming trails.

Technical Assessment:

Project Background:

The City of Missoula has been balancing ecological, flood safety and access issues surrounding Rattlesnake Creek and Greenough Park for many years. The city, pressured by a lawsuit filed by the Greenough family in 1955, has been striving to restore the forest to the park. In 1996 and 1997, however, floods damaged the park and private property, highlighting the need for hydrological studies and flood mitigation for the area. The city unsuccessfully applied for DNRC grant funding during the last grant cycle.

The city realized that more thorough planning and documentation were necessary. To that end, it retained a consultant to perform a study, compile public input and recommend design procedures for restoration and damage control in Greenough Park. The city funded the study with city money, volunteer work and assistance from a DNRC planning grant.

Technical Approach:

The goal of the Rattlesnake Creek Project is to provide for conditions in Greenough Park that will allow Rattlesnake Creek to meander naturally within the park, while providing some level of protection against catastrophic flooding. To achieve this goal, the city proposes the following 8 tasks:

1. Remove the dike on the left side of the creek, to return the eastern floodplain area to a more functional state;
2. Construct a rock weir at the upper channel split to prevent downcutting and to maintain the current flow proportion between the main and side channels;
3. Replace a culvert that restricts flow in the east floodplain main channel with a bridge;

4. Raise the grade of Monroe Street 2 feet to mitigate the overtopping and flooding of private property. Construct a relief channel to guide overflows back to the side channel and eventually back to Rattlesnake Creek;
5. Replace, remove, or stabilize existing concrete weirs in the overflow channel;
6. Stabilize a section of Rattlesnake Creek that is chronically unstable;
7. Relocate the unstable lower reach of the side channel, revegetate the surrounding area with native plants, and provide a landscape contour along the side channel to mitigate flood potential; and
8. Reconstruct the lower side channel to a deeper and narrower shape.

An alternative location for the side channel relocation was investigated but discarded because of impacts to a parking area.

Construction is estimated to take about three weeks.

Project Management:

The Missoula city forester will administer the construction and oversight contracts for the project. The city of Missoula will contract for oversight of the construction phase of the project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$19,500	\$19,500
Professional & Technical	\$0	\$0	\$51,000	\$51,000
Construction	\$100,000	\$0	\$56,500	\$156,500
Total	\$100,000	\$0	\$127,000	\$227,000

The proposed unit costs (manpower, materials, supplies, etc.) appear reasonable. The City of Missoula, the contractor and the consultant have committed funds for specific parts of the project.

Benefit Assessment:

The restoration of the Rattlesnake Creek floodplain will conserve and protect natural resources, and serve as an example of proper floodplain and stream management. Hundreds of daily visitors to Greenough Park, including children, hikers, bicyclists, birdwatchers, anglers and others, will view the natural system within a developed area that is protecting fish habitat and reducing flood hazards.

The project will stabilize the east channel and portions of the main Rattlesnake channel, and will revegetate the area with native plants. Channel stabilization will allow reconnecting of the irrigation system, which will further help to re-establish vegetation (irrigation reconnecting will be a separate project).

The upper portion of the east channel, which was cut by the 1996 flood, has become an important recreational and aesthetic attraction as well as an important spawning area for wild trout from the Clark Fork River. The project will restore the lower reach of the east channel to a condition similar to the upper reach, providing smaller gravels and lower flow velocities conducive to spawning trout.

The revegetation will improve valuable wildlife and bird habitat.

Greenough Park is considered the jewel of Missoula's public park system, and carries historic value as well as an abundance of natural resources not normally found in urbanized areas. The park serves the 100,000-plus residents of Missoula and visitors from other parts of Montana.

Environmental Evaluation

During construction, minor short-term sedimentation of the creek might occur. This will be minimized with erosion control measures. Construction will be timed to minimize impacts to spawning. No long-term adverse environmental effects are anticipated.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 40

Applicant Name: Lockwood Water and Sewer District
Project Name: Sanitary Sewer Trunk, Arterial and Collector System Project

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 100,000	
Other Funding Sources:	\$ 51,000	District
	\$3,801,000	EPA Grant
	\$1,000,000	EDA Grant
	\$ 500,000	Treasure State Endowment Program Grant
	<u>\$3,236,453</u>	Rural Development Loan
Total Project Cost:	\$8,688,453	

Project Abstract: (Prepared and submitted by applicant.)

The Lockwood area is the largest unsewered community in the state. The Lockwood Water and Sewer District's goal is to develop a wastewater collection, treatment and disposal plan to serve the district's service area through the year 2017. The primary plan elements involve maintaining the water quality of the Yellowstone River, providing a wastewater collection system and a wastewater treatment and disposal system in an environmentally acceptable manner, and providing capacity to serve a moderate increase in population.

The entire population within the district boundary is not currently served by any publicly owned and operated wastewater collection, treatment, and disposal system. Each resident or business within the district's boundary relies on septic tanks and drainfields or experimental wastewater disposal systems. The estimated wastewater production within the district was determined by examination of the Lockwood Water Users Association's (LWUA) past water production records along with accepted values for per capita wastewater generation. If a wastewater collection system were in place, the 1996 estimated wastewater flow would be in the neighborhood of 516,100 gallons per day.

If a public wastewater collection, treatment, and disposal system is not constructed, septic tanks and drainfields will remain the only method of wastewater disposal available in Lockwood. The Facilities Plan has shown a high percentage of drainfield failures in the Lockwood planning area. It is expected that the number of failures will continue to increase as more and more building takes place.

Additional drainfields increase the potential for groundwater pollution. Soils studies contained in the Facilities Plan have shown the questionable areas where construction of a normal drainfield has not been possible. Continued construction of non-conforming drainfields will further increase the potential for groundwater pollution.

Population projections for the Lockwood area made by Yellowstone County do not accurately reflect the actual population in the district. Existing population within the district was estimated using water usage records provided by LWUA, school population trends, mobile home park unit counts, and other methods of estimating current population. Records from both LWUA and the Lockwood School District show a

population trend increasing in the range of 2.4 percent per year. It is expected that once sanitary sewer service is available in the district, the population will continue to increase.

Major commercial growth has occurred near the Johnson Lane Interchange and is expected to rapidly increase once sanitary sewer facilities are available.

A sampling of records from the Yellowstone County Sanitarian (approximately 25 percent) has shown numerous failures of the on-site wastewater disposal system in the past. Further examination of this sampling has shown that some systems have failed more than once. A number of the existing systems that have failed are now operating as non-conforming septic and drainfield installations. There is concern that nitrogen levels in the groundwater may be rising to unacceptable levels, and may affect residents that are served by groundwater wells. This has not been a major concern for LWUA, which uses the Yellowstone as its water source and owns and operates a modern water treatment plant and distribution system within most of the populated planning area.

Being a newly formed water and sewer district, there is no existing Montana Pollution Discharge Elimination system permit, nor is there a need for one, as the district has negotiated a contract with the City of Billings for treatment and disposal.

Technical Assessment:

Project Background:

This project will take place in the unincorporated community of Lockwood, located just southeast of Billings. The recently formed Lockwood Water and Sewer District is undertaking this project to provide a central sewer system to serve the community. District population is over 5,000.

Residents rely on septic systems for wastewater treatment and disposal, and the area has been plagued with numerous septic system failures due to poor soil conditions. The lack of a central sewer system has limited residential and commercial development.

This project is the first phase of a four phase project that will provide a central collection system to serve Lockwood. Wastewater will be pumped to the Billings wastewater treatment plant. The first phase will include a sewer trunk main from Johnson Lane to the Billings treatment plant, two main pumping stations, and a crossing of the Yellowstone River. It is assumed this phase will provide service to the business district on Johnson Lane. The remainder of the collection system will be completed in three separate phases. No definitive schedule was provided for future phases.

Technical Approach:

The goal of the project is to provide a central sewer system for the Lockwood community. Completion of the system (or specific phases) will allow abandonment of failing septic systems and will facilitate residential and commercial development. Economic development will result from commercial and business development.

The Facility Plan provided an excellent development of alternatives for meeting district needs. The plan provided alternatives for the collection system, several alternatives for providing wastewater treatment, alternatives for final disposal and alternatives for crossing the river.

The district opted to complete a collection system and transmission main to transport wastewater to the Billings wastewater treatment plant. This option is the least-cost alternative. The district has recently negotiated an agreement with the City of Billings to provide wastewater treatment for Lockwood.

The Lockwood collection system will consist of a series of collector sewers, sewer mains, arterial sewers and a trunk main. The system will use two pump stations and will pump the sewage across the Yellowstone River to the Billings treatment plant. The Facility Plan has been reviewed and approved by the Department of Environmental Quality.

The facility plan (October 1998) presented a project schedule, with funding secured in January 2000 and construction completed by March 2003. It would appear that this schedule is off by at least one year, and the earliest that completion could take place may be by March of 2004.

Project Management:

The applicant has identified a project management plan and key members of the project team to handle the major tasks of the project administration. The engineer will be responsible for oversight of construction activities and contractors. The applicant has identified its attorney and bond council. The applicant will hire a grant administrator or certified public accountant to manage grant coordination.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match RD Loan	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$22,905	\$0	\$0	\$22,905
Construction	\$77,095	\$0	\$3,236,453	\$3,313,548
Total	\$100,000	\$0	\$3,236,453	\$3,336,453

The applicant has presented a budget and funding strategy to meet the needs of the proposed project. There are no major irregularities or concerns. At this time, it appears that the district is likely to receive the \$3.8 million EPA grant if the district can match 45 percent of the construction cost. For this project, that match would be \$2.9 million. The district has applied for a \$3.2 million Rural Development (RD) grant in which \$2.9 million is budgeted for construction as the match for the EPA grant.

The district has applied for an Economic Development Administration (EDA) grant. The 50 percent match requirement will be met with the RD loan. The district has a reasonable expectation of receiving both the EPA and the EDA grants. The district has also applied for a \$500,000 TSEP grant.

This project, when fully completed, will serve a current population of about 5,000 people. Currently, 1,300 households rely on on-site septic systems. The current rate for sewage disposal is \$0/month. With the proposed project, the estimated sanitary sewer user rate will be between \$43/ and \$46/month. The service area receives water service from the Lockwood Water Users Association. The average monthly water user rate is \$35/month.

The unit prices presented in the construction cost estimate appear reasonable. The costs in the application have been updated from the 1998 Facility Plan to reflect current costs. The fees budgeted for design and inspection are reasonable for a project of this size and complexity.

Benefit Assessment:

This project will benefit the residents and land owners of the Lockwood community. It will increase property values, allow construction on otherwise unusable lots, encourage economic growth and expand employment opportunities. This project, when fully built, will eliminate the need for septic systems in the service area.

The project will also return a large volume of water to the Yellowstone River after being treated by the Billings Wastewater Treatment Plant to meet DEQ standards. This will increase instream flow for other uses downstream.

Environmental Evaluation:

The application did include a Uniform Environmental Checklist. This checklist noted only two potentially adverse impacts. A portion of the sewer will go through an area of contaminated soils near the Town Pump gas station, which is currently being mitigated by EPA. To prevent any problems, the sewer will use special pipe materials and gaskets within the contaminated area. The second potential impact is the

fact that, once the sewer system is completed, the area will likely experience population growth, which may increase enrollment at area schools. The checklist does not discuss the crossing of the Yellowstone River. The project is likely to use directional drilling and impacts should be minimal.

The checklist also noted several potential benefits. These potential benefits included reducing leaking septic systems, providing employment opportunity and economic growth, promoting development and increasing the local tax base. The environmental impacts associated with this project are primarily beneficial. Potentially adverse impacts will be minimized through design and construction management practices.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 41

Applicant Name: Stillwater County Commissioners
Project Name: Improving Soil Productivity and Water Quality in South Central Montana Through Land-Use Changes

Amount Requested:	\$ 99,870	Grant
Amount Recommended:	\$ 99,870	
Other Funding Sources:	\$ 26,664	Montana Bureau of Mines Geology
	\$ 5,000	Stillwater County
	<u>\$ 50,000</u>	U.S. Forest Service
Total Project Cost:	\$181,534	

Project Abstract: (Prepared and submitted by applicant.)

Since the 1950s, serious saline-seep conditions have developed in the Lake Basin of south central Montana. With the extensive loss of land productivity and the advent of the Conservation Reserve Program (CRP), much of the salinized land is now being returned to rangeland. Stillwater County proposes to document these changes and to develop Best Management Practices to further reduce saline-seep growth. Current land use in this area is dominated by small-grain crop and by livestock production. Most producers in the area require a mixture of grain and livestock production for feasible economics. Traditional cropping patterns result in land being left fallow every other year to enhance soil moisture. This is in contrast to the native conditions of limited infiltration through the sod developed below the prairie grasslands. A negative byproduct of the crop/fallow system has been the development of saline seeps in groundwater discharge areas. These seeps develop because excess water infiltrates into recharge areas and mobilizes salts containing high concentrations of selenium, nitrates, and sulfates. These constituents can build up in lakes, springs, seeps, sediment, and forage to concentrations that are toxic to livestock and wildlife. Other antagonistic minerals can block the uptake of required trace metals necessary for healthy livestock and wildlife. Part of the evaluation will be to expand previous localized study plots for a comprehensive overview that compares current land uses to water quality in the Lake Basin. The project will evaluate the area for development of potable water supplies for livestock and sources of contamination associated with saline seeps including surface water, groundwater, and sediment. With this information, changes in land use from the current crop/fallow system to a system more similar to native conditions can be used to determine the viability of a major change in land use.

Technical Assessment:

Project Background:

The proposed project is located in south-central Montana, encompassing the Lake Basin area. The study area includes the towns of Rapelje and Molt, Hailstone and Halfbreed wildlife refuges, Big Lake, and surrounding agricultural lands. The project area is severely impacted by saline seeps, where salts are pulled upward and concentrated at the surface by evaporation of shallow groundwater. The shallow groundwater is caused from excess groundwater recharge. The salts leave a white crust on the surface and kill most, if not all, vegetation, and contaminate stockwater and surface water with selenium, nitrates and sulfates. The spread of saline seeps in this area is well documented in research conducted by the MBMG, Montana State University, U.S. Geological Survey, Natural Resource Conservation Service, and USFWS.

Initial research was completed in the 1970s, followed by work in the 1980s. Past efforts have studied saline seep impacts on a relatively small scale, typically one square mile or less. The findings show the saline seeps are caused by a combination of cultural, climatic, soil and hydrogeologic conditions. In general, this problem happens when moisture not used by plants migrates down through the soil profile. Once the moisture is 4 to 5 feet below ground surface, it is below the root zone of most cereal grains and cannot be used by these crops. The water usually continues to migrate downward, dissolving salts on the way. The moisture often reaches an impermeable or less permeable layer, such as shale, creating a shallow groundwater zone. The groundwater moves laterally, leaching additional salts along the flow path, and eventually resurfaces downslope to form a saline seep in the discharge area. Existing studies indicate it may take years for the water to travel from the recharge area to the discharge area. Saline seep impacts can be exacerbated by cropping practices, such as land being left fallow every other year to enhance soil moisture.

In addition to loss of soil from saline seep, local veterinarians have recorded damage to livestock caused by high levels of minerals in water supplies and forage. Some minerals are referred to as antagonistic minerals, which block the uptake of required minerals for healthy livestock. Other impacts in the area include elevated levels of selenium, toxic minerals in wetlands and difficulty providing clean stockwater to cattle. Landowners have worked to reduce and eliminate summer fallow, grown alfalfa to increase water uptake, replaced cropland with CRP, and in some cases, converted cropland to livestock production. These efforts helped to address saline seep issues on a local scale. However, work on the Lake Basin scale is needed to better characterize the cause and effect of saline seeps, propose best management practices, work with landowners on land use changes, and develop new sources of stockwater for area ranchers.

Technical Approach:

The Stillwater County Commissioners seek RRG funds to assess ways to mitigate saline seep impacts in Lake Basin and identify new stockwater groundwater resources. The project goals and objectives include: (1) characterizing the hydrogeology, (2) documenting land-use influences on water quality, (3) documenting and mapping stockwater resources, and (4) evaluating the feasibility of changing land uses to improve water quality and soil productivity in the basin. In general, the goals and objectives will be accomplished through:

1. inventorying existing wells in the project area
2. compiling existing data
3. installation of 20 to 30 monitoring wells
4. monthly and continuous water level monitoring
5. conducting 20 to 30 short-term aquifer tests and about 10 to 15 slug tests
6. water quality sampling
7. land-use mapping
8. mapping area aquifers
9. completing a feasibility study

The goal of the proposed project is to provide unbiased scientific information regarding the complex issues of basin hydrogeology, development of saline seeps and identifying potable water for livestock. In turn, the county and rural residents can make informed decisions on how to mitigate salinity problems, protect area water quality, and ensure an adequate stockwater supply. A host of mitigation alternatives will be evaluated in the feasibility study, which will consider land-use changes and the practicality, costs and effectiveness of the available options. Example efforts include increasing livestock production, promoting CRP as an alternative to cropping, alternating crop production and planting crops that maximize water use (e.g., alfalfa). The proposed project involves working directly with local community members in public meetings, which is very important considering they will be the ones who voluntarily implement the project recommendations.

The alternatives presented in this proposal included: (1) not funding the proposed grant, allowing the existing conditions to persist and likely worsen, or (2) implement a smaller scale effort, similar to past efforts. The alternatives presented did not offer a viable solution to the problem.

This project is in compliance with all regulations. The installation of monitoring wells will require a licensed monitoring well constructor on site. No permitting is required for this project. The project schedule is proposed to begin in mid 2001 and be completed in mid 2003.

Project Management:

Stillwater County will administer the project and MBMG will manage the project. MBMG staff has substantial experience managing RRG projects and scientific research efforts. MBMG staff will help guide the project for the county, ensure data collection efforts are on schedule, ensure the efforts are relevant to the goals and objectives of the project, and communicate with the county on a regular basis. The county will assist in tracking the project schedule and will provide DNRC with the appropriate reports for grant administration.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$5,000	\$0	\$5,000	\$10,000
Professional & Technical	\$94,870	\$0	\$76,664	\$171,534
Construction	\$0	\$0	\$0	\$0
Total	\$99,870	\$0	\$81,664	\$181,534

The funding strategy for this project relies on the RRG program with matching funds from the applicant, MBMG, and a large match from USFWS. The funding strategy is straightforward and very feasible. USFWS funds are not secured at this time, but USFWS has provided a letter anticipating that it will help fund the project. In addition, MBMG has an excellent history working with and retaining USFWS funding. All other matching funds are secured. The original application had a relatively broad explanation of the funding specifics, but MBMG provided a more detailed explanation of the proposed costs during the review process. In terms of fees, this is a study and will not affect fees on any of the county residents in the project area. Hourly rates are reasonable.

Benefit Assessment:

The project will collect scientific data that are needed by the county and area agricultural producers to evaluate alternatives and land-use changes that mitigate soil and water quality impacts from saline seeps. As part of the project, area water resources will be evaluated to provide replacement stockwater in areas impacted by saline seeps, and as a means to convert cropland to ranchlands, if it is beneficial. Resource conservation benefits would be realized by reversing saline seep conditions. Existing uses and future renewable resources on agricultural land will be protected by the identification of stockwater for cattle. Future Montanans will benefit from the project, and the effort supports prior implementation actions that manage renewable resources and have addressed some impacts.

In terms of resource enhancement, the project will develop alternatives that improve water quality and soil conditions/productivity, which benefits area agricultural producers and residents. There are about 70 farms or ranches in the 255,000-acre project area, and there is a strong community desire to address soil and salinity impacts. Recommendations and actions developed from this project will take several years to be implemented, but the long-term benefits of addressing saline seep impacts and need for alternative stockwater are worthwhile, based on the benefits to future Montanans and local citizens. The benefits will be quantified as salt encrusted lands are improved into productive lands. This will result in direct and indirect benefits to area residents, cost savings, and improved land productivity for local citizens and agricultural producers.

Environmental Evaluation:

No significant adverse environmental impacts will occur as a result of activities associated with the project.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 42

Applicant Name: City of Whitefish
Project Name: Whitefish Beach Stabilization Project

Amount Requested: \$ 58,650 Grant

Amount Recommended: \$ 58,650 Grant

Other Funding Sources: \$ 5,300 City of Whitefish in-kind

Total Project Cost: \$ 63,950

Project Abstract: (Prepared and submitted by applicant.)

The City of Whitefish is requesting assistance through the DNRC Renewable Resources Grant and Loan Program for a proposed shoreline stabilization plan along City Beach in Whitefish. The primary objective is to improve water-quality of Whitefish Lake and the Whitefish River through mitigation of a significant source of fine sediment. In January 2000, the City of Whitefish received funding through the DNRC Project Planning Grant program to assess existing conditions and develop preliminary conceptual designs for stabilization of the shoreline at and adjacent to City Beach. In conjunction with the City of Whitefish, Land & Water Consulting, Inc. (LWC) conducted a feasibility study of the shoreline to determine if a problem did in fact exist and if so, to recommend and develop appropriate water quality mitigation measures. As further described in this application, preliminary studies completed by LWC indicate that due to the high energy nature of the shoreline and conversion to a sand-beach environment, sediment loading to Whitefish Lake and the Whitefish River is occurring annually. The magnitude and rate of sedimentation appears to be strongly governed by wave action, longshore tendencies of lake currents, and level of recreational use based on preliminary investigations completed for the project area.

Based on the results of this preliminary technical review, the City of Whitefish has developed a preliminary design(s) that will achieve multiple resource benefits including:

- Preserving the habitat and water quality of Whitefish Lake, a designated water-quality impaired freshwater lake (303(d) list for siltation) by mitigating a significant source of fine sediment;
- Protecting the Whitefish River, a designated water-quality impaired stream (303(d) list but not for siltation), by mitigating a significant source of fine sediment; and

- Ensuring the continued beneficial use of City Beach and Whitefish Lake for the citizens of Whitefish and Flathead County.

To accomplish these goals, the following tasks have been identified and are the focus of this grant application:

1. Collect public input concerning the preferred alternative;
2. Develop and finalize shoreline stabilization design and engineering specifications; and
3. Construct the project, including permitting, materials, contractor costs, and labor.

Technical Assessment:

Project Background:

Whitefish City Beach is located along the southern shoreline of Whitefish Lake. Whitefish Beach is an area that has been converted from the natural environment of a vegetated gravel to pebble shoreline to an artificial sand beach that is highly prone to erosion.

Sand imported to the Whitefish City Beach undergoes suspension into the lake, and is transported along the shore toward the Whitefish River outlet. Whitefish Beach sand appears to contribute to sedimentation in the Whitefish River. In addition, the loss of sand on Whitefish Beach has resulted in the cost of importing sand to the Beach annually and excavating sand from a boat ramp.

Both Whitefish Lake and the Whitefish River are defined as water bodies that are not meeting state water quality standards or their intended beneficial uses by the Montana Department of Environmental Quality (DEQ). The Whitefish River is affected by various metal and organic contaminants, and Whitefish Lake is affected by siltation. DEQ personnel state that even though the Whitefish River is not listed for sedimentation as an impairment in the current draft 303(d) list, *"sediment suspended from Whitefish Beach appears to be a significant source to the river."*

Technical Approach:

The overall goal of this project is to preserve the habitat and water quality of Whitefish Lake and the Whitefish River by mitigating erosion of fine sediment from Whitefish Beach, while maintaining continued beneficial use of City Beach and Whitefish Lake for the citizens of Whitefish and Flathead County. A DNRC Project Planning Grant funded a feasibility study to assess existing conditions and develop preliminary conceptual designs for stabilization of the shoreline at City Beach. The feasibility study results indicate that sediment loading to Whitefish Lake and the Whitefish River from the sand beach is occurring annually, but the amount of sedimentation was not quantified. Based on the results of the study, the City of Whitefish proposes a two-pronged approach in this grant application that would (1) reduce the contribution of suspended sediment to the lake and Whitefish River, and (2) minimize loss of fine-grained material by erosion at Whitefish Beach.

1. To reduce the contribution of sand-size sediment to Whitefish Lake and the Whitefish River, the City of Whitefish proposes to construct a concrete groin that would double as an elevated boat ramp, about 105 feet long and 28 feet wide. The groin would be designed to capture migrating beach sand. Captured sand would be excavated once or twice a year and returned to the beach.
2. To minimize sand loss through erosion, the City of Whitefish modified the original plan to include the management practice of placing the fine-grain beach sand above the high-water mark and maintaining natural grain-size material (3/8-inch pea gravel) below the high-water mark.

The project faces two minor obstacles: (1) acquiring the numerous requisite environmental permits for construction may affect the estimated schedule, and (2) meeting the long-term routine maintenance requirements (excavating captured sand) that would ensure the effectiveness of the project. The applicant states that five permits would be sought by four separate agencies, in addition to completion of a biological opinion by U.S. Fish and Wildlife Service. The permitting process, and especially the

biological opinion, if required, could easily take longer than the two and one-half months estimated by the applicant. Long-term maintenance requirements are not included in the project budget. Because the City of Whitefish has demonstrated that it can and does meet the expense of maintaining an adequate supply of beach sand under the current management practice, the long-term maintenance of the beach sand under proposed project (less costly than under current conditions) would be expected to continue.

The applicant should place sand on City Beach only above the mean annual high water mark, fill below the high water mark with washed pea gravel. The applicant should direct its contractor to consult with Montana DEQ to determine adequate height design of the boat ramp so that it effectively captures migrating beach sand.

In addition to permit requirements addressed in the application, the applicant should also investigate the need for a license from the Montana Department of Natural Resources and Conservation relating to navigable waters.

Project Management:

The City of Whitefish would provide project management. A qualified environmental consulting firm, selected in conformance with Whitefish City laws and regulations, would complete the design, and provide project management assistance, permitting services, and construction oversight. A construction contractor would be selected and be responsible for project construction. Public input would be solicited during the design stage.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$5,300	\$5,300
Professional & Technical	\$17,950	\$0	\$0	\$17,950
Construction	\$40,700	\$0	\$0	\$40,700
Total	\$58,650	\$0	\$5,300	\$63,950

The budget appears to be sufficient to fund the proposed project. Material, labor, and equipment costs used to develop the budget appear to be reasonable and adequate. The various alternatives evaluated in the application appear to have been developed in a consistent manner, and the preferred alternative was determined to be the most viable and cost-effective alternative.

The proposed funding package appears to be a reasonable mix of state funds and in-kind contributions. In addition to the requested DNRC grant, in-kind contributions will be obtained from the City of Whitefish. Long-term maintenance costs are expected to be less than current maintenance costs under the existing beach sand management practice.

Benefit Assessment:

The proposed project would mitigate impacts from fine-grained sediment in Whitefish Lake and the Whitefish River by reducing the contribution of suspended sediment. Resources that would benefit include aquatic life, including Bull Trout and surface water quality. In addition, recreation use of Whitefish City Beach and Whitefish Lake would improve.

Environmental Evaluation:

This project would result in short-term adverse environmental impacts during the construction phase including increased suspended sediment, dust, noise and risk of accidental releases such as hydrocarbons from construction equipment. These impacts would be localized and short term. The proposed project would have no long-term adverse environmental impacts.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 43

Applicant Name: Hill County
Project Name: Beaver Creek Dam

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000 <u>\$ 50,000</u>	Hill County
Total Project Cost:	\$150,000	

Project Abstract: (Prepared and submitted by applicant.)

The proposed project involves needed repairs and improvements to the Beaver Creek Dam, which is owned, operated, and maintained by Hill County. The dam has a storage capacity of approximately 7,700 acre-feet and is used for irrigation, flood control, recreation, and fish and wildlife habitat purposes. It is located 13 miles south of Havre on Beaver Creek, which is a tributary of the Milk River.

Built in 1974, Beaver Creek Dam has a hydraulic height of about 105 feet. Outflow from the reservoir is controlled by a combination of the irrigation works, concrete chute, and earthen emergency spillway. The dam is considered a high-hazard dam according to both the Natural Resources Conservation Service and the State of Montana's classification system. About 62 homes could be affected by flooding due to problems at the dam. An Emergency Action Plan for Beaver Creek Dam was prepared by Hill County and submitted to DNRC in 1992.

The proposed project is based on an Inspection Report completed by the Natural Resources Conservation Service in 1999. Hill County is seeking \$100,000 in grant funds from the Renewable Resources Program and will provide matching funds of \$50,000. The project scope of work includes completion of an engineering study and cost estimate, preparation of bid documents, and construction. Hill County has received letters of support for the proposed project from the Dam Safety Section of the Montana Department of Natural Resources and Conservation and the State Conservationist of the Natural Resources Conservation Service.

Work on the project would begin in the summer of 2001 and be completed by the fall of 2002.

Technical Assessment:**Project Background:**

Beaver Creek Dam is operated and maintained by Hill County. General maintenance has been adequate, but after more than 25 years some long-term maintenance and repair work is needed. An increased population downstream of the structure is at risk in the event of a failure, and it has been recommended that, in addition to the maintenance work, the spillway capacity be re-evaluated using the new Montana Dam Safety criteria. If necessary, the spillway would be enlarged to ensure public safety by preventing overtopping during extreme high flows.

The dam and reservoir are located 13 miles from Havre and provide a significant recreation resource to that community. The reservoir also provides irrigation water to 1,155 acres of cropland.

Technical Approach:

The goal of this project is to ensure that Beaver Creek Dam remains in a safe condition for another 30 years. The objectives and tasks to accomplish them are clearly stated in the proposal. An analysis to identify feasibility, cost, and priorities of each work item has not yet been done. An engineering consultant will be selected to complete this analysis. A final design will then be prepared and the construction work completed within funding limitations.

A detailed list of the maintenance and repair items is provided in the 5-year inspection report dated 1999. Work items include gate and gear assemblies, removing the cap from the outlet to allow complete drainage. Preliminary costs have been developed and added as a supplement to the grant application. It will be up to the consultant engineer to refine these costs and to help prioritize the work.

The earthen emergency (auxiliary) spillway capacity needs to be reevaluated because of the change in Montana Dam Safety Spillway Standards. This task should be done by the consultant engineer or by the Montana Dam Safety office before the priorities for work are set. An alternative would be a spillway that would pass the full probable maximum flood (PMF). This would meet the Natural Resources Conservation Service (NRCS) standard, a likely requirement if federal funding is obtained through NRCS.

Project Management:

The project will be managed by the Hill County Commissioners. Coordination with DNRC and NRCS will be required.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$850	\$0	\$850	\$1,700
Professional & Technical	\$15,000	\$0	\$15,000	\$30,000
Construction	\$84,150	\$0	\$34,150	\$118,300
Total	\$100,000	\$0	\$50,000	\$150,000

Average annual revenue for the operation and maintenance (O&M) of the dam is \$18,364, which is obtained through the assessment of water users at \$10.50/acre-foot. This revenue is adequate for normal O&M, but is not enough to address the needed replacements and improvements. The assessment is not projected to change with project implementation.

Estimated total costs exceed the project budget shown above. However, the applicant intends to use the engineering study to help prioritize the needed repairs and to use this grant for the most critical work.

Benefit Assessment:

The project will improve long-term water resource conservation in Beaver Creek. The citizens of the area and of Montana will benefit from the continued availability of recreation, the continued supply of irrigation water, and by improved safety below the dam.

Environmental Evaluation:

There are no long-term adverse environmental impacts or potential adverse impacts because of the proposed improvements.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of project scope of work, administration and budget.

Project No. 44

Applicant Name: Helena Valley Irrigation District
Project Name: Fixed Wheel Gate and Hydraulic Cylinder Repair

Amount Requested:	\$100,000	Grant
	\$ 58,444	Loan
Amount Recommended:	\$100,000	Grant
	\$ 58,444	Loan
Other Funding Sources:	<u>\$ 29,956</u>	U.S. Bureau of Reclamation
Total Project Cost:	\$188,400	

Project Abstract: (Prepared and submitted by applicant.)

The Helena Valley Irrigation District delivers water to agricultural water users and to the City of Helena. The district's water source is the Missouri River stored in Canyon Ferry Reservoir.

A penstock connects Canyon Ferry Dam with the district's pumping plant. Two 3,500 hp hydraulic-driven pumps deliver water to a gravity canal distribution system. In Canyon Ferry Dam, there are four identical fixed wheel gates operated by hydraulic cylinders. Three of the gates are for the electric generation units operated by the U.S. Bureau of Reclamation (USBR); the other is for the pumping plant.

Through inspections, USBR determined that the gates and cylinders should be overhauled. In 1999, USBR entered into a contract to pull, overhaul and reinstall the three gate units that supply water to the electric generators. They put an option in the contract to have the unit overhauled at the district's discretion and expense. Two of the units were overhauled in 1999, and based on their condition, confirmed that the district's unit should also be overhauled at this time .

The district services more than 15,000 acres of farmland, 200 farm units, and 28,000 residents in the City of Helena. The system has a positive effect on the area aquifer, supplies water to wetlands, provides habitat for birds and other wildlife and the system's open drains are used by brown and rainbow trout for spawning. The entire operation of the system depends on the proper operation of the gate. Therefore, the district is totally convinced that the responsible and necessary action is to do the maintenance at this time.

Technical Assessment:

Project Background:

Canyon Ferry Dam was completed in 1954, and the Helena Valley pumping plant in 1958. This gate has never been removed or refurbished. The irrigation district is responsible for the maintenance and repair of its part of the system. USBR will contribute 15.9 percent of the total cost. If the district had to pay for this project without assistance, it would deplete its reserve fund.

Technical Approach:

The goal of this project is to maintain and refurbish the equipment so that a failure does not occur. The proper operation of the gate and cylinder is paramount to the Helena Valley Irrigation District. If the gate will not fully open water cannot be provided to the system's users, including, farmers, ranchers and the City of Helena. If the gate were not to close in an emergency, massive flooding could occur downstream. The methods and the individual tasks have been well thought out, and since two identical gates have already been through the process, the needed maintenance is clearly defined. There are no alternative solutions to this project. All regulations, permits, etc. will be managed by USBR.

Project Management:

Project administration, management, and coordination activities with other agencies will all be done by USBR. The irrigation district manager will also be involved as needed.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$2,315	\$2,315
Professional & Technical	\$0	\$0	\$1,785	\$1,785
Construction	\$100,000	\$58,444	\$25,856	\$184,300
Total	\$100,000	\$58,444	\$29,956	\$188,400

The costs are documented from the work done in 1999 on identical equipment, and, unless an unforeseen problem arises, should be quite accurate. The district has also applied for loans for the full amount of the work in case this grant request is not granted.

Water rates are currently \$17.96/acre and are not expected to change as a result of this project.

Benefit Assessment:

The Helena Valley Irrigation District has a water conservation plan that was done in conjunction with the USBR. Part of the plan is to maintain and improve the system to more efficiently deliver water. If the proposed improvements were made to the dam, it would ensure continued operation of the dam at current levels. It currently provides irrigation, flood control, recreation, and water supply benefits. It will directly benefit over 200 farms covering 15,000 acres and the project will also benefit the city of Helena that obtains drinking water from the system.

Environmental Evaluation:

There are no long-term adverse environmental impacts or potential adverse impacts that will result from the proposed improvements.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget, and a Renewable Resource Loan in the amount of \$58,444 at a 4.5 percent interest rate.

Project No. 45

Applicant Name: The Hinsdale Water and Sewer District
Project Name: Wastewater System Improvements

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$329,000 Treasure State Endowment Program
\$ 53,000 State Revolving Fund
\$169,000 Community Development Block Grant
\$ 8,000 District

Total Project Cost: \$659,000

Project Abstract: (Prepared and submitted by applicant.)

In 1916, the original Sewer and Lighting District was established as a Special Rural Improvements District, with oversight by the Valley County Commissioners until a recent election, whereby an independent Water and Sewer District was created. In 1974, The Hinsdale Sewer District constructed a small package plant for sewage treatment. The treatment system is beyond its useful life. As stated in its Administrative Order, *"The Hinsdale Plant is 25 years old, which is at or beyond the expected life span of such facilities. Several of its parts are dysfunctional or in disrepair..."*.

Of particular concern is operator safety. Old steel channels that form the walkway around the aeration chamber are rusted through and unsafe. The people of Hinsdale did not form a district until April 2000. The delay was mainly due to misunderstandings about funding availability. The Community Development Block Grant (CDBG) application was rejected in June 1999; TSEP maintained its refusal to change the guidelines following numerous town meetings and letters from bond council, engineers, RD and the county, entities such as Midwest Assistance Program and a protest by two Hinsdale citizens in November of 1999. Those opposing district formation finally conceded to its necessity and in April 2000, the citizens voted overwhelmingly to not only form the district, but also to incur the necessary indebtedness.

The Administrative Order cites 70 permit violations from 1996 to 1998 and the violations continue. In addition to treatment problems, the facility plan prepared by the engineer notes that many of the collection pipes are undersized (a main collector under 8 inches) and others are cracked (clay tile) and have root penetration. Leakage through these pipes further inhibits proper treatment. The scores of violations all affect the Milk River. The plant's grating and channel supports are terribly corroded. One operator fell in several years ago, and almost could not escape (the bubbling from the aerators make it impossible to swim out and the operator had to find something to hold onto and climb out).

The engineer proposes installing a new treatment system adjacent to the existing system. Once the new system is on-line, the old system would be rehabilitated to provide a back-up. The cost of the new treatment system is estimated at only about \$360,000, about a third the cost of a lagoon or SBR system. The proposed project would also provide some pipe replacement to bring the collection system into compliance with W1313-2. The facility plan has been approved by DEQ.

Technical Assessment:

Project Background:

Hinsdale, Montana, is located in Valley County along the Milk River. The original Sewer and Lighting District was established in 1916 as a Special Rural Improvements District, with oversight by the Valley County Commissioners. In 1974, the Hinsdale Sewer District constructed a small package plant for sewage treatment. The treatment system is beyond its useful life. As stated in its Administrative Order, *"The Hinsdale Plant is 25 years old, which is at or beyond the expected life span of such facilities. Several of its parts are dysfunctional or in disrepair..."* Of particular concern is operator safety. Old steel channels that form the walkway around the aeration chamber are rusted through and unsafe.

An Administrative Order, executed in 1998, cites 70 permit violations from 1996 through 1998, and according to correspondence received from DEQ (June 28, 1999, and September 21, 1999), violations continue. In addition to treatment problems, the facility plan prepared by the engineer notes that many of the collection pipes are undersized and other are cracked and have root penetration. The scores of violations all affect the Milk River.

The people of Hinsdale formed the Hinsdale Water and Sewer District in April 2000 to allow them to apply for funding assistance to help finance wastewater treatment system improvements.

Technical Approach:

The goal of the project is to provide the Hinsdale community with safe and reliable wastewater treatment. Currently, the facility itself is unsafe for the operators due to rusting and deteriorating grating and channel supports. In addition, the plant is in violation of its MPDES permit and is discharging marginally treated water into the Milk River. The objective necessary to achieve the goal includes the construction of a new

wastewater treatment system and replacement of undersized and damaged sections of the collection system. Additional benefits are expected through the use of the existing facility as a back-up system.

Fourteen alternatives were originally considered for the new wastewater treatment system. After an initial review, the list of alternatives was reduced to the following six options:

- Alternative 1 – Non-discharging Facultative Treatment Lagoon
- Alternative 2 – New Wastewater Treatment Package Plant
- Alternative 3 – Rehabilitate Existing Wastewater Treatment Package Plant
- Alternative 4 – No Action Alternative
- Alternative 5 – Discharging Facultative Treatment Lagoon
- Alternative 6 – Aerated Lagoons

The applicant provided a detailed description of each of the six alternatives. Alternative 2--New Wastewater Treatment Package Plant--though not the least expensive option, is the selected alternative.

Since the proposed new packaged treatment system basically is the same as the existing facility, and since the existing facility has operated satisfactorily for most of the past 26 years, it can be assumed that the proposed alternative will sufficiently serve the community of Hinsdale. Information was provided regarding existing and projected wastewater flows and sufficient details regarding the design of the proposed package plant to evaluate the selected approach.

The current wastewater treatment facility is in violation of its MPDES permit, and an Administrative Order has been executed requiring that the violations be addressed. The Administrative Order stated that failure to take corrective action constitutes a violation of the Act and may result in (a) the assessment of civil penalties of up to \$10,000 per day of violation or (b) the assessment of criminal fines of not more than \$25,000 per day of violation.

Four alternatives for upgrading the collection system were described in detail. The second alternative included replacing all undersized pipes and existing problem areas. Though not included as part of the selected alternative, a visual investigation (televising) of the existing collection system should be performed to determine the location and extent of problems.

The proposed schedule for construction of the new package wastewater treatment plant is to begin in the second quarter of 2002, with final inspection scheduled for the fourth quarter of 2002.

Project Management:

The district will contract with a project administrator to assist in all phases of procurement and project development and management. The applicant identified the project team members and how each will be coordinated to provide solid project management.

The applicant identified specific measures that will be taken to manage consultants and contractors throughout the project. These measures include clear communication, a specific scope of services, meetings (pre-bid, pre-construction, weekly, monthly, and as-needed), billing approval process and accounting tasks.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$100,000	\$0	\$0	\$100,000
Total	\$100,000	\$0	\$0	\$100,000

Funds from the RRGL program will be used to finance portions of the construction phase of the project. Equipment items included are the packaged wastewater treatment plant, the UV disinfection system and a 55,000-gallon holding tank. The cost estimate for construction appears to be reasonable. It is anticipated that sewer fees will increase from \$10.03/month to \$25.20/month for the 121 users in the Hinsdale District.

Benefit Assessment:

A beneficial health impact to the Hinsdale area is expected due to the implementation of a more efficient and reliable treatment process.

The project will end the discharge of extremely high coliform counts and high BOD or nutrient-rich wastewater to the Milk River. This improvement will make the river safer for floaters, boaters, and anglers, and will bring the plant into compliance with its MPDES permit as directed in the Administrative Order executed on November 2, 1998. An additional benefit is that the new facility will contribute to maintaining flow in the Milk River, which is known to cease flowing during drought periods.

It is difficult to accurately estimate how many miles of the Milk River will be impacted by eliminating the discharge of untreated wastewater. The flow recordings from Saco, the point closest to Hinsdale, vary from 0 cfs recorded over 7 days in 1981 up to 11,900 cfs in 1986. The Milk River and the local boat ramp are used recreationally by local residents and outfitters. The applicant states that the proposed plant would provide some storage of water, but would also provide a continuous flow of 33 to 35 gpm to the river even during drought periods.

The facility improvements will discontinue the discharge of high BOD water, which takes oxygen out of the river and is dangerous to the fish population. In addition, the new UV disinfection process will eliminate current use of chlorine and sulfur dioxide, potential hazards to riparian wildlife. All impacts are anticipated to be environmentally beneficial.

The project will help to manage the quality and quantity of water in the Milk River that provides recreational benefits to local residents and outfitters. Maintaining the quality of water now will provide future benefits to Montanans. The Milk River flows into the Missouri River, which provides drinking water to downstream users. Therefore, improvements to the quality of the water in the Milk River will impact and benefit downstream users.

Environmental Evaluation:

The project does not have any long-term adverse environmental impacts.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 46

Applicant Name: Town of Richey
Project Name: Water System Improvements

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000	
Other Funding Sources:	<u>\$ 6,500</u>	Local Contribution

Total Project Cost: \$106,500

Project Abstract: (Prepared and submitted by applicant.)

The Town of Richey's original water distribution system was constructed in the 1930s and early 1940s and features a 120,000-gallon water storage reservoir built in 1937. The current back-up water well, known as the Park Well, was completed in 1965. The well presently used as the Town of Richey's primary source of water was drilled in 1987 and produces 80 gallons per minute (gpm).

The Park Well has recently collapsed, leaving the Town of Richey with only one source of water. With only one functional water well, the Town of Richey is in violation of the following Department of Environmental Quality (DEQ) standards: Sections 3.2.1.1: Source Capacity - total developed source must equal or exceed the maximum day and equal or exceed the design average day with the largest producer out of service; and 3.2.1.2: Number of Sources - a minimum of two sources of groundwater must be provided.

The proposed project would involve replacing the collapsed Park Well by drilling another deep water well, approximately 75 feet from the existing site. The new water well will have a pitless unit on the casing and will be piped over to the original well house to reuse the existing meters, valve, etc. Upon completion, the proposed project will also comply with DEQ standards issued in Sections 3.2.1.1 and 3.2.12, of the Circular DEQ-1, by ensuring the Town of Richey a second water source should the primary water well fail.

Technical Assessment:

Project Background:

The Town of Richey is located in eastern Montana along Montana Highway 200, about 45 miles west of Sidney. The Town's water is supplied from two deep wells, each about 1,500 feet deep. The newest well was completed in 1987. The oldest well (the Park Well) was constructed in 1965 and has recently collapsed and cannot be used. The collapse of the second well is the reason behind this proposed project. The current usable water source is a single, deep (1,500-foot) well rated at 80 gpm. DEQ standards for source capacity require two groundwater sources, and the total developed source must equal or exceed the maximum day and equal or exceed the design average day with the largest producer out of service. The water source for Richey fails both of these criteria.

Technical Approach:

This project proposes to construct a new well adjacent to the existing well so that the Town will have an additional source of groundwater and satisfy the stated DEQ requirements. The approach to construct a new well adjacent to the existing well is a sound approach and should ensure that the same good supplying aquifer can be drilled into. This also eliminates the need to purchase new land or obtain easements for pipe routing. The location for the new well is owned by the Town. The alternatives evaluated by the engineer were (1) no action, (2) new water source, and (3) new replacement well. The costs associated with developing a new water source (the Yellowstone River) were evaluated and concluded to be prohibitive compared to costs associated with a new replacement well. Several permits will have to be obtained for this project, including a stormwater discharge general permit and a water-use permit, as noted by the engineer and the Town. The scheduling for this project will be to design and construct as soon as funds become available.

Project Management:

Richey's town council will accept the responsibility for the management of project activities and expenditures. The mayor will be the official signatory. The project manager will be responsible for overall project management and ensuring compliance with applicable federal and state requirements for the proposed project. The project manager will also serve as the Town of Richey's liaison with DNRC and as the labor standards officer. The project engineer will be responsible for the design and construction engineering, preparing and administering the bid process, conducting the pre-construction conference,

supervising construction, and completing inspection reports.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$4,000	\$0	\$3,500	\$7,500
Professional & Technical	\$8,500	\$0	\$3,000	\$11,500
Construction	\$87,500	\$0	\$0	\$87,500
Total	\$100,000	\$0	\$6,500	\$106,500

The administrative and financial costs for this proposed project total \$7,500, of which \$4,000 is requested to come from the Renewable Resource Grant (RRG) Program. The remaining portion will come directly from the town's commitment. Engineering, construction and contingency costs total \$99,000, of which \$96,000 will come from the RRG grant, while the remainder will come from the town's commitment. The unit costs of the project for professional services, material and construction all appear to be reasonable. The town committed \$6,500 in May of 2000, and when RRG grant funds become available, the town will proceed with the project. If the town is successful in obtaining the total \$100,000 RRG grant, the project will not impact the water system user rate. Residents are currently paying an average of \$39.51 per month for operating and maintenance of the water system. The town increased the rates in 1997 and 1998 to accommodate a water system improvements project (treatment). The target water rate for Richey is \$14.00/month.

Benefit Assessment:

This project will protect existing water use and ensure adequate future supplies of water for domestic, irrigation, and fire fighting needs, for 260 residents in the Town of Richey.

Environmental Evaluation:

There will be no long-term environmental impacts or any potential adverse impacts if this project is completed. Short-term impacts, such as dust, smoke and on-site run-off, can be mitigated.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 47

Applicant Name: Charlo Water District
Project Name: Water System Improvements - New Well

Amount Requested: \$ 100,000 grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 14,400 (INTERCAP loan)

Total Project Cost: \$114,400

Project Abstract: (Prepared and submitted by applicant.)

Charlo's water system was installed in 1948. The water mains and tank were wood. In 1965, the wood tank was replaced with the existing 49,000-gallon elevated, steel storage tank. A second well was drilled in 1974. A major project in 1984 replaced all the wood mains with plastic and a water district was formed.

In 1993, in response to problems with bacterial contamination and high manganese, a poly-phosphate chlorination system was installed at each well.

The current capacity of the two wells does not meet the district's flow needs. The 1974 well has a capacity of 250 gallons per minute. The 1948 well produces less than 80 gallons per minute. Total well capacity exceeds the design maximum day. With the largest well out of service, the supply is less than the design average day. The storage is less than the design average day, which requires additional capacity.

A new well is needed to replace the 1948 well. The new well will be about 475 feet deep. In addition, a four-inch main will be installed from the new well to the existing pump house to utilize the existing poly-phosphate chlorination and control equipment.

Technical Assessment:

Project Background:

The proposed project is located within Charlo, a community in the Mission Valley south of Flathead Lake in Lake County. The Charlo water system was constructed in 1947 and included 1.8 miles of wooden pipe, a 30,000-gallon storage tank, and a 6-inch diameter well. Major improvements since that time consisted of a new 40,000-gallon water storage tank that was constructed in 1965 and a new well, drilled in 1974. In the early 1980s, the old wooden distribution mains were replaced with PVC pipe. A polyphosphate system for iron and manganese removal, with disinfection, was added to the water system in the early 1990s.

Several years ago, a new pump and motor were installed at a greater depth. Community growth due to employment at Jore Industries and natural migration continues, and the quantity of available water is a recognized problem. The old well can not provide the future (year 2020) design average day demand, as required by Department of Environmental Quality (DEQ) standards, if the largest producing well (1974 well) is out of service. The Charlo distribution system, storage facilities, and the 1974 well are all in excellent condition. Adding a new well at this time will solve the district's only current problem - inadequate water quantity for future needs.

Technical Approach:

The goal of this project is to drill a new well to provide an adequate water supply to meet community needs for the next 20 years. Specific construction tasks are:

1. to drill a new 8-inch well to provide at least an additional 132 gallons per minute (gpm) of water
2. to pipe the new well over to the existing pumphouse
3. to plumb the new supply into the polyphosphate/chlorination system
4. to install controls to operate the new well in conjunction with the 1974 well

Three alternatives were considered for this project: (1) no action, (2) rehabilitation of the old well, and (3) drilling a new well. Alternative 3 was chosen because it would provide the desired water quantity of at least 132 gallons per minute and it would be a permanent, long-term solution. DEQ standards would require that the smaller well produce 100 gpm over a 24-hour period to meet the 20-year average daily demand. With a developed capacity of 132 gallons per minute, the well could provide the average daily demand in 18 hours.

Well log and water rights information is provided for the 1948 and 1974 wells. These wells are only 100 feet away from each other and are drilled to almost the same depth. According to the engineer, other nearby wells have a similar lithology. A new well can be expected to utilize the same aquifer, at an approximate depth of 475 feet. According to the engineer, the only water quality contaminants are iron and manganese, which are a nuisance but are within acceptable limits. The engineer indicates that there is adequate protection for the proposed well site, since it is surrounded by county parkland. Agricultural land is located 500 feet away to the north, and west and there is an irrigation ditch located 75 feet away.

Since the ditch's flow is Flathead River water, and not return water, and the aquifer is protected by several clay and silt layers, contamination from the ditch is not a concern.

No legal hurdles are anticipated. Lake County owns the parkland on which the new well is to be drilled, and the engineer's preliminary discussions with the county indicate no problems with using this site. After the new well is drilled and test-pumped, the existing water rights will be modified to address the new point of diversion, the increased volume, and a new date of completion. Since tribal members are served by the water supply, no problems are anticipated in obtaining the revised water rights from the Confederated Salish and Kootenai Natural Resource Division, which has oversight authority. Delays in funding will not impair the project or significantly reduce benefits or increase costs.

Project Management:

The proposed management plan for the water well project is feasible and should serve to ensure that the project is completed in a timely manner and within budget constraints. The key project staff members are identified as the engineering consultant, the district's secretary and the manager. Preliminary project planning has already been completed. With only two proposed funding sources, DNRC and INTERCAP, there should be no problems in coordinating project tasks with the availability of funds. It is not known whether there has been any public involvement to date, but a public meeting to discuss the project is proposed for this summer.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$1,000	\$1,000
Professional & Technical	\$9,300	\$0	\$0	\$9,300
Construction	\$90,700	\$0	\$13,400	\$104,100
Total	\$100,000	\$0	\$14,400	\$114,400

The proposed funding scenario for this project is relatively simple because the Charlo Water District proposes to use a \$100,000 DNRC grant for the bulk of the project costs. An INTERCAP loan will supplement the grant funds and will be directed toward legal fees and additional construction costs not covered by the DNRC grant. The construction cost estimate seems reasonable. The water quality test costs seem high, but the \$1,000 extra is only a minor portion of the proposed construction costs. Paperwork for the INTERCAP loan can be prepared prior to a DNRC grant award, and the loan can then be closed as soon as the grant money is available.

The present fee for Charlo water users is \$19.00, with \$2.57 of this fee going toward debt retirement. No increase in the user rate will result from this project. The existing debt will soon be retired, and the debt service on the new INTERCAP loan will be paid with this same approximate portion of the user fee. It is possible that only interest payments on the INTERCAP loan will be paid until the full amount of the existing debt is retired.

Benefit Assessment:

This project will greatly benefit the community of Charlo by increasing the quantity and quality of the town's public water supply to meet the community's demands. The 1948 well has a perforated casing, its construction is questionable, and it is located less than 50 feet away from a sewer main. The well is also ungrouted, which is contrary to current well driller regulations. While the aquifer has natural overlying clay and silt layers for protection, grouting is still required to keep contaminated surface water from flowing down the casing to the aquifer. Abandonment of the 1948 well will ensure that contaminants do not penetrate down the well to the aquifer. The proposed new well will have an efficient screen to withdraw the required water flow from the aquifer with the smallest pump required. This saves on electrical energy for the pump. A new well will be constructed in accordance with current standards, which are designed to protect the aquifer and promote efficient water withdrawal.

The proposed new well has a 20-year design basis. Current and future residents of Charlo will benefit from having an adequate water supply to meet their domestic and irrigation needs. The additional flow from the proposed well, to be at least 132 gpm, will provide a measurable public benefit.

Environmental Evaluation:

There will be temporary short-term negative impacts during the construction period, such as pollution from noise, fumes, and dust. In addition, water pumped from the well during development, testing, and disinfection will need to be disposed of properly to prevent unnecessary soil erosion and contamination of local waters. Construction of the proposed 700 feet of water main will require disposal of chlorinated water from disinfection procedures. With careful construction practices, these short-term environmental concerns can be easily handled. Long-term environmental benefits include abandonment of an old well that is ungrouted and could allow surface contaminants to travel to the aquifer along its casing.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 48

Applicant Name:	DNRC Water Resources Division		
Project Name:	Seepage Monitoring Program – DNRC Dams		
Amount Requested:	\$ 100,000	grant	
Amount Recommended:	\$ 100,000		
Other Funding Sources:	<u>\$ 37,163</u>	DNRC State Water Projects Bureau	
Total Project Cost:	\$ 137,163		

Project Abstract: (Prepared and submitted by applicant.)

The Department of Natural Resources and Conservation (DNRC) owns several reservoirs that have aging high-hazard dams. The term "high-hazard" refers to the potential for loss of life below the dam, should the dam fail. One of the responsibilities of dam ownership is to have in place an adequate program to monitor the seepage of water at the dam.

The importance of controlling seepage through a dam was not known 60 years ago when many of DNRC's dams were originally built. Several of DNRC's dams do not have adequate seepage control systems. As a result, problems associated with seepage are starting to show up at several of DNRC's dams. There is no means in place to determine the severity of the seepage and whether the integrity of the dams is at stake.

The purpose of this project is to establish a seepage monitoring program for the high-hazard dams on four of DNRC's reservoirs. These dams were chosen due to surficial evidence that problems may be developing and/or the potential threat to public safety. The primary focus will be the installation of monitoring wells and piezometers in each dam. The funding in this request will be used primarily to contract with private drilling firms to install monitoring wells. The four dams identified are: Painted Rocks Dam (Ravalli County); Willow Creek Dam (Madison County); Cataract Dam (Madison County); and Yellow Water Dam (Petroleum County).

DNRC is requesting a grant in the amount of \$100,000 to implement these seepage monitoring programs. The total cost of the project is \$137,163. \$37,163 of the funds would come from in-kind services provided by DNRC.

Technical Assessment:

Project Background:

The Department of Natural Resources and Conservation owns 24 high-hazard dams that require modern seepage monitoring programs and seepage control devices to protect lives and property downstream, as well as to protect the irrigation and recreation values of associated reservoirs. The lack of seepage monitoring and control makes a dam failure more probable. This project would establish a seepage monitoring program for four of DNRC's dams with surficial evidence that problems may be developing. Requested funding will be used to contract private firms to install monitoring wells and piezometers at each dam and to purchase a seepage monitoring database program to manage data from all monitored dams. The four dams are: Painted Rocks Dam (Ravalli County); Willow Creek Dam (Madison County); Cataract Dam (Madison County); and Yellow Water Dam (Petroleum County).

Painted Rocks Dam, located on the West Fork of the Bitterroot River in Ravalli County, is an earthfill dam 143 feet high and 800 feet long that stores 32,360 acre-feet of water used for irrigation, recreation and fisheries. There have been no recorded observations of seepage at Painted Rocks Dam.

Willow Creek Dam, located in Madison County, is an earthfill dam 105 feet high and 453 feet long that stores 18,000 acre-feet of water for irrigation and recreation. Flowing water has been observed exiting from the dam toe and from rock in the left abutment.

Cataract Dam, located in Madison County, is an earthfill dam 80 feet high and 775 long that stores 1,478 acre-feet of water for irrigation and recreation. Seepage has been observed at the toe of the dam for many years. Past attempts to grout the dam have had questionable effectiveness. The effectiveness of a drain is also questionable because grout was observed flowing from the drain during grouting.

Yellow Water Dam, located in Petroleum County, includes an earthfill dam 37 feet high and 1,695 feet long and a dike 11 feet high and 545 feet long. The reservoir stores 4,242 acre-feet of water for irrigation and recreation. Seepage water flows from a number of locations along the dam toe and through rock in the right abutment.

Technical Approach:

The project goals are to prevent loss of life and to evaluate dam saturation and stability. The objectives to meet these goals focus on providing seepage monitoring programs at four dams and a seepage control structure at one. The approach is a conventional method used at dams throughout the state and country which focuses on installing monitoring wells, piezometers, and seepage control systems. These methods are currently in use at other Montana dams. Alternatives included continuing visual monitoring, which is ineffective, and installing early warning systems, which are expensive and do not provide advanced indications of potential problems. Regulations and permitting are not project impediments.

The project will begin with preparing bid specification for the drilling, testing, and construction work. Next, contracts for installing monitor wells and piezometers will be let. DNRC staff will provide oversight on all work and will then purchase and establish a seepage monitoring database.

Project Management:

The applicant has identified sufficient staff (DNRC) to manage the project. There is sufficient funding available based on recent similar projects, and there is a commitment to provide additional staff time if needed. Public input will be supplied through an environmental assessment process. Consultants and contractors will be managed by DNRC staff. The applicant has a history of similar successful projects.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$5,300	\$0	\$37,163	\$42,463
Professional & Technical	\$10,754	\$0	\$0	\$10,754
Construction	\$83,946	\$0	\$0	\$83,946
Total	\$100,000	\$0	\$37,163	\$137,163

Unit costs for each project component were provided and appear reasonable. The overall budget also seems reasonable, and final construction costs will be determined by a competitive bid process overseen by an agency with significant experience in this type of project.

The sponsor has indicated that matching funds are available and that additional funds and/or in-kind support would be provided from DNRC operating budgets if costs are higher than estimated in the application. This project is not subject to user fees of any kind.

Benefit Assessment:

The project improves management and protection of dams and their related irrigation and recreational resources and also supports prior implementation activities. Some wildlife values have a wider benefit area than the immediate project sites due potential seasonal use by some species.

The project seeks to protect existing resources but does not enhance resources through developing new recreation, new water storage, new water-use efficiency, or new projects.

There is a quantifiable multiple-use benefit to the public in terms of dam failure protection, irrigation supply maintenance, recreation, and wildlife habitat. Approximately 7,400 Montanans live directly downstream of these dams in areas that would be inundated by floods if breaches were to occur. In the case of Painted Rocks, an additional 50,000 Montanans would be impacted by road closures, power failures, health and safety issues related to flooding along the Hamilton-Missoula-Frenchtown population corridor. Costs associated with damage to land, physical structures and possible loss of life have not been determined. However, liabilities resulting from such a breach would severely impact the State's economy. Ensuring that the state-owned dams remain functional and safe allows for the continued conservation of the State's water resources for multiple use, including farm irrigation water storage, water-based recreational activities and enhancement of wildlife habitat. Citizen support was not directly demonstrated by letters or hearings. It is assumed, however, that the project has the support of irrigators, recreationists and potential flood victims.

Environmental Evaluation:

Only minor environmental impacts associated with drilling activities are likely to occur. No mention was made in the application of the potential negative impacts to downstream riparian areas, wetlands, fish, wildlife habitat, or recreation if these dams are maintained and their stored water continues to be diverted for other uses.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 49

Applicant Name: DNRC Water Resources Division
Project Name: Seepage Monitoring Program – DFWP Dams

Amount Requested: \$ 100,000 grant

Amount Recommended: \$ 100,000

Other Funding Sources: \$ 17,657 (DNRC State Water Projects Bureau)

Total Project Cost: \$ 117,000

Project Abstract: (Prepared and submitted by applicant.)

The Department of Fish, Wildlife and Parks (DFWP) owns several reservoirs that have aging high-hazard dams. The term "high-hazard" refers to the potential for loss of life below the dam, should the dam fail. One of the responsibilities of dam ownership is to have in place an adequate program to monitor the seepage of water through the dam.

The importance of monitoring and controlling seepage through a dam was not known at the time when many of DFWP's dams were originally built. Several of DFWP's dams do not have adequate seepage control or seepage monitoring systems. The lack of seepage monitoring devices makes it more difficult to identify seepage related problems, and the lack of seepage control devices makes it more probable that seepage related problems will progress to a dam failure.

The purpose of this project is to establish a seepage monitoring program for three of DFWP's dams. These dams were chosen due to surficial evidence that problems may be developing and/or the threat to public safety. The primary focus will be the installation of monitoring wells and piezometers in each dam. The funding in this request will be used primarily to contract with private drilling firms to install monitoring wells and with a contractor to install a filtered drain. The three dams identified are: Gartside Dam (Richland County); South Sandstone Dam (Fallon County); and Park Lake Dam (Jefferson County).

DNRC is requesting a grant in the amount of \$100,000 to implement these seepage monitoring programs. The total cost of the project is \$117,657. \$17,657 of the funds would come from in-kind services provided by the DNRC's Water Projects Bureau.

Technical Assessment:**Project Background:**

The Department of Fish, Wildlife and Parks owns several aging high-hazard dams that require modern seepage monitoring programs and seepage control devices to protect lives and property downstream, as well as to protect the irrigation and recreation values of associated reservoirs. The lack of seepage monitoring and control makes a dam failure more probable. This project would establish a seepage monitoring program for three of DFWP's dams with surficial evidence that problems may be developing. Monitoring wells and piezometers would be installed at each dam. Requested funding will be used to contract private firms to install monitoring wells and a filtered drain. The three dams identified are: Gartside Dam (Richland County); South Sandstone Dam (Fallon County); and Park Lake Dam (Jefferson County).

Gartside Reservoir is an earthfill dam built in 1962 located in Richland County 1 mile west of Crane and used for recreation. A dam failure would jeopardize several residences, a major supply canal, a highway, and a railroad. The dam is 30 feet high and impounds 330 acre-feet. The principal seepage exit points at Gartside Dam are the left abutment and within the spillway.

South Sandstone Dam is an earthfill dam built in 1975 located in Fallon County south of Plevna and is used for recreation and flood irrigation. The dam is 38 feet high and impounds 950 acre-feet. Seepage currently exits the dam toe, but there is currently no way to measure it due to the lack of piezometers.

Park Lake is an earthfill dam built in the early 1870s to supply mining water for the Helena area and is currently used for recreation. Dam failure would inundate residences along Lump Gulch and Prickly Pear Creek. The dam is 22 feet high and impounds 225 acre-feet. The embankments at Park Lake include a dike section with fill depths of 18 feet, and a main dam 22 feet high. The dike section of the dam has diffuse seepage exiting along the downstream face, and several locations with concentrated seepage exit points. A piezometer at the toe of the main dam has an abnormally low water level, possibly indicating that the foundation is highly fractured.

Technical Approach:

The project goals are to prevent loss of life and to evaluate dam saturation and stability. The objectives to meet these goals are discussed above and focus on providing seepage monitoring programs at three dams and a seepage control structure at one. The approach is a conventional method used at dams throughout the state and country that focuses on installing monitoring wells, piezometers, and seepage control systems. These methods are currently in use at other Montana dams. Alternatives included continuing visual monitoring (which is ineffective) and installing early warning systems (which are expensive and do not provide advanced indications of potential problems). Regulations and permitting are not project impediments.

The project will begin with preparing bid specification for the drilling, testing and construction work. Next, contracts for installing monitor wells, piezometers, and a toe drain for the Gartside dam will be let. DNRC staff will provide oversight on all work and will then establish a data collection and analysis program.

Project Management:

The applicant has identified sufficient staff (DNRC) to manage the project. There is sufficient funding available based on recent similar projects, and there is a commitment to provide additional staff time if needed. Public input will be supplied through an environmental assessment process. Consultants and contractors will be managed by DNRC staff. The applicant has a history of similar successful projects.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$15,508	\$15,508
Professional & Technical	\$16,200	\$0	\$2,149	\$18,349
Construction	\$83,800	\$0	\$0	\$83,800
Total	\$100,000	\$0	\$17,657	\$117,657

Unit costs for each project component were provided and appear reasonable. The overall budget also seems reasonable, and final construction costs will be determined by a competitive bid process overseen by an agency with significant experience in this type of project.

The applicant has indicated that matching funds are available and that additional funds and/or in-kind support would be provided from DNRC operating budgets if costs are higher than estimated in the application. This project is not subject to user fees of any kind.

Benefit Assessment:

The benefit of seepage monitoring programs at Gartside, South Sandstone and Park Lake Reservoirs is to detect problems at an early stage before a crisis occurs and to reduce the risk of a dam failure. In addition, this program will provide data to improve the ability of the DFWP to rank and schedule maintenance and rehabilitation at the dams, and to reduce the overall cost of repairs. The project

improves management and protection of dams and their related irrigation and recreational resources and also supports prior implementation activities. Some wildlife values have a wider benefit area than the immediate project sites due to potential seasonal use by some species.

The project seeks to protect existing resources, but does not enhance resources through developing new recreation, new water storage, new water-use efficiency or new projects.

Ensuring that the state-owned dams remain functional and safe allows for the continued conservation of the State's water resources for multiple use, including farm irrigation, water storage, water-based recreational activities and enhancement of wildlife habitat. Citizen support was not directly demonstrated by letters or hearings other than one letter from DFWP, but it is assumed that the project has the support of irrigators, recreationists and potential flood victims.

Environmental Evaluation:

The project should result in only minor environmental impacts associated with drilling activities and with road construction at the Park Lake Dam. No mention was made in the application of the potential negative impacts to downstream riparian areas, wetlands, fish, wildlife habitat, or recreation due to maintaining these dams and diverting their stored water.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 50

Applicant Name: City of Laurel
Project Name: Groundwater and Salinity Management Feasibility Study

Amount Requested:	\$ 99,991	Grant
Amount Recommended:	\$ 99,991	
Other Funding Sources:	\$ 14,285	MBMG
	<u>\$ 9,420</u>	City of Laurel
Total Project Cost:	\$123,696	

Project Abstract: (Prepared and submitted by applicant.)

The City of Laurel has persistent problems with high groundwater levels, wet and unstable soils, and saline-seep development. These problems cost the city and its residents in street, building foundation and corrosion damages; higher water treatment costs; property devaluation; and lost development opportunities. Areas of saline-seep development render soils devoid of vegetation and contain salts (nitrate, sulfate, selenium) that can be harmful to animal and human health.

There are likely multiple causes to these problems, but they are primarily linked to regional agricultural practices, the city's geologic setting and the local drainage systems. This project will collect the information necessary to better delineate the causes and to identify and test the feasibility of appropriate corrective measures. This will lead to better resource conservation and management in the area.

The project will consist of inventorying area wells, drains, sewers, irrigation canals and land use, and by completing soil borings, installing monitor wells and measuring groundwater and surface-water levels. Groundwater and soil samples will be collected for chemical analyses. Soils and aquifer media will be tested for physical and hydraulic properties. The above data will be used to identify and test the feasibility of appropriate corrective measures for the City of Laurel.

Technical Assessment:

Project Background:

The proposed project is located in southcentral Montana, encompassing about 18 square miles around the City of Laurel, approximately 16 miles west of Billings. The project area includes urban and rural lands impacted by unstable soil and saline seep, which are caused by shallow groundwater conditions in expansive clays. Croplands and pastures surrounding Laurel have been flood-irrigated since the construction of large irrigation supply canals in the early 1900s. The canals serve the important function of delivering irrigation water from the Yellowstone River to area farms and ranches. Three large irrigation canals are located upgradient of the city, and are known to leak irrigation water into the groundwater system based on previous investigations. Shallow groundwater levels caused from canal water loss were partially corrected in 1986 by lining selected canal segments. However, groundwater levels measured in and around the city in 1999 showed a 3- to 9-foot rise in groundwater levels in response to annual flood irrigation and operation of the canals. Additional mitigation measures are needed.

Shallow groundwater is a significant problem in the area because the upper bearing soils contain expansive clays. As a result, the city and surrounding area have significant problems with subsidence, cracking, and settling of building foundations; frost heave on roads; trees growing off center; and other serious and costly issues associated with unstable soils. These problems are often associated with saline seeps and saline soil development, where salts are pulled upward and concentrated at the surface by evaporation of shallow groundwater. The salts leave a white crust on the surface and kill most, if not all, vegetation, which also impacts surface water and groundwater quality. The toll of these impacts are high repair costs to the city and rural residents, loss of soil resources, and the loss of production on agricultural lands impacted by saline seep.

The Montana Bureau of Mines and Geology (MBMG) also identified other causes that may make matters worse. Storm water runoff, urban watering, loss of water from landscape ponds, and other water sources also contribute to shallow groundwater in the project area.

The City of Laurel and surrounding residents are in great need of data and land management recommendations that identify the best management practices and corrective actions to mitigate the affects of the shallow perched aquifer and expansive clays. In addition, they are in need of land use recommendations and alternatives that protect deeper groundwater, which supplies the area's drinking water. The project is geared to address the needs by evaluating the area hydrology and hydrogeology, and by completing a feasibility study.

Technical Approach:

The City of Laurel seeks RRG funds to assess shallow groundwater conditions, analyze water quality, evaluate saline seep development and complete a feasibility study. The project goals and objectives include:

1. characterize the hydrogeology of the soil and groundwater system
2. evaluate the existing surface water and storm water drainage systems
3. assess the effects of irrigation canals and irrigation practices on groundwater levels and flow in the area
4. identify the sources and migration pathways of soil salinity
5. evaluate the feasibility of managing groundwater levels and mitigating salinity impacts

In general, this will be accomplished through inventorying existing wells in the project area, installation of 20 to 30 boreholes or monitoring wells, water level monitoring for two and a half years, computer modeling (optional), conducting three aquifer tests and about 10 to 20 slug tests, storm drain and canal flow monitoring, soil testing, and water quality sampling. Reviewers recommended additional soil mechanic analyses, which could be done in the future if needed.

The goal of the proposed project is to provide unbiased scientific information regarding the complex shallow aquifer system. In turn, the city and public citizens can make informed decisions on how to mitigate soil stability problems and protect area water quality. The proposed project involves working with local community members in public meetings, which is very important, considering they will be ones who voluntarily implement project recommendations and actions.

This project is in compliance with all regulations. The installation of monitoring wells will require a licensed monitoring well constructor on site. No permitting is required for this project. The project schedule is proposed to begin in mid 2001 and be completed in mid 2003.

Project Management:

The project will be administered and managed by the city clerk. The city will guide the project, ensure data collection efforts are on schedule, ensure the efforts are relevant to the goals and objectives of the project, communicate with MBMG on a regular basis, and provide DNRC with the appropriate reports for grant administration. The city clerk will also serve as the public liaison for the project, summarizing public input for the feasibility study.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$5,660	\$0	\$9,420	\$15,080
Professional & Technical	\$94,331	\$0	\$14,285	\$108,616
Construction	\$0	\$0	\$0	\$0
Total	\$99,991	\$0	\$23,705	\$123,696

The funding strategy for this project relies heavily on the RRG program with matching funds from the applicant and MBMG. The funding strategy is straightforward and very feasible. All matching funds are secured. The original application had a relatively broad explanation of the funding specifics, but MBMG provided a more detailed explanation of the proposed costs during the review process. In terms of fees, this is a study and will not affect fees on any of the city or rural residents in the project area.

In terms of hourly unit costs, the MBMG professional rate (\$26/hour) and student rate (\$9/hr) are very reasonable, and below typical private sector costs. The actual time that will be spent on the project totals 11 months of professional/technical time and 4 months of student time. The RRG costs for laboratory analysis (\$7,000), drilling (\$23,000), and small line item costs (\$4,135) appear to be reasonable. There is a \$10,000 equipment rental item in the RRG budget, which MBMG broke out into specific items on request. The \$10,000 estimate seems a bit high but not unreasonable, considering the type of pumps, generators, recorders, and other equipment needed for the project. Travel costs for this project are \$3,670. The city is providing a \$5,000 surveying match for this project to determine well elevations and other benchmarks that are needed for water level and flow analyses.

Benefit Assessment:

The project will collect scientific data needed by the City of Laurel and nearby residents to evaluate alternatives for mitigating impacts from unstable soils and saline seep conditions. Resource conservation measures will result from improved management of groundwater levels and mitigation of unstable soil conditions and saline seep in agricultural and urban settings. Project findings will be used to develop strategies and actions that protect and preserve excellent soil conditions for agricultural and domestic use. In addition, project findings will be used to develop strategies to protect the deeper groundwater system, which supplies drinking water for the city and rural residents. The success of these measures will benefit future Montanans if soil and land use are protected. Lastly, the proposed project is one of several important resource conservation efforts underway, or completed, that are focused on addressing saline seep impacts, conserving excellent water quality, and soil productivity.

There are more than 5,000 people in the City of Laurel and more than 14,000 residents in the project area. The benefits will be quantified as salt encrusted lands are improved into productive lands, and issues associated with unstable soil/expansive clays are mitigated. This will result in direct savings and improved productivity for local citizens.

Environmental Evaluation:

No significant adverse environmental impacts will occur as a result of activities associated with the project.

Funding Recommendation:

DNRC recommends grant funding of \$99,991 upon approval of a project scope of work, administration and budget.

Project No. 51

Applicant Name: MSU Family & Graduate Housing Office
Project Name: Irrigation/Municipal Water Load Reduction

Amount Requested: \$ 100,000 grant

Amount Recommended: \$ 100,000
Other Funding Sources: \$ 318,386 (MSU)

Total Project Cost: \$ 418,386

Project Abstract: (Prepared and submitted by applicant.)

This grant application is for the design and construction of improvements to convert the Montana State University Family and Graduate Housing (a self-funded, non-subsidized, housing service for married and graduate students) irrigation system from City of Bozeman water to a groundwater supply source.

The existing Family and Graduate Housing (FGH) irrigation system serves approximately 42 acres of lawn, landscape and garden areas. The existing irrigation system costs approximately \$92,000 to \$107,000 a year to operate. By converting to a groundwater source and modernizing the system, operating costs will be reduced by approximately \$97,000 a year to an operating cost of \$10,000 a year.

The proposed improvements will disconnect the irrigation system from the city system and connect the system to four new groundwater wells. By converting the system to well water, the renewable water resource will be used to its highest and best use. To use treated city water for irrigation is a poor use of resources, straining municipal source, distribution, and treatment facilities for a non-potable use.

The source of raw water for the City is Hyalite Reservoir, Bozeman Creek and Lyman Creek. All three of these water sources provide high-quality water with limited water rights. In 1993, DNRC worked with the city to raise Hyalite Reservoir approximately 8 feet at a cost of \$3.1 million to provide additional water to the city. The city is also evaluating the construction of a new reservoir in Bozeman Creek for additional storage. By removing FGH from the city system the water storage behind Hyalite Reservoir will be preserved and the construction of a new reservoir in Bozeman Creek delayed.

It is anticipated that the city water saved by converting to well water will provide domestic water to an additional 332 Bozeman households.

Technical Assessment:

Project Background:

This project would convert the existing MSU student housing irrigation system from the city of Bozeman to a groundwater source. This will reduce the need for municipal water treatment and distribution infrastructure by as much as 220,000 gallons of water per day, which is sufficient to provide service to 332 new homes in Bozeman (estimated new growth in Bozeman over 3.5 years). The seasonal cost to irrigate the 42 acres served by FGH ranges from \$70,000 to \$85,000 per year plus additional labor. A well feasibility study has been conducted and an irrigation master plan is underway. The remainder of the MSU campus has completed similar system improvements over the past 15 years to convert from city water to surface water.

Technical Approach:

Project goals are to reduce irrigation costs by \$70,000 to \$80,000 per year and to reduce municipal water treatment needs based on surface water. The alternative considered was connecting to the existing MSU groundwater-based irrigation system, but it was determined to be inadequate to handle the increased use.

The project components include drilling four new wells and installing a distribution system, irrigation system and control system. All design work would be performed by licensed professional engineers.

The proposed project should encounter no difficulties conforming to existing regulations or obtaining the needed permits, including a new groundwater right. The project implementation schedule is reasonable and reflects an aggressive attitude for completing the project.

Project Management:

The project has identified sufficient staff to manage the project including administration, contracting, construction inspection, consultants and other requirements. There appears to be a sufficient funding commitment and sufficient economic incentives to ensure the project will be implemented. Public input has been provided by city water managers, citizen groups and individuals. Consultants and contractors will be managed by MSU staff with assistance from the consulting engineer.

Financial Assessment:

Budget Category	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$1,500	\$1,500
Professional & Technical	\$0	\$0	\$33,286	\$33,286
Construction	\$100,000	\$0	\$283,600	\$383,600
Total	\$100,000	\$0	\$37,163	\$418,386

The financial feasibility is well documented. Administration costs appear to be considerably underestimated, but it is assumed the project sponsor has the resources and motivation to make up the shortfall. The construction cost estimates seem reasonable and are supported by a consulting engineer report. The potential operating budget savings of \$97,000 per year make it very likely that the project will be implemented. The project sponsor states that no university indirect costs are included. Funding seems adequate and matching resources available. No spending has occurred on this project to date.

The sponsor has indicated that matching funds are available and ready for commitment to this project. This project will reduce the fee MSU pays to the City of Bozeman for municipal water used for irrigation by about \$97,000 per year.

Benefit Assessment:

The project will improve water management and may reduce total water consumption due to a more efficient and more easily managed irrigation system. Total water use may not change dramatically at the irrigation site, but about 60 acre-feet per year will no longer be processed by the city water and wastewater facilities. This reduced load on city treatment facilities is sufficient for 332 homes or 3.5 years of Bozeman residential growth. This project also supports prior MSU efforts to convert irrigation systems from municipal water supplies to other sources.

The project seeks to protect existing resources but does not enhance resources through developing new recreation, new water storage, or new projects. Water-use efficiency should improve due to a more efficient irrigation system that is easier to manage.

The project would have a quantifiable benefit to the public on 42 acres of MSU property. Benefits include reducing the load on city water and wastewater systems by 60 acre-feet per year, a slight reduction in total water use (perhaps 5 acre-feet per year), and a \$97,000 reduction in annual operating expenses.

Citizen support was expressed in letters from city water managers, citizen groups and individuals. The annual budget savings may benefit all Montanans who attend MSU to some degree.

Environmental Evaluation:

The project has no identified negative environmental impacts. It has potential positive environmental impacts, including:

1. energy savings for municipal treatment
2. water savings due to a more efficient irrigation system
3. less surface water withdrawal for the community water system, which may improve recreation, fish, wildlife, riparian areas and wetlands.

Funding Recommendation:

DNRC recommends funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 52

Applicant Name: Glen Lake Irrigation District
Project Name: Costich Drop Improvements Project

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 100,000	
Other Funding Sources:	<u>\$ 88,700</u>	Project Sponsor
Total Project Cost:	\$ 188,700	

Project Abstract: (Prepared and submitted by applicant.)

In 1910, what is now the Glen Lake Irrigation District was formed and later placed into operation in 1914. The district provides irrigation and stock watering to farmers and ranchers north and east of Eureka in Lincoln County. Water for the district is stored in two reservoirs: Glen Lake and Costich Lake. Users within the system are provided water by a series of open canals and buried conduit. This grant application discusses existing deficiencies and improvement options for a drop pipe immediately below the dam.

In 1997, under emergency conditions, the district installed approximately 1,800 linear feet of 36-inch HDPE culvert to replace two failed drops. This stop-gap measure allowed the district to continue operations, but has plagued the district with excessive repairs. The district plans to replace the corrugated plastic pipe with 36-inch concrete pipe. The concrete pipe has a design life of 100-years and has been sized for a 500-year flood event. In addition to replacing the pipe, the district will reroute the pipe to an area with greater geotechnical stability.

Should funding be unavailable, the district would be required to construct much of the improvements with borrowed funds, generating an increase in already high users charges. It is the district's intention to pursue \$100,000 in grant funding from the DNRC Renewable Resource Program and bear the remaining costs through district funds or in-kind contributions.

Technical Assessment:

Project Background:

Glen Lake Irrigation District serves 3,162 acres near Eureka. Placed in operation in 1914, the district provides water for both irrigation and livestock. Water for the district is stored in two reservoirs, Glen Lake and Costich Lake. Both reservoirs are formed by earthfill high-hazard dams and provide public recreational benefits as well as water storage for the district.

Costich drop is an existing 36-inch diameter high density polyethylene (HDPE) buried conduit that conveys outlet flows about 1,500 feet below Costich Dam. This existing drop was installed by the district in 1997 with locally borrowed money. The emergency project was necessary to keep the dam in operation after two existing drops failed and would not have survived the 1997 irrigation season.

Since installation, the HDPE outfall has failed several times due to pipe collapse. The reason for the continuing failures is improper installation. The pipe is installed in soil that is not properly compactable, and acceptable backfill material was not imported to replace the native material. Consequently, the pipe is not adequately supported and fails due to movement and soil pressure. The district has attempted unsuccessfully to correct the problem, but it has become clear that the only long-term solution is to properly replace the pipe.

Technical Approach:

The proposed project is to replace 1,500 feet of improperly installed and subsequently failed 36-inch diameter HDPE pipe. Four alternatives are discussed, including the "do nothing" alternative and the "maintenance as required" alternative. The construction alternatives discussed are to replace the pipe with properly specified and installed HDPE welded joint pipe or with reinforced concrete pipe. Of these alternatives, the concrete option is the least-cost alternative, and is thus being proposed as the preferred alternative.

Project Management:

The district is proposing a relatively simple management plan that should be adequate for this project. The board of commissioners will be responsible for the expenditure of all funds. Records will be kept by the district. Administrative management of the project will be performed by the district.

Design, technical review coordination with DNRC, construction inspection and contractor payment certifications will be performed by the engineering consultant (engineer of record) for the project. This person or firm will be registered as a professional engineer in the State of Montana and will be hired by the district in accordance with statutory procurement requirements.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 3,000	\$ 3,000
Professional & Technical	\$ 10,200	\$0	\$ 8,900	\$ 19,100
Construction	\$ 89,800	\$0	\$ 76,800	\$166,600
Total	\$100,000	\$0	\$ 88,700	\$188,700

Construction cost estimates have been prepared for each of the alternatives, and a present value analysis has been made for the no-action and continued maintenance alternatives. The construction cost estimates look reasonable.

The budget does not contain costs for administration of the project, which will be performed by the district. The overall budget is adequate to effectively design, manage, and construct the project, including administration.

Glen Lake Irrigation District serves 151 water users on 3,322 acres. The district currently assesses its members \$20 per acre per season. Current debt includes a loan from a local bank that was used to construct the existing drop. The district proposes to retire that loan and assume a new loan to obtain match funding for this project. These transactions will not necessitate an increase in the existing assessment.

Construction of this project is scheduled for the spring or fall of 2002; grant fund availability will not affect the proposed schedule.

Benefit Assessment:

Both of the reservoirs operated by Glen Lake Irrigation District provide multiple benefits, including recreation, flood control, and water storage. Both are accessible to the public. There is documented support for the project from governmental agencies including the U.S. Forest Service and Natural Resource Conservation Service. Residents of the area have also provided their written support for the project. The benefits the district provides to the Eureka area are significant; without irrigation the area would not be agriculturally productive.

This project lends itself to the efficient management and operation of the district's facilities. Costich Dam and its related features, including this drop, are integral to the system operated by the district. The district has been pro-active in seeking funding for and making the necessary improvements to keep its dams and ditch system safe and operational.

Environmental Evaluation:

No long-term adverse environmental impacts are identified with this project. The long-term benefits have been previously discussed in this report. The project is located in a rural area, and short-term adverse impacts during construction will be minimal.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 53

Applicant Name: Malta Irrigation District
Project Name: Replacement of Check Structure

Amount Requested: \$ 68,290 Grant
Amount Recommended: \$ 68,290
Other Funding Sources: \$ 69,790 Malta Irrigation District
Total Project Cost: \$138,080

Project Abstract: (Prepared and submitted by applicant.)

The Malta Irrigation District is part of the Milk River Project and contains 42,492 irrigable acres. Water is supplied by a diversion dam on the Milk River at Dodson. The water is diverted from the dam into Dodson south and Dodson north canals. The Dodson south canal feeds Bowdoin National Wildlife Refuge and ends up in Nelson Reservoir, which stores water for Malta and Glasgow Irrigation Districts. The Dodson north canal supplies water for the Dodson and Malta Irrigation Districts.

The irrigation district was constructed during the years 1909 through 1923 and is an old project that has been in continuous service since 1911 with regular inspections and normal maintenance. Our objective is to replace and modify the existing check structures with concrete. The majority of these structures are metal and have rusted out to where they no longer control water efficiently. These structures will be modified so that they can be automated in the future.

The irrigation district has over 280 miles of canals and laterals, with many check structures and about 1,400 turnouts.

With many check structures made out of steel that is rusting out, we find that it is almost impossible to control the irrigation water. With the replacement of these checks, we will be able to deliver water more efficiently to the farmers. With no leakage, less water will be needed, which will greatly improve water delivery and efficiency.

We also have some areas where there is quite a distance between checks. We would like to install new checks to shorten the distance, which means not as much water will be needed.

Technical Assessment:**Project Background:**

The Malta division (Malta Irrigation District) of the Milk River Project in northcentral Montana, was constructed during the years 1909 to 1917 and contains 42,493 irrigable acres. The U.S. Bureau of Reclamation (USBR) operated the irrigation works until 1941, when the Malta Irrigation District assumed the operation and maintenance (O & M) responsibility for the division.

In 1989, USBR completed a repair and betterment study on the proposed rehabilitation and betterment of the Malta Division. The cost estimate to complete the study's recommendations was prohibitive to water user's at that time.

This proposal is to replace 48 check structures within the boundaries of the district, which runs from Dodson to Hinsdale. Replacement of the check structures was part of USBR's original 1989 proposal. The new check structures will be made of concrete and will be designed for future automation, placement of measuring devices or possible conversion to overshot gates.

The Malta Irrigation District has recently completed a cost share grant with DNRC to replace eight of the main delivery diversion check structures and has recently received grant monies for the repair of Dodson Dam.

Technical Approach:

Replacement and modification of the check structures are needed to:

1. restore the reliability of the system
2. conserve irrigation water by reducing seepage losses and operational wastes
3. restore and provide design capacity to the system to avoid overloading it, and thus eliminate the risk of system failure
4. reduce annual operation and maintenance costs
5. ensure the continued social and economic welfare of the area.

The only alternative to this project is to repair the existing structures. Given the currently poor conditions of the check structures, this is not a viable option. If the project were not funded, the replacement and repairs of the check structures would be delayed, possibly escalating the costs and making it a financial hardship on the district.

The checks will be installed in the fall after the irrigation season is over. An excavator will be used to excavate a level and on-grade site for each concrete check. After installation of the check, it will be backfilled and rip-rap will be placed on the canal banks down stream from the check to control erosion.

The district plans to replace about ten new checks each year, beginning with the most deteriorated ones. Check structures will be designed to meet USBR standards. USBR will provide any consultants or engineering work on the project.

Project Management:

The Malta Irrigation district manager will be responsible for supervising the project. The district has a hydraulic excavator to excavate for the checks, and district personnel will construct the checks.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 1,500	\$ 1,500
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$ 68,290	\$0	\$ 68,290	\$136,580
Total	\$ 68,290	\$0	\$ 69,790	\$138,080

The cost of labor, materials, equipment, and contingency for the replacement of 48 check structures will be \$136,580. The total cost per check structure will be \$2,845. This cost will be split between the requested DNRC grant monies and in-kind contributions by the district. The district will also provide \$1,500 in in-kind administrative support. The requested grant monies include \$32,500 for labor, \$22,090 for materials, \$7,500 for equipment and \$6,200 for contingencies. A more specific breakdown for materials and labor should be provided by the project sponsor before construction begins.

The Malta Irrigation District has 223 water users on 40,458 assessed acres. The district presently has an unpaid balance of \$145,968.85 to USBR and expects to have this debt paid off by 2003. The district has no other outstanding debts. The district's annual revenue is \$810,000.00. The current rate levied per acre is \$13.46. Cost for each additional acre-foot is \$3.25.

Benefit Assessment:

The population of this area is largely dependent on agriculture, and the proposed check structures will allow for more efficient water conveyance. This in turn, could lead to the preservation of farmland by protecting it from seepage damage and possibly increasing irrigable acreage and crop production. There was no information provided by the applicant as to the severity of the current seepage problem.

The Bowdoin National Wildlife Refuge would benefit from better water distribution and possibly greater instream flows, though no documentation was provided in the application.

Environmental Evaluation:

A reviewer noted that erosion control, loss of vegetation, and encroachment of noxious weeds are possible adverse environmental effects that need to be addressed. Short-term construction impacts must be identified and mitigated to the extent possible.

Funding Recommendation:

DNRC recommends grant funding of \$68,290 upon approval of a project scope of work, administration and budget.

Project No. 54

Applicant Name: City of Scobey
Project Name: Wellfield Rehabilitation Study

Amount Requested: \$ 67,605 Grant

Amount Recommended: \$ 67,605

Other Funding Sources: \$ 0

Total Project Cost: \$ 67,605

Project Abstract: (Prepared and submitted by applicant.)

Plugging of water wells is a common occurrence where groundwater is hard and contains iron and manganese. The technical literature on well plugging and its removal is mostly anecdotal and lacks documentation of the methods, improvements and costs. This Wellfield Rehabilitation Study will evaluate methods to treat a plugged well, documenting the associated improvements and related costs. The study will also include a preventive maintenance phase that will demonstrate how to monitor and delay the onset of plugging.

The study is planned to occur in the City of Scobey wellfield. The shallow aquifer of the wellfield provides an ideal setting for the study, reducing both contractor labor and rehabilitation chemical costs. The wellfield also has conditions that result in severe plugging of wells and pumps. Testing in January 2000 confirmed the presence of mineral incrustation and microorganism growth in the wellfield. A new pump installed in one of the city wells was severely clogged in a period of less than eight years. Two other wells in the wellfield are no longer in use due to plugging. The study will apply different rehabilitation chemicals to the wells in the wellfield. Detailed testing will be performed to document the improvement of well capacity related to rehabilitation. City staff will also conduct a 12-month preventive maintenance program to evaluate the rate of return of plugging and methods to delay plugging.

The study results will be documented in a project report, and summaries of the work will be distributed to well owners and water associations in the state of Montana. Many water system managers are interested in the project results. Circle, Plentywood, Sidney and Wolf Point were contacted about their interest in the project, and each community offered a letter of support, which is included in this grant application.

Technical Assessment:

Project Background:

During January 2000, the City of Scobey completed a well and pump performance test at its No. 5 well. Test results indicated that the screen efficiency was about 16 percent, the pump was severely clogged, and the productivity of the well was about one-third of the original production capacity. The pump, which was new in 1992, had been severely clogged in a period of eight years. Water quality data indicated a high potential for mineral deposition and bacterial clogging by iron-related bacteria, sulfate reducing bacteria, slime forming bacteria and aerobic heterotrophic bacteria.

There is a substantial amount of information written on the rehabilitation of water wells. This literature, however, is too general and does not provide detailed data on actual hydraulic performance, treatment methods and associated costs. There are no data presented regarding the rate of return of bacterial clogging following treatment, and direct comparisons are not made among the various chemicals that can be used for rehabilitation. Additionally, there is disagreement among authors with respect to actual treatment methodologies.

Technical Approach:

The Wellfield Rehabilitation Study is intended to provide specific information needed by public water systems to critically review and apply an effective rehabilitation method. The study will be limited to the most commonly applied acids used for well rehabilitation. Detailed data will be collected on well hydraulics and water quality before, during and after the treatments are applied. Video logging of the conditions in the well will be completed and recorded. Cost information will be determined for the various treatments, and a general discussion will address safety issues, chemical discharge, and application problems encountered. The technologies will be limited to those that are feasible for Montana considering its climate and resources.

The goal of the study is to develop information that will assist well owners in sustaining the quality and capacity of existing water supply wells. The objectives will be threefold:

1. compare three different acids commonly used for water well rehabilitation
2. develop a preventive maintenance program that can be implemented by well owners to monitor and manage well plugging
3. provide detailed data on treatment methods and successes, including costs, for the three different methods employed.

A report will be written and made available to communities throughout the state. Additionally, the results of the study will be presented to engineers, local governments, and water system operators throughout the state at various technical conferences held each year.

Project Management:

The Wellfield Rehabilitation Study will be completed by a combination of city staff, a consulting engineer and a water well contractor. The City of Scobey will administer the grant. Although not included in the project budget shown below, administrative costs will be borne by the city. Technical management and documentation of the project will be the responsibility of the consulting engineer. Actual work in the three wells will be performed by a water well contractor.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$33,765	\$0	\$0	\$33,765
Construction	\$33,840	\$0	\$0	\$33,840
Total	\$67,605	\$0	\$0	\$67,605

Although not presented in the proposed budget, administrative costs will be borne by the City of Scobey. Grant funds will be used to pay for engineering and actual water well contractor expenses.

The average residential water user in Scobey pays \$26.53 per month for water. This project will not affect that rate.

The costs associated with the project are adequate to accomplish the proposed activities. The project is being proposed in three phases. The first phase will be to apply the three treatment processes. Phase 2 will be to maintain the wells and monitor the successes of the various treatment processes and to develop a preventive maintenance program. Phase 3 will be to document all of the data and compile it into a report to be made available to the public. Phase 1 is scheduled to begin in the fall of 2001 after grant funding has become available.

Benefit Assessment:

The Scobey Wellfield Rehabilitation Study will provide conservation and resource enhancement benefits as well as public benefits to the residents of Scobey and other communities across the state. By increasing and maintaining production capacities in water supply wells, pumping and associated energy consumption costs will be reduced and overall management of the community's water system will be improved. The project proposes to install a flow meter on one well, which will improve the operational efficiency of the system and aid in the detection of excessive water usage or loss due to leakage.

The public benefits include those normally associated with a reliable water supply for a community. Additionally, the project proposes to produce a report that will address specifics associated with the treatment of mineral deposition and bacterial congestion and clogging in water wells. This is a documented problem in communities across the state. Although general information is available through existing literature, very little detail is offered and communities are continually faced with indecision and lack of financial resources to experiment with all of the various alternatives that are discussed. The report that results from this project will determine the effectiveness and costs associated with three different treatment alternatives, and that information will be presented at technical conferences held annually and attended by engineers and system operators. The report will also be available to communities through DNRC.

Environmental Evaluation:

There are no anticipated adverse environmental impacts associated with this project. The beneficial impacts include energy conservation (reduced pumping costs for a properly producing well versus a clogged well) and the benefits to public health and safety that will be derived from a good public water supply system.

Funding Recommendation:

DNRC recommends grant funding of \$67,605 upon approval of a project scope of work, administration and budget.

Project No. 55

Applicant Name: Power-Teton County Water and Sewer District
Project Name: Water System Improvements

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$425,000 Treasure State Endowment Program
\$ 35,000 District Funds
\$298,000 RD Loan

Total Project Cost: \$858,000

Project Abstract: (Prepared and submitted by applicant.)

The current conventional package water treatment plant was built in 1970. In addition, the system consists of a 6,000,000-gallon pre-sedimentation reservoir and a 50,000-gallon level concrete tank. Current water supply is considered undrinkable by most residents, and will not meet all 2003 U.S. Environmental Protection Agency (EPA) regulatory requirements, specifically those relating to turbidity levels. The current system offers no fire protection.

The town's water system has the following deficiencies:

1. treatment plant is outdated and sub-standard
2. lack of back-up treatment system
3. limited water distribution
4. inability to provide fire flow
5. storage system is grossly inadequate.

The proposed project would involve conducting pilot testing of conventional treatment versus membrane technology as the best treatment alternative, construction of a new treatment plant, installation of a 250,000-gallon storage reservoir, making core distribution improvements that will provide fire flow to the entire town and replacing and extending water mains to completely update the system.

Technical Assessment:**Project Background:**

Power's domestic water system consists of a conventional package treatment plant and a 6,000,000-gallon pre-sedimentation reservoir that were constructed in 1970, along with the distribution system. Both are located about 1.5 miles west of Power. A 50,000-gallon water storage tank and an adjacent booster station are located in the southwest portion of town. These components were constructed in 1988. The distribution system does not provide fire flows and consists of 2-inch, 3-inch, and 4-inch mains.

Raw water quality is high in color and organic content, and there are occasionally taste and odor problems. Turbidities as high as 300 nephelometric turbidity units (NTU) have been found in Muddy Creek, and turbidities in the pre-sedimentation basin have been higher than 30 NTU at times. Algae are a problem during the hot summer months, and high turbidities cause difficulties for plant operations. Department of Environmental Quality (DEQ) files show that total trihalomethanes have been as high as 126.4 micrograms per liter (ug/l). The water treatment plant will not meet future turbidity criteria under the Long-Term Enhanced Surface Water Treatment Rule. This rule will require an effluent turbidity of 0.3 NTU for 95 percent of collected samples. Although residents have complained about inadequate water supply during peak summer months, the real dissatisfaction is with the quality and safety of the water supply. The water treatment plant has only a single train of treatment units. DEQ standards require two trains for redundancy.

Technical Approach:

This project is geared toward correcting deficiencies at the existing treatment plant, which is Phase 1 of the water system improvements plan. Several water supply alternatives were considered. Continued use of Muddy Creek as a surface water source was determined to be the only feasible option.

Several alternatives were also considered for treatment. Conventional treatment was selected as the preferred alternative because it has the least technological risk and a high degree of performance. Membrane filtration is also being considered through pilot studies because it offers some treatment performance advantages and simplicity of operation. Either conventional treatment or membrane filtration could provide a long-term answer to the treatment problems for the community of Power. Pilot studies for conventional treatment and membrane filters will determine the appropriate technology to use and the necessary pre- and post-treatment processes.

Operation and maintenance costs for either conventional treatment or membrane technology were estimated to be about the same in the preliminary engineering report. While membrane filtration may require less operator time, it may have higher costs associated due to membrane replacement every three to five years and potentially higher power costs. These costs should be considered in more detail during the pilot-study stage of the project. DEQ has indicated that the water treatment plant has not always been adequately operated and maintained in the past. The new treatment plant should incorporate design items that promote ease of operation. The water system operator should be consulted during the design process.

One design item that must be addressed before construction begins is the disposal of waste from either the conventional treatment plant or the membrane filtration plant. The existing backwash pond has not been adequately maintained or monitored. If total retention can not be obtained in a disposal pond, then a discharge permit and/or non-degradation compliance are necessary.

Project Management:

The \$34,500 budgeted for administrative and financial costs is adequate. There are also enough funds designated for construction inspection and engineering services. The management plan assigns specific duties to each position on the management team. With these duties, all required tasks can be completed and coordination between various agencies can be adequately handled. Local newspapers will keep the public abreast of project progress and pertinent issues. If any hurdles are encountered, citizen participation will be solicited through public meetings. A community advisory committee has been created and will continue to function during construction. Weekly progress reports will be conducted in public or through written correspondence. Frequent communication throughout the project will be a priority.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$34,500	\$34,500
Professional & Technical	\$0	\$0	\$153,500	\$153,500
Construction	\$100,000	\$0	\$570,000	\$670,000
Total	\$100,000	\$0	\$758,000	\$858,000

The proposed funding amounts and sources in the application's budget are: a \$425,000 grant from TSEP, a \$100,000 grant from DNRC, a \$298,000 loan from RD and \$35,000 from local reserves. These sources total to \$858,000 for the complete project cost. A preliminary engineering cost of \$18,500 was included in the budget in order to identify all matching funds for the RD loan. However, this sum has already been spent.

The proposed project is going through both TSEP and DNRC review this summer. The district will know whether it has received these grant funds in April 2001 after the legislative ranking and approval process. If the grants are not received, the project will likely not proceed because excessive user rates would be

required to finance the project with a larger loan. If successful with its grant applications, an RD loan will be secured at that time. District funds are already available.

There is adequate justification for the budget's construction costs. Pilot testing costs seem high at \$15,000 each for membrane and conventional filtration. However, the project engineer indicates that this cost is based on other past projects. Budget costs for administrative and financial costs seem reasonable. A 10 percent contingency is used and is reasonable, considering the complexity of the treatment processes and dependence of the design on pilot testing results.

The current average water user rate is \$19.60 per month. The fee increase as a result of this project is \$17.40, which includes \$1.96 for higher operation and maintenance costs and the remainder for Rural Development debt. An SRF loan was originally proposed for the project, but with a reduction in the grant request from TSEP, an RD loan with a 40-year term was necessary to provide for lower annual debt payments.

Benefit Assessment:

The proposed new water treatment plant will have two trains to provide the redundancy that the existing plant now lacks. This will allow for continued water production through one train during periods of filter backwash or maintenance of other system components. Effluent quality will be improved. Total trihalomethane levels should be reduced, thereby reducing the cancer risks associated with this contaminant. Construction of a new backwash or waste pond will ensure protection of Muddy Creek and groundwater.

Public support is evident from letters included in the application and an excellent return on a recent income survey needed for funding. A volunteer citizen advisory board has also been established to aid in project implementation.

Environmental Evaluation:

The proposed new treatment plant will be housed at the same location as the existing water treatment plant, and in a slightly larger building of similar masonry construction. Since there is not a 100-year floodplain designation for Muddy Creek, which has fairly steep sides, the same treatment plant location along the creek is acceptable. Replacement of the raw water supply line to the new plant could cause some negative, short-term impacts to Muddy Creek and minor, adjacent wetlands during construction. Necessary permits will be obtained, and appropriate protective measures and best management practices will be used to minimize the impact. There will be no negative impacts to vegetation, wildlife, habitat or historical and cultural resources as a result of this project. Temporary nuisances such as noise, dust and exhaust fumes during construction can be mitigated through best management practices.

Currently, there is an unmonitored backwash pond at the existing treatment plant site. Details of the pond are not given in the preliminary engineering report. The project engineer indicates that the pond may occasionally discharge and it has developed into a small wetland. Surface water treatment plants can produce large amounts of waste with high concentrations of many constituents, including total dissolved solids and organics. Discharge to a public sewer system is often the best solution, but this option was not discussed in the application. Because the treatment plant is located 1.5 miles from town, this option is likely too costly. Use of the existing backwash pond may be feasible, but specific details on the size required for total retention and whether lining was necessary were not provided. Montana's non-degradation criteria would need to be met.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 56

Applicant Name: Butte-Silver Bow Local Government
Project Name: Elimination of Combined Sewers

Amount Requested:	\$88,463	Grant
Amount Recommended:	\$27,919	Materials and Project Administration
Other Funding Sources:	\$ 9,000	Community Development Block Grant Tech.
		Assistance Grant
	\$ 916	Local Funds
Total Project Cost:	\$98,379	

Project Abstract: (Prepared and submitted by applicant.)

The purpose of this project is to identify homes that have their sanitary sewer connection plumbed to the storm sewer system and to construct the necessary facilities to connect these homes to the sanitary sewer system.

Historically, it was not uncommon in Butte, or in other communities around the nation, for there to be combined sanitary and storm sewer systems. In these systems, a single pipe conveyed sanitary sewage from homes, as well as storm water from streets, to the nearest stream. As an understanding was developed regarding the impacts of raw sewage on streams and aquatic life, these combined sewers were eliminated and separate sanitary sewers were constructed to convey sewage to wastewater treatment plants. The City of Butte followed this national trend by the construction of a community-wide sanitary sewer system. However, due to the age and complexity of the sewer systems on the Butte hill, some homes have remained connected to the storm sewer system. This project will identify these homes and will then construct the improvements needed to connect these homes to the sanitary sewer system.

The State of Montana's support and commitment to assist in this project, as demonstrated through this grant program, is critical. This assistance will enable the disconnection of these homes from the storm sewer system and their placement on the sanitary sewer system. This will result in a benefit to the public health as well as a benefit to the receiving stream and the aquatic life downstream from the community.

Technical Assessment:

Project Background:

A number of homes in the older areas of Butte have their sanitary service lines connected to the storm sewer. This was a common practice before passage of the Clean Water Act and the implementation of domestic wastewater collection and treatment. Over the years, Butte has methodically re-connected such dwellings to the sanitary sewer. This project represents a continuation of those efforts. Currently, at least five homes in the project area are connected to the storm sewer and their discharge goes directly to Silver Bow Creek.

Technical Approach:

The project goal is to remove these dwellings from the storm sewer, re-connect them to the sanitary sewer, and ultimately improve the quality of Silver Bow Creek. The applicant intends to conduct further investigations to determine the number of homes need to be re-directed, determine the best method of rectifying the problem, design the necessary improvements and construct the re-connections.

Project Management:

The applicant anticipates accomplishing the entire project with in-house resources. All project planning, design, construction and administration will be performed by City-County personnel, and there will be no

need to manage consultants or contractors. The applicant will observe its current system of managing its personnel, equipment, and funds.

Financial Assessment:

Budget Item	RRGL Grant	CDBG Tech. Assist. Grant	Project Sponsor	Total
Administration	\$1,279	\$0	\$916	\$2,195
Professional & Technical	\$4,818	\$0	\$0	\$4,818
Construction	\$82,366	\$9,000	\$0	\$91,366
Total	\$88,463	\$9,000	\$916	\$98,379

The applicant has provided a fairly involved cost evaluation for the recommended alternative. Unit costs and quantities appear reasonable.

Funding includes \$916 of local funds, \$9,000 from a 1998 CDBG Technical Assistance Grant, and \$88,463 from the anticipated DNRC RRGL grant. The overall funding strategy appears to be sound, with one concern. According to the application, the entire project is being completed in-house. The city-county is using the grant to pay its own forces to plan, administer, design and construct the project. The concern is that the local government would normally be paying its personnel whether this project is being implemented or not. The only added expense should be that of materials to complete the project. This amounts to an estimated \$26,640. If the estimated cost to administer the grant funds is included, that adds another \$1,279. Based on this concern, DNRC recommends that the project be funded to the extent that it will cover materials and reasonable administrative services, for a total of \$27,919.

According to the applicant's funding strategy, no rate increases are anticipated because less than 1 percent of project costs were to be provided by the applicant. However, at the recommended funding level of \$27,919, the applicant would provide more than 71 percent of project costs. It is unknown whether the reduced funding would result in an increase in user rates for Butte residents.

Benefit Assessment:

The project will result in the protection of surface waters and human health by directing an estimated 1,500 to 2,000 gallons per day (gpd) of raw wastewater into the sanitary sewer for treatment. Currently, the raw wastewater is conveyed into the storm sewer system and is discharged untreated into Silver Bow Creek. This project follows Butte's history of disconnecting domestic dischargers from the storm sewer and re-directing them to the sanitary sewer for treatment. According to the applicant, the project area includes some of the last users on the storm sewer. Butte has also undertaken extensive efforts to improve the quality of storm water from Butte Hill. New ditches and sediment ponds in the area have reduced heavy metals discharges and reduced discharges to Silver Bow Creek. This project complements these previous efforts.

Environmental Evaluation:

Due to the small scale of the project, it is unlikely that there will be any significant, long-term adverse environmental impacts. While the application is not clear on this point, it appears that most of the work will occur on private property. One concern is the possibility of encountering historical artifacts during construction. The environmental evaluation indicates that no impacts are anticipated. But given the project location in one of the oldest parts of Butte, the chance of uncovering artifacts does exist.

Funding Recommendation:

DNRC recommends grant funding of \$27,919. The applicant anticipates implementing the storm sewer separation project relying on in-house resources. The applicant intends to use the grant funds to pay wages and benefits for its own forces and equipment to implement the project. The applicant's own personnel will be receiving normal salaries and benefits regardless of whether or not this project is

implemented. Consequently, DNRC recommends that proposed grant funding be reduced to cover only the material and project administration costs. It is not clear what effect the reduced funding will have on the project since \$70,460 would need to come from other sources, presumably the applicant itself.

Project No. 57

Applicant Name: City of Great Falls
Project Name: Great Falls Yard Waste

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 100,000	
Other Funding Sources:	\$ 109,250	Local Reserve (spent to date)
	<u>\$ 19,475</u>	Local Reserve
Total Project Cost:	\$ 228,725	Local Reserve

Project Abstract: (Prepared and submitted by applicant.)

The City of Great Falls Parks and Recreation Department has operated a small yard waste composting operation for many years. The facility provides a convenient means of waste disposal and creates a useful product. The compost has been used by the city in the parks program, and the city has also sold limited amounts of compost to the public.

The existing operation is hampered by lack of equipment to create and turn compost piles. Water content is difficult to control. The composting process requires a relatively long period of time to achieve product stabilization, and the compost may be inconsistent in quality.

Acquisition of equipment to facilitate waste processing, turning, pile creation and irrigation will allow for a better compost process with a product created in a shorter period of time. This will make more compost available for city and public use, as well as allow the facility to accept and process more wastes. Additionally, the facility will seek licensing to accept wastewater biosolids, which provide a very compostible material capable of adding nutrients and moisture to the process. This will also reduce the amount of material hauled to the landfill.

Technical Assessment:

Project Background:

The City of Great Falls Parks and Recreation Department has operated a small yard waste composting operation for many years. The facility provides a convenient means of waste disposal and creates a useful product. The compost has been used by the city in the parks program, and the city has also sold limited amounts of compost to the public. The existing operation is hampered by lack of equipment to create and turn compost piles. Water content is difficult to control. The composting process requires a relatively long period of time to achieve product stabilization, and the compost may be inconsistent in quality. Acquisition of equipment to facilitate waste processing, turning, pile creation and irrigation will allow for a better compost process with a product created in a shorter period of time. This will make more compost available for city and public use as well as allow the facility to accept and process more wastes. Additionally, the facility will seek licensing to accept wastewater biosolids, which provide a very compostible material and add nutrients and moisture to the process. This will also reduce the amount of material hauled to the landfill.

Technical Approach:

The goal of the project is to reduce waste volume to the local landfill by adding equipment to make the process more efficient, by expanding available composting space, and by obtaining a DEQ license to

compost municipal wastewater biosolids. The goal and objectives have been well defined and are quantifiable and obtainable. The compost operation may expand from 7,700 cubic yards to 18,000 cubic yards. All appropriate alternatives have been identified and evaluated. The detail is sufficient to document and justify the selection of the preferred alternative of windrowing. The least-cost alternative has been selected, and it will solve all of the identified problems and satisfy project goals and objectives in their entirety. The proposed project schedule is reasonable, and there are no apparent insurmountable property, legal or compliance hurdles that will delay or stop the project. The project will result in the purchase of land, fence, tractor, windrow turner, front-end loader, irrigation equipment, services to obtain a DEQ license and the construction of a well. This will allow for continued operation of a windrow type compost operation and more efficient and complete turning of material. This will increase the rate of compost stabilization and the volume of material that may be handled. The larger land area will increase volume by providing more compost area.

Project Management:

This project is very simple. It largely consists of the purchase of composting equipment and land. The applicant has provided a reasonably thorough, well thought out plan for management of the funding sources. Bidding documents will describe the equipment to be purchased in detail. A bid solicitation process in compliance with state law will be implemented to obtain competitive bids. The land has already been purchased. General oversight and project management will be provided by the city forester. The city finance department will oversee financial aspects and accounting. A consultant will be hired to help the city obtain the DEQ license. The city forester will oversee the work of the consultant, whose work will be defined in a detailed scope of work in the contract.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$ 100,000	\$0	\$ 128,725	\$ 228,725
Total	\$ 100,000	\$0	\$ 128,725	\$ 228,725

The City has already invested the bulk of the funds needed to acquire and develop the composting site. Additional funds are needed only for the purchase of equipment. The city has operated the composting facility for 25 years and is very committed to an ongoing annual operation and maintenance budget. The project appears to be financially feasible.

Benefit Assessment:

The project will reduce waste volumes delivered to the local landfill. Potentially 45,000 cubic yards of yard wastes and 17,000 wet tons of municipal wastewater sludge could be diverted from the landfill to a beneficial use. The compost yard capacity could increase from 8,000 cubic yards to 18,000 cubic yards. The reduced landfill use would conserve land and water resources. The production of usable compost would enhance agriculture and conserve water. Compost is a soil amendment and fertilizer that can reduce chemical use and improve soil water holding capacity. Reduced landfill use will protect or preserve renewable resources such as land, water, wildlife, and vegetation. This project supports the ongoing compost operation that is currently used by the residents as a place to dispose of yard waste and to purchase compost.

Environmental Evaluation:

The project does not appear to have any long-term adverse impacts. The project will have a positive effect on the environment by reducing landfill volumes and providing a product for beneficial use that reduces agricultural chemical use. Also, this project will allow the use of municipal solid waste in the composting operation.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration, and budget.

Project No. 58

Applicant Name: Lambert County Water and Sewer District
Project Name: Water System Improvements

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000	
Other Funding Sources:	\$403,000	Treasure State Endowment Program
	\$242,450	Community Development Block Grant
	\$ 25,000	District
	<u>\$ 36,000</u>	State Revolving Fund Loan
Total Project Cost:	\$806,450	

Project Abstract: (Prepared and submitted by applicant.)

The water distribution system in Lambert was constructed in the late 1960s and early 1970s. The water system was under the direction of the Richland County Commission with a water association board that ran day-to-day operations until early this year, when water users voted to create the Lambert County Sewer and Water District. This water distribution system has never had individual users metered. The Town of Lambert's water system is also comprised of a 50,000-gallon, on-ground, steel water storage reservoir built in 1969, which was recoated inside and out in 1990. The current water well was drilled and completed in 1977 and replaced the original shallow well drilled in 1965.

The district is plagued by the absence of a water treatment facility that is needed to reduce high levels of fluoride consistently greater than 4.0 mg/l (which is the enforceable federal standard, or Maximum Contaminant Level), resulting in a Notice of Violation from the Department of Environmental Quality (DEQ). Also, the current water source fails to meet other DEQ requirements regarding source capacity and number of sources. Furthermore, breaks in water service connections have allowed coliform bacteria to infiltrate the water system, causing the potential for public health risks.

The proposed project would involve the construction of a water treatment facility, including the installation of a reverse osmosis system. This treatment method has been extremely effective in the removal of 96 percent of the fluoride in water and a high percentage of rejection of dissolved solids (i.e. sodium and organic materials) from raw water. Additionally, a new water well, installation of water meters, and the replacement of water service connections will allow the district to meet DEQ standards, promote conservation, have the means to monitor and control costs and substantially reduce the amount of coliform bacteria infiltrating the water system.

Technical Assessment:

Project Background:

The proposed project is located within the community of Lambert, 23 miles west of Sidney on Montana Highway 200. The water system is unmetered and consists of one 1,500-foot well, a 50,000-gallon storage tank and almost 10,000 feet of distribution mains. The existing well is located 3,600 feet northwest of town.

This application is triggered by a desire to correct the current drinking water violation of the Maximum Contamination Level (MCL) for fluoride and to provide a second water well for the town, as required by

DEQ standards. The most recently measured fluoride level in the water system is 5.05 mg/l, which exceeds the MCL of 4.0 mg/l. Fluoride is a regulated contaminant that can cause dental fluorosis (mottling of permanent teeth) or skeletal fluorosis (a serious bone disorder). Since dental fluorosis occurs when developing teeth are exposed to elevated fluoride levels, young children are particularly susceptible to this disorder.

Technical Approach:

The goal of the proposed project is to bring the water supply into compliance with DEQ standards. The objectives are: (1) to drill a new well to meet DEQ's requirement of two groundwater sources, with the total developed groundwater source meeting maximum demand, and average day demand being met with the largest-producing well out of service; and (2) to provide a treatment plant that removes fluoride so that the 4.0-mg/l MCL is met.

Several alternatives were analyzed. The chosen alternative consists of a fluoride removal facility with a new well. Three treatment options were considered: reverse osmosis (RO), activated alumina, and lime softening. While the alternative analysis may not have been thorough, the chosen alternative is reasonable and feasible. The proposed pilot testing, to be conducted by the treatment unit manufacturer, will be used to provide data for RO design and to ensure that this technology will be effective at Lambert. In accordance with DEQ standards, the treatment plant must be designed so that each of its two units can produce Lambert's maximum daily water needs. The preliminary engineering report indicates that the treatment plant would be designed to produce 50 gallons per minute (gpm), which is less than the community's 58 gpm maximum daily demand. A larger-sized treatment plant is therefore required.

The engineer did not adequately address disposal of the concentrate from the reverse osmosis process. According to the engineer, there is plenty of room for a total retention lagoon for disposal of the reverse osmosis concentrate. Disposal to public sewer, located about 500 feet away from the proposed treatment plant site, is also an option. The \$15,000 budgeted for the cobble pit could be applied toward one of these other disposal methods. If a big enough lagoon cannot be built and a discharge is necessary, then a discharge permit must be obtained from DEQ prior to construction. If disposal to a drainfield or groundwater is desired, then non-degradation requirements must be met. It is fairly certain that an acceptable disposal option can be found.

Project Management:

The district's board and grant consultants will be responsible for project management. The project engineer will be responsible for the design and construction of the proposed facilities. The application indicates clearly how bank accounts and financial transactions will be handled, and how multiple signatures on drawdown requests will be required to ensure effective coordination.

Without a local public newspaper, the public can keep abreast of the project through the accessibility of the water district and through an open invitation to weekly construction meetings. To ensure timely and accurate completion of major project tasks, drawdown requests must be accompanied by progress reports. Compensation for administrative services will be provided in installments, based on actual work performed.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$68,800	\$68,800
Professional & Technical	\$0	\$0	\$102,750	\$102,750
Construction	\$100,000	\$0	\$534,900	\$634,900
Total	\$100,000	\$0	\$706,450	\$806,450

The funding package includes \$403,000 from TSEP, a \$100,000 DNRC grant, a \$242,450 CDBG grant, \$25,000 from the district and an SRF loan in the amount of \$36,000. TSEP and DNRC applications were

both submitted this year. The plan is to submit a CDBG application in May of 2001, after notice from TSEP and DNRC is received. An SRF loan application can then be submitted in the summer of 2001. The district has already voted to designate \$25,000 of its reserves toward the project.

No problems are evident at this time with procuring the required funds. According to the application, Lambert meets CDBG program requirements for benefiting low or moderate income families. CDBG and TSEP's match requirements are met with district funds and the proposed SRF loan. Adequate documentation is generally provided to show how costs were derived. Most construction and estimated operation and maintenance costs seem reasonable. A reasonable contingency of 11 percent of the estimated construction costs is included in the budget. It is intended that the project will begin once DNRC and TSEP funds are awarded in 2001.

The 149 residents served with water by the Lambert County Water and Sewer District pay a flat monthly rate of \$22.25. With the new rate structure, the average monthly rate will be \$36.84. The additional \$14.86 per customer is designated to cover the anticipated \$11.92 in increased operation and maintenance costs resulting from the project and the additional \$2.94 per user for new debt repayment.

Benefit Assessment:

The 149 residents of Lambert will receive direct health and safety benefits from this project. The application is triggered by a desire to correct the current drinking water violation of the Maximum Contamination Level (MCL) for fluoride and to provide a second water well for the town, as required by DEQ. Drilling of a second well will provide the Lambert County Water and Sewer District with a back-up supply in case the first well is out of service. The proposed project also includes the installation of water meters, which is expected to result in water conservation by users. The project will provide quantifiable benefits in terms of the amount of fluoride removed, amount of water conserved through the use of water meters, and the amount of additional supply provided to the district. Public support for the project is evident through the 56 letters included with the application.

Environmental Evaluation:

No significant, long-term, negative environmental impacts are expected. During construction, there will be some temporary environmental nuisances such as dust, noise and possible erosion. Mitigation with water trucks for dust suppression and straw bales to control silt runoff can lessen the impacts. To maintain area aesthetics, the proposed new treatment building will be painted to blend in with the landscape.

One item discussed in some detail with the project engineer, is the disposal of wastes from the reverse osmosis unit. The preliminary engineering plan proposes a cobble pit for disposal of the concentrate from the reverse osmosis units. This plan is not acceptable because it does not consider state standards. Waste disposal will need to meet DEQ requirements, non-degradation standards and discharge permit requirements (if a discharge is proposed). Possible options include disposal to the public sewage system, which has excess capacity, or disposal in a total-retention, lined lagoon. The project engineer indicates that there is plenty of land available for construction of a non-discharging lagoon. Disposal in a drainfield system is unlikely because levels of nitrates in the upper aquifer would prohibit the final fluoride level from meeting non-degradation requirements. According to the engineer, the \$15,000 included in the budget for the originally proposed cobble pit would be adequate for an acceptable disposal option,.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 59

Applicant Name: Park County Conservation District
Project Name: Wildlife Assessment of the Upper Yellowstone River

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000	
Other Funding Sources:	\$ 10,000	Park County Conservation District (in-kind)
	91,000	U.S. Geological Survey (in-kind)
	<u>10,000</u>	U.S. Fish and Wildlife Service (grant)
Total Project Cost:	\$211,000	

Project Abstract: (Prepared and submitted by applicant.)

The Wildlife Assessment: The Governor's Upper Yellowstone River Task Force Cumulative Effects Investigation project is the evaluation and monitoring of cumulative effects of river channel modifications on wildlife. Project partners are the task force (project endorsement), Park County Conservation District (grant sponsor and administrator), U.S. Geological Survey (researchers), and the technical advisory committee (scientific oversight). Total cost for the project is \$211,000. Grant money requested from this Renewable Resource Grant is \$100,000. Matching/in-kind funds amount to \$111,000: \$91,000 of in-kind from the U.S. Geologic Survey BRD, \$10,000 of match from the U.S. Fish and Wildlife Service, and \$10,000 of match from Park County Conservation District. Funding from this Renewable Resource Grant will continue to give Montana a voice in the management of our resources.

The project study area extends from Gardiner to the bridge crossing at Springdale, a river distance of approximately 80 miles. It is home to more than 14,500 Montana residents and is visited by more than one million tourists each year.

The Yellowstone River represents a significant and valuable natural and economic resource. In the wake of the 1996 and 1997 floods, many independent channel modification projects were undertaken. These activities illustrated to many the need for a comprehensive and consolidated planning effort for the upper Yellowstone River. That concern led to the creation of the Upper Yellowstone River Task Force in November 1997 (by Governor Racicot) and ultimately to this investigation.

The wildlife assessment has two goals: (1) to provide information on effects that have already occurred due to natural and/or human-induced activities, and (2) to provide information that will form the basis for projecting the short-term and long-term effects of future channel modification activities. The research team plans to begin work in July 2001 and complete its final report by December 31, 2002.

Technical Assessment:

Project Background:

The project is located in the upper Yellowstone river, specifically, the river's floodplain between Gardiner and Springdale. The applicant, the Park County Conservation District/Upper Yellowstone River Task Force, is responsible for coordinating the public input and scientific direction of several multi-disciplinary natural resource studies within the project area. In fact, the DNRC Reclamation and Development Grant program provided \$300,000 during the 1998 grant cycle to fund most of the hydrology, channel geomorphology and riparian vegetation components of the task force's integrated study effort. The present grant request would fund the wildlife population component of the overall cumulative effects investigations.

Technical Approach:

The wildlife assessment has two goals: (1) to provide, where possible, information on effects that have already occurred due to natural and/or human-induced activities, and (2) to provide information that will form the basis for projecting the short-term and long-term effects of future channel modification activities.

In the application, however, the project's details were not sufficiently developed. The majority of the application discusses the overall goals and objectives of the multi-disciplinary studies that are being coordinated by the Upper Yellowstone River Task Force. While this information was useful, more details about the wildlife assessment (that this grant would be funding) should have been provided.

No description is presented regarding possible survey techniques for evaluating mammal populations, nor are any thoughts given about which mammal species might be targeted for evaluations of some kind. Even the Wildlife Assessment Study Plan goes to great lengths about how this study would be integrated into the overall cumulative effects study, but talks very little about the nuts and bolts of the wildlife field work that this grant would be funding.

There are questions regarding the attainability of the goals and objectives of the wildlife assessment. To their credit, the project contractors admit that projecting short- or long-term effects of future stream channel modifications upon wildlife populations will be difficult. Quoting from the study goals:

"The efficacy with which the wildlife assessment achieves the first goal will depend on the availability of historical data, and the degree to which the effects of human-induced activities (such as past bank stabilization projects) on hydrologic processes (component 1), channel migration, and riparian vegetation (component 3) can be disentangled from confounding factors such as conversion of land to agriculture, logging, or urbanization. ...The efficacy with which the wildlife component achieves the second goal will depend on the adequacy with which the riparian zone of the upper Yellowstone River can be sampled for the selected species, and the validity of predictions regarding riparian vegetation (component 3) at some future time."

Because the success of the wildlife assessment depends upon (and is so closely tied to) the success of other ongoing or proposed studies, it is difficult to determine whether the site-specific wildlife findings would be useful or quantifiable.

Project Management:

The budget and time allocations proposed by the applicant are very adequate for project administration and management. The full-time task force coordinator, a conservation district employee, would be the project coordinator. The district administrator would function as administrative support in a part-time capacity. The task force coordinator and the district's board have extensive experience in the administration of grants and coordinating the work funded by these grants.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$ 7,360	\$0	\$ 2,640	\$ 10,000
Professional & Technical	\$ 92,640	\$0	\$ 98,360	\$191,000
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$101,000	\$201,000

The wildlife assessment budget was not sufficiently developed to determine whether or not it truly reflects project costs. The budget in the application was not the same as presented in the Wildlife Assessment Study Plan. The numbers on the table showing the wildlife assessment budget do not equal those on the budget forms; that is, there is a \$7,360 difference in the travel budget. A third budget, sent by the applicant on August 3, 2000, reduced the total cost of the project to \$190,000. This was accomplished by

removing the dollars for project administration in the above table and by reducing the USGS matching dollars for technical and professional services by a similar amount. No clear explanation was provided regarding the inconsistencies or reasons for the differences among these budgets.

Benefit Assessment:

The overall goals and objectives of the multi-disciplinary studies that are being coordinated by the task force are definitely aimed at the conservation, management, and protection of a renewable resource: the recreational, agricultural and domestic uses that are supported by the upper Yellowstone River's floodplain. There are concerns about whether or not the wildlife assessment by itself would result in quantifiably significant contributions to this effort. However, this project would likely contribute to the management of the floodplain's wildlife resource. The project would support the prior activities of the task force, whose goal is to improve the conservation and management of the floodplain. As well, the findings of this study could indirectly result in significant benefits to the development of natural resource based recreation, including the potential enhancement of wildlife populations that support hunting, bird watching and other recreational activities along the floodplain.

The project has documented citizen support because of the diversity of task force membership and the opportunity for public input during all of its meetings. The coordination, local participation, and overall technical study efforts of the task force could potentially provide a model for the management of other watersheds in Montana.

Environmental Evaluation:

There would be no significant short- or long-term environmental impacts resulting from this project.

Funding Recommendation:

DNRC recommends grant funding of \$100,000 upon approval of a project scope of work, administration and budget.

Project No. 60

Applicant Name: City of Troy
Project Name: Emergency Water Main Replacement

Amount Requested: \$99,970 Grant

Amount Recommended: \$99,970

Other Funding Sources: \$ 0.00

Total Project Cost: \$99,970

Project Abstract: (Prepared and submitted by applicant.)

Troy's current water distribution system was installed in the mid 1950s. It is primarily asphalt wrapped steel pipe. Sections are failing due to extreme corrosion. Leakage or lost water is excessive because of the multitude of pinhole leaks in the steel mains.

Steel mains on Mill Street and Riverside Avenue have numerous patches and repair clamps. Recently, to repair a leak that was caused by the blow out of a section of pipe the size of a dollar, the city had to replace a 20-foot section because the entire pipe section was either repair clamps or full of pinhole leaks. Similar conditions are present in all the water mains north of the railroad tracks, Mill Street and Riverside Avenue.

The city could continue to repair the leaks. This is not cost-effective. It requires a lot of crew time, fuel, materials and street patching. Replacing all the mains in this area with PVC would be a long-term solution. At the same time, the services would also be replaced to the property line.

The resource benefit is conservation of groundwater by replacing a section of water main that is leaking tremendous quantities of water. Replacing the section will significantly decrease the daily pumping from the two wells and conserve the groundwater.

Technical Assessment:

Project Background:

The City of Troy is located in northwest Montana on U.S. Highway 2 along the west bank of the Kootenai River. The water system is owned and operated by the City of Troy.

Troy's current water distribution system was installed in the mid 1950s. It is primarily asphalt-wrapped steel pipe. Sections of the system are failing due to extreme corrosion. Steel mains on Mill Street and Riverside Avenue have numerous patches and repair clamps. Recently the city had to replace a 20-foot section of pipe because the whole pipe section was entirely comprised of either repair clamps or pinhole leaks. According to the applicant, similar conditions are present in most of the water mains north of the railroad tracks, Mill Street and Riverside Avenue.

This project is part of a much larger distribution system rehabilitation project. Due to the corroded condition of the water main that is being proposed for immediate replacement, the city is attempting to expedite this portion of the overall water system upgrade. The city will pursue other funding for the rest of the project as soon as practicable (after the master water plan is approved).

Technical Approach:

Project goals are to eliminate water system leakage with the objective of replacing deteriorated mains. The selected alternative is to replace 1,980 feet of severely deteriorated steel water main with new PVC pipe. Although technical documentation is marginal, this alternative appears to be the best solution to this particular problem at this time. More alternatives should have been explored and each alternative should have had a cost analysis included for comparison. DEQ Drinking Water SRF Loan Program provided comments on the draft Master Water Plan. Although these comments cover the plan for the entire system, most of them apply to this particular portion of the project as well. Some of the comments included are: more effort should be given to the development and comparison of alternatives, the report should include a copy of the latest floodplain map for the Troy area, cost estimates for alternatives should be presented for all alternatives, and the selection of the preferred alternative needs to be better discussed. The selected project should be capable of meeting all regulations, standards, and permitting. The project schedule seems to be reasonable.

Project Management:

The project management team consists of the city clerk, director of public works and the project engineer. It is advised that the city include an attorney on the project management team to provide legal advice during contract negotiations. Although the management plan is weak, this project is relatively simple and can probably be managed with the stated team.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$18,250	\$0	\$0	\$18,250
Construction	\$81,720	\$0	\$0	\$81,720
Total	\$99,970	\$0.0	\$0	\$99,970

The proposed project is to be funded entirely with this Renewable Resource Grant. In the near future, additional grant and loan funding will be sought to complete overall distribution system improvements. Rates are not expected to increase as a result of this project, as it will be funded entirely by grant monies. Water rates are currently at \$14.00 per month per equivalent dwelling unit (EDU). Currently there are 555 EDUs using the water system. Presently, the user rates are not sufficient to fund operation and maintenance for the system. It is anticipated that the completion of this project will help to reduce operation and maintenance costs.

The budget presented seems somewhat tight, but reasonable. A 6 percent contingency is provided, which may be a little low. A contingency of 10 percent is recommended.

Benefit Assessment:

The primary benefactors of this project are the water users within the city. Troy has a population of about 1,163 people (555 EDUs). The citizens will benefit from the project by seeing a reduction in water waste and repair costs by replacing a dilapidated section of water main.

Resource benefits associated with this project include conservation of groundwater. The groundwater will be conserved due to the replacement of water main piping that is corroded and leaking. This project will greatly reduce the chance of major pipe failure, which would cause large quantities of water loss and water shortages, resulting in major emergency repairs. All of these concerns will be avoided.

Environmental Evaluation:

There will be no long-term environmental impacts. Short-term impacts will result from noise, dust and ground disturbances commonly associated with utility construction projects. Impacts will terminate upon project completion.

Funding Recommendation:

DNRC recommends grant funding of \$99,970, upon DNRC approval of a scope of work, administration and budget.

Project No. 61

Applicant Name: Butte-Silver Bow Water Utility Division
Project Name: Basin Creek Dam #1 and #2 Site Improvement Projects

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$100,000	
Other Funding Sources:	\$292,793	Treasure State Endowment Program Grant
	<u>\$192,793</u>	Project Sponsor
Total Project Cost:	\$585,586	

Project Abstract: (Prepared and submitted by applicant.)

Basin Creek Dams #1 and #2, located in Butte-Silver Bow County, were built in the late 1800s and early 1900's. No major site improvements have been completed on either dam since initial construction. Both dams are classified as high-hazard dams by the DNRC Dam Safety Division and both dams are a critical component to Butte-Silver Bow's potable water supply system, supplying approximately 40 percent of Butte's drinking water.

Both Basin Creek Dams #1 and #2 require significant upgrades to bring the dams into compliance with the Dam Safety Act requirements for high-hazard dams. The emergency spillway on each dam must be

expanded and rehabilitated to allow the dams to safely pass large storm events. In addition, critical elements of Basin Creek Dam #1 require replacement to allow safe dam operation into the future, to ensure the safety of local residences, and to allow the dam to supply potable water to the city of Butte.

The proposed project would involve improving the emergency spillway of each dam. In addition, critical elements of Basin Creek Dam #1, such as the parapet wall, outlet works valveing, real time reservoir level monitoring system and dam access would be improved. This will allow each dam to meet Dam Safety Act requirements, allow Basin Creek Dam #1 to continue to supply potable water to the city of Butte, and ensure the safety of local residences.

Technical Assessment:

Project Background:

Maintenance of these structures has been lacking for many years. The dams are now in a deteriorated condition and in need of major repair and rehabilitation. The dams and reservoirs are located only 9 miles from Butte and pose a significant risk to a number of the citizens in that community. They also provide municipal water to 40 percent of the community.

Technical Approach:

This project will improve the safety and operation of this water supply facility. However, as proposed, it will not ensure the safety of the community from extreme hydrologic events. Integrity of the Dam #1 structure depends on its ability to resist damage from water overtopping it. As stated in an engineering report by Piedmont Engineering, *"It is our opinion that the dam will be able to withstand overtopping for a short period of time without failing; however, this is a quantity that is highly dependent on the internal condition of the dam and foundation bedrock, which is unknown."* A review by the U.S. Bureau of Reclamation (USBR) states *"It would be prudent to verify the stability of the dam during high reservoir levels using actual dam and foundation material properties instead of assumed properties"*. Whether the relatively small improvements outlined in this proposal should be made, when a thorough investigation might show more serious problems, is a question that should be addressed.

These structures are certainly an important part of the water supply for Butte Silver Bow. It is unfortunate that there is no comprehensive plan for maintaining and improving the overall system. It is not shown by this application that this is the most feasible water supply or if any alternative systems were ever evaluated.

Project Management:

The project will be managed by the Butte-Silver Bow Water Utility Department. Administration, management and coordination needs have been identified. Time and cost estimates for this work have been considered.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$ 3,572	\$0	\$ 17,342	\$ 20,914
Professional & Technical	\$ 10,714	\$0	\$ 52,027	\$ 62,741
Construction	\$ 85,714	\$0	\$416,216	\$501,930
Total	\$100,000	\$0	\$485,585	\$585,585

It is DNRC's opinion that some of the unit costs shown on the application may be low and that quantities may be under estimated. Engineering costs will also increase with a more detailed structural investigation, which is recommended.

Other funding is expected from a TSEP grant, which has been applied for. The applicant is funding 33 percent of the cost from its operating budget. This is the maximum amount that they can fund without increasing water rates. There are 10,887 residential equivalent dwelling units served by the system. The current average monthly residential rate is \$45.78.

Benefit Assessment:

This project will benefit water users in the Butte community by prolonging the useful life of the water storage facility. Additionally, improvements to ensure the structural stability and spillway capacity of the dam, classified as “high-hazard” by the State of Montana’s Dam Safety Program, will protect lives and property downstream from the dam.

Environmental Evaluation:

There are no long-term adverse environmental impacts associated with this project.

Funding Recommendation:

DNRC recommends grant funding of \$100,000, with the stipulation that a structural investigation be performed to the satisfaction of the DNRC prior to design. The engineering report presented with this grant application is inadequate to determine if major structural problems exist, and the project as proposed may not ensure the safety of downstream lives and property should the dam overtop. Further investigation is needed to determine if the dam will withstand overtopping and to evaluate seismic stability. The cost of this investigation will be substantial, but it is necessary to fully evaluate the structural adequacy of the dam and major improvements that should be considered. The additional investigation may result in a re-prioritization of project elements. Should this occur, it is our recommendation that improvements be made in order of priority with respect to safety and structural stability.

The following projects, listed alphabetically, are not recommended to receive grant or loan funding.

Project No.

Applicant Name: Town of Circle
Project Name: Engineering Study to Repair Municipal Wells

Amount Requested: \$100,000 grant

Amount Recommended: \$0

Other Funding Sources: \$0

Total Project Cost: \$100,000

Project Abstract: (Prepared and submitted by applicant.)

The Town of Circle is seeking grant funding for engineering costs associated with an ongoing problem in one and perhaps both of the municipal deep wells. This project will be to determine the problem with our municipal wells, rehabilitate and formulate an ongoing maintenance program and/or develop a new water source.

Through water testing it has been determined there is a heterotrophic bacteria problem existing in both wells that has infiltrated into the treatment plant. The municipal water is taken from the Fox Hills Sand Aquifer, which has high fluoride levels and naturally warm water that allows the bacteria to flourish. Even though we feel the source of the problem may have been determined, a solution has not.

The process that has brought us to the current conclusion has been long and costly. Over the years we have had to replace the pumps and motors more frequently in this well. Each replacement cost between \$8,000 and \$12,000 depending on whether both the pump and motor were replaced or just one. The pumps were operating at a capacity of 225 to 250 gallons per minute when installed and after a short period of time the capacity would begin to decrease until it would be necessary to replace the motor.

In 1997, we completed a reverse osmosis water treatment plant. Reverse osmosis requires the water to be filtered through pre-filters prior to going through the membranes. The membranes are very costly to replace (approximately \$100,000). Once the plant was in operation, we went for a year before the pre-filters started to become plugged from sand being pumped from well #2. Within a five month period in early 1998, the pre-filters were replaced five times.

We have tried several procedures, which have failed to correct the problem. Each procedure has cost roughly \$30,000. Instead of dumping money aimlessly into the well, we would like to submit this application to hire an engineer to study the problem and find a solution. If it is determined that the existing wells can not be rehabilitated, then a new water source should be identified.

Technical Assessment:

Project Background:

The project location is within the Town of Circle, at the two public well locations. Well #1 was drilled in 1972 and well #2 was drilled in 1975. These wells are approximately 1,500 feet deep. In 1997, a reverse osmosis treatment plant was added to the system to treat the high levels of fluoride and sodium found in the water. Since then, high levels of sand in the water have caused frequent clogging of the pre-filters, requiring their replacement five times in five months. In January of 1997, the pump and motor had to be replaced in well #2 costing approximately \$10,000. In June of that same year, pumping of well #2 into a stock tank showed a large amount of sand, iron bacteria and rust particles. The well was videotaped down to the 5-inch casing, after which point the camera could not pass. Subsequent investigation with

an electromagnetic coil unit showed that 39 feet of the well screen was filled with sand, thereby reducing the screen area by 27 percent. A sand separator, at a cost of about \$4,600, was installed at the well head. In November of 1998, a well driller washed out the fine sand that had settled into the well and tried to repack the well, but was unsuccessful. In November of 1999, water quality testing showed 70,000 CFU/ml (colony-forming units per milliliter) of bacteria in well #2. This past February, the well was again videotaped. The casing and screen were found to be in good condition, but bacterial growth was visible. The well was then super-chlorinated and later treated with a Boroid acid. Testing after these treatments showed 8,700 CFU/ml of heterotrophic bacteria in the water. The town spent about \$28,500 on these activities. The driller did some further research for the town on the iron bacteria problem, and an acid/biocide blend was poured into the well. The chemical was then pumped out and the well improved slightly. The cost for this treatment was over \$15,000. Heterotrophic testing at well #1 indicated 640 CFU/ml in the well and the bacteria have also been shown to be present at the water treatment plant. The Town of Circle does not yet have the iron bacteria problem under control.

Technical Approach:

Both wells have a problem with iron bacteria; well #2 is in worse shape and also has a problem with sand. The proposed project is an engineering study to assess the problem and determine the appropriate course of action. The town's three alternatives at this time are:

1. no action
2. continue to have a driller address the well problems each time they arise
3. hire an engineer or hydrogeologist to complete a technical study to develop a long-term solution.

Town officials feel it is time to hire the expertise necessary to develop a long-term fix for the problem. The goal of the project is to assess the severity of the iron bacteria problem and propose the necessary treatment and ongoing well maintenance program. The study should also compare these treatment and maintenance costs to those for drilling a new well or finding an alternate water source.

The Town of Circle hopes to implement a construction plan as a result of the study. Completion of an engineering study would help ensure that no more money is spent on well #2 if the well cannot be rehabilitated. Based on discussions with a consultant and DEQ staff, as well as technical research, the proposed technical study could be completed for less than \$25,000. The study would include performance testing on both wells and an alternatives analysis. Included in this total cost would be initial sampling and testing at about \$400 per well. The testing would include general water quality parameters and typing of the bacteria (e.g. wetting agent, surfactant, or bio-fouling). It is likely that well #2 could still be used with monthly monitoring to see when the well needed special retreatment. On a monthly basis, the well would likely require shock chlorination at 300mg/l for 24 to 48 hours to keep the bacteria in check. There is a sand problem in the well that must also be addressed. Research indicates that this problem may be directly related to the presence of the iron bacteria. When the bacteria clog the screen openings, the water enters at a higher velocity and, as a result, the sand particles move in faster and erode the openings.

Project Management:

The Town of Circle proposes to have one of its two clerks manage the project and to hire a consulting firm to complete the technical work. Either an engineer or a hydrogeologist could complete the requested project, depending on their expertise and knowledge in well rehabilitation, specifically as it relates to treating iron bacteria. The town proposes to cover management costs with its own funds.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$100,000	\$0	\$0	\$0
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$0	\$100,000

The Town of Circle is requesting \$100,000 for professional and technical services to complete a technical study on its wells. The proposed technical study, however, can be completed for less than \$25,000, based on comparisons to similar reports and discussion with a consultant. A technical assistance grant from either the Department of Natural Resources and Conservation or the Department of Commerce might better meet the financial needs of this project.

After the reverse osmosis treatment plant was installed in 1997, the Town of Circle imposed a water user rate of \$27.06 for a minimum water usage of 2,500 gallons. The spending of approximately \$60,000 on well rehabilitation in the last three years depleted the reserve water fund. The Town of Circle is now borrowing money from the sewer reserve to cover water expenses. This past May, a \$10.00 assessment was placed on the 302 households and the businesses in Circle, bringing the current user rate up to \$37.06. This fee is imposed for the next two years in an attempt to reimburse the sewer fund and replenish the water reserve fund. According to the most recent Treasure State Endowment Program application guidelines, the target water rate for Circle is \$27.20. The Town of Circle is paying almost \$10.00 more than the target rate for its water system.

Benefit Assessment:

Although the application indicates that results of this study could be applied to other communities with iron bacteria problems, in actuality this study will result in the solution of the Town of Circle's particular problem. The proposed well study and the implementation of its recommended alternative will benefit the 605 residents of the Town of Circle. The town has spent approximately \$60,000 in the last few years on various well rehabilitation projects. Additional water quantity and improved water quality for the residents of Circle are expected from implementation of the proposed study's recommendations, as the design capacity of the well is restored and the iron bacteria and sand are managed in the public water supply.

Environmental Evaluation:

The proposed project is a technical study of the Town of Circle's public water supply wells. It is expected that the study would consist only of well sampling, research, and report writing. The completed study will have a positive impact on the Town of Circle because it will give the people hope of combating the iron bacteria problem and having an efficient, acceptable water supply system once the study's recommended alternative is implemented.

Funding Recommendation:

DNRC recommends no funding. This project ranked very low against the other projects competing for DNRC funding, and the project scope of work was not well developed in the application. DNRC suggests that the Town of Circle seek technical assistance funding from either the Department of Natural Resources and Conservation or the Department of Commerce in the amount of \$20,000 to \$25,000 to complete the proposed well study.

Project No.

Applicant Name: City of Colstrip
Project Name: Water System Improvements

Amount Requested: \$100,000 Grant

Amount Recommended: \$100,000

Other Funding Sources: \$350,000 Coal Board Grant
\$148,500 State Revolving Fund Loan
\$113,000 City Cash Reserves

Total Project Cost: \$711,500

Project Abstract: (Prepared and submitted by applicant.)

In 1997 Colstrip became an incorporated municipality. At that time, Colstrip Community Services Company, a subsidiary of Montana Power Company, turned over operation and maintenance of the community water and sewer systems to the newly formed incorporated city. Both the water distribution system and the sewer collection system are badly deteriorated and the water system is undersized. The 857 residential users are not metered. Approximately 116 commercial, industrial, and institutional users are on meters.

Currently, Colstrip's water consumption is approximately 150 percent of the design capacity of the system. The water system also fails to meet the MDEQ Circular 1, "Standards for Waterworks" because many fire hydrants are connected to 4" lines (the standard is at least 6") and lines as small as 3" are serving as water mains (the minimum is 6"). As a result, Colstrip has inadequate capacity to provide effective fire flows for proper fire fighting in many parts of the city that include a middle school and elementary school, and portions of the business district. Also, the high consumption stresses the water treatment plant, distribution system, and storage facilities.

Colstrip plans to replace inadequately sized water lines with properly sized PVC lines to provide adequate pressure throughout the city and proper fire flows.

Technical Assessment:**Project Background:**

The proposed project consists of replacement of about 4,500 feet of under-sized water line in Colstrip.

The City water supply is pumped from the Yellowstone River and is treated with pre-setting, filtration, and chlorination before being pumped into the distribution system. In 1997, the newly incorporated city of Colstrip took over the operation and maintenance of the water system from the Colstrip Community Services Company. The original distribution system used some 4-inch water mains in the distribution system, which is inadequate to meet existing fire protection needs.

Technical Approach:

The goal of this project is to improve the fire protection capabilities of the water distribution system in a section of Colstrip. The lines that are to be replaced are undersized and inadequate for fire protection.

The proposal is to replace the undersized water lines to provide adequate fire protection capacity and meet minimum DEQ standards. Replacing undersized lines is the only available alternative. Documentation to justify the project was limited to the fact that the water lines were less than 6 inches in diameter and do not meet minimum DEQ standards.

The consequence of not replacing the water lines is continued service without full fire protection capabilities. The project area in which fire protection would be improved includes the middle school, the elementary school, and portions of the business district.

The application and engineering report indicates that total water demand exceeds the existing water treatment capacity. The engineering report discusses water conservation incentives and measures and recommends the installation of water meters. The application does not discuss these issues, however, and it does not appear that water consumption issues are being addressed. The system demand of 750 gpcd is very high in comparison to other communities. Water conservation measures should be given serious consideration.

The city is expecting substantial future growth (from 2,300 to 6,500 residents) with the development of town sites 3 and 4. An overall master plan of how these areas will be served should be developed so that it can be confirmed that any improvements made now will fit into the future overall system.

The schedule indicates a project completion date of April 2002. The schedule provided adequate time for design, but indicated that submittal to DEQ for review, bidding, contract award, pre-construction meeting and Notice to Proceed will take place during the month of July 2001. This is not reasonable or possible. If the final design is completed in July 2001, a more reasonable schedule for Notice to Proceed would be October 2001. If the construction project is started in October 2001, the project could be completed in December 2001, weather allowing.

Project Management:

The project management team proposed for this project consists of the mayor, the city clerk, an administrative consultant and the engineer. The administrative consultant will be responsible for administrative tasks, and the engineer will be responsible for managing the contractors.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$4,000	\$26,000	\$0	\$30,000
Professional & Technical	\$0	\$33,000	\$65,000	\$98,000
Construction	\$96,000	\$89,500	\$48,000	\$233,500
Total	\$100,000	\$148,500	\$113,000	\$361,500

The project appears to have been adequately estimated, and a funding budget for the project has been developed that will meet the needs of the project if the requested grant money is received. This project will increase the average monthly water rate from \$34.44 to \$35.64. The budget includes \$33,000 for administration, \$65,000 for design, \$33,000 for inspection, \$527,500 for construction and \$53,000 for contingency.

The project cost estimate did lack detail and only included major items. The estimate could have gone into more detail and avoided using a 15 percent miscellaneous mark-up. The estimate included a 15 percent contingency, while the application included a 10 percent contingency. The different contingency rates have lead to inconsistencies between the Engineering Report and the project budget presented in the application.

The sponsor has also applied for a Coal Board grant and an SRF loan. The sponsor has committed \$113,000 to the project from existing sources.

Benefit Assessment:

This project will enhance fire protection capabilities in a small portion of Colstrip. It will not promote conservation or water resource management, and it will not enhance any renewable resource. The application did not demonstrate public support and only a limited citizen benefit.

Environmental Evaluation:

This project includes the replacement of existing water mains. As with any construction activity, some erosion and runoff may be possible, along with some dust. Potential impacts will be minimized with erosion control and dust control measures. The application included a Uniform Environmental Checklist. The environmental impacts of this project are minimum and acceptable. No long-term adverse impacts were identified.

Funding Recommendation:

DNRC does not recommend grant funding for this application because the proposed project does not remedy the most serious water system deficiency. The supply deficiency is the result of low water production capabilities and excessive per capita day water use. The Engineering Report recommended installation of water meters as a means of encouraging water conservation among the users. This would reduce the deficiency in the water supply relative to the use. Other options include increasing the capacity of the water system or completing a leak detection survey and improving the distribution system based on the results of leak study.

Project No.

Applicant Name: DNRC, Water Management Bureau
Project Name: Montana's Water Resources in the 20th Century: A Reference Guide

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$ 0	
Other Funding Sources:	\$ 60,000	DNRC, In-kind
	\$ 25,000	DEQ, In-kind
	\$ 25,000	DFWP, In-kind
	\$ 25,000	U.S. Bureau of Reclamation Grant to DNRC
	\$ 25,000	U.S. Bureau of Reclamation, In-kind
	<u>\$ 60,000</u>	U.S. Geological Survey, In-kind
Total Project Cost:	\$320,000	

Project Abstract: (Prepared and submitted by applicant.)

Over the past 100 years, much information and knowledge regarding the development, conservation and protection of Montana's water resources has been hidden in technical reports and stored in the memories of retired water managers, professionals, elected officials and water users. To manage Montana's water more effectively in the 21st century, it is critical that those participating in management of the resources have a thorough understanding of the history of the issues before them. This document would contribute greatly to that end.

It would consist of historical summaries of the state's major water management issues and overviews of the four large river basins. This comprehensive reference document would focus on the history of the legal, institutional, policy and administrative changes to water management that have occurred over the past century in Montana. Of particular interest will be the arguments and rationale that led to those changes. The document would define and frame the state and federal water development programs, including changes to Montana's water quality laws.

There could also be four separate supplemental documents prepared - one for each of the four major river basins. These documents would include trends and history of water use, water development, water quality, fish and wildlife, and water monitoring throughout the 20th century and the status of these issues in the year 2000. They would summarize and reference many hard-to-find technical and policy studies.

To prepare these documents, DNRC would work closely with DEQ, EQC, DFWP, USGS, USBR, Montana Watershed Coordinating Council, conservation districts and many retired water resource professionals and elected officials. DNRC plans on contracting with those retired water professionals and others that have credibility and a good understanding of what went on over the past 30 to 40 years. GIS maps and other data formats would be used to illustrate trends in water uses and water quality.

Only through a clearer understanding of where we have been and a knowledge of what was accomplished will tomorrow's water managers and elected officials gain the insight to know where we should be going and how to get there most cost effectively and efficiently.

Technical Assessment:

Project Background:

The chronicles of Montana's water resources, including water management history and changes in law, policy, and administration are not recorded in one place. Many of these valuable sources of information are slowly being lost or remain untapped. Consequently, as new issues arise and decisions are made and implemented, past data collections and interpretations are either not used or are redone. This results in unnecessary duplication of effort, expenditure of state funds, and disputes, as well as decisions that are not fully informed. The applicant believes that it is vital to capture these valuable resources in a comprehensive Statewide Water Resources Reference Guide that addresses overall water resources and the specific attributes and activities within the state's four major watersheds.

Technical Approach:

The Guide would consist of two published reference documents.

The Statewide Reference Guide would contain a comprehensive history of Montana's water institutional, legal, policy, and administrative actions over the past 100 years. Objectives are to:

1. describe the history of Montana water uses, policy, laws, and institutions that changed through the century and the major activities and actions that led to those changes
2. describe statewide water trends in water quality, fish and wildlife, and the status of these uses in the year 2000
3. collect and reference the many technical and policy investigations and reports that have influenced Montana's policies, laws, court cases, and administrative actions

The Basin Reference Guide would tell the detailed story for each of Montana's four major river basins - Kootenai, Clark Fork, Missouri and Yellowstone. Each basin has unique technical, legal, policy and institutional issues leading to different paths in water use, conservation and management. Objectives include:

1. describe the physical setting within each of the river basins and their tributaries
2. describe the history of water uses and water management in each of the major river basins and the issues and actions that affected these uses and management
3. reference all relevant technical and policy studies and analyses that led to changes in water use and management within specific basins and tributaries
4. reference the water monitoring programs, water uses, water quality, and other relevant trend data, and illustrate the relevant database in a Geographic Information System (GIS)

DNRC Water Management Bureau would take the primary lead in coordinating and producing these documents. The Montana Watershed Coordinating Council (WCC) would play a key role. A WCC subcommittee, as yet to be gathered, would oversee the project, including developing and approving the specific content of the documents. The state and federal agencies providing grant and in-kind support all will be integral in contributing to the documents through grant and in-kind support. Assignments of tasks to agency personnel and the need for contractors would be decided collaboratively.

According to the application, the project would take 2.5 years to complete in 9 phases. The sponsor candidly states that the timeframe to complete this larger project is optimistic given this past example and the in-depth nature of the proposed Reference Guide.

Goals and objectives are well stated and are theoretically achievable. However, the application provides no substantive task/time commitments to accomplish the objectives.

Only one alternative was given, to continue addressing each water management project or issue without the benefit of the statewide resource guide. Although it seems reasonable that the proposed reference document is needed and the effort is generally supported by a wide variety of entities, there are other ways to accomplish the project.

Questions also arise concerning duplication of efforts. The sponsor mentions that a book on the history of Montana Water Law is nearly completed. It is not clear to what extent this will meet the needs or overlap with this project. Also, USGS is willing to work with DNRC and conduct the year-2000 water-use study, but it is not clear if this study would be conducted if the grant was not awarded. Also, there may be other studies or historical research by other agencies already underway that may affect the need for parts of these proposed documents.

The applicant has made a good case that a Statewide Water Resources Guide, as proposed, is needed - especially to capture knowledge of the many players that have been involved in water resource issues over the years. The proposal, however, lacks specificity in terms of specific tasks, level of effort, and personnel and expertise required to successfully complete the project.

This proposal may be feasible, but the work completed and documentation submitted fails to support technical feasibility at this time.

Project Management:

The project sponsor will be responsible for coordinating this effort. DNRC has extensive history in the successful coordination of large-scale projects, and there is no reason to doubt that the same will apply for this project. However, because the project specifics are lacking, it is not possible to fully evaluate the potential success of this project from a management and implementation perspective.

The success of this project depends on identifying the contributing people, whether they are involved through contracting or in-kind support. In turn, this necessitates a huge effort to coordinate numerous entities. Much is left to the "good-will" of the committed agencies and members of WCC and the subcommittee to do their respective parts.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$100,000	\$0	\$220,000	\$320,000
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$220,000	\$320,000

A detailed budget for the \$100,000 grant request was not supplied in the application or through phone conversations and written response, therefore it is not possible to evaluate program versus project costs. As stated, the entire \$100,000 request would be used for contracted services, yet the need for this specific amount remains largely undefined.

Only broad staff commitments were provided for DNRC's in-kind contribution of \$60,000. The applicant indicated that roughly seven staff at the Water Management Bureau would work on various parts of the

documents, with a very rough estimate of 1/4 to 1/3 FTE each for 2.5 years of project life. Depending on salary costs, this may or may not be adequate to support the request for grant money.

The applicant has letters of commitment from the state and federal agencies offering in-kind support, totaling \$195,000. In particular, the USBR commits to giving a \$25,000 grant to complete the project.

Benefit Assessment:

Because of the nature of the project, it is not possible to assign quantifiable, direct benefits resulting from its accomplishment. Nonetheless, if the goals are achieved for this document AND people use it, water resources and probably wildlife resources would be protected, management of these resources would be more efficient, and interagency agreements may be facilitated - a benefit to all Montanans. But these benefits are definitely indirect at best because the document cannot "cause" sound implementation of any future actions.

Environmental Evaluation:

This project would have no long-term adverse environmental impacts or potential adverse impacts.

Funding Recommendation:

DNRC recommends no funding for this project. The Water Resources Guide document contents should be developed and associated agency and contractor tasks and budgets completed, at which time, a reassessment of the technical and financial feasibility of the project can be made.

Project No.

Applicant Name: Department of Environmental Quality
Project Name: Bertha Tailings Reclamation Project

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 0	
Other Funding Sources:	<u>\$ 900,000</u>	OSMRE Title IV Grant
Total Project Cost:	\$1,000,000	

Project Abstract: (Prepared and submitted by applicant)

The purpose of this project is to address human health and safety hazards associated with exposed and accessible heavy metals and acid mine drainage originating from the Bertha Mill tailings. The Bertha Mill site contains 18,000 cubic yards of mill tailings that have eroded down slope from the mill site into Spring Creek. Eroded tailings are visible along the stream banks for a distance of 3,000 feet below the mill site, and dissolved metals and acid water can be detected two miles downstream from the mill site. The site wastes contain significantly elevated levels of copper, mercury, antimony, cadmium and lead. Site surface and groundwater degradation has been documented. Site water sampling clearly indicates contaminant migration offsite. Contaminated soil and waster have affected site trees, grass, and shrubs, much of which have succumbed to heavy metal poisoning.

An attempt was made in 1987 to provide isolation and containment of the waste materials and tailings (State of Montana, Department of State Lands, MONT A/E 87-46-108). The project at that time applied reclamation technologies commonly used in the reclamation of coal mines. That reclamation attempt has failed. With new technologies and increased knowledge and experience in addressing hard rock mine problems, current approaches to mine reclamation will remove and encapsulate the mine waste materials, removing them from further environmental exposure.

The primary objective of this project is to remove solid media contaminant sources located at the Bertha Mill site and those materials eroded into Spring Creek, and dispose of these wastes in a constructed repository. Site surface water would be isolated from contact with contaminated mill wastes, and all disturbed areas would be re-graded, top-soiled and revegetated. When these tasks are completed, heavy metals exposure and migration will be significantly reduced or eliminated. Water quality will be improved, and the site and lower stream areas will again be able to support a native stand of vegetation species.

Once construction is implemented, the project should be completed within 100 consecutive calendar days.

Technical Assessment:

Project Background:

The Bertha Mill site is located about three miles west of Jefferson City, in Jefferson County. Since closure of the mine in 1917, erosion has breached the tailings impoundment, and the mine tailings have been eroding into Corbin Creek and Spring Creek.

Technical Approach:

The goal of the project is to reduce water pollution into Corbin and Spring Creek. Objectives include the following:

1. Remove and encapsulate mine wastes and tailings on the Bertha mill site by 2003
2. Remove tailings from Corbin Creek and Spring Creek by 2003
3. Emplace topsoil and revegetate disturbed areas with successful growth by 2003

The following tasks are proposed:

1. Environmental Investigation
 - a. Preliminary Assessment
 - b. Ownership Determination
 - c. Community Relations Plan
 - d. Reclamation Work Plan Development
 - e. Site Characterization
 - f. Risk Assessment Cleanup Goals
 - g. Expanded Engineering Evaluation/Cost Analysis
 - h. Public Meeting and 30-day Comment Period
2. Project Construction and Reclamation
 - a. Design and Construction Specifications
 - b. Bid Package Preparation
 - c. Bid and Contract Construction Services
 - d. Complete Construction Contract
 - e. Final Construction Report

The project is estimated to take 3 years from start to finish. Monitoring is also proposed for 3 years following the project.

No construction details or alternative analyses are presented in the application. Based on previous experience, DEQ and its contractors are capable of successful mine cleanup. However, not enough documentation is available in the grant application to judge technical feasibility. Several of the proposed tasks mentioned above should be completed before the grant application can be assessed.

Project Management:

DEQ Mine Waste Cleanup Bureau would manage the project. Tetra Tech is the project engineering company assigned to the project. The public will be involved through solicitation of comment during the Engineers Evaluation and Cost Analysis and a public meeting in Clancy. Other federal, state and local agencies are involved in the process to the extent required.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$100,000	\$0	\$900,000	\$1,000,000
Total	\$100,000	\$0	\$900,000	\$1,000,000

DNRC Renewable Resource Grant funds are being sought to supplement the construction portion of the project only. Other funds will be supplied by DEQ through US Department of Interior Office of Surface Mining Reclamation and Enforcement (OSMRE).

Because no detailed construction plan has been developed, the above costs are developed based on previous mine reclamation experience. Not enough information has been supplied to assess financial feasibility.

Benefit Assessment:

The project will address human health and safety risks associated with heavy metals contamination at the site by eliminating the possibility of human contact with contaminated soils, waste rock and tailings. Human contact with water-born heavy metals contamination will be reduced or eliminated. Public lands and waters will be enhanced, and aesthetic beauty will be restored. Economic benefits will also result from project construction and from increased use of the general area.

Environmental Evaluation:

Construction will affect streambank and riparian resources. However, as discussed above, the project will benefit the environment. A 124 permit will be secured from the Montana Department of Fish, Wildlife and Parks prior to construction.

Funding Recommendation:

DNRC recommends no grant funding at this time. This project should not be funded until alternative analysis and designs are available to judge its merits and allow comparison with other grant applications. According to DEQ, delay in this portion of funding would not affect receipt of OSMRE funds.

Project No.

Applicant Name: Department of Environmental Quality
Project Name: Snowshoe Mine Reclamation Project

Amount Requested: \$100,000 Grant

Amount Recommended: \$ 0
Other Funding Sources: \$650,000 USDI OMSRE

Total Project Cost: \$750,000

Project Abstract: (Prepared and submitted by applicant.)

The Snowshoe Mine is an abandoned inactive silver, lead, zinc and gold mine that operated during the early 1900s. The ore from the mine was processed in an on-site mill, and the waste (tailings) from the mill was allowed to flow out onto the ground. The milling process did not extract all of the metals out of the ore, and the site was contaminated with tailings that are spread over the site. A past reclamation project to clean up the site failed, and the tailings still leach acid and heavy metals into Snowshoe Creek, which runs through the site.

There is approximately 10 acres of disturbance, with 30,000 cubic yards of waste rock and tailings with high levels of arsenic, cadmium, copper, iron, mercury, lead antimony, and zinc. There are also 3 open adits that create a safety hazard. The site is ranked 28th worst site in the state on the DEQ-MWCB abandoned mine priority list.

The cleanup of the site will likely entail placing the tailings and other contaminated tailings into a lined and capped on-site repository. DEQ will use its Abandoned Inactive Hard Rock Mine Cleanup Procedure to conduct the reclamation on the site. The procedure mirrors the CERCLA Removal Action Process to ensure that the cleanup addresses all applicable and relevant appropriate regulations and is completed in the best technical and cost-effective manner.

Technical Assessment:

Project Background:

The Snowshoe Mine is near Libby, in Lincoln County. In 1989, the Department of State Lands and the USDA Forest Service attempted to reclaim the Snowshoe Mine property, with limited success. With recent advances in mine technology and several successes behind it, the Montana Department of Environmental Quality (DEQ) desires to reclaim the mine to protect human health and the environment.

Technical Approach:

The goal of the project is to reduce threats to human health and the environment that are present at the mine. The applicant proposes to accomplish that goal by isolating the contaminated wastes from the public and natural elements in an on-site lined and capped repository.

No construction details or alternative analyses are presented in the application. Based on previous experience, DEQ and its contractors are capable of successful mine cleanup. However, not enough documentation is available in the grant application to judge technical feasibility.

Project Management:

The Mine Waste Cleanup Bureau at DEQ would manage the project. DEQ might enter into a partnering and agreement with the USDA, U.S. Forest Service and the U.S. Bureau of Land Management to complete the project, but no agreement has been signed.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$100,000	\$0	\$650,000	\$750,000
Total	\$100,000	\$0	\$650,000	\$750,000

DNRC Renewable Resource Grant funds are being sought for the construction portion of the project only. Other funds will be supplied by DEQ through Office of USDI Surface Mining Reclamation Enforcement (OSMRE).

Because no detailed construction plan has been developed, the above costs are developed based on previous mine reclamation experience. Not enough information has been supplied to assess financial feasibility.

Benefit Assessment:

The Snowshoe Mine is currently contaminating our state's water by allowing an endless supply of heavy metals and acid to leach into Snowshoe Creek. These contaminants kill vegetation downstream in the national forest, exposing more soil to erosion. This cycle will be broken by removing the tailings from the stream and protecting them from exposure, and by reconstructing the stream.

Environmental Evaluation:

The project will benefit the environment by reducing or eliminating contamination due to abandoned mine tailings. DEQ will consult with various state and federal agencies and will obtain permits as necessary.

Funding Recommendation:

DNRC recommends no funding for this project until alternative analyses and designs are available to judge its merits and allow comparison with other grant applications. In addition, a thorough understanding of necessary permits and partnering agreements should be documented. According to DEQ, delay in this portion of funding would not affect receipt of OSMRE funds.

Project No.

Applicant Name: Essex Sewer and Water District, Flathead County
Project Name: Potable Water System Improvements

Amount Requested:	\$ 50,000	Grant
Amount Recommended:	\$ 0	
Other Funding Sources:	\$240,000	(Treasure State Endowment Program Grant)
	\$165,000	(EDA Grant)
	\$307,697	(USDA RD/RUS Grant)
	\$ 14,595	(USDA RD/RUS Grant)
	<u>\$ 50,000</u>	(Local Reserves)
Total Project Cost:	\$827,292	

Project Abstract: (Prepared and submitted by applicant.)

The original portions of the present system were built by the Great Northern Railroad in the late 1890s and early 1900s. The current water source originates at a crude intake below a small falls on Essex Creek, approximately 1-1/4 miles southwest of the Essex community. From the intake, water is transported through a deteriorating 6-inch cast iron transmission main to an aging 40,000 gallon elevated tank. Chlorine is injected into the transmission main upstream from the tank.

The distribution system consists of 6-inch cast iron and 3/4-inch galvanized and plastic pipe. Portions of the distribution system are located on private land, and in one instance the line runs underneath a private dwelling. Thirty homes are served, in addition to The Izaak Walton Inn and the BNSF Railroad Station and offices.

In 1998, the Department of Environmental Quality issued an Administrative Order to the district, requiring corrections to violations of the Public Water Supply Act related to treatment of surface water. The district has agreed to abide by the terms of the Administrative Order.

The Administrative Order requires installation of treatment facilities or development of a compliant source by September of 1999. However, no enforcement has been initiated to date, presumably to allow additional time for the district to obtain funding for the needed improvements.

Inadequate screening at the intake allows forest debris and mud to enter the system during periods of high run-off. The chlorination facility is sub-standard in terms of ventilation and chlorine segregation. Sustained power outages occur frequently, rendering pumping facilities associated with other area water systems inoperable.

The small diameter distribution mains are buried 2 feet or less in the ground. Freezing occurs frequently in areas where the snow cover is removed for vehicle access. A large portion of the transmission main is laid on top of the ground or is covered by 2 feet, or less, of forest duff. Snow cover, combined with overflow from the tank and leaks in the line, appears to prevent the main from freezing. Although no occurrences of freezing in this portion of the system have been recorded, the lack of cover remains a concern.

The proposed solution would:

1. Replace the surface water source with a deep well in a known productive aquifer
2. Provide chlorination facilities
3. Replace the distribution system in public right-of-way with 4-inch PVC pipe, buried at an adequate depth to prevent freezing
4. Connect all existing services
5. Construct a 20,000-gallon storage tank at an elevation sufficient to provide required pressure in the event of a sustained power outage

Technical Assessment:

Project Background:

The unincorporated community of Essex is located approximately mid-point of U.S. Highway 2, between East Glacier and West Glacier at the southern tip of Glacier National Park, in Flathead County.

The majority of the water system was constructed in the late 1890s and early 1900s. The entire water system is in deteriorated condition and has existed beyond its useful life.

District water originates from a surface water source that undergoes chlorine disinfection as the only form of treatment. The system provides unfiltered surface water, which is in direct violation of the Safe Drinking Water Standards.

The district is under an Administrative Order issued by the Department of Environmental Quality specific to the use of the surface water source without associated mandated filtration. The order mandates that the district properly filter the source water to present standards, or change its water source to one of groundwater origin.

Technical Approach:

The goals of the project are:

1. to conserve water by eliminating leaking distribution piping and overflow of the storage tank
2. to comply with the Administrative Order by converting to a new groundwater system meeting the Administrative Rules of Montana for public water systems
3. to increase pressure in the distribution lines with the new storage tank
4. to provide a safe disinfection system
5. to facilitate water conservation by installing water meters on each service

Two alternatives were analyzed in detail. The selected alternative consists of replacing the existing surface water source with a new groundwater source in conjunction with upgrading the treatment, storage, and distribution system. Using a groundwater source is typically cost effective and provides a better source of water than surface water.

The technical documentation for the selected alternative is somewhat weak. The well location has not been discussed with MDEQ, water rights could be a major setback to the project, and a geo-technical evaluation of the storage tank site has not been discussed. A test well should be drilled and flow tested prior to any design work. If the two entities with existing water rights in the vicinity of the proposed well protest the new water right application, this project could face major set backs.

Several permits and easements must be obtained to complete this project. The applicant has acknowledged this and has begun communications with the affected parties. These issues should be resolved at the beginning of the project.

The schedule seems reasonable if funding and permits can be obtained in a timely manner. Drilling and flow testing the well should be done as soon as possible, due to the length of time and uncertainty of obtaining water rights.

Project Management:

The project management team will consist of a grant and loan administrator, the district chairman, district secretary/treasurer, attorney, and the project engineer. The district chairman will have the responsibility for all official contacts with the grant/loan agencies and will have ultimate authority and responsibility for project management. The secretary/treasurer will be responsible for management of the funds and record keeping necessary for this project. The selected grant/loan administrator will be responsible for the overall management of the project, ensuring compliance with applicable federal and state requirements, and will be the district's liaison with the funding agencies. The attorney will review and advise the district regarding any proposed contractual agreements or any other legal guidance necessary. The project engineer will be responsible for construction-related activities.

It appears the proposed management team is adequate for completing the project. The district and its engineer seem to be familiar with the bidding and project management procedures of a public facility project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$17,700	\$17,700
Professional & Technical	\$0	\$0	\$169,463	\$169,463
Construction	\$50,000	\$0	\$590,129	\$640,129
Total	\$50,000	\$0	\$777,292	\$827,292

Project costs were taken from the Preliminary Engineering Report. Some of the costs seem excessive and some seem too low. Items that seem too high are the cost of well construction and engineering. It seems the cost for boring under the railroad tracks is too low given costs of similar projects. It appears costs associated with acquiring land for the placement of the water storage tank have not been included. It also appears that the quantity of 6-inch water main from the water storage tank to the water distribution main is significantly less in the budget table than in the site layout.

The funding strategy seems to be sound, with the exception that the district is not eligible for the anticipated Rural Development grant monies. The district will need to locate another funding source for \$307,695. This amount of money comprises 37 percent of overall project costs, and results in a serious flaw in the funding strategy. The TSEP grant (\$240,00) application has been submitted. The EDA grant (\$165,000) should be submitted June of 2000.

Benefit Assessment:

The primary benefactors of this project are the water users within this water district. The population benefited is uncertain at this time. Forty EDUs will use the system at the conclusion of the project. Others in the area may benefit indirectly from this project. Although the quantity of water used from Essex Creek is relatively small compared to the overall flow, downstream users could benefit from the current use being returned to the creek.

Surface water will be conserved due to providing an alternative groundwater source. The new water system will provide for water conservation by replacing old leaking pipes, replacing the water storage tank and controls to eliminate overflow conditions, and installing water meters on all services to ensure better control and accountability of water use.

Environmental Evaluation:

The placement of the well house and storage tank facility will have a long-term impact on the environment. This impact should not be significant, due to the location being within an area where visual impacts are currently significant. The project may also cause long-term significant impact to the groundwater aquifer. The aquifer will be tested, prior to project approval, in order to quantify the effects this project could have on the aquifer. The groundwater rights permitting process will ensure the impacts on the aquifer are acceptable. All other construction-related impacts should be short term.

Funding Recommendation:

DNRC recommends no funding for this project. A new water system for this community is certainly warranted, but the inadequate funding strategy will seriously impact the implementation of this project. DNRC recommends the applicant reapply once a solid funding strategy has been developed and all alternatives thoroughly considered.

Project No.

Applicant Name: Town of Jordan
Project Name: Combined Water/Wastewater System Improvements

Amount Requested:	\$ 100,000	grant
Amount Recommended:	\$0	
Other Funding Sources:	\$ 500,000	Treasure State Endowment Program grant
	\$ 783,500	Rural Development loan
	<u>\$ 500,000</u>	Community Development Block Grant
Total Project Cost:	\$1,783,500	

Project Abstract: (Prepared and submitted by applicant.)

The Town of Jordan's water distribution, wastewater collection and treatment systems, and water storage tank were built in the 1950s. The last major improvements were in 1993, when a capital gas chlorination system was installed. In 1992, the Montana Department of Environmental Quality (DEQ) documented four sites within Jordan that have contaminated soil along water and sewer main trenches. Over time, the contaminated soil can be expected to increase the rate at which the water and sewer mains will deteriorate. The DEQ Potential Project Priority List for funding assistance (FFY2000) is currently being updated, and Jordan will be included on the list.

The town's water distribution, wastewater collection and treatment system, and water storage tank have the following deficiencies:

1. The water distribution system is hindered by the elevation of the existing water storage tank and the size of lines in the distribution system.
2. The wastewater collection and treatment system needs improvements to the sewer lift station, the collection system, and the lagoon system.
3. The water storage tank is functional, but the tank lacks the capacity required by DEQ and the Insurance Services Office (fire).

The following tasks will be completed under Phase I of the completed Preliminary Engineering Report and Capital Improvements Plan:

1. replace the water distribution lines within the highway right-of-way and install a new 12-inch water main
2. replace selected sewer mains below DEQ minimum slopes and make improvements to the sewer lift station and the lagoon
3. provide auxiliary power, piping, valves, and telemetry at the existing well and develop a new potable well

Technical Assessment:

Project Background:

The proposed water and wastewater projects are located in and near the Town of Jordan. Jordan is the County Seat of Garfield County and is located about 84 miles northwest of Miles City. The project is motivated by a Memorandum of Understanding with the Montana Department of Transportation (MDT), which requires the replacement of water and sewer mains under the highway during a period of major highway renovation in 2001.

The water system was originally constructed in the 1950s with a well, storage reservoir, and a distribution system of asbestos cement pipe. The main problem with the water system at this time is that it has only a single well, which violates the DEQ requirement for a minimum of two groundwater sources. Should the current well require major repairs or fail, the town would be left without essential water service. During the 1990s, Jordan had some bad bacteriological test results and, in response, installed a gas chlorination system in 1993. Excavation of a leaking water main in 1992 revealed the presence of gasoline from a leaking underground storage tank. In the summer of 1999, the Insurance Services Organization (ISO) tested the distribution system and rated its fire-fighting capability as below recommended flows. Another problem in the water system is low pressure in the upper region of town. The water tank was inspected in 1966, revealing satisfactory integrity and the need for some minor repairs.

The wastewater system was originally constructed in 1951 and consisted of 22,905 feet of collection piping, a single lift station, 2,600 feet of asbestos cement force main and a two-cell lagoon. In 1968, a new two-cell lagoon was constructed. The lagoon was designed to discharge, but after three years of operation with no discharge, the permit was no longer monitored. A new lift station was constructed in 1968 along with the lagoon improvements. There is only a single power source for this lift station, and an emergency overflow on the lift station allows discharge of raw sewage to Big Dry Creek; in 1992, such a discharge occurred. Jordan has an active sewer main cleaning program due to the inadequate (below minimum grade) slopes on many of its sewer mains. The application indicates that the existing clay tile pipe is developing more separated joints and broken sections of pipe. The proposed improvements consist of replacement of selected trunk sewer mains with inadequate slopes, replacement of sewer mains under Highway 200, and lift station and lagoon improvements.

Technical Approach:

The preliminary engineering report identifies problems with both the water and wastewater systems and presents alternatives to be considered by Jordan. The goal of the proposed project is to correct some of the town's water and wastewater system deficiencies. The alternatives selected by the town are:

1. replacement of water and sewer mains within the highway right-of-way
2. replacement of selected trunk sewer mains that are less than the required minimum slope
3. improvements to the lagoon and lift station
4. development of a new well
5. improvements at the existing well
6. installation of a new 12-inch water main up to the future tank site.

These alternatives were selected by the community at a meeting without the engineer's participation. The one alternative that is clearly a priority, however, is construction of a second well, according to DEQ.

Analyses of the water and wastewater systems were not in-depth. Alternatives generally consisted of rehabilitation of different system components. Other alternatives, such as the installation of a booster station to increase system pressures, or installation of sprinkler systems to meet the highest fire flow requirements, were not considered. Conventional sewer main replacement was not mentioned, even though the engineer indicated its cost was probably similar to that for the proposed pipe-bursting method.

While the selected alternatives will resolve some of the water and wastewater system deficiencies, it is not clear that the best approaches to the problems were selected. Long-term operation and maintenance issues and costs were not discussed in any detail. One problem cited by DEQ is that when small towns like Jordan attempt to provide full fire protection, they have a water tank that is oversized for normal uses and is particularly subject to freezing and stagnation. DEQ suggested that the installation of sprinkler systems in the school and downtown buildings might be a more cost-effective solution. With pipe-bursting, a larger pipe size will be installed so that minimum slope requirements can be met by the new pipe. The engineer did not provide calculations to show that adequate velocities will be provided to keep solids from depositing with the relatively small flows in the larger pipes. Television inspection and infiltration/inflow analyses were not performed on the sewer system, nor were any calculations made to determine the adequacy of the existing lagoon. The proposed wastewater system improvements are largely the correction of some operation and maintenance problems, without a thorough analysis of the system. It is premature to install the lagoon improvements until it is determined whether the lagoon is functioning properly. In addition, part of the sewer and water main replacements are in the area of petroleum-contaminated soil. and the engineer and DEQ differ on the method of handling the contaminated soil .

Project Management:

The project management narrative indicates that news articles will keep the public aware of project progress and street traffic control issues will be announced. The application does not indicate a clear understanding that coordination between the engineer and grant administrator will ensure effective project management. Both water and sewer improvements are proposed, so project management could be more complicated than it would be if only one utility was under construction.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$148,000	\$148,000
Professional & Technical	\$0	\$0	\$206,323	\$206,323
Construction	\$100,000	\$0	\$1,429,177	\$1,529,177
Total	\$100,000	\$0	\$1,783,500	\$1,883,500

The funding structure uses TSEP, CDBG, and DNRC grants, along with a Rural Development loan to finance the project. TSEP, CDBG, and DNRC applications are being reviewed at this time. The Town of Jordan is not proposing to contribute any cash reserves or any personnel or office costs. The applicant will request reimbursement for time spent by the town clerk for accounting and dispersal of funds and for supplies, postage, publications, printing and telephone expenses that the town will incur on the proposed project. The \$50,000 allocated to the grant administrator seems high, especially when compared to the

costs for the town clerk and engineering services. Construction costs for the well are also high at about \$285,000.

The current average monthly residential user rate is \$12.00. This fee will increase to \$28.69 as a result of debt incurred with a Rural Development loan to finance this project. Operation and maintenance costs are not expected to increase.

Benefit Assessment:

The 494 people in Jordan would benefit from completion of the proposed project. There is currently only one well on the water system, and a second one is required by state standards for redundancy. Replacement of the water mains in the petroleum-contaminated soils and upgrading the lift station so that it can not discharge raw sewage during pump or power failure will address health and safety issues.

Environmental Evaluation:

There are contaminated soils from old, leaking underground storage tanks where some water and sewer mains are located. Possible deterioration of pipe gaskets in the gasoline environment raises a concern. Ductile iron pipe with petroleum-resistant gaskets will be used in this area for main replacement. The existing well is located about 500 feet away from the contaminated soils. However, given the direction of the well from the site and the clay layers evident on the well log, the well should be adequately protected. The new well location is north of town near the existing tank and will not be impacted by the contaminated soils.

The current population of Jordan is less than the design population used in 1968 when the lagoon was built. While it is possible that there is currently no wastewater discharge because the lagoon is oversized, it is also possible that the lagoon has excessive seepage or is leaking through its outlet valve. The lagoon's integrity was never checked as part of this proposed project.

There will be short-term environmental impacts during construction, such as dust, noise, and emissions. Erosion of soils during drilling and other construction measures could be a problem. However, with implementation of best management practices during construction, these problems can be mitigated.

Funding Recommendation:

DNRC recommends no funding for this project at this time. The application combines both water and sewer projects. Each need to be better defined technically. DNRC encourages the applicant to reapply for separate funding packages for water and sewer, with a more comprehensive technical and financial proposal for each.

Project No.

Applicant Name: City of Kalispell
Project Name: Water and Sewer Utility Extension

Amount Requested:	\$ 100,000	Grant
Amount Recommended:	\$ 0	
Other Funding Sources:	\$ 500,000	Treasure State Endowment Program
	\$ 36,700	State Revolving Fund
	<u>\$1,000,000</u>	Environmental Protection Agency
Total Project Cost:	\$1,536,700	

Project Abstract: (Prepared and submitted by applicant.)

This proposed project extends water and sewer utilities from the city limits of Kalispell to serve existing high-density development contiguous and north of Section 36 and for future development within Section 36. The existing development adjacent to and north of Section 36 consists of a 154 unit apartment complex, 212 residential lots, and a 16 unit condominium complex.

The existing development contiguous and north of Section 36 relies on on-site water and sewer systems for its water and wastewater disposal needs. There is a history of failing wastewater systems within the existing development. The proposed project will extend water and sewer utilities to the area of high-density development to correct the failing on-site wastewater systems.

The proposed utility extensions will eliminate the pollution load on the existing aquifer from on-site wastewater sewer systems, service future development within section 36, and eliminate future contamination of the water system. Each on-site wastewater system represents potential concentrated discharge of nitrates, phosphorous, and bacteria to the groundwater system. This same aquifer is utilized as the sole source of potable water by those located down-gradient specifically those living in the Evergreen area.

The majority of Section 36 is owned and managed by the Department of Natural Resources and Conservation as school trust land. DNRC is mandated by statute to *"seek the highest development of state-owned lands in order that they may be placed to their highest and best use and thereby derive greater revenue for the support of the common schools, the university system and other institutions benefiting therefrom, and that in so doing the economy of the local community as well as the State is benefited as a result of the impact of such development."* The plan to extend utilities to service development in section 36 and existing adjacent development has been outlined by the DNRC's "Neighborhood Plan," with supporting engineering documented through a "Preliminary Engineering Analysis." The "Neighborhood Plan" has been developed over several years time and has been presented to the interested public. Public involvement was encouraged via several avenues, through direct mailings, attendance of homeowners association meetings, and conducting four general public meetings specific to the evolving Neighborhood Plan.

Technical Assessment:

Project Background:

The proposed project will extend municipal water and sewer services to the border of an existing development located northwest of the City of Kalispell along U.S. Highway 93. Water and sewer mains will traverse Section 36 (entirely DNRC school trust land), which the DNRC intends to develop for commercial and residential purposes. Individual and community on-site sewers serve the existing development, consisting of 212 single-family homes, 154 apartment units, and a 16-unit condominium complex. Occasional sewer system failures have occurred over the past 20 years, largely stemming from improper care and operation. A community public water system provides the existing development with water. The applicant states that on-site sewer systems are causing groundwater contamination which could be eliminated by annexing existing development to the city and providing municipal water and sewer services.

Technical Approach:

The application asserts that the goal of the project is to extend city services (water and sewer) to the edge of existing development in order to eliminate on-site sewage treatment systems, thus reducing groundwater contamination. The applicant fails to address how, both technically and financially, the existing development will be annexed and sewered once city sewer is extended within the development. Further, groundwater contamination resulting from sewer systems serving the existing development has not been documented. It is not apparent that sewer systems within the existing development are violating any regulations or standards.

Alternatives eliminating on-site sewers within existing development were not explored. The feasibility and cost effectiveness of creating a sewer district providing various forms of central sewer collection and

treatment should have been examined. Further documentation of the existence and extent of groundwater contamination should be provided.

Extending city water to the border of this existing development is unwarranted because an approved community water system presently serves the development. This system is in full compliance with all state and federal water supply rules. Extending city water mains more than one mile, across Section 36, to the edge of existing development will primarily serve new development proposed within the square mile of school trust land or other areas in the vicinity. While this may be a benefit to new development, it does not serve the goals of the project stated by the applicant.

Project Management:

City of Kalispell staff is well qualified to administer grants, loans and the construction of large utility construction projects. The city manager will have responsibility for all official contacts with grant agencies. The city manager and city council will have ultimate authority for the proper management of project activities, expenditure of funds, and contract approvals. The financial director will manage all record keeping and accounting of project funds. The community development director and the public works director/city engineer will manage the project on a day-to-day basis. The city attorney will review all contracts and other legal documents. A consulting engineer will be retained to monitor construction-related activities, including design, bidding, inspection, contractor compliance and payment requests.

Details of annexing existing development have not been established. It is possible that the property owners within the existing development will not agree to be annexed, or to pay for the cost of the sewer extension and subsequent user fees. Public meetings between the city and property owners relative to potential annexation have yet to take place. Annexation and sewerage agreements are vital to the management success of the proposed project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$50,360	\$50,360
Professional & Technical	\$0	\$0	\$201,440	\$201,440
Construction	\$100,000.00	\$0	\$1,284,900	\$1,384,900
Total	\$100,000.00	\$0	\$1,536,700	\$1,636,700

All project costs appear to be reasonable. Construction cost estimates are consistent with recent bids on other projects similar in nature, and the budget has adequate administrative costs associated with the utility extension. TSEP and EDA grant applications have been submitted, but the funds have not yet been committed. SRF loan monies are available upon request, provided all bonding requirements are met.

The application asserts that user rates for the 382 EDUs in the existing development will be \$45.06 per month to extend water and sewer to the boundary of development. This user fee does not include costs associated with providing services to the interior of the development. The application fails to address if property owners in the existing development will agree to annexation and user fee assessment. Financial impacts of annexation and extension of services to the interior of the development should be further identified.

Benefit Assessment:

The application states that the primary goal of the project is to enhance groundwater quality in the area by eliminating on-site wastewater treatment systems within existing development. Extending city water and sewer services to the border of existing development does not eliminate the on-site wastewater treatment systems. The resource enhancement goal stated by the applicant is not met by the project. Also, the application fails to quantify existing groundwater quality, nor how groundwater quality would be enhanced in the event the existing development does connect to city sewer services. Citizen benefits resulting from

the project could include commercial and residential development of the school trust land within Section 36, along with other nearby lands.

Environmental Evaluation:

Impacts associated with this project include short-term land disruption and dust associated with construction projects. All impacts will be eliminated once construction is terminated. A positive environmental impact associated with groundwater quality could occur if sewer service is ever provided to the interior of existing development.

Funding Recommendation:

DNRC recommends no funding for this project. The resource enhancement goal stated by the applicant is not met by the project. Also, the application fails to quantify existing groundwater quality, nor how groundwater quality would be enhanced in the event the existing development does connect to city sewer services. DNRC recommends reapplication after annexation of the existing development, developing costs associated with providing city sewer to the interior of the development, and identifying the resulting user fees that will be assessed to property owners in the existing development.

Project No.

Applicant Name: Lewis and Clark Conservation District
Project Name: Nilan Dam Repair and Irrigation Efficiency Project

Amount Requested: \$96,305 Grant

Amount Recommended: \$0

Other Funding Sources: \$68,690 (Nilan Irrigation District, NRCS, DNRC, LCCD and Sun River Watershed Group – primarily in-kind services)

Total Project Cost: \$164,995

Project Abstract: (Prepared and submitted by applicant.)

The Nilan Water Users is a state-owned irrigation project in the upper Sun River Watershed that distributes water to approximately 10,000 acres on 58 farms between the Rocky Mountain Front and Augusta. The project was originally completed in 1951, with several upgrades over the past 10 years. The project went through two major emergency dam repairs during the past two years. The aging outlet structure and delivery system of 12 miles of canal are in dire need of repair to reduce potential dam failure, significant water loss, and water quality degradation. The impacts can be seen for miles, with losses of 10,00 acre/feet of the water per year, which equates to 50 percent of the water removed from the inflows to the project.

This project will install a new outlet structure on the north dam, install a drain on the east dam, line 100 feet of canal, conduct a thorough review of the ditch lining program to reduce the significant seep problem, and evaluate other water conservation options to integrate with the Department of Natural Resource and Conservation's (DNRC) water conservation program and Natural Resource Conservation Service irrigation water management program. These improvements will protect the health of the dam and prepare the irrigators for the best options for future improvements.

The goals of this project are: (1) prevent potential dam failure, (2) improve overall irrigation efficiency to reduce loss of land from seeps, and (3) improve water quality and quantity in the area streams from these improvements.

The objectives to reach this goal are: (1) replace outlet structure, (2) line canal, (3) conduct extensive water conservation review with DNRC and others.

Technical Assessment:

Project Background:

The project is located on Nilan Irrigation District west of Augusta, Montana. The project consists of three distinct parts:

1. construction of an outlet works to replace the existing aging outlet works at the Nilan Dam
2. construction of a canal liner on a small portion of the existing delivery canals
3. research on additional needs for canal lining and overall water management improvements in the irrigation district.

Technical Approach:

The goals and objectives of the project are not strongly linked. One of the goals of the project is to prevent dam failure. The objective to accomplish this is to replace and repair the outlet structure. However, it is not clearly documented that the aging outlet works are a dam safety threat directly related to dam failure. Similarly, a second goal of reducing loss of land to seeps is not necessarily ensured by lining a 100-foot section of canal. Finally, neither the outlet replacement, canal lining, nor the research portion of the project will necessarily lead to improved overall water quality in the Sun River and the irrigation district (the third goal of the application). In short, the costs associated with the project may not generate any of the benefits.

The technical approach to this project is tenuous at best if each of the distinct sub-projects (outlet replacement, canal lining, and research) is examined individually. The technical approach is even more suspect when the entire funding package is examined. These sub-projects are actually distinct from each other and are not dependent on each other for implementation or success. The only commonality among them is that they occur on the irrigation district's facilities and they affect water management on the district. It would seem more logical to evaluate these projects separately so their individual technical and financial merits could be evaluated.

Only two alternatives for repair of the dam outlet works were proposed—one a no-action alternative and the other an alternative that involved ceasing use of the reservoir until funding can be generated from district funds. Both were dismissed peremptorily without analysis. The only alternative logically remaining was the selected alternative. This conclusion was inevitable given that the other alternatives were either not supported with any information or were chosen so as to be infeasible and easily dismissed. No alternatives were presented for either the lining portion of the project or the research portion of the project.

The schedule presented by the applicant is sketchy. The primary use of RRGL funding will be for lining and outlet replacement, which is scheduled to begin October 1, 2001, and run through October 2003. The applicants did not identify any external constraints that would prevent their schedule from being delayed, so if funding were not available until after October 1, 2001, the project is still viable.

Project Management:

The application is somewhat confusing as to who the lead management agency is. At various locations within the application, the Sun River watershed coordinator, Nilan Water User's manager, DNRC, and the Lewis and Clark Conservation District (LCCD) all are indicated as being lead coordinator/project managers or co-managers. This is especially confusing in that the project applicant is LCCD, while most of the project activities occur on and at the benefit of the Nilan Water User's Association facilities. Because the project is really three separate and distinct sub-projects, different agencies may serve as a lead agency for different portions of the project. However, as noted above there is not a clear, overall project coordination plan.

Methods for managing and coordinating multiple entities or consultants have not been identified by the applicant. The only provisions for incorporating public input into the project are through the Sun River Watershed Coordinator. There are no specific budget items for public input meetings or publication, but they may be included in larger budget items.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$13,000	\$13,000
Professional & Technical	\$0	\$0	\$46,640	\$46,640
Construction	\$96,305	\$0	\$9,050	\$105,355
Total	\$96,305	\$0	\$68,690	\$164,995

LCCD currently assesses a tax of 1.5 mils on each of the \$20,000 acres within the district. No increases in assessments will be needed by the district. The district will provide \$3,600 in in-kind services for this project. The application claims the Nilan Irrigation District (on which the improvements and research will be made) has no additional ability to pay or to assess more upon its users due to large bills from repairs during the past few years. The district will contribute \$15,580 in labor, materials and administrative support to this project. The irrigation district serves about 10,000 acres.

The budget presented is based on reasonable rates for technical services. The construction estimate is based on very preliminary designs and includes a reasonable contingency. The largest discrepancy with the budget is that it mixes the costs for the three sub-projects (outlet replacement, lining, and research) so that the individual benefits from each sub-project cannot be compared to their individual costs.

Since both LCCD and the Nilan Water Users cooperated on the application, it is probably certain that they would dedicate funding as indicated in the application if their budgets allowed. However, commitment from the other agencies is uncertain. It appears that all or most of the research portion of this project would be paid by the other sources.

Benefit Assessment:

The construction portion of the project involving replacement of outlet works is a large portion of the budget and consumes the bulk of the RRGL funding. This portion of the project basically returns the Nilan Dam outlet works to an acceptable condition. In doing so, it protects and preserves the water resources that now serve as water supply for irrigators within the irrigation district. However, it does little to enhance the value of the resource.

The canal lining portion of the project could lead to enhancement of the resource by reducing water loss and allowing otherwise saturated lands to become arable again. But the benefit from canal lining is not necessarily guaranteed by the lining proposed by the applicant. Furthermore, the significance of lining 100 feet of canal, and the size of the area or the amount of water that may be saved by doing so, is not considered in the application and is suspect.

The research portion of this project is consistent with existing planning and management efforts in the Sun River Watershed to effect a basin-wide water management strategy.

The benefits from the RRGL investment in this project are likely to accrue to a relatively small segment of the state's population. Replacement of the outlet works and canal lining will benefit the water users within the district and the dam owners and operators. Lining of 100 feet of canal will likely conserve a small amount of water, which might have benefits to other water users and the public, but the amount saved by this isolated lining is probably insignificant. The research portion of this project has potential to have the largest effect on Montana's citizens by identifying broad scale water management needs and changes that could have significant effects. However, RRGL funding is not used for this portion of the project and it seems likely that the research will go forward regardless of RRGL funding.

Environmental Evaluation:

The only adverse environmental impact that may occur as a result of this application is the elimination of wetlands as a result of canal lining. The amount of wetlands eliminated is not quantified in the application. The application indicates that other wetlands would be created as mitigation, but no firm plan for doing so and no funding for this mitigation is identified.

Funding Recommendation:

DNRC does not recommend grant funding for this application because the proposed project lacks documented technical feasibility, and financial feasibility is uncertain.

Project No.

Applicant Name: Town of Lima
Project Name: Water System Improvements (Transmission Main)

Amount Requested:	\$100,000	Grant
Amount Recommended:	\$ 0	
Other Funding Sources:	\$300,000	SRF Loan
	<u>\$120,000</u>	CDGB Grant
Total Project Cost:	\$520,000	

Project Abstract: (Prepared and submitted by applicant.)

Lima, an incorporated town of 266 residents, is near the continental divide in the extreme southwestern corner of Montana. Lima is fortunate to have "first priority" water rights to the highest quality drinking water in Montana. Unfortunately, the transmission line bringing water into the town is too old, too small, and too deteriorated to be effective.

Lima's original water system was developed by the Oregon Short Line Railroad in the 1880s. The system was operated and maintained by the railroad until 1924, when the town obtained it by lease agreement. Since then, the railroad has transferred the water right and the system to Lima.

Over the years, Lima has repaired and replaced much of the system. The existing system is a spring-fed gravity system originating approximately 3/4 mile south of town and approximately 180 feet higher than the town. The higher elevation is the basis for adequate natural pressure for distribution. In 1990, Lima installed a 100,000-gallon storage tank at Spring Hill, the water source.

The transmission line from Spring Hill to Lima is a six-inch, cast-iron pipe with leaded joints. The line is so old and decomposed that it leaks extensively and crumbles under pressure. The school in the center of Lima has a water pressure of 2 pounds per square inch (psi), which is dangerously below the recommended 60 to 80 psi. Extremely low and negative pressure can result in serious contamination of the water supply, especially in a community where the homes are on individual cesspools and septic systems. There is not adequate water pressure for fire protection.

This urgently necessary project will replace the deteriorated transmission lines to preserve a high-quality water supply (which is currently leaking into the ground all along the transmission line) and to protect the health and safety of the citizens of Lima.

Technical Assessment:

Project Background:

The Town of Lima is located about 15 miles north of the Idaho border along Interstate 15. Lima is an incorporated town and home to 266 residents. Lima's water supply consists of a spring located less than a mile from town and about 180 feet in elevation above the town. Spring water is conveyed 4,800 lineal feet through a transmission main to the town distribution system. The spring transmission main was likely constructed in the 1880s and consists of six-inch, cast iron pipe with leaded joints. Due to its age, the transmission main is severely deteriorated leaks water excessively. The entire water distribution system is also old, leaking, and in need of repair. The proposed improvements for this project consist of replacing the existing six-inch transmission main with a 12-inch, PVC transmission main, as well as improvements to the spring collection box and existing chlorination system.

Technical Approach:

The primary project goal in relation to renewable resources is to reduce the loss of spring water by replacing the dilapidated transmission main. Other tasks associated with the overall project are to improve the spring collector and provide a new water chlorination system. The existing chlorination system consists of a perforated bucket containing chlorine tablets that is suspended in a storage reservoir.

Two alternatives to transmission main replacement were considered:

1. simply repair leaky portions of the line on an as needed basis
2. abandon the transmission line and spring by developing groundwater wells in town.

Repairing the transmission main would likely be ineffective due to the age and level of deterioration. Abandoning the transmission main and developing a new groundwater source was dismissed under the assumption that the groundwater, at a depth of greater than 200 feet, would be contaminated from the on-site sewer systems in Lima. This alternative should be further analyzed, particularly relative to costs.

The selected alternative is capable of complying with public water supply standards enforced by DEQ, as well as water rights issues governed by DNRC. Transmission line replacement will require that the Town obtain a railroad crossing agreement. The proposed project implementation schedule is reasonable, as are estimated construction costs.

A Preliminary Engineering Report was not included in the application, nor has it been determined whether the spring is a groundwater source under the influence of surface water.

Project Management:

The project management team will consist of the mayor, the town council, town clerk, attorney and the project engineer. The mayor will have responsibility for all official contacts with the grant and loan agencies and will have ultimate authority and responsibility of the management of the project. The town clerk will be responsible for management of the funds and record keeping necessary for this project. The selected grant/loan administrator will be responsible for overall management of the project, ensuring compliance with applicable federal and state requirements, and will be the town's liaison with the funding agencies. The attorney will review and advise the town regarding any proposed contractual agreements or other necessary legal guidance. The project engineer will be responsible for construction-related activities including preparation of design plans and specifications, construction inspection, contractor compliance, scheduling, and review of payment requests.

It appears the project management team is adequate for completing the project. The town and its engineer seem to be familiar with the bidding and project management procedures of a public facility project.

Financial Assessment:

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$23,500	\$23,500
Professional & Technical	\$0	\$0	\$43,500	\$43,500
Construction	\$100,000.00	\$0	\$305,000	\$405,000
Total	\$100,000.00	\$0	\$372,000	\$472,000

Unit costs used in the construction cost estimate are reasonable when compared to other recently bid projects of similar nature. Proposed administrative costs are also rational considering town personnel will, for the most part, administer the grants.

The applicant intended to apply for a TSEP grant but missed the deadline. An SRF loan will be applied for upon the commitment of RRGL and CDBG grant funds. All grant applications were submitted in May 2000, with grant commitments being made after the 2001 legislature. Presently there are 203 EDUs assessed at a flat user rate of \$16.50 per month. User rates will be increases by \$9.06 per month per EDU as a result of this project, resulting in a flat user fee of \$25.56 per month. The town is proposing to increase user rates to this level over the next five years

Benefit Assessment:

Transmission line replacement will result in resource conservation by reducing the waste of groundwater from the leaking main. Further, groundwater will be put to enhanced beneficial use by the residents of Lima, rather than being lost. In terms of citizen benefit, the users will experience improved water pressure. The degree to which system pressure may improve has not been determined. It is likely that water system pressure is low due to the deteriorated state of the water distribution system.

Environmental Evaluation:

Impacts associated with this project are short-term land disruption and dust associated with the construction project. All impacts will be eliminated once construction is completed.

Funding Recommendation:

DNRC recommends no funding for this project due to the lack of a Preliminary Engineering Report and no resolution of whether the spring is groundwater under the direct influence of surface water. If the spring is under the influence of surface water, funding the proposed project would not likely be a long-term solution to the town's water supply problems. DNRC recommends the town reapply for a grant after the preparation of a Preliminary Engineering Report and completion of the GUDISWA assessment of the spring.

CHAPTER 3

Coal Severance Tax Loans to Public Entities

Application Administration and Project Review Procedures

Applications for public loans are accepted by DNRC's Resource Development Bureau until May 15 of each even-numbered year at the same time other applications are due from public applicants under this program. A \$250 application fee is required with each application for a large public loan. These loans are provided with proceeds from the sale of coal severance tax secured bonds and frequently are offered at a subsidized interest rate. The subsidy is paid with coal tax revenues.

Project Solicitation

Applications for public loans are solicited through the same process DNRC uses to solicit other public grant and loan applications described in Chapter 2. The availability of low-interest loan funds is widely advertised through direct mailings, press releases in association and commercial newspapers, and with contact made during promotional workshops conducted by DNRC, DOC and DEQ at the local level. The same application form is used to solicit both grant and loan applications.

Application Review

All public loan applications received by the deadline are evaluated for completeness. Those missing documentation, application fees, or other basic requirements are notified and allowed time to submit additional material. After applications are reviewed for completeness, and any additional information needed is obtained from the sponsor, completed applications are given to the team of key reviewers for review and evaluation. Figure 1, in Chapter 2, shows the flow of the application review process. Loans are reviewed to determine financial, economic, and technical feasibility.

Funding Recommendations

All feasible public loan applications eligible for funding receive a favorable funding recommendation if the applicant demonstrates the ability to repay the loan. DNRC's recommendation includes the amount of financing needed to meet project and financing expenses and the interest rate suggested. There is no maximum allowable funding level. Public loans are limited to the amount an applicant has the ability to repay under the standard repayment terms and by DNRC's bonding capacity.

Availability of Loan Funds

In 1981, the legislature adopted SB 409 to provide up to \$250 million in Montana coal severance tax bonds. Coal severance tax bonds are issued for financing projects and activities in the state specifically authorized by the legislature. Statutes dictate that loans made from coal severance tax bond proceeds are to be administered by DNRC, and that DNRC is to review each project to determine its technical and financial feasibility.

Although the legislation was adopted in 1981, coal severance tax loans were not issued for the first few years because the constitutionality of the state's bonding authority under this program was initially challenged. In February 1984, the Montana Supreme Court ruled in the state's favor in *Grossman v. State of Montana*, and the first Montana coal severance tax bond was sold to finance loans during that same year.

In September 1985, the board of examiners adopted a general resolution pursuant to which all subsequent coal severance tax bonds have been issued. A copy of this resolution may be obtained from DNRC. The general resolution requires the bonds issued be secured on a parity basis. This means that all subsequent coal severance tax bond issues have the same right or ability on proceeds flowing into the

trust fund to pay bondholders. However, to assure bondholders there always will be enough coal severance tax revenue to meet debt service payments, the general resolution restricts the cumulative amount of bonds that can be issued. This restriction is more constraining than the \$250 million statutory limit. The general resolution does not allow any additional coal severance tax bonds to be issued if annual debt payments exceed 50% of the coal severance tax revenue allocated to the trust, plus 50% of the loan repayments received from local government borrowers.

Loan Repayment

Coal severance tax revenue is used to pay the difference between payments received from local government borrowers and the state coal severance tax bond payments. Thus, coal severance tax bonds are paid with revenue from payments from local government borrowers along with coal severance tax proceeds.

To implement these repayment provisions, the statute established a fund structure within the permanent coal tax trust fund. Fifty percent of coal severance tax proceeds flowing to the permanent trust fund are first deposited in the coal severance tax bond fund. A portion of the proceeds deposited in the bond fund are transferred to the debt service account to pay for the interest rate subsidies. An amount equal to a year's debt service payment on all coal severance tax bonds is held in reserve in the bond fund.

Proceeds that exceed the subsidy payments and reserve requirement are transferred to the coal severance tax school bond contingency account. This fund was established to provide security to school bonds issued during the 1992-93 biennium. The remaining proceeds are then transferred into the Treasure State endowment fund and the coal severance tax permanent fund, which retains the remaining 80% of this income.

With the exception of the Treasure State Endowment Fund, the interest earnings associated with all account balances are transferred to the coal severance tax income fund. These interest earnings are then transferred to the general funds.

Interest Rates

Loans may be provided at a rate less than the rate at which the state bond is sold, for all or part of the term. During the financial review of each loan application, DNRC prepares a funding recommendation that includes a recommended interest rate subsidy. This subsidy is available for loan applicants only. Applicants that receive grant funding in conjunction with a loan do not receive an interest subsidy. Recommendations are developed to be consistent with past direction provided by the Long Range Planning subcommittee of the legislature. In 1987, the legislature directed that the recommended subsidy for municipal projects typically be based on the user rate as a percentage of the "median household income." The schedule for subsidies with respect to municipal projects is presented below.

1. If less than 1% of the median household income is required to pay user rates, no subsidy is recommended;
2. If the user rate is at least 1% but less than 2%, a 1% interest rate subsidy for 5 years is recommended;
3. If the user rate is at least 2% but less than 4%, a 2% interest rate subsidy for 5 years is recommended; and
4. If the user rate is more than 4% of the median household income, a 3% interest rate subsidy for 5 years is recommended.

The basic interest rate on coal severance tax loans is determined by the bond market at the time coal severance tax bonds are sold. The rate of interest on most loans from the program will vary in accordance with the rate on the state coal severance tax bonds. The basic rate of interest for each public loan financed from the proceeds of a single bond issue is the same. Subsidies vary, depending on legislative authorization.

Project Management

DNRC reviews each public loan application to determine whether the project is financially feasible. A project is considered financially feasible if sufficient funds can be made available to complete the project, and if sufficient revenue can be obtained to repay the loan and to operate, maintain, and replace the project. After a public loan is authorized by the legislature and the project sponsor is ready to secure financing, DNRC performs a more thorough review of the applicant's ability to repay the loan. At this time DNRC may require access to the applicant's most recent financial statement, budget document, and other documentation in order to assess whether the proposed project is truly financially feasible.

If the borrower provides documentation of the ability to repay a loan and all legal requirements to incur debt are met, a bond purchase agreement is prepared and executed to make specific requirements and covenants with respect to a project or improvements to a project being financed. Borrowers must acquire all property rights necessary for the project, including rights-of-way and interest in land needed for a project's construction, operation, and maintenance. As appropriate, these and other stipulations also are contained in a bond resolution. Unless otherwise authorized, each loan--including principal and interest--shall be payable over a term approved by DNRC not to exceed the term authorized by the legislature. The cost of issuing the state's bond also is paid by borrowers.

Each borrower must agree not to sell, transfer, lease, or otherwise encumber the project, any portion of the project, or interest in the project without DNRC's prior written consent. Further, the borrower must notify DNRC of any changes or modifications in a project either before or during construction. Borrowers are required to acquire and maintain, with respect to the project, property, casualty and liability insurance. Insurance policies must name DNRC as a certificate holder for notification purposes.

For local government revenue bonds, borrowers must establish a system fund to segregate the revenue of the system or district. Within the system or district fund, the following accounts are generally established: construction account, operating account, revenue bond account, reserve account, replacement and renewal account, and surplus account. These accounts ensure that the system's revenue and other funds are properly applied in a manner reasonably satisfactory to DNRC.

Loans are disbursed by warrants drawn by the state auditor, or by wire transfers authorized by the state treasurer in accordance with the provisions of this rule and the bond resolution. No disbursement of any loan funds shall be made unless DNRC has received from the borrower (1) a duly adopted and executed bond resolution in a form acceptable to DNRC; (2) an executed bond in a principal amount equal to the loan amount, also in a form acceptable to DNRC; (3) a certificate from an official of the governmental unit stating that no litigation is threatened or pending that would challenge the governmental unit's authority to undertake the project, to incur the loan, to issue the bonds, and to collect revenue; (4) an opinion from the bond counsel that the bond is a valid and binding obligation of the borrower payable in accordance with its terms; and (5) any other closing certificates or documents that DNRC or the bond counsel may require.

Project Monitoring

Borrowers must maintain proper and adequate records of accounts that show the complete and correct entries of all receipts, disbursements, and other transactions related to the project and, if applicable, the monthly gross revenue derived from the projects operation. Any segregation and application of the gross revenue resolution also must be shown in such reasonable detail as may be determined by the borrower in accordance with generally accepted accounting practices and principles.

Loan agreements require quarterly progress reports, expenditure reports, a final report, and annual financial reports over the term of the loan. Projects are closely monitored each quarter when quarterly reports are submitted. Borrowers submit documentation for all expenditures and these are checked against the loan agreement.

Under the usual terms of DNRC's bond purchase agreement, each borrower must comply with reporting requirements during the construction period and continue to do so throughout the term of the loan. According to these requirements, within 180 days after the close of each fiscal year, the borrower must

prepare and supply to DNRC an appropriate financial report with respect to the project for such fiscal year. Where applicable, this report includes a statement that details the project's income and expenditures for the fiscal year; the identification of capital expenditures that separate them from operating expenditures; a balance sheet as of the end of the fiscal year; the number of premises connected to the project at the end of the fiscal year; and the amount of cash on-hand in each account of the fund at the end of the fiscal year. The borrower must also provide a list of the insurance policies and fidelity bonds in force at the end of the fiscal year, that shows the amount of coverage, the risks covered, the name of the insurer or surety, and the expiration date of the policy or bond.

FIGURE 3 Resource Development Public Loans

Coal Severance Tax Loans

ID Number	Type	Applicant	Balance Due	Closing	Termination
1) WDL-86-3050	CST	Anaconda-Deer Lodge County	266,197	01/08/86	01/20/06
2) WDL-93-3160	CST	Beaverhead Co/Red Rock W & S	2,119,751	08/06/92	07/02/12
3) WDL-85-3015	CST	Belgrade, City of	400,306	01/21/85	01/21/05
4) WDL-85-3043	CST	Bitterroot Irrigation District	793,460	09/17/85	02/17/16
5) WDL-91-3149	CST	Bozeman, City of	270,321	04/01/91	05/23/11
6) WDL-89-3125	CST	Bozeman, City of	492,597	05/23/89	05/23/09
7) WDL-00-3266	CST	Broadwater Missouri Pipespan	509,426	12/07/99	11/25/19
8) WDL 87-4395	CST	Broadwater Power Project	21,735,000	11/05/87	11/05/07
9) WDL-87-43951	CST	Broadwater Power Project	1,400,000	11/05/87	11/05/07
10) WDL-86-3053	CST	Charlo Water District	16,621	12/04/85	12/04/05
11) WDL-85-3010	CST	Conrad	119,303	10/29/84	10/29/04
12) WDL-85-3029	CST	Culbertson, City of	287,934	07/01/85	07/01/05
13) WDL-88-3096	CST	Denton, Town of	119,493	08/31/87	09/01/07
14) WDL-93-3162	CST	Dutton, Town of	117,591	09/15/92	06/08/12
15) WDL-93-3162A	CST	Dutton, Town of	21,038	09/15/92	06/08/12
16) WDL-85-3048	CST	East Bench Irrigation District	537,512	06/29/87	07/02/17
17) WDL-00-3266	CST	East Fork Rock Creek Dam	900,000	06/01/97	04/10/17
18) WDL-88-3104	CST	East Helena, City of	289,631	02/02/88	02/02/08
19) WDL-87-3079	CST	Ekalaka, Town of	113,966	08/15/86	08/15/06
20) WDL-85-3014	CST	Ennis, Town of	81,109	11/30/84	11/30/04
21) WDL-96-3200	CST	Ennis, Town of	670,929	05/15/96	05/01/16
22) WDL-91-3147	CST	Fairview, City of	201,918	11/26/90	07/01/10
23) WDL-93-3163	CST	Flathead County	3,081,890	12/31/92	07/05/13
24) WDL-93-3174	CST	Forsyth, City of	323,939	11/01/93	05/14/13
25) WDL-96-3203	CST	Forsyth, City of	280,745	02/27/96	11/01/15
26) WDL-86-3054	CST	Fort Benton, City of	384,957	12/30/85	12/30/05
27) WDL-98-3246	CST	Fort Benton, City of	501,648	04/15/98	05/01/18
28) WDL-90-3134	CST	Gardiner-Park County Water District	245,370	11/07/89	07/01/09
29) WDL-88-3097	CST	Glasgow, City of	1,887,673	10/02/87	07/01/07
30) WDL-91-3146	CST	Glendive, City of	1,324,894	03/14/91	01/01/11
31) WDL-88-3018	CST	Harlem, City of	258,023	05/08/88	05/01/08
32) WDL-86-3051	CST	Havre, City of	1,326,382	12/02/87	12/02/05
33) WDL-97-3227	CST	Huntley Irrigation District	1,276,351	12/17/96	02/01/17
34) WDL-00-3262	CST	Huntley Irrigation District II	300,000	11/05/99	02/01/17
35) WDL-97-3216	CST	Hysham, Town of	187,994	06/26/97	07/17/16
36) WDL-87-3091	CST	Lakeside County Sewer District	480,141	07/07/87	03/01/07
37) WDL-98-3245	CST	Lakeside County Sewer District	189,057	01/22/98	11/01/17
38) WDL-85-3013	CST	Libby, City of	286,522	12/03/84	01/03/05
39) WDL-88-3103	CST	Lima, Town of	160,108	01/25/88	02/01/08
40) WDL-87-3087	CST	Lockwood Irrigation District	152,088	03/26/87	07/01/07
41) WDL-90-3138	CST	Miles City, City of	1,122,630	05/21/90	06/01/10
42) WDL-89-3114	CST	Mill Creek Water & Sewer District	715,967	10/14/88	07/15/20
43) WDL-96-3213	CST	Neihart, Town of	135,644	06/20/96	06/01/16
44) WDL-96-3214	CST	Petrolia Dam	334,663	10/25/96	11/15/16
45) WDL-89-3117	CST	Pondera County Canal & Reservoir	389,877	01/11/89	06/01/09
46) WDL-94-3176	CST	Pondera County Canal & Reservoir	317,255	05/20/94	06/01/09

ID Number	Type	Applicant	Balance Due	Closing	Termination
47) WDL-86-3052	CST	Poplar, City of	244,286	11/12/85	11/12/05
48) WDL-85-3017	CST	Sage Creek Co Water District	551,345	01/31/85	01/31/15
49) WDL-90-3145	CST	Sanders Co Water District at Noxon	108,591	06/14/90	05/15/10
50) WDL-85-3011	CST	Shelby, City of	266,759	11/02/84	11/02/04
51) WDL-98-3078	CST	Shields Canal Water Users	18,639	06/01/86	12/15/06
52) WDL-91-3148	CST	Sun Prairie Sewer District	420,425	10/15/90	07/01/10
53) WDL-93-3173	CST	Sun Prairie Water/Sewer District	165,725	01/25/94	01/01/13
54) WDL-85-3044A	CST	Three Forks, City of	146,468	01/14/86	01/14/06
55) WDL-85-3044B	CST	Three Forks, City of	94,735	01/14/86	07/14/06
56) WDL-98-3237	CST	Tin Cup Water District	294,558	12/10/97	07/01/18
57) WDL-85-3047	CST	Upper Musselshell Water Users	101,333	06/12/85	12/01/05
58) WDL-88-3101	CST	West Yellowstone, City of	302,401	12/30/87	07/01/07
59) WDL-89-3127	CST	West Yellowstone, City of	392,457	06/30/89	01/01/09
60) WDL-87-3084	CST	White Sulphur Sprs, City of	246,247	03/02/87	03/02/07
61) WDL-93-3175	CST	Whitefish, City of	399,924	08/17/93	12/01/13
62) WDL-87-3093	CST	Whitehall, City of	44,170	11/09/87	12/01/07
63) WDL-91-3152	CST	Wibaux, Town of	198,452	06/25/91	07/01/11
64) WDL-86-3067	CST	Yellow Water Water Users	15,530	10/11/85	07/01/05
65) WDL-86-3060	CST	Yellowstone County	130,424	03/13/86	03/14/06
66) WDL-86-3066	CST	Yellowstone County	167,726	03/13/86	03/14/06
Total Coal Severance Tax Loans			51,438,116		

FIGURE 4 Water Development Public Loans

ID Number	Type	Applicant	Balance Due	Closing	Termination
1) WDGL-85-8005	GO	Antelope Co Water/Sewer District	65,863	01/03/86	01/10/16
2) WDGL-85-3030	GO	Culbertson, City of	45,763	07/01/85	07/01/05
3) WDGL-84-8004	GO	Winnett, Town of	39,131	05/30/84	05/30/04
4) WDL-89-3128	RRD	Cut Bank N Glacier W/S District	62,225	09/28/90	06/07/10
5) WDL-87-3082	RRD	Kevin, Town of	95,413	11/10/86	11/10/06
6) WDL-87-3083	RRD	Park County RSID #7	87,548	12/22/86	12/22/06
Total Water Development Loans			395,943		

TOTAL OUTSTANDING PUBLIC LOANS

\$51,834,059

FIGURE 5 Public Loans Authorized in 1999 and Seeking Reauthorization

<u>Applicant</u>	<u>Amount</u>	<u>Rate</u>
Daly Ditches Irrigation District	\$ 730,691	Market Rate
Hebgen Basin/West Yellowstone Refuse District	\$2,080,000	Market Rate
Hill County Water District	\$ 400,000	2% Below 1 st 5 Yrs.
Canyon Creek Irrigation District	\$ 300,000	4.5%
Malta Irrigation District	\$2,274,950	4.0%
Huntley Project Irrigation District	\$3,200,440	3.5%

FIGURE 6 Public Loans Authorized in 1999 That Have Been Canceled

<u>Applicant</u>	<u>Amount</u>
Town of Boulder	\$ 907,000
Town of Ennis	\$ 350,000
City of Glendive	\$2,240,762
City of Forsyth	\$1,218,916
Seeley Lake-Missoula County Water District	\$1,600,000
Fort Peck Rural County Water District	\$1,325,000
DNRC	\$1,034,467
(North Fork of the Smith River Dam Rehabilitation)	

CHAPTER 4

RENEWABLE RESOURCE GRANTS AND LOANS TO PRIVATE ENTITIES

Grant Application Administration and Project Review Procedures

As discussed in Chapter 1, applications for water-related projects from any individual, association, for profit corporation, or not for profit corporation, may be considered for funding. Only water-related projects may be funded. They must have quantifiable benefits that will exceed costs. Projects must also provide public benefits in addition to any private benefits.

Project Solicitation

To solicit applications from private entities that provide significant public benefits, DNRC has chosen to target public water systems operated by private water user associations and small agricultural projects that need help. The agricultural projects have included inspection on private high-hazard dams, and water measuring devices on chronically dewatered streams. To this end DNRC has contracted with Montana Rural Water Systems, Inc. (MRWS) to solicit projects from private drinking water systems, review projects and advise DNRC on their validity, feasibility and performance. Dam and water measuring projects were solicited by the Dam Safety Bureau and the Water Management Bureau of the Water Resources Division of DNRC. In addition to the projects solicited by the above-mentioned organizations DNRC also accepts applications at any time from any water system. Grantees are given one year to complete the project.

Information requested in the application includes:

- name, address, and telephone number of applicant
- description of the problem, including the history and alternative methods of rectifying the problem
- complete budget information including funding sources and cost comparatives of the alternatives
- description of the public and private benefits of the project and the need and urgency of the project
- environmental impacts of the project, both positive and negative
- technical information and approval, if necessary, by DEQ, EPA, or other responsible enforcement agency

Application Review

All applications received by MRWS were evaluated and ranked according to the extent each application represents a project that is critically needed, will protect public health, provides opportunities for resource conservation, and improves the environment. Applications received by Dam Safety and Water Management were reviewed by them, and submitted to Resource Development Bureau with a recommendation. Other applications are also evaluated by DNRC staff. All applicants must hold or be able to acquire all necessary lands other than public lands and interests in the lands and water rights necessary for the construction, operation, and maintenance of the project.

Criteria for evaluating private grants is similar to the criteria outlined in Chapter 2 for public grants. As with public grants, private grants are also evaluated to determine the potential adverse environmental impacts. Projects that would result in significant impacts would not be recommended for funding by DNRC until an environmental assessment or environmental impact study has been completed. Recommendations are made to minimize impacts and to ensure that appropriate steps are taken to protect the environment. Any potable water system project must be approved by DEQ to assure that it meets state standards.

Funding Recommendations

According to Montana's Constitution, the legislature may not appropriate funds to private individuals. However, state entities have the authority to distribute public funds to private individuals. To provide for private grants in 1993, the legislature appropriated \$100,000 to DNRC to fund grants for private entities.

Since then, the legislature has appropriated \$100,000 to DNRC each biennium to fund grants to private entities.

DNRC's role is to review and screen grant requests to determine whether the proposed projects are technically and financially feasible. DNRC will evaluate MRWS, Dam Safety, and Water Management, recommendations based on criteria outlined in statute; within funding constraints the highest ranked projects will be recommended to DNRC's director for funding. Feasibility studies, research, and/or public information projects will not be recommended for funding. By law, grant funding for any project may not exceed 25 % of the total estimated cost of the project.

Project Management

After DNRC's director has acted on the funding recommendations prepared by staff, DNRC notifies the applicants of their funded or not-funded status. DNRC does not reimburse any project cost incurred before a formal funding agreement is executed.

Project Monitoring

Procedures for monitoring projects, to ensure the program's intent is met, are primarily driven by a project grant contract agreement between DNRC and the project sponsor. The equivalent of 1 full-time staff administers active private grants and all private loans. MRWS has agreed to provide technical support to private grant projects during design and construction phases. Budget and staffing constraints preclude DNRC's site involvement at all projects.

Project sponsors must: (1) pay all project costs, (2) submit a claim and obtain a reimbursement of allowable costs from DNRC or (3) arrange for an advance of funds. Invoices may be submitted monthly, and all costs must be supported by invoices, receipts, or both.

Project Evaluation

Grant agreements require expenditure reports, and a final report. During a project's contract term, the project sponsor must submit quarterly reports to DNRC. These reports must reflect the percentage of the project completed, the project costs to date, any problems encountered, and the need for any amendment to the grant contract. In response to changes in project scope of work, time line or budget, amendments to grant agreement are prepared and issued. Amendments will continue to be the technique used to modify projects to adjust for changes in scope, budget or timeliness.

FIGURE 7 Private Grant Applications since the last report

	Applicant	Requested	Approved
1)	Hook-U-Up R.V.	\$ 1,500.00	\$ 1,500.00
2)	Sand Coulee WUA	\$ 2,576.61	\$ 2,576.61
3)	Norris Hot Springs	\$ 5,000.00	\$ 5,000.00
4)	Saddle Mountain Services	\$ 5,000.00	\$ 5,000.00
5)	Nilan WUA	\$ 5,000.00	\$ 5,000.00
6)	Water Users Irr. Co.	\$ 400.00	\$ 400.00
7)	Pipestone WUA	\$ 641.50	\$ 641.50
8)	Big Sky Inc.	\$ 1,191.50	\$ 1,191.50
9)	Hopley Creek	\$ 435.40	\$ 435.40
10)	Tim Todd	\$ 704.75	\$ 704.75
11)	Zeier Ranch	\$ 512.50	\$ 512.50
12)	Rocky Mountain WUA	\$ 4,672.00	\$ 4,672.00
13)	West Harrison Ditch Group	\$ 1,074.00	\$ 1,074.00
14)	Boggs Ditch	\$ 1,074.00	\$ 1,074.00
15)	Pondera Co Canal & Res	\$ 500.00	\$ 500.00
16)	East Harrison Ditch	\$ 1,087.00	\$ 1,087.00
17)	Phil Schuman	\$ 660.00	\$ 660.00
18)	Boulder Hot Springs	\$ 5,000.00	\$ 5,000.00
19)	Cayuse Livestock	\$ 1,865.00	\$ 1,865.00
20)	Teton Co-op Reservoir	\$ 150.00	\$ 150.00
21)	Melvin Winkels	\$ 5,000.00	\$ 5,000.00
	Total	\$44,044.26	\$44,044.26

Private Loan Application and Project Review Procedures

Loans to private individuals also must promote and advance the beneficial use of water and allow Montana's citizens to fully use the state's water. Loan funding became available in 1981 when the legislature earmarked \$350,000 under the former Renewable Resource Development program to finance loans to private individuals. At the same time, DNRC was given the authority to issue general obligation bonds to finance private loans.

Project Solicitation

Projects are solicited through press releases, public meetings and word of mouth. When a bond is sold a press release is sent to all newspapers in the state. Promotion by irrigation equipment dealers who are aware of the program, encouragement from local NRCS offices and Conservation Districts, and presentations by staff at various industry functions also serve to solicit applications for loan funding.

Application Review

Loan applications are submitted at any time. DNRC staff reviews the application for completeness and requests additional information when needed. Technical aspects of the project are usually completed by the NRCS, or a private engineer. If the project is not designed by a qualified professional, DNRC will closely review the project design and specifications. Financial review is completed by the DNRC and includes an evaluation of the applicants financial strengths, weaknesses, and risk taking ability. This also includes an evaluation of the security offered and a determination of the relative security position DNRC will have. All of the these factors are considered in the recommendation to the loan committee.

Funding Recommendations

Applications that meet feasibility and eligibility criteria are funded if the applicant demonstrates the ability to repay the loan. Projects must be technically and economically feasible, and must pay for themselves over the life of the installation through water savings, increased crop production, or other measurable benefits.

For private individuals, \$200,000 is the maximum loan amount allowable under the Renewable Resource Grant and Loan program. The 1997 legislature amended the statute to allow the DNRC to accept applications and loan funds to water user associations. These loans are limited to \$300,000 rather than the \$200,000 for private individuals. Loans are for a term not longer than 30 years or the estimated useful life of the equipment purchased or materials installed. For new irrigation equipment, 15 years is the allowable term; for used irrigation equipment, the term usually is 10 years or less.

Availability of Loan Funds

DNRC has the authority to issue general obligation Renewable Resource bonds totaling up to \$20 million to finance private loans. Changes made by the 1995 Legislature allow the DNRC to have up to \$20 million of general obligation Renewable Resource bonds outstanding. Since the programs inception, bonds totaling about \$17.08 million have been issued to finance private loans. \$9.3 million in bonds is presently outstanding. To finance loans, DNRC sells bonds on the open market.

Interest Rates

The rate of interest on the state's general obligation bond determines the interest rate for private loans. The basic rate for private loans has varied from 4.3 to 9.5 percent. Tax law has also contributed to increased interest rates. Before 1986, state bonds sold to finance DNRC projects were tax-exempt. The tax law of 1986, thereafter prohibited financing private ventures with tax-free bonds. Therefore, bond sales to finance private projects after 1986 have been taxable (federal taxable, state tax-exempt). Because investors demand a higher interest rate on investments when their investments are subject to federal income tax, sale of these taxable bonds resulted in higher interest rates than those of the earlier, tax-exempt bonds.

In addition to interest costs, borrowers also pay a share of bond issuance costs proportionate to the percentage of the bond used to finance their loan. Higher interest rates and issuance cost charges have made private loans less attractive than those offered when the program first started. Although less attractive, private loans remain competitive with conventional financing because of the rate on taxable bonds are still slightly under interest rates obtainable from conventional financing. DNRC's loans also provide financing at a fixed interest rate for a period longer than that available to borrowers through their local financial institutions.

Longer terms and competitive fixed interest rates, in most cases, make these loans continue to be attractive to borrowers interested in long-term financing for major equipment or system purchases. The exception are loans for less than \$10,000. For small loans, closing costs will outweigh the benefit of DNRC's lower interest rate. DNRC recommends that projects needing less than \$10,000 seek funding from other sources. Closing costs include a \$150 non-refundable application fee and title insurance.

Project Management

Borrowers must acquire all property rights necessary for the project including rights-of-way and interest in land needed for the construction, operation, and maintenance of the project. Title insurance, a title opinion or other documents showing the ownership of the land, mortgages, encumbrances, or other liens must be provided to DNRC.

Loans must be secured with real property valued higher than the loan amount requested. According to statute, security equal to at least 125 percent of the loan's value is required. Loans may be secured with a first or second real estate mortgage, an assignment of accounts receivable, certificates of deposit, or

similar securities, or other security as accepted by the DNRC. To adequately secure the state's interest, DNRC requires a security equal in value to at least 150 percent of the loan. For example, a loan application for \$100,000 would require real estate security of \$150,000. DNRC will accept a second mortgage on property if the state's interest can be adequately secured. DNRC may require an appraisal of real property used for securing a loan. Cost of the appraisal must be paid by the applicant.

After an application is approved for financing, interim financing may be secured by the applicant, with interest costs included in the DNRC's loan financing. The Renewable Resource Grant and Loan program does not refinance existing loans; only new ventures are eligible.

Loans to private entities are disbursed by warrants drawn by the state auditor or wire transfers authorized by the state treasurer. Before disbursement can occur, all loan documents must be properly signed, security documents must be filed with the county Clerk and Recorder, the final Title Insurance policy must be in force, and an invoice must be submitted by the borrower to document the use of funds.

Project Monitoring

Project construction is monitored by the NRCS if there is cost share money involved, by the borrower as he has a vested interest in the successful completion of the project, and by bureau staff through field visits when possible.

Borrowers must maintain proper and adequate records of accounts that show the complete and correct entries of all receipts, disbursements, and other transactions related to the project and, if applicable, the monthly gross revenue derived from the project's operation. Any segregation and application of the gross revenue resolution also must be shown in such reasonable detail as may be determined by the borrower in accordance with generally accepted accounting practices and principles.

Project Evaluation

Through its monitoring efforts DNRC conducts an on-going effort to evaluate the projects funded under the Renewable Resource Grant and Loan program. DNRC will continue to review each final report as has been done in the past. This review will be documented to indicate whether the project successfully completed the objectives outlined in the original application as specified in the loan agreement.

Private Loan Projects Previously Funded

As of October 2000, Figure 8 lists the status of private loans that have been authorized under the Renewable Resource Grant and Loan program. As of October 2000, 181 private loans had been approved. A total of \$14,930,956 has been advanced, and \$1,205,000 is committed to projects that had not been disbursed. Loans have been used to finance projects involving new and refurbished irrigation systems, riprap, irrigation wells and refurbishing private drinking water systems.

FIGURE 8 Private Loan Application since the last report

Contract Number	Amount Requested	Amount Approved
99-3252	85,000	85,000
99-3253	104,606	104,606
99-3254	54,865	54,865
99-3256	200,000	200,000
99-3257	79,845	79,845
99-3258	50,000	50,000
99-3259	103,000	103,000
00-3260	71,500	71,500
00-3261	107,500	107,500
00-3262	84,762	84,762
00-3264	199,920	199,920
00-3265	244,300	244,300
00-3267	175,000	175,000
00-3268	200,000	200,000
00-3269	81,428	81,428
00-3270	146,000	146,000
00-3272	10,620	10,620
00-3273	107,670	107,670
00-3274	26,925	26,925
00-3275	40,630	40,630
00-3276	86,360	86,360
00-3277	200,000	200,000
00-3278	58,000	58,000
00-3279	30,000	30,000
01-3280	66,025	66,025
01-3281	81,975	81,975
01-3282	148,570	148,570
01-3283	66,200	66,200
01-3285	45,705	45,705
01-3287	66,440	66,440
	\$3,022,846	\$3,022,846

CHAPTER 5

Emergency Grants And Loans

Application Administration and Project Review Procedures

In addition to the regular funding available during each Renewable Resource Grant and Loan Program funding cycle, limited funds are also available for immediate projects necessary to address qualified emergencies. These funds are reserved to help finance emergency projects otherwise eligible for grant or loan funding which, if delayed until legislative approval could be obtained, would result in substantial damages or legal liability for the project sponsor.

Applications for emergency grants and loans are accepted by DNRC from public entities when an emergency occurs. No application fee is required.

Project Solicitation

No formal solicitation for applications is conducted. Engineering firms and other consultants likely to be involved with eligible emergency projects have been informed that emergency funds exist. During presentations to solicit applications for the regular public grant and loan program, the availability of emergency funding is discussed.

To request funds, applicants are required to submit a letter containing:

- a description of the problem;
- a statement of when the problem occurred;
- the proposed solution;
- cost estimates with documentation; and
- documentation of the community's financial condition and ability to otherwise pay for the proposed repairs

In calendar years 1999 and 2000, ten emergency requests were submitted to DNRC. Of the ten applications received, five projects were funded.

Application Review

As with funding for other renewable resource projects, emergency funds must be used for projects that enhance renewable resources in the state through conservation, development, management or protection; for assessing feasibility or planning; for implementing renewable resource projects; or for similar purposes approved by the legislature. All applications submitted are evaluated for completeness. Sponsors for those applications needing more documentation are notified and asked to submit additional material immediately.

Requests for emergency funds are reviewed by DNRC staff. DNRC's engineer investigates the problem to determine feasible alternatives. The project is evaluated to determine its eligibility for funding under the Renewable Resource Grant and Loan Program. Projects must meet the statutory requirements of 85-1-605 (4), MCA as a minimum to merit further consideration. Engineers and technical experts from other state agencies may be solicited for technical opinions, guidance, and information.

Funding Recommendations

As discussed in Chapter 1, statute allows DNRC to request up to 10 percent of the grant funds available each biennium to fund emergency projects. DNRC typically requests \$125,000 for emergency grants. DNRC will request an additional \$125,000 during the 2001 session to fund emergency grants for fiscal years 2002 and 2003.

Funding recommendations are made on a case-by-case basis within the constraint of available funding. As information is gathered and documented, a staff report with funding recommendations is written and presented to DNRC's director for an official decision as to whether the project should receive emergency grant or loan funding. A maximum of \$30,000 in emergency grant funding is typically placed on an individual project; the limited total amount of funding available each biennium dictates close management of funding limits for each emergency project.

Project Management

Based on the decision of DNRC's director, the sponsor is notified of the status of its emergency grant or loan application. If successful, the applicant and DNRC enter into a formal agreement, and the project is managed in the same manner as other grant and loan projects funded by the Renewable Resource Grant and Loan Program.

Emergency Grant and Loan Applications in Calendar Years 1999 and 2000

There were no emergency loans requested during 1999 or 2000. Of the ten emergency grant applications received during 1999 and 2000, investigations determined that five met the urgency and need criteria established for the program.

Each emergency grant request submitted during 1999 and 2000 was reviewed by DNRC staff and, based on staff recommendation, was approved or denied for funding by DNRC's director. Total funding for all emergency grants may not exceed the legislative biennial appropriation for emergency projects under the Renewable Resource Grant and Loan Program. \$1,000,000 per biennium is available for emergency loans. No emergency grant may be funded in excess of the biennial appropriation less the total of all emergency grants funded previously during the biennium.

Authorized Projects

In 1999, the legislature authorized \$125,000 for emergency grants. During the 2000-2001 biennium, funded emergency grant applications have included the following:

Valley View School District RRG-00-1115

\$30,000 Emergency Grant

Valley View School is a small rural school located in the Flathead Valley approximately ten miles south of Polson, in Lake County. In November, 1999, the school district reported to the department that its well casing had collapsed in October and that the school was faced with hauling water for sanitary purposes and drinking bottled water. On the advice of Montana Rural Water Association, the district had procured the services of a hydrogeologist who advised them that it would be necessary to drill a new well to a probable depth of about 500 feet. The district applied for and was awarded a grant in the amount of \$30,000 to offset the cost of the successful project, completed early in 2000.

Town of Hobson

RRG-01-1123

\$30,000 Emergency Grant

Hobson is an incorporated town located in Judith Basin County in central Montana. Faced with drought conditions for several years in succession, 15 privately-owned wells in Hobson have failed. Only deep wells continue to produce. The community proposed to drill a 100-foot well at the fire station and construct a water station to provide water to residents whose wells have failed. The project also would provide hydrogeologic information to the community necessary for the design of a proposed centralized municipal system. Hobson was awarded a \$30,000 emergency grant to partially compensate them for the estimated \$46,475 project, constructed in the fall of 2000.

City of Conrad**RRG-01-1124****\$30,000 Emergency Grant**

The only source of water for the City of Conrad's municipal water system is Lake Francis, located south of Valier in Pondera County. Drought conditions have resulted in a historically low pool level in Lake Francis, thereby threatening flows to the intake to Conrad's pumping facility located below the dam. In August, Conrad requested and was awarded a \$30,000 emergency grant to pay for 60% of the costs associated with hydraulically dredging a channel to supply water to Conrad's drinking water supply system during the upcoming winter and until the pool elevation increases to normal levels.

Town of Geraldine**RRG-01-1126****\$5,000 Emergency Grant**

Geraldine is an incorporated community located in Choteau County east of Great Falls. The primary source of water for the town's municipal water system is a spring water collector located ten miles away, at Square Butte. Drought conditions and low flows for the last two years have resulted in deterioration of the collector, thereby further reducing the capacity of the system. The community has applied for a Renewable Resource grant to upgrade its system and install water meters. An immediate repair to the collector became necessary in September, 2000, however, and emergency financial assistance was requested to repair the collector. Geraldine was awarded a \$5,000 grant, and the emergency repairs were made in September.

Bitterroot Conservation District**RRG-****\$30,000 Emergency Grant**

In the summer of 2000, Montana experienced one of the worst fire seasons on record. In the Bitterroot Conservation District, approximately 352,500 acres were burnt. Immediate action was necessary to reduce sedimentation, erosion, and flooding problems associated with the high density burn areas. The total cost of the burned area rehabilitation was \$625,000, of which \$500,000 came from the federal Emergency Watershed Program. This Renewable Resources Grant, a Conservation District Grant, and landowner contribution provided the required match for the Emergency Watershed Program grant. Aerial seeding, erosion control devices, and culvert retrofits took place in the fall of 2000.

Projects Not Funded**Town of Circle**

In May, 1999, the Town of Circle requested emergency funding to install a drain system to alleviate a seepage problem at a local church. At the time of application, the source of the seep was unknown; the community was advised that, once a plan of action had been identified by a groundwater hydrologist or other professional, an emergency grant would probably be available to them to help pay for associated costs. A letter received by the department in September, 1999 explained that the church had installed a drainage system to protect its structure, and the seepage had, in fact, disappeared in August.

Town of Circle

In July, 1999, the Town of Circle requested emergency funding to hire an engineer or hydrologist to study and recommend a solution to the low productivity of one of the community's water supply wells. Limited funding has dictated that emergency funds not be provided for studies or design work, and, accordingly, the emergency grant request was denied.

Town of Nashua

In July, 1999, the Town of Nashua applied for emergency financial assistance to replace a sewer line railroad crossing that had been constructed in 1937. The community was advised that adequate emergency funding was not available to fund projects that are the result of normally anticipated deterioration due to age or use, and that it should consider applying to this program during the upcoming funding cycle.

Town of Geraldine

In July, 1999, the Town of Geraldine applied for emergency funding to replace an inoperative pump in one of two standby wells. Since limited funding has dictated that reserve components to a utility system or projects necessitated by age and normal use do not qualify for emergency assistance, the request was denied.

Town of Circle

In March, 2000, the Town of Circle requested emergency funding to offset costs associated with acidizing a water supply well to control bacterial clogging. Approximately \$30,000 has been spent in similar efforts at another well in Circle with limited success. The department recommended that a professional investigation be conducted prior to the expenditure of additional money to determine appropriate solutions to Circle's specific problem. Because emergency funding is not available for studies, it was recommended that Circle apply to this program for a Renewable Resource Grant in May, 2000, which they have done.

CHAPTER 6

Summary of Active Grants to Public Entities

The status of all projects authorized July 1, 1999 to October 1, 2000 is reported here. Project status is reported in three categories: completed, active, and authorized but not executed.

Within each of these categories projects are listed alphabetically by the name of the grant recipient.

Grant Projects Completed Since July 1, 1999

Butte-Silver Bow Local Government

Big Hole River Water Transmission Line Improvements Project

RRG-96-1028

The legislature authorized a \$100,000 grant in 1995. Completed in 2000, the project consisted of the replacement of 2,000 feet of leaking water transmission main. Work was completed by city crews and materials were purchased with grant proceeds.

Butte-Silver Bow Local Government

Municipal Compost Pilot Study and Report

RRG-95-1020

The legislature authorized a \$50,000 grant in 1993 for Butte-Silver Bow to conduct a compost pilot study. Completed in 1998, the project provides useful information not only for Butte but for other communities contemplating compost production from biodegradable solid waste and sludge byproducts from wastewater treatment plants.

Cascade, Town of

Wastewater System Improvements Project

RRG-98-1072

A \$100,000 grant was authorized by the legislature in 1997 for the replacement of an existing wastewater treatment lagoon and collection system improvements. Completed in the fall of 1998, the system is in operation and performing satisfactorily.

Chinook Division Irrigation District Joint Board of Control

Milk River Water Supply Project

WDG-93-5104

A \$100,000 grant was authorized in 1991. A contract extension was given in 1993. The Chinook Division used the funds to repair aging infrastructure and improve irrigation efficiencies through canal lining, the installation of headgates, and other irrigation infrastructure improvements. The project was successfully completed in November 1998.

Department of Natural Resources and Conservation

Deadman's Basin Irrigation System Improvements Project

RRG-97-1054

A \$47,919 grant was authorized in 1995 for the first phase of improvements to the Barber Canal. All grant disbursements have been made for this phase of the project, which was completed in 1998. Improvements consisted of specified segments of canal reconstruction and the replacement of drop and headgate structures.

Eastern Agricultural Research Center

Alternative Irrigation Systems and Alternative Crops

RRG-98-1064

A \$60,000 grant was authorized by the legislature in 1997. A grant agreement was executed in August 1995. The project, consisted of improvements to the municipal water storage and distribution system. The final report has been received and the project successfully completed in December 1999. The full \$60,000 was disbursed.

Fairview, Town of
Water System Improvements Project
RRG-96-1027

A \$100,000 grant was authorized by the legislature in 1995. The project, completed in 1998, consisted of improvements to the community's water storage and distribution systems.

Glasgow, City of
Combined Sewer Separation Project
RRG-00-1085

Glasgow was authorized a \$100,000 grant by the legislature in 1999 for the second phase of a stormwater/sanitary sewer separation project. This phase of the project, completed in 1999, provides a separate stormwater collection and disposal system for the north side of the City of Glasgow.

Glasgow Irrigation District
Vandalia Dam Rehabilitation Study
RRG-98-1061

A \$98,221 grant was authorized by the legislature in 1997. A grant agreement was executed in October 1997. Funds were used to complete a rehabilitation plan for the aging structure. The rehabilitation plan is complete. Constructed in 1915, the Vandalia Dam is the district's main diversion structure on the Milk River. It provides water to 106 farms on approximately 18,000 acres. The project has been successfully completed.

Glen Lake Irrigation District
Costich Dam Improvements Projects
RRG-00-1089

Glen Lake Irrigation District received a \$100,000 grant in 1999 for improvements to Costich Dam near Eureka. Completed in 2000, the project consisted of the replacement of the outlet works and spillway structure for the high-hazard earthfill dam in Lincoln County.

Granite Conservation District
Upper Clark Fork River Basin Water Management Plan
RRG-96-1040

A \$45,814 grant was authorized by the legislature in 1995. A grant agreement was executed in November 1995. A total of \$45,814 was disbursed for the project. The project was completed in October 2000. Funds were used to support the activities of the Upper Clark Fork River Basin Steering Committee from October 1995 to September 2000. The Steering Committee achieved the following objectives: made recommendations to the legislature; provided a public communication forum for a wide range of water topics and issues; educated the public on water law and water management issues at Steering Committee meetings and special meetings; identified and addressed short- and long-term water management issues and problems; assisted in facilitating resolution of water related disputes; provided coordination with other basin planning and management efforts; advised government agencies about water management and permitting activities; provided consulting for the basin's local governments; and reported periodically to entities with water management authority (such as the legislature).

Hill County
Salinity Control Project
RRG-97-1055

A \$50,000 grant was authorized in 1993. A grant agreement was issued in April 1997. Funds were used to install a drainage control system at the fairgrounds. The area suffers from an acute saline problem. The balance of the \$175,000 project was provided by funds from the federal CTEP program administered by the Department of Transportation. The project was completed in November 1998.

**Lincoln Lewis and Clark County Sewer District
Lincoln Wastewater System Improvements Project
RRG-97-1052**

In 1995, the legislature authorized a \$15,000 grant to the Lincoln Lewis and Clark County Sewer District for miscellaneous improvements to its wastewater collection system and associated treatment lagoon. \$4,000 was utilized to conduct an infiltration study for the system in 1998, and the remainder was spent to upgrade lift station pumps and the emergency power plant.

**Madison Conservation District
Willow Creek Demonstration Watershed Project
RRG-97-1051**

A \$25,000 grant was authorized by the legislature in 1995. A grant agreement was executed in October 1996. \$21,420 has been disbursed for the project. Project funds were used to install a Sno-Tel site in the Willow Creek drainage of the Tobacco Root Mountains. The district joined with the USFS, Indiana State University, and NRCS in developing a demonstration watershed management project that provides real-time water supply data to assist water users in irrigation management. This grant was completed in November 1999.

**Manhattan, Town of
Water System Improvements Project
RRG-96-1025**

Manhattan received a \$50,000 grant from the legislature in 1995 to develop a new spring source of drinking water for its system. Completed in the late fall of 1995, the spring collector replaced the wooden structure previously used which produced water that was influenced by surface water contaminants.

**Montana Department of Fish, Wildlife and Parks
Assessment of Aquatic Resources in the Blackfoot River Basin
RRG-96-1036**

A \$100,000 grant was authorized by the legislature in 1995. A grant agreement was executed in September 1995. A total of \$92,692 was disbursed for the project. The project was completed in October 1999. Funds were used to conduct a reconnaissance assessment of the aquatic resources of the Blackfoot River basin, and to design and operate a monitoring network for long-term assessment of the aquatic resources of the basin. A centralized and comprehensive computer database for water resources information in the basin was established. This database can be used to statistically detect water quality trends and to define the magnitude and extent of potential problems associated with multiple land-use in the Blackfoot River basin. This information will greatly aid land managers in their decision making process.

**Montana Department of Natural Resources and Conservation
Flathead Valley Cooperative Groundwater Study
RRG-94-1016**

A \$100,000 grant was authorized by the legislature in 1993. A grant agreement was executed in June 1994. A total of \$89,736.64 in grant funds have been disbursed for the project. Funds were used to develop a detailed technical framework for responsible groundwater management in the Kalispell area. The project was given an extension to permit data collection over two concurrent water years. This project was completed in the fall of 1999.

**Montana Department of Natural Resources and Conservation
Rocky Boy/North Central Montana Regional Water Supply System
Off-Reservation Needs Assessment and Federal Funding Procurement
RRG-98-1078**

In 1995, the legislature authorized the expenditure of \$30,000 in grant funds to offset costs associated with the development of the North Central Montana Regional Water System. Authorized expenditures included miscellaneous costs associated with preliminary planning and the acquisition of federal funding for the project. The final disbursement for this grant was made in April, 2000.

**Montana Tech of the University of Montana, Montana Bureau of Mines and Geology
Groundwater Protection and Education in Montana Schools
RRG-96-1042**

A \$84,560 grant was authorized by the legislature in 1995. A grant agreement was executed in December 1995. A total of \$84,560 was disbursed for the project. The project was completed in October 1999. Funds were used to protect groundwater supplies through a unique educational approach in Montana's primary and secondary schools. Educators and students from eight schools, in conjunction with Montana Bureau of Mines and Geology personnel, developed wellhead protection plans for school wells at Divide, Montana City, Rau, Victor, Corvallis, Turner, St. Regis, and Shepherd, Montana. These schools derive their water supply from groundwater. The wellhead protection plans are certified and meet requirements of the Safe Drinking Water Act.

**Montana Tech of the University of Montana
Hydrologic Evaluation for Florence and Seeley Lake
RRG-96-1037**

A \$95,422 grant was authorized by the legislature in 1995. A grant agreement was executed in October 1995. The project consisted of a hydrologic study to determine the impact to groundwater as a result of rapid development in the communities of Florence and Seeley Lake. This project has been successfully completed.

**Neihart, Town of
Water Distribution System Improvements
RRG-98-1059**

A \$100,000 grant was authorized by the legislature in 1997 to replace Neihart's obsolete water distribution system. Completed in 1998, the project consisted of the replacement of mainlines to mitigate leakage and freezing problems associated with the turn-of-the century system. Other improvements included the replacement of individual service connections.

**Pondera County Conservation District
Lake Frances Shoreline Rehabilitation
RRG-98-1066**

A \$20,000 grant was authorized by the legislature in 1997. A grant agreement was executed in November 1997. Funds were used to construct a bulkhead on the eastern shoreline of Lake Frances to prevent erosion from wave action. The erosion was degrading water quality for recreation, fisheries, and drinking water. This project was successfully completed.

**Ravalli County, Board of Commissioners
Ravalli County Groundwater Vulnerability Assessment
RRG-94-1018**

A \$70,672 grant was authorized by the legislature in 1993. A grant agreement was executed in July 1994. Funds have been used to document the hydrogeologic history and to map areas vulnerable to groundwater pollution on non-federal lands in Ravalli County. Resulting maps are now used to plan and make decisions concerning land use and water-related development in the county. The project was extended to permit the collection of additional data from the Hamilton Heights focus area. This project was completed in the spring of 1999.

**Roosevelt County Conservation District
Regional Water System Needs Assessment and Feasibility Study
RRG-98-1069**

Roosevelt County Conservation District received a \$64,561 grant in 1997. Grant proceeds were used to pay costs associated with evaluating the need for and the feasibility of including a large four-county area in northeastern Montana with the Fort Peck Assiniboine and Sioux Rural Water Project. This project has been successfully completed.

**Ruby Valley Conservation District
Upper Ruby Water Developments and Riparian Area Improvements
RRG-94-1005**

A \$100,000 grant was authorized by the legislature in 1993. A grant agreement was executed in September 1993. Funds were used to make range improvements on the Upper Ruby Cattle and Horse Allotment. These improvements are designed to decrease livestock use on riparian areas, while simultaneously increasing the use of uplands to improve riparian conditions. The project was completed in early spring 1999.

**Sheridan County Conservation District
Sheridan County Ground Water Management Program
RRG-98-1062**

A \$95,412.00 grant was authorized by the legislature in 1997. A grant agreement was executed on October 1997. Funds were used to review reserved water use applications for groundwater use, monitor aquifer and surface water conditions, and to estimate how water can be pumped from the aquifer without substantially affecting other water users. This project will be complete upon the approval of the final report.

**Sheridan County Conservation District
Ground Water Monitoring Program
RRD-89-5529**

The final report has been received. Funds were used for technical work related to the District groundwater monitoring program. The grant agreement was completed in September of 2000. The full \$8,952.31 was disbursed.

**Sun River Water and Sewer District
Water System Engineering Study and Report (Second Study)
RRG-96-1030**

A \$50,000 grant was authorized by the legislature in 1995. Grant funds were authorized for both an engineering study to investigate new sources of drinking water and for actual construction activities once a new source was identified. In 1996, a firm was contracted to perform the investigation, but a feasible alternative was not identified. \$26,505.18 was expended in the performance of this investigation. The balance of the grant, \$23,494.82, has been terminated, and the project has not progressed.

**Twin Bridges, Town of
Water Storage and Distribution System Improvements Project
RRG-98-1073**

The legislature authorized \$100,000 to the Town of Twin Bridges in 1997 for a water system improvements project. Consisting of a new storage tank and the replacement of the existing distribution system, the project was successfully completed in 1998.

**Thompson Falls, City of
Water Line Replacement
RRG-99-1082**

In 1997, the City of Thompson Falls was awarded a \$100,000 grant for the replacement of undersized and leaking water distribution lines. The project was successfully completed in 1999, and all reporting requirements were completed in 2000.

**Valier, Town of
Wastewater Treatment Facility Upgrade
RRG-98-1075**

The Town of Valier was awarded a \$100,000 grant in 1997 for the construction of a replacement wastewater treatment lagoon. Design of the project began in 1997, and the project bid in the spring of 1998. Construction began in the summer of 1998, and was successfully completed later that year.

Active Grant Projects

Beaverhead County Board of Commissioners Big Hole River Return Flow and Water Budget Study RRG-98-1058

A \$100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in July 1997. \$90,859 in grant funds have been disbursed. Funds are being used to evaluate the role of groundwater and surface water interactions as they relate to river flow in the Big Hole River basin. The project will help to determine the relationship between river flow and groundwater flow as a result of precipitation, irrigation, livestock diversions, evapo-transpiration and municipal withdrawals.

Bitterroot Irrigation District Water Conservation & Improvement RRG-00-1103

A \$99,650 grant was authorized by the legislature in 1999. A grant agreement was executed in May 2000. \$0 grant funds have been disbursed. Funds will be used to complete improvements to the Bitterroot Irrigation District facilities and install water conservation measures. Specifically the project will complete a water conservation plan; install four broadcrest weirs; establish eight water measurement monitoring sites; install a remote control system at the Lost Horse diversion; replace check boards with an overshot gate and remote control system at the Rock Creek diversion site; rehabilitate Rock Creek diversion riprap; line 1,000 feet of canal with a PVC or similar liner; complete a water user guide and public information program; and install a remote electronic monitoring and control base station at district headquarters to monitor flow at water measurement sites and allow remote control of inlet headgates at the main canal.

Boulder, Town of Water System Improvements RRG-00-1086

The Town of Boulder was awarded a \$100,000 Renewable Resource Grant in 1999 for improvements to the community's drinking water system. Consisting primarily of the replacement of the undersized and deteriorated distribution system, the project bid and was successfully constructed during the summer and fall of 2000.

Brockton, Town of Water & Wastewater System Improvements RRG-00-1088

In 1999, the Town of Brockton received a \$100,000 grant for the design and construction of water system improvements. The primary components of the project include a new concrete water storage reservoir and the replacement of undersized and deteriorated water distribution lines. The new storage reservoir and distribution system were completed late in 1999, with minor work still in progress. \$74,122.99 in grant funds have been expended.

Buffalo Rapids Project Improving Pump Discharge Line Efficiency RRG-00-1090

In 1999, this project received a \$91,622 grant for the replacement of discharge lines at one of the pump stations to improve water use efficiency. To date \$82,460 has been disbursed. Completion of the grant agreement is pending receipt and approval of the final report.

Cascade County Conservation District Muddy Creek Restoration & Water Quality Improvement RRG-00-1091

A \$77,000 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. \$46,866 in grant funds have been disbursed. Funds are being used to continue erosion reduction and monitoring on Muddy Creek, which will enhance all uses on Muddy Creek, the Sun River, and

Missouri River. This project phase will pursue an additional 50% reduction in sediment load with another ten miles of riparian enhancement.

**Cascade County Conservation District
Agrimet Irrigation Water Management Project
RRG-99-1081**

A \$80,000 grant was authorized by the legislature in 1997. A grant agreement was executed in December 1998. \$48,548 in grant funds have been disbursed. Funds are being used to continue the development and expansion of the Agrimet Program in Montana. Agrimet is an on-farm irrigation management program with the goal of reducing energy costs and water usage through precise irrigation scheduling and water management practices.

**Choteau, City of
Rehabilitation of Sewer System
RRG-98-1070**

In 1997, the Town of Choteau was awarded a \$100,000 grant to identify and replace deteriorated sections of sewer line. The project has been ongoing since 1997, with \$48,583.63 expended to date. It is anticipated that the remainder of the grant will be utilized this fall to pay costs associated with a recently awarded construction contract for the replacement or lining of deteriorated collection lines.

**Columbia Falls, City of
Sewer Treatment Plant Upgrade
RRG-00-1112**

In 1999, the City of Columbia Falls received a \$100,000 grant for the design or construction of improvements to its existing wastewater treatment facility. Renewable Resource grant funds were expended in the design of the project. Bid in 2000, the project is currently in progress with completion estimated early in 2001.

**Cut Bank, City of
Water System Improvements
RRG-00-1113**

The City of Cut Bank was awarded a \$100,000 Renewable Resource grant for the design or construction of improvements to its water treatment plant. To date, no funds have been expended. However, the project is in the process of being bid and construction is scheduled to begin this fall.

**Daly Ditches Irrigation District
Republican Canal Diversion Dam Replacement
RRG-00-1121**

Daly Ditches Irrigation District was awarded a \$100,000 grant in 1999 for the study, design, or construction of a replacement irrigation diversion dam in the Bitterroot River south of Hamilton. After an intensive selection process, a design firm has been selected and the project is in the preliminary design phase. Because several alternatives for the diversion exist, all of which are potentially environmentally sensitive, the design and public review process will not be complete until mid-2001, with construction tentatively scheduled for the fall of 2001.

**Denton, Town of
Wastewater Treatment Project
RRG-00-1087**

The legislature authorized a \$100,000 grant to the Town of Denton in 1999 for the design or construction of a replacement wastewater treatment lagoon. Design work was completed in 1999, and construction began late in the year. Completed early in 2000, the project is now operational.

**East Missoula Sewer District
Wastewater Treatment and Collection System
RRG-00-1104**

East Missoula Sewer District received a \$100,000 Renewable Resource grant in 1997 to design and construct a centralized wastewater collection and treatment system. Because land could not be obtained

for the construction of a lagoon, an agreement was reached with the City of Missoula to connect to its system. The design of a new collection system and force main into Missoula is currently in progress, with construction scheduled for 2001.

Ekalaka, Town of
Ekalaka Water Source Improvement
RRG-00-1119

The legislature authorized a \$100,000 grant to the town of Ekalaka in 1999. A grant agreement was executed in March of 2000. Grant agreement administration is ongoing. The project entails upgrade and repair of two wells that supply water to the Town of Ekalaka. To date no funds have been requested or disbursed.

Flathead Lake Biological Station
Monitoring Water Quality-Flathead lake
RRG-00-1094

A \$100,000 grant was authorized by the Legislature in 1999. A grant agreement was executed on August 24, 1999. At the time of this report \$40,201 have been disbursed. Funds are being used to defray the cost of water quality monitoring in Flathead Lake at specified locations.

Fort Shaw Irrigation District
Water Quality & Quantity Improvement
RRG-00-1096

A \$50,000 grant was authorized by the Legislature in 1999. A grant agreement was executed on September 2, 1999. Grant agreement administration is ongoing. The project entails ditch lining, installation of flow monitoring stations and water quality monitoring. To date \$19,208 has been requested and disbursed.

Frenchtown Irrigation District
Irrigation System Water Use & Water Quality Improvements
RRG-00-1110

A \$32,400 grant was authorized by the legislature in 1999. A grant agreement was executed in November 1999. \$16,651 in grant funds have been disbursed. Funds are being used to complete improvements to the Frenchtown Irrigation District facilities and install water conservation and water quality improvement measures. Specifically the project will complete a water conservation plan; install three broadcrest weirs; replace the Mill Creek and O'Keefe Creek radial gates; replace the Houle Creek, M-8, Loiselle Lane, Boyer, and Primo headgates; repair the Houle Creek headgate; and complete a water user guide.

Gallatin County Local Water Quality District
Ground Water Evaluation and Monitoring Project
RRG-98-1057

A \$100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in September 1997. \$90,271 in grant funds have been disbursed. Funds are being used to protect, preserve, and improve the quality of groundwater and to provide the basis for understanding the groundwater resources of the Gallatin Local Water Quality District, and for development of preventative measures needed to ensure a continued supply of clean groundwater. This project will provide accessible information for making sound public and private land-use decisions and to develop guidelines and provide a basis for protection and future groundwater resource management.

Garfield County Conservation District
Rehab of Irrigation diversion Dam & Outlet Works
RRG-00-1095

A \$100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. Grant agreement administration is ongoing. The project entails rehabilitation of the Little Dry diversion dam and outlet structures. To date \$89,302.94 has been requested and disbursed.

**Glasgow Irrigation District
St. Mary Siphon Repair
RRG-00-1109**

A contract amendment changing the project scope of work, budget and allowing additional time to complete this project was approved and signed on September 22, 2000. The Bureau of Reclamation completed the design of the cathodic protection and installation of the system began in September of 2000. The design and repair of the siphons will begin winter 2000 with completion of the project scheduled for October 2002.

**Glasgow Irrigation District
Vandalia Diversion Dam Rehabilitation
RRG-01-1125**

The contract for this project was executed and approved in October of 2000. The concrete has been poured for the inlet floor and the pillar. The district is waiting for temperature specifications for the tar to be used in completing the floor and pillar restoration. The staff has started cleaning the tunnels in preparation for pouring the concrete. The completion of the project is scheduled for April 2002.

**Governor's Office- Flathead Basin Commission
Flathead Lake - Watershed Management Program
RRG-96-1043**

A \$100,000 grant was authorized by the legislature in 1995. A grant agreement was executed in January 1996. \$52,112 in grant funds have been disbursed. The purpose of the Flathead Lake and Watershed Education Plan is to facilitate and encourage, through public involvement, the integration of science, management, and policy to enhance water management and to protect the water quality within Flathead Lake and the surrounding watershed.

**Hebgen Basin/West Yellowstone Refuse District
Municipal Solid Waste Composting Facility
RRG-00-1122**

The Gallatin County-Hebgen Basin/West Yellowstone Refuse District was awarded a \$100,000 grant in 1999 for preliminary engineering associated with the design of a solid waste composting facility to be constructed near West Yellowstone. The county has contracted with an engineering firm and the design of the facility is in progress. To date, \$11,650.70 has been disbursed. Construction is scheduled for 2001.

**Hill and Liberty County Conservation Districts
Water Resource Evaluation of the Sage Creek Watershed
RRG-98-1074**

A \$40,622 grant was authorized by the legislature in 1997. A grant agreement was executed in June 1998. \$3,227 in funds have been disbursed. Funds are being used to collect baseline information in the Sage Creek watershed for the purposes of watershed planning, water-resource assessment, and effecting change in land-use management practices. Information gathered through this effort will promote local efforts to protect the watershed through improved water quality.

**Lake County Land Services
Evaluation of Level II Treatment for Individual Septic
RRG-98-1071**

A \$100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in March of 1998. This project will provide state and local regulators as well as property owners with information on the performance of individual on-site wastewater treatment and disposal systems. Two grant extensions have been made in order to fully evaluate the data collected thus far. \$54,838 has been disbursed.

**Lake County Conservation District
Forestry Implementation Project
RRG-00-1093**

A \$100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. The purpose of this grant is to provide funds to plant trees and fund technical assistance to landowners in the development of a pilot carbon-offset forestry program. \$11,433 in grant funds have been disbursed.

**Lewis and Clark County
Helena Area Bedrock Aquifer Assessment
RRG-96-1033**

A \$100,000 grant was authorized by the legislature in 1995. A grant agreement was executed in August 1995. \$95,848 in grant funds have been disbursed. Funds are being used to assess the bedrock aquifer systems that recharge 45% of the Helena Valley alluvial aquifer. This aquifer provides the only source of water for residents living in the bedrock areas.

**Lewis & Clark County Water Quality District
Helena Area Groundwater Quality Monitoring Network
RRG-00-1114**

A \$100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in January 2000. No grant funds have been disbursed. Funds are being used to establish a ground water quality and quantity-monitoring network in the Helena area. The project will provide the means for the Lewis and Clark County Water Quality Protection District to collect and maintain comprehensive, scientific baseline data that will give citizens, planners, commissioners, and other decision-makers the information they need to form policies and make appropriate land-use management decisions for responsible growth in the Helena area. Through continued water level measurements and water-quality sampling from appropriately sited and properly constructed monitoring wells, the water quality district can continue to monitor the local groundwater aquifers for the protection of public health and economic well-being of Helena area citizens.

**Madison County
Harrison Wastewater System Improvements
RRG-00-1111**

The 1999 legislature awarded the Madison County-Harrison Water and Sewer District a \$100,000 grant for the design or construction of a new sanitary sewer collection and treatment system. The project was designed in 1999 and is currently under construction. Project completion is scheduled for November, 2000.

**Malta Irrigation District
Repair & Modification of Dodson Diversion Dam
RRG-00-1099**

Malta Irrigation District received a \$100,000 grant in 1999 to assess the condition of Dodson Diversion Dam and recommend and design improvements. The district contracted with a Great Falls firm to perform an engineering evaluation of the aging structure. Recommendations for improvement have been made and are being reviewed by the Bureau of Reclamation at the time of this report.

**Missoula County
Conservation of Riparian Areas Model Project
RRG-96-1041**

A \$100,000 grant was authorized by the legislature in 1995. A grant agreement was executed in January 1996. \$35,978 in grant funds have been disbursed. Funds are being used to design, implement, and evaluate a model for establishing public-private partnerships aimed at protecting the area's water resources and wildlife habitats by conserving critical private riparian land. Funds are used for land appraisals, baseline data, title searches and fees that are required for the completion of a conservation easement with a private land trust.

**Missoula City of
Reserve Street South Sewer Project
RRG-98-1068**

The City of Missoula was authorized a \$100,000 Renewable Resource grant for construction of the Reserve Street South Sewer Project in 1997. The project was substantially completed in 1998 and 1999. No disbursements have been requested. All disbursements must be complete by December 31, 2000, the termination date for the agreement.

**Montana Reserved Rights Compact Commission
Chippewa-Cree Water Rights Settlement Implementation
RRG-00-1120**

A \$150,000 grant was authorized by the legislature in 1997. A grant agreement was executed in March 2000. \$53,948 in grant funds have been disbursed. Funds are being used to mitigate the impact of development of the Chippewa Cree Tribal water right from Big Sandy and Beaver Creeks on downstream water rights holders by providing for more efficient coordination and use of stored water and more efficient diversion from natural flow. This goal will be met through the completion of the following objectives: construct a new irrigation water diversion facility for diversion of a private water right on Big Sandy Creek prior to the Tribe's enlargement of Bonneau Dam on Box Elder Creek, construct a new irrigation water conveyance facility for delivery of water to fields owned by a private water user prior to enlargement of Bonneau Dam, install monitoring wells and establish a baseline monitoring program to provide early detection of saline seep that may result from the Tribes modification and development of storage at Stoneman Farms ponds, and purchase contract irrigation water in Lower Beaver Creek Reservoir from Hill County

**MT Bureau of Mines and Geology
Ground Water Protection and Education for Rural School
RRG-98-1079**

A \$49,899 grant was authorized by the legislature in 1997. A grant agreement was executed in June 1998. \$21,685 in grant funds have been disbursed. Funds are being used to protect groundwater supplies through an education approach in Montana's primary and secondary school systems. This is accomplished by having educators and students, in conjunction with MBMG personnel, develop a wellhead protection plan for their school well. The program is a unique approach that requires an interdisciplinary effort and achieves active student participation. Primary and secondary school students learn basic scientific principles and relate them to the area in which they live. Plans have already been completed for Canyon Creek and Ramsay schools; plans will be completed for two additional rural schools.

**MT Dept. Natural Resources & Conservation
Seepage Monitoring Program
RRG-00-1101**

A \$100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in January 2000. \$92,700 in grant funds have been disbursed. Funds are being used to establish a seepage-monitoring program for high-hazard dams on several DNRC reservoirs. The dams are Deadman's Basin, Nilan East, Nilan North, Ruby, Cottonwood, and Ackley. These dams were chosen due to surficial evidence that problems may be developing and/or the reservoirs could pose a threat to public safety.

**MT Dept. of Environmental Quality
Direct Planning Grants to Small, Needy Communities
RRG-98-1063**

A \$100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in December 1997. \$76,252 in grant funds have been disbursed. Funds are being used by small, needy Montana communities to procure the services of consulting engineers to prepare facility plans for drinking water and wastewater projects.

**MT Dept. Natural Resources and Conservation
Deadman's Basin Water Quality Improvement
RRG-00-1116**

The 1999 legislature awarded a \$100,000 grant to the Montana Department of Natural Resources and Conservation for construction of improvements to increase the capacity of the Barber Canal, a primary component of the Deadman's Basin Irrigation System. Design was completed in 1999 and 2000, and the project is currently in progress with completion scheduled for early 2001.

**Petroleum County Conservation District
Musselshell River Assessment & Monitoring Plan
RRG-00-1117**

A \$47,050 grant was authorized by the legislature in 1999. A grant agreement was executed in February 2000. \$3,934 in grant funds have been disbursed. Funds are being used to improve the water quantity, water quality, and health of riparian areas within the Lower Musselshell River Environmental Quality Incentives Program (EQIP) priority area. The project will also educate the landowners in the EQIP priority area on irrigation water management and water quality improvement measures.

**Roosevelt County Conservation District
Fort Peck Assiniboine & Sioux Rural Water supply Project
RRG-00-1092**

A \$82,109.00 grant was authorized by the legislature in 1999. A grant agreement was executed in August of 1999. Grant contract administration is ongoing. The project entails conducting an environmental assessment for the proposed water supply system. To date \$28,512.13 has been requested and disbursed.

**Ruby Valley Conservation District
Ruby River Water Management and Conservation Project
RRG-98-1065**

A \$100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in November of 1997. To date, \$31,000 has been disbursed for the project. The project will use funds to install 8 adjustable headgates and 19 measuring devices on the Ruby River. Better water management will increase the amount of water available for the Ruby's well-known fishery. Improvements to irrigation infrastructure should also improve water quality through the reduction of irrigation return flows. A grant extension was executed in October of 2000. Land closures during the 2000 fire season prevented construction work from being completed.

**Sanders County
Floodplain Delineation of Clark Fork River
RRG-00-1097**

A \$100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. \$90,000 in grant funds have been disbursed. Funds are being used to generate accurate floodplain maps approved by the Federal Emergency Management Agency. These maps and accompanying hydrologic data will be used to implement the county's floodplain ordinance in the newly mapped area. This information will be used by the county to make appropriate land-use management decisions for responsible growth. The county will also develop a countywide public awareness program to educate the public about wise floodplain management and best management practices.

**Sheridan County Conservation District
Sheridan County Groundwater Mgmt Program
RRG-00-1102**

Grant contract administration is ongoing. The project entails continuing review of reserved water use applications, monitoring aquifer and groundwater conditions and estimating the amount of water that can be pumped from the aquifer without causing adverse affects. To date no funds have been requested or disbursed.

Sheridan, Town of
Water Supply Improvements
RRG-00-1107

The 1999 legislature authorized a \$30,000 grant to the Town of Sheridan to construct a new water well to augment the community's sources of drinking water. A site was selected and the project bid in early 2000, but the bids exceeded the estimated cost for the project. The town is now considering improvements to existing wells to increase production and maintain affordable costs.

Teton County Conservation District
Irrigation Methods & Pesticide Transport to Groundwater
RRG-00-1100

A \$100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in September 1999. \$0 grant funds have been disbursed. Funds are being used to develop recommendations for irrigation practices to minimize herbicide contamination of groundwater. Data is being collected from two test fields representative of farming practices on the Greenfields Bench. The primary difference between the two test fields will be the irrigation method (sprinkler versus flood). Monitoring wells will be installed and water samples collected in early spring, prior to herbicide and irrigation water application. Following application of a herbicide, the fields will be monitored and sampled throughout the early part of the irrigation season. The data will be evaluated to quantitatively and qualitatively determine how much of the applied chemical is transported to groundwater

Tin Cup County W & S District
Tin Cup Lake Dam Restoration Project
RRG-00-1108

In 1999, Tin Cup County Water and Sewer District received a \$25,000 grant to monitor the spring 1999 filling of Tin Cup Reservoir following extensive repairs by the Forest Service and to construct a floating manway from the dam to the outlet structure. Since that time, however, a study to determine the hazard classification of the dam has been in progress, and the walkway has not been constructed, since its design may be affected by the dam's hazard classification and desired modifications to raise the spillway and increase storage capacity. Of the \$25,000 grant, \$3,203.66 has been disbursed.

Authorized Projects Not Yet Executed

Neihart, Town of
Water Distribution Improvements
NC

The Town of Neihart was authorized a \$76,770.00 grant for water distribution system improvements by the 1999 legislature. Specific improvements consist of the installation of water meters in an effort to conserve water and reduce costs associated with water treatment. To date, no activity has taken place; the project is being proposed for 2001 design and construction.

Eureka, Town of
Wastewater Collection, Treatment & Disposal Improvements
NC

The 1999 legislature awarded the Town of Eureka a \$100,000 grant to replace and expand its wastewater collection system and to modify its existing treatment system. The community has contracted with an engineering firm to design the project, and construction is scheduled for 2001.

Drummond, Town of
Sanitary Sewer Rehab project
NC

The 1999 legislature authorized the Town of Drummond a \$100,000 grant for the design or construction of wastewater collection and treatment system improvements. Specific upgrades include lift station modifications, the replacement of approximately 10,000 feet of existing outfall line with a new gravity flow or force main, and minor improvements at the treatment facility. Construction is scheduled for 2001.

Geraldine, Town of
Wastewater Improvements
NC

In 1999, Geraldine received authorization for a \$100,000 grant to modify and expand its existing wastewater treatment facility to increase capacity and extend its useful life. The community received additional grant funding in 2000 and is proceeding with the project, scheduled for construction in 2001.

Corvallis County Sewer District
Upgrade & Expansion of Wastewater Treatment Facility
NC

The Corvallis County Sewer District received a \$100,000 grant in 1999 to expand its wastewater collection and treatment system to accommodate community growth and comply with state non-degradation requirements. Design is currently in progress and construction is scheduled for 2001.

Sweetgrass Community County W & S district
Wastewater Treatment Facility Rehab/Upgrade
NC

The Sweetgrass Community County Water and Sewer District received a \$100,000 grant in 1999 to improve and expand its wastewater treatment facility to comply with state and federal treatment standards. It obtained additional grant funding through the Community Development Block Grant Program in 2000. Design and construction are scheduled for 2001.

West Crane Sprinkler Irrigation Project
West Crane Irrigation Project
NC

A \$100,000 grant was authorized by the legislature in 1999. No grant agreement has been issued. Funds have not yet been disbursed for the project. Funds were approved for engineering and design services for an 8,100-acre sprinkler irrigation project in Richland County, Montana. In 1998, a group of farm families in Richland County invested private funds to complete a feasibility study on creating a large irrigation district to use existing water rights reserved for the Richland County Conservation District. Currently there are 12 landowners involved in this project. They are getting ready to file a petition for formation of an Irrigation District and expect this to be completed around the beginning of 2001. After the West Crane Irrigation District is formed, the district will contract with DNRC to begin the engineering and design work.

Missoula Sewer System, City of
East Reserve Street Phases II & III
NC

The 1999 legislature authorized the City of Missoula a \$100,000 grant for the East Reserve Street Sewer Project, the second phase of improvements in a previously unsewered area of the city. Construction is in progress, and a grant agreement is in the process of being executed with the community.

Projects That Have Been Terminated Since July, 1999

Bozeman, City of
Separator Waste Collection Facility
RRG-96-1046

The 1995 legislature authorized a \$50,000 grant and corresponding loan to the City of Bozeman for the construction of a covered solid waste treatment facility to pre-treat non-hazardous industrial waste prior to landfill burial. The project was cancelled by the City in 2000, and the grant and loan authorizations have been terminated.

East Glacier Water and Sewer District

Midvale Diversion**RRG-00-1098**

East Glacier Water and Sewer District was awarded a \$25,905 grant by the legislature in 1993 to construct a diversion at the system's water storage reservoir on Midvale Creek. The purpose of the diversion would have been to allow continued operation of the system during cleaning operations required periodically to remove sediment from the reservoir to maintain storage capacity. Because a new source of water is being designed for East Glacier and Browning, Midvale Creek will be abandoned as a source and the project has been cancelled.

Greenfield's Irrigation District**J-Lake Re-regulation Reservoir****97GD000**

A \$100,000 grant was authorized by the legislature in 1997. No grant agreement was issued for the project and no funds were disbursed. Funds were approved to construct a reservoir to prevent excess canal water and irrigation return flows from entering Muddy Creek. The project was terminated in favor of more pressing infrastructure need in the district.

Jackson Water and Sewer District**Geothermal Development Feasibility Study****95JW000**

A \$25,000 grant was authorized in 1995. No grant agreement was issued and no funds were disbursed. Funds were approved to investigate the geothermal heat potential of the hot spring located in town. Since the project was only partially funded, the town did not pursue completion of the feasibility study. The project was then terminated.

CHAPTER 7

Renewable Resource Project Planning Grants

Application Administration and Project Review Procedures

In 1999, the legislature authorized \$400,000 to facilitate the development of renewable resource projects. The intent of the program is to assist public entities in the completion of near-term project planning. Grants are provided to fund planning for renewable resource projects that conserve, manage, develop or protect Montana's renewable resources.

Applications for planning grants are accepted by DNRC from public entities on an "open-cycle" basis. No application fee is required. Grant awards are made on a first come-first serve basis for qualified studies until funding is depleted. Each grant requires an equal cash match by the applicant, and grants are limited to \$10,000 per project.

Project Solicitation

No formal solicitation for applications is conducted. Engineering firms and other consultants likely to be involved with eligible studies have been informed that planning grant funding exists. During presentations to solicit applications for the regular public grant and loan program, the availability of planning grants is discussed.

To request funds, applicants are required to submit an application that describes the project, identifies the sources and uses of funding necessary to complete the planning study, and discusses the implementation schedule for the study.

Since July, 1999, DNRC has awarded project planning grants to public entities for 33 public facility (water, wastewater or solid waste) and 10 other renewable resource projects. The total contracted amount through September 30, 2000 is \$369,456. It is anticipated that the remaining \$30,544 will be contracted prior to December 31, 2000.

Application Review

As with funding for other renewable resource projects, planning grant funds must be used to plan projects that enhance renewable resources through conservation, development, management, or protection; for assessing feasibility or technical planning; or for similar purposes approved by the legislature. All applications submitted are evaluated for completeness and compliance with the intended purposes of the program.

Requests for planning grant funds are reviewed by DNRC staff. The scope of the project being considered is evaluated to determine its eligibility for funding under the Renewable Resource Grant and Loan Program. The proposed budget is analyzed to ensure compliance with required cash-match requirements of the program, and proposed costs are evaluated for feasibility.

Funding Recommendations

DNRC typically requests \$500,000 for Renewable Resource Project Planning Grants. DNRC will request \$500,000 during the 2001 session to fund project planning studies and preliminary engineering reports for fiscal years 2002 and 2003.

Project Management

DNRC staff works closely with project sponsors and consultants during the planning stages of projects. For public facility studies, the applicant must contract with a registered professional engineer to prepare a Preliminary Engineering Report that satisfies the requirements of the Uniform Application Supplement for Montana Public Facility Projects. This application is accepted by all of the state agencies funding water,

wastewater and solid waste projects in Montana, and also by the Montana Rural Development Rural Utilities Service, formerly known as Farmers Home Administration. For all projects, draft submittals of planning documents prepared under this program are submitted to DNRC or other agency professionals for review prior to interim payments, and a final report is required for review and approval prior to final payment.

Authorized Projects

In 1999, the legislature authorized \$400,000 for planning grants. Since July 1, 1999, funded project planning grant applications have included the following:

Applicant	Project Type	Approved Grant Amount
1) Florence County W/S	District Wastewater	\$ 6,325.00
2) Town of Kevin	Wastewater	\$ 8,980.00
3) City of Laurel	Wastewater	\$10,000.00
4) Town of Clyde Park	Drinking Water	\$10,000.00
5) City of Libby	Wastewater	\$10,000.00
6) Ashland County W/S District	Wastewater	\$ 6,500.00
7) Butte-Silver Bow	Dam Rehabilitation	\$10,000.00
8) City of Troy	Drinking Water	\$10,000.00
9) City of Missoula	Stream Channel Restoration	\$10,000.00
10) Madison County /Alder	Wastewater	\$10,000.00
11) City of Libby	Drinking Water	\$10,000.00
12) Glen Lake Irrigation District	Diversion Study	\$10,000.00
13) Cascade County CD	Stream Channel Restoration	\$10,000.00
14) Town of Lavina	Wastewater	\$ 9,000.00
15) MDFWP	Stream Channel Restoration	\$10,000.00
16) City of Wolf Point	Drinking Water	\$10,000.00
17) Zortman County W/S District	Drinking Water	\$10,000.00
18) City of Whitefish	Wastewater	\$10,000.00
19) MDFWP	Stream Channel Restoration	\$10,000.00
20) Chouteau County CD	Aerial Imagery Study	\$10,000.00
21) City of Livingston	Wastewater	\$10,000.00
22) Town of Darby	Drinking Water	\$ 8,075.00
23) City of Whitefish	Beach Stabilization Study	\$ 4,990.00
24) City of Choteau	Water and Wastewater	\$10,000.00
25) Cooke City W/D	Drinking Water	\$10,000.00
26) Town of Jordan	Water and Wastewater	\$ 8,750.00
27) Town of Manhattan	Wastewater	\$10,000.00
28) South Hills W/S District	Wastewater	\$ 4,850.00
29) Judith Basin County/ Raynesford	Wastewater	\$10,000.00
30) Lockwood W/S District	Wastewater	\$ 9,187.00
31) Elk Meadows Ranchettes Water District	Drinking Water	\$ 3,950.00
32) City of Polson	Drinking Water	\$10,000.00
33) Lewis and Clark County CD	Stream Channel Restoration	\$10,000.00
34) Madison County CD	Stream Channel Restoration	\$ 9,924.00
35) Canyon Creek Irrigation District	Dam Rehabilitation	\$10,000.00
36) Missoula County CD	Diversion Study	\$ 7,500.00
37) Town of Hobson	Drinking Water	\$ 5,000.00
38) Ravalli County (Fairgrounds)	Wastewater	\$ 3,000.00
39) Town of Richey	Wastewater	\$ 2,500.00
40) Town of Rexford	Drinking Water	\$ 3,675.00
41) Gardiner County Water District	Drinking Water	\$ 9,250.00
42) City of Scobey	Wastewater	\$10,000.00
43) Pablo County W/S District	Wastewater	\$ 8,000.00