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Reclamation and Development Grants Program

Project Evaluations and Funding Recommendations
For the 2019 Biennium

and

2007 Through 2015 Biennia Status Report

Prepared by the

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LIST OF ABBREVIATIONS

AIS.....	Aquatic Invasive Species
AMD	Acid Mine Drainage
AML	Abandoned Mine Land
ARCO	Atlantic Richfield Company
ARD.....	Acid Rock Drainage
BANCS.....	Bank Assessment for Non-point Source Consequences of Sediment
BCM	Basin Creek Mine
BHWC	Big Hole Watershed Committee
BLM.....	Bureau of Land Management, U.S. Department of the Interior
BMP.....	Best Management Practices
BNSF.....	Burlington Northern Santa Fe Railroad
BOGC.....	Montana Board of Oil and Gas Conservation
BPSOU.....	Butte Priority Soils Operable Unit
BRES.....	Butte Reclamation Evaluation System
CARDD.....	Conservation and Resource Development Division
CD	Conservation District
CECRA	Comprehensive Environmental Cleanup and Responsibility Act of 1989
CERCLA.....	Comprehensive Environmental Response Compensation and Liability Act
CMRWA	Central Montana Regional Water Authority
CSKT.....	Confederated Salish and Kootenai Tribes
cy.....	Cubic Yards
DEQ.....	Montana Department of Environmental Quality
DEQ-AML.....	Montana Department of Environmental Quality–Abandoned Mine Lands Program
DNRC.....	Montana Department of Natural Resources and Conservation
DNRC–WRD	Montana Department of Natural Resources and Conservation–Water Resources Division
EA.....	Environmental Assessment
EE/CA.....	Expanded Engineering Evaluation/Cost Analysis
EHPS.....	East Helena Public Schools
EPA	U.S. Environmental Protection Agency
EQIP.....	Environmental Quality Incentives Program
ESA	Endangered Species Act
ET	Evapotranspiration
FBIC	Fort Belknap Indian Community
FEMA	Federal Emergency Management Agency
ft	Feet
FHHC	Fox Hills/Hell Creek Aquifer
FPRS.....	Free Product Recovery System
FWP	Montana Fish, Wildlife and Parks
GWIC.....	Montana Ground Water Information Center
HB	House Bill
ID.....	Irrigation District
IRAP.....	Interim Remedial Action Plan
LiDAR	Light Detection and Ranging
LIF	Laser Induced Fluorescence
LUST	Leaking Underground Storage Tank
MBMG	Montana Bureau of Mines and Geology
MCA	<i>Montana Code Annotated</i>
MSCA.....	Montana Salinity Control Association
MT	Montana
MSU	Montana State University
NPL	National Priorities Program

NRDP Natural Resource Damage Program
 OU Operable Unit
 PCP Pentachlorophenol
 PER Preliminary Engineering Report
 PGC Pegasus Gold Corporation
 PRP Potentially Responsible Party
 RDG/RDGP Reclamation and Development Grants Program
 RFQ Request for Qualifications
 RIT Resource Indemnity Trust
 ROD Record of Decision
 RP Remediation Proposal
 RRGL Renewable Resource Grant and Loan
 SQL Structured Query Language
 SSU State Superfund Unit
 SSRA State Special Revenue Account
 TMDL Total Mean Daily Load
 TU Trout Unlimited
 USFS U.S. Forest Service
 USFWS U.S. Fish and Wildlife Service
 USGS U.S. Geological Survey
 VCP Voluntary Cleanup Plan
 VCRA Voluntary Cleanup and Redevelopment Act
 WMA Wildlife Management Area
 WRD Water Resources Division
 WTP Water Treatment Plant

PROJECTS SUBMITTED FOR FUNDING IN THE 2019 BIENNIUM

Following is a list of projects submitted for funding in the 2019 biennium. For easy reference, the list is alphabetized by the names of the project sponsors. However, in Chapter II the project assessments and recommendations are presented in the order of their ranking by the Montana Department of Natural Resources and Conservation (DNRC) and the Governor.

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CHAPTER I

Program Description and Procedures

Program Information

The Reclamation and Development Grants Program (RDGP) is a state-funded grant program designed to fund projects that *"indemnify the people of the state for the effects of mineral development on public resources and that meet other crucial state needs serving the public interest and the total environment of the citizens of Montana"* (90-2-1102, MCA). The program, established by the 1987 Montana Legislature, is administered by the Montana Department of Natural Resources and Conservation (DNRC).

In February 2016, DNRC notified all Montana communities, counties, the university system, Conservation Districts (CDs), state agencies, state legislators, and others who might benefit by program participation that the grant application for 2016 was available electronically. Application materials were also printed for distribution. The application deadline was May 16, 2016. DNRC received 23 applications for RDGP funding totaling over \$8.6 million. One project subsequently withdrew and three applications were ineligible, so DNRC ranked 19 projects requesting a total of over \$7.6 million. These projects are listed alphabetically by applicant on page v. A map of the proposed projects is included at the end of this chapter on page 7.

Since 1986, previous Legislatures have authorized nearly \$62 million for 284 projects. DNRC previously gave statutory priority of \$600,000 per biennium to the Montana Board of Oil and Gas Conservation (BOGC). The 2015 Legislature eliminated that statutory priority in House Bill 226. DNRC is statutorily required to give priority to abandoned mine reclamation projects in the amount of \$800,000 (90-2-1113 [3] MCA). These projects may not include personnel costs or operating expenses.

The 2007 Legislature revised the funding structure of the RDGP by establishing two Natural Resources State Special Revenue Accounts (SSRAs): 1) the Natural Resources Projects SSRA; and 2) the Natural Resources Operations SSRA. The Projects SSRA receives revenue to be used exclusively for grants for designated projects authorized in statute. Funds from this account are shared by the RDGP and Renewable Resource Grant and Loan (RRGL) program. The Natural Resources Operations SSRA pays for expenses necessarily incurred in the administration of these two natural resource grant programs. Other related agency expenses are also charged to the operations account. This change in funding structure is designed to ensure that natural resource project funds are expended consistent with the original intent of the statute.

The 2015 Legislature approved authorization of \$800,000 in project planning grant funding, a reduction of \$200,000 from the 2013 Legislature. Chapter IV describes DNRC's role in the administration of planning grants and lists the 26 projects that were approved for funding.

The 2015 Legislature authorized \$500,000 in aquatic invasive species control funding, a reduction of \$25,000 from the 2013 Legislature. Chapter V describes DNRC's role in the administration of aquatic invasive species control and lists the 14 control projects and direct contracts for technical support that were approved for funding.

The 2013 Legislature authorized \$300,000 in groundwater baseline sampling funding. Chapter VI describes DNRC's role in the administration of groundwater baseline sampling grants.

The 2015 Legislature authorized \$214,000 for the Montana Salinity Control Association. Chapter VII describes DNRC's role in the administration of funds for this program and describes how these funds are being utilized.

The RDGP Act requires that the Governor submit, by the first day of each regular session of the Legislature, a list of all grant proposals received with his or her recommended priorities for funding (Table 1). Administrative rules further provide that the DNRC must furnish to the Legislature a status report on previously funded projects (Chapter III). This report fulfills the requirements of those directives.

Project Eligibility

The following excerpt from the RDGP Act (90-2-1112, MCA) establishes project eligibility criteria:

1. Except as provided under subsection (2), to be eligible for funding under the RDGP, the proposed project must provide benefits in one or more of the following categories:
 - a. Reclamation of land, water, or other resources adversely affected by mineral development;
 - b. Mitigation of damage to public resources caused by mineral development;
 - c. Research, demonstration, or technical assistance to promote the wise use of Montana minerals, including efforts to make processing more environmentally compatible;
 - d. Investigation and remediation of sites where hazardous wastes or regulated substances threaten public health or the environment; and,
 - e. Research to assess existing or potential environmental damage resulting from mineral development.
2. If a crucial state need exists to protect Montana's environment, the DNRC may evaluate and the Governor may recommend that the Legislature approve funding for projects in addition to those described in subsection (1).

Applicant Eligibility

Any department, agency, board, commission, or other division of state government or any city, county, or other political subdivision or tribal government within the state may apply for a grant from the RDGP.

Funding Limits

No grant may exceed \$500,000 and there is no minimum funding limit. An applicant proposing more than one project may submit a separate application for each.

Application Review and Ranking Procedures

The grant applications were evaluated for the technical and financial feasibility of the proposed projects, provision of public benefits, need and urgency, and impacts on the environment. Reviewers included DNRC staff members of the Conservation and Resource Development Division (CARDD), contracted engineering firms, and federal, state, and university personnel with expertise in specific project areas. For each application, project reviewers wrote a descriptive project assessment incorporating their concerns, ideas, and comments.

More funds are requested than are available. Therefore, the department ranks feasible projects, so that it can recommend funding priority and funding level to the Governor and the Legislature. Evaluation criteria established by the 1987 Legislature include, but are not limited to:

1. The degree to which the project will provide benefits in its eligibility category or categories;
2. The degree to which the project will provide public benefits;
3. The degree to which the project will promote, enhance, or advance the policies and purposes of the RDGP;
4. The degree to which the project will provide for the conservation of natural resources;
5. The degree of need and urgency for the project;
6. The extent to which the project sponsor or local entity is contributing to the costs of the project or is generating additional non-state funds;
7. The degree to which jobs are created for persons who need job training, receive public assistance, or are chronically unemployed; and
8. Any other criteria DNRC considers necessary to carry out the policies and purposes of the RDGP.

Grant applications were scored and ranked based on the degree to which they met evaluation criteria listed above.

Recommendations

After ranking the projects and recommending funding, DNRC presented recommendations to the Governor for final ranking of the proposed projects (Table 1), along with funding recommendations.

An appropriations bill listing the Governor's recommendations will be introduced to the 2017 Legislature. By appropriation or other means, the Legislature may approve grants for those projects it finds consistent with the policies and purposes of the RDGP.

The appropriations bill will also contain a request for RDGP planning grant funds and aquatic invasive species grants. These funds, to be administered by DNRC, can be accessed by local governments statewide to assist in planning and developing local natural resource projects within their jurisdictions and to address threats of aquatic invasive species.

Table 1. Ranking and Funding Recommendations

Rank	Applicant	Project Name	Amount Requested	Amount Recommended	Cumulative Amount
The first 19 projects below this line are recommended for funding.					
1	Granite Conservation District	Flint Creek Watershed Metals Remediation – Fred Burr Creek, Rumsey Mill Tailings	\$500,000	\$500,000	\$500,000
2	Montana Department of Environmental Quality	Tramway Creek Mine Reclamation Project	\$432,500	\$432,500	\$932,500
3	Harlowton, City of	Removal of Contaminated Soils and Free Product at the Harlowton Roundhouse in Harlowton, MT	\$300,000	\$300,000	\$1,232,500
4	Lewistown, City of	Cleanup of the Central Post and Treating Company in Lewistown, MT	\$475,000	\$475,000	\$1,707,500
5	East Helena Public Schools	Dartman Field Reclamation Project	\$500,000	\$500,000	\$2,207,500
6	Confederated Salish and Kootenai Tribes	Revais Creek Mine Tailings Reclamation	\$302,074	\$302,074	\$2,509,574
7	Missoula County Community and Planning Services	Ninemile Creek Housem Placer Mine Reclamation	\$420,000	\$420,000	\$2,929,574
8	Lincoln Conservation District	Tobacco River Restoration Project – Engineering and Implementation	\$395,136	\$395,136	\$3,324,710
9	Richland County Conservation District	Mitigating Impacts to the Fox Hills/Hell Creek Aquifer, Richland County	\$499,469	\$454,419	\$3,779,129
10	Montana Department of Environmental Quality	Upper Blackfoot Mining Complex – Wetland Connection	\$300,000	\$300,000	\$4,079,129
11	Deer Lodge, City of	Milwaukee Roundhouse CECRA Site Passenger Refueling Area VCRA Program Remediation	\$294,250	\$294,250	\$4,373,379
12	City and County of Butte-Silver Bow, Planning Department	Butte-Silver Bow Erosion Control and Vegetation Enhancement Program	\$439,850	\$185,307	\$4,558,686

Rank	Applicant	Project Name	Amount Requested	Amount Recommended	Cumulative Amount
13	<i>Fort Belknap Indian Community (FBIC)</i>	<i>Landusky Pit and Swift Gulch Capture Wells to Reduce Acid Mine Discharge to State Waters and the Fort Belknap Indian Reservation, Montana</i>	\$489,966	\$132,000	\$4,690,686
14	Montana Department of Environmental Quality	Basin Creek Mine – Phase 2 Site Stability Project	\$500,000	\$300,000	\$4,990,686
15	<i>Ruby Valley Conservation District</i>	<i>California Creek Mining Reclamation – Multi-Phase Stream and Floodplain Restoration</i>	\$62,625	\$62,625	\$5,053,311
16	<i>Deer Lodge Valley Conservation District</i>	<i>Mt. Haggin Uplands Restoration Project</i>	\$299,796	\$74,405	\$5,127,716
17	<i>Mile High Conservation District</i>	<i>Conifer Encroachment Reduction Project</i>	\$195,744	\$32,809	\$5,160,525
18	<i>Deer Lodge Valley Conservation District</i>	<i>Oregon Creek Placer Mine Reclamation</i>	\$450,000	\$58,610	\$5,219,135
19	Roosevelt County	Kenco Refinery Cleanup	\$487,469	\$275,000	\$5,494,135
The project listed below was withdrawn from consideration by the applicant.					
*	<i>Meagher County</i>	<i>Meagher County Road Department Maintenance Yard Soil Remediation</i>	\$175,000	\$0	\$5,494,135
The three projects listed below were not ranked for funding. They did not meet program eligibility.					
*	<i>Deer Lodge Valley Conservation District</i>	<i>French Creek Placer Mine Restoration</i>	\$300,000	\$0	\$5,494,135
*	Deer Lodge, City of	Replacement of Public Water Supply Well	**	\$0	\$5,494,135
*	Sweet Grass County Conservation District	Yellowstone River Channel Stabilization and Surface Water Protection	**	\$0	\$5,494,135
Cumulative Total			\$7,818,879	\$5,494,135	\$5,494,135

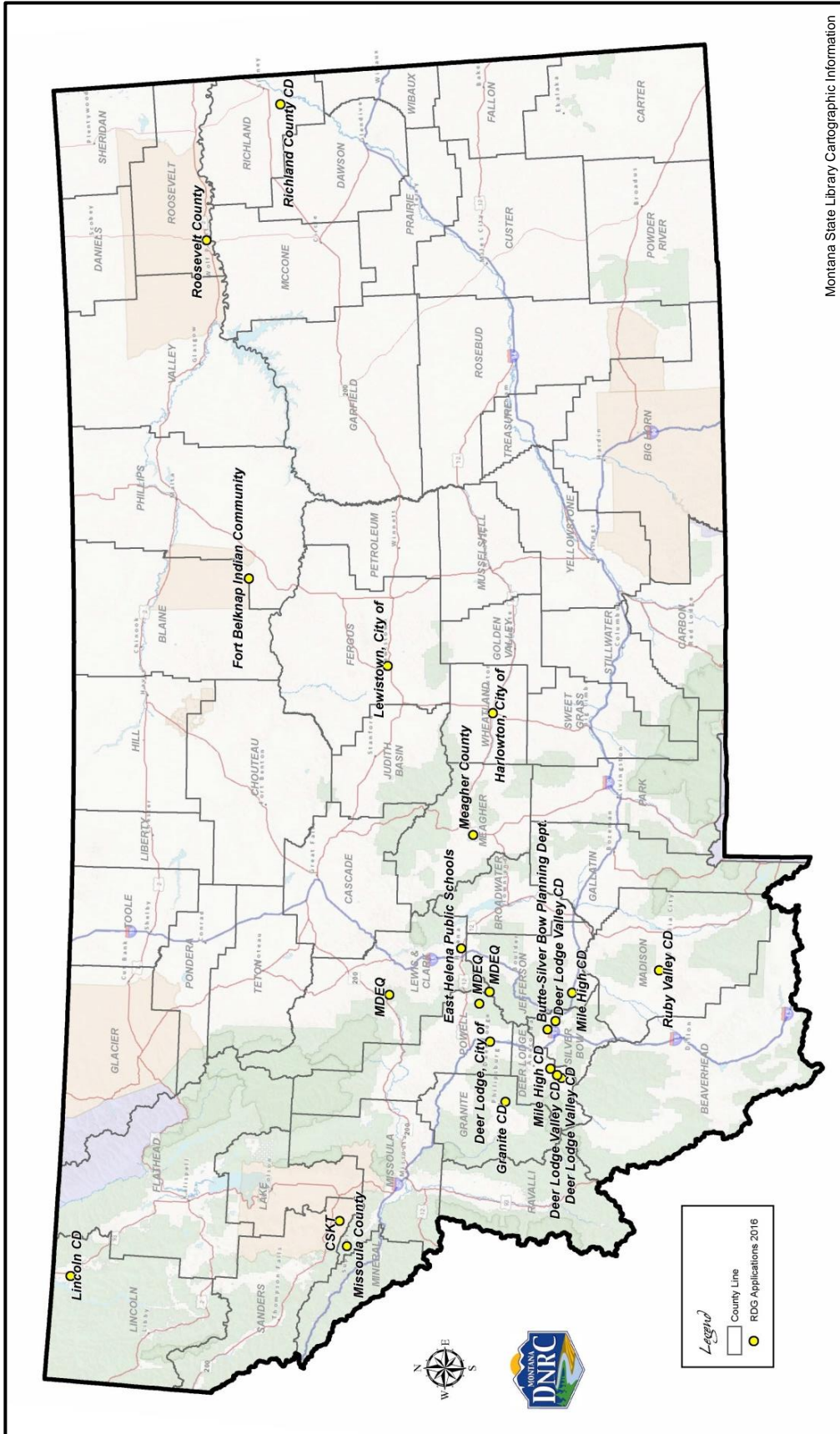
Italics indicate the project had a planning grant.

Note: The first two projects are ranked based on a statutory requirement, “the department shall give priority to grant requests not to exceed a total of \$800,000 for the biennium for abandoned mine reclamation projects” (90-2-1113 [3] MCA).

* Not recommended for funding.

** These projects were removed from consideration before ranking of the projects began because they did not meet eligibility. Both of these projects were recommended to the RRGL program for funding.

Reclamation and Development Grants – Proposed Projects Map



CHAPTER II

Project Evaluations and Recommendations for the 2019 Biennium

This chapter combines summary evaluations of 23 projects submitted for funding consideration. The 19 projects recommended for funding are presented in the order of their ranking. The cumulative requested amount for the projects is \$7,818,879. Part 2 contains other projects that were submitted for funding consideration.

To find any particular evaluation quickly, refer to the alphabetical listing of projects by the name of the applicant on page v.

For projects recommended for Reclamation and Development Grant Program (RDGP) funding, "Total Project Cost" is the sum of "Other Funding Sources" plus the "Amount Requested."

Part 1. Projects Recommended for Funding

Project No. 1

Applicant Name	Granite Conservation District	
Project Name	Flint Creek Watershed Metals Remediation – Fred Burr Creek, Rumsey Mill Tailings	
Amount Requested	\$ 500,000	
Other Funding Sources	\$ 75,000	Applicant
	\$ 458,550	DEQ
Total Project Cost	\$ 1,033,550	
Amount Recommended	\$ 500,000	

Project Summary

Tailings generated by operations of the historic Rumsey Mill near Phillipsburg are releasing mercury and other metals to Fred Burr Creek. Migration of metals from this source has damaged natural resources (surface water, groundwater, aquatic habitat, soil, and terrestrial fauna) along Flint Creek to its confluence with the Clark Fork River. The project will remove metals-containing soil and sediment from sources within and adjacent to Fred Burr Creek.

Project History

Processing of gold and silver ore occurred at the Rumsey Mill site near Phillipsburg from 1889 to 1893, discharging tailings to impoundments along Fred Burr Creek. Waste rock piles and a dispersed deposit of tailings, containing mercury and other heavy metals, extends along the creek downstream of the mill. The tailings have been identified as a principal source of mercury to Fred Burr and Flint creeks. Mercury bioaccumulation in fish tissue has resulted in establishment of a fish consumption advisory for those streams.

Proposed Solution

Goals and Objectives

The goal of the project is to reduce human and ecological exposure to mercury and other heavy metal concentrations in sediment and water within the Fred Burr Creek and Flint Creek watersheds. Tailings associated with the Rumsey Mill have been identified as a primary source of these metals. The objective is to remove the Rumsey Mill tailings and associated impacted soil and place the material in a nearby engineered repository.

Tasks or Activities

The objective will be accomplished through the completion of six tasks, as described below.

Task 1: Field Investigation

A field investigation will be conducted in 2017 to further define areas with the highest metal concentrations and refine the reclamation plan. The investigation will include soil and sediment sampling.

Task 2: Engineering Evaluation/Cost Analysis (EE/CA)

An EE/CA will be completed in 2017 to assess and document reclamation alternatives, leading to selection of a preferred alternative.

Task 3: Consultation with Outside Agencies and Stakeholders

DEQ will consult with outside agencies in 2017 so that reclamation activities will have no adverse impacts to threatened and endangered species or to historical features. DEQ will apply for any required permits during the consultation period.

Task 4: Engineering Design and Bid Document Preparation

A detailed engineering design of the preferred alternative and bidding documents will be prepared in 2017.

Task 5: Public Bidding and Contract Award

The project will be submitted for competitive bids in compliance with Montana Code Annotated Title 18. Bidding and award will occur in early 2018.

Task 6: Construction

Tailings removal and placement in an engineered repository will occur in the summer of 2018. Disturbed portions of Fred Burr Creek will be reconstructed. A final report documenting construction activities will be completed by early 2019.

Monitoring Plan

Site inspections and maintenance will be performed for three years following construction. Maintenance may include fence repair, weed control, and reseeding, as necessary. Monitoring will include collecting surface water and sediment samples from Fred Burr Creek to measure project performance.

Other

Public and stakeholder outreach is needed to bring this project to fruition. Granite Conservation District has committed to facilitating the public meetings, steering committee meetings, technical advisory committee meetings, watershed tours, and landowner meetings.

Public Benefits Assessment

Damage to natural resources has been documented in Fred Burr Creek and Flint Creek as a result of metals-laden tailings associated with the Rumsey Mill. The impacts include accumulation of mercury in fish tissue at levels that have caused fish consumption advisories to be placed on both watersheds. Elevated levels of mercury have also been discovered in osprey living on and near Flint Creek. The source of the mercury has been primarily attributed to the Rumsey Mill tailings. Removal and containment of the tailings will reduce direct human contact with the tailings, improve water quality, and alleviate wildlife impacts. The project will reduce, but likely not eliminate, elevated mercury and other metals concentrations in surface water due to historical downstream tailings dispersal as well as the presence of other metals sources in this area.

Direct benefits include reducing human and ecological exposure pathways and improving habitat for diverse wildlife and aquatic life. Farmers and ranchers that irrigate bottomland in the Flint Creek valley will benefit from improved water quality. The project will have a short-term benefit in construction employment.

Reclamation will prevent continued, long-term natural resource damage as metals continue to be released from the tailings into the watershed. Soil removal and containment is a proven technology for addressing impacts associated with historical mining wastes.

The project has letters of support from Granite County Commissioners; Department of Justice Natural Resource Damage Program; Montana Fish, Wildlife and Parks; Trout Unlimited; and Clark Fork Coalition.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Field Investigation	\$16,000	\$0	\$16,000
EE/CA	\$35,000	\$0	\$35,000
Engineering Design	\$73,000	\$0	\$73,000
Construction	\$376,000	\$450,000	\$826,000
Administration (DEQ)	\$0	\$8,550	\$8,550
Administration (Applicant)	\$0	\$75,000	\$75,000
Total	\$500,000	\$533,550	\$1,033,550

The project budget is reasonable given the estimated quantities of tailings to be removed. Waste volumes are based on a limited dataset and additional investigation is needed to refine waste areas and prioritize them for removal. It is anticipated that funding will not be adequate to address all of the tailings dispersed in Fred Burr Creek and that future actions will be needed. DEQ match funds are not committed at this time. If DEQ match funds cannot be secured, the project will be phased and the grant will be used to complete the sampling, EE/CA, engineering design, and first phase of reclamation.

Funding Recommendation

DNRC recommends grant funding of \$500,000 upon DNRC approval of the project scope of work, administration, budget, and funding package. The site is located on private property. A landowner access agreement for tailings removal must be in place before contracting this grant.

Project No. 2

Applicant Name	Montana Department of Environmental Quality		
Project Name	Tramway Creek Mine Reclamation Project		
Amount Requested	\$ 432,500		
Other Funding Sources	\$ 362,100	DEQ (Applicant)	
	\$ 316,000	Helena National Forest	
	<u>\$ 122,680</u>	Trout Unlimited	
Total Project Cost	\$ 1,233,280		
Amount Recommended	\$ 432,500		

Project Summary

Abandoned mines near Elliston discharge heavy-metal-laden sediment to Tramway Creek, a tributary to the Little Blackfoot River. The project will remove contaminated waste rock and soils from five mine sites in the Upper Little Blackfoot River watershed and develop management measures for mine adit discharges to Tramway Creek, which flows into the Little Blackfoot River. Resource benefits include improvements to water quality, soil, and vegetation, as well as removal of a public health and safety concern.

Project History

Mining in the area began in the 1860s as placer mining. In the 1890s, area mining transitioned to lode mining and many of the mines were active until the 1960s. In 2008, metals-laden water from a blown-out adit discharged into Tramway Creek and the Little Blackfoot River. The Little Blackfoot River is listed as impaired for exceedances of arsenic, cadmium, copper, cyanide, and lead as a legacy from historic mining in the watershed. The largest metals load input to the river occurred where the stream receives contributions from the Charter Oak, Golden Anchor, Kimball, and Mountain View mines.

Proposed Solution

Goals

The goals/objectives of the Tramway Creek Mine Reclamation Project are to:

1. Improve water quality in Tramway Creek and the Little Blackfoot River by removing mine wastes from the Tramway Creek watershed;
2. Complete a source water improvement strategy for future work by completing source assessment and mapping of mine adit workings/discharges in the Tramway Creek watershed; and
3. Improve soil quality and vegetation on Tramway Creek and the Little Blackfoot River by regrading, amending, and revegetating reclaimed areas of the Tramway Creek watershed to reduce sediment loads.

These goals and objectives support the overall goal of improving water quality for aquatic and human standards, improving stream habitat for trout, and increasing recreation value.

Objectives and Tasks

The three objectives will be accomplished by the completion of multiple tasks, as summarized below.

Objective 1: Remove and Safely Contain Mine Waste from the Tramway Creek Mine Sites.

Prior to beginning the construction work, the project planning tasks will include finalizing sampling and mine characterization activities and the agreements to authorize the project work. The mine site construction phase will include improving access roads and haul routes; clearing and grubbing of mine sites; installing construction best management practices (BMPs); installing dewatering and diversion systems; grading, excavating, and stockpiling clean topsoil for capping and soil amendments; excavating, loading, and hauling mine wastes to the Charter Oak Repository; and cleanup of disturbed areas by fertilizing, seeding, mulching, and removing construction BMPs. The Charter Oak Repository will be

prepared to receive the Tramway Creek mine waste materials by removing and disposing of the existing liner, which was found to be leaking. Mine wastes will be placed at the repository, capped with 24 inches of subsoil, a geosynthetic liner, and 12-inches of topsoil. Tasks for Objective 1 will occur from summer 2017 through winter 2018.

Objective 2: Complete Source Assessment and Mapping of Mine Adit Discharges in the Tramway Creek Watershed.

For objective 2, tasks to be completed from summer–winter 2017 include compiling and analyzing existing data and sampling information to complete a data-gap analysis; researching historical information and maps of mine production and mine workings; developing a sampling and analysis plan; field verifying mine workings infrastructure; conducting infiltration testing and a final groundwater investigation; monitoring adit flows (water quality and water quantity); completing adit source assessments and workings investigations; and preparing a source water improvement strategy for future work to improve water quality in the Little Blackfoot Watershed.

Objective 3: Regrade, Amend and Revegetate Disturbed Areas of Tramway Creek Watershed.

Tasks necessary to complete this objective include backfilling and regrading waste removal sites at Tramway Creek mines to create floodplain and match existing hillslopes; importing and spreading topsoil and completing final fine grading of the sites; reconstruction of the streambank at the Blackfoot 1 Mine to restore the natural components and functions of stream dimension, pattern, and profile of the Little Blackfoot River; reconstructing approximately 150 feet of Tramway Creek and tributaries; stabilizing disturbed areas and removing construction BMPs where appropriate; removing stream diversions; decommissioning access roads; and revegetating the mine sites with native grass seed mixes and conifers/woody species where appropriate. These tasks will be completed in fall 2018; however, reseeding may be completed in spring 2019 to optimize planting success.

Monitoring Plan

The Montana Department of Environmental Quality (DEQ) and the Helena National Forest will monitor the contaminated soil and waste rock removal areas at the mine sites for three years following completion. Work will involve yearly site inspections and monitoring of existing groundwater infrastructure. Site revegetation and safety features will be maintained as necessary.

Public Benefits Assessment

During runoff events, water quality sampling data indicate that the drinking water and aquatic standards are exceeded downstream of the mining areas in Tramway Creek and the Little Blackfoot River. Contaminated waste rock and soils at the mine sites are the source of these high metal concentrations in the creek and river. Removing these metal sources and revegetating these areas will have a direct improvement in water quality and fish and wildlife habitat. The public benefit is an improvement in water quality for human use as well as increased recreation from improved fish and wildlife habitat.

Direct benefits to Montanans include mitigation of safety hazards from open adits and mine entrances and removal of contaminated material on reclaimed and enhanced public and privately held land. Landscape aesthetics will be improved and seen by the public in the very short term. The project has a direct benefit to the residents of the Little Blackfoot River valley and the general public with improved water quality, public safety, community involvement, and fish and wildlife habitat. Project construction will provide opportunities for on the job training and short-term employment opportunities.

The current situation has the potential to cause ongoing threats to human health and the environment. Without this project, no action will result in continued releases of runoff with high metal concentrations exceedances of water quality standards in discharges to surface water.

The project has letters of support from the Helena National Forest District Ranger, Powell County, Deer Lodge Valley Conservation District, Trout Unlimited, and DEQ Abandoned Mine Lands Program (applicant).

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Administrative Costs	\$0	60,000	\$60,000
Activity Costs	\$432,500	\$740,780	\$1,173,280
Total	\$432,500	\$800,780	\$1,233,280

RDGP funding is expected to cover the subsoil cap (\$100,000); geosynthetic liner (\$60,000); compost (\$40,000); repository fertilizer, seed, and mulch (\$20,000); waste excavation, loading, hauling, and placing at repository (\$200,000); and construction oversight (\$12,500). Activity costs were broken down into quantities and unit costs; which appear to be reasonable.

Funding Recommendation

DNRC recommends grant funding of \$432,500 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 3

Applicant Name City of Harlowton
Project Name Removal of Contaminated Soils and Free Product at the Harlowton Roundhouse in Harlowton, MT

Amount Requested	\$ 300,000	
Other Funding Sources	\$ 28,245	EPA 128(a) Brownfields Grant
	<u>\$ 420,000</u>	DEQ Orphan Share Account
Total Project Cost	\$ 748,245	
Amount Recommended	\$ 300,000	

Project Summary

Historic fueling operations at an abandoned Milwaukee Roundhouse in Harlowton released diesel fuel to soil and groundwater in the floodplain of the Musselshell River. Natural resources damaged by the releases include soil, groundwater, and aquatic habitat. Project tasks include source removal of impacted soil, diesel recovery from groundwater, and remedy performance monitoring. This facility is a Montana Comprehensive Environmental Cleanup and Responsibility Act (CECRA) site.

Project History

Railroad engine repair and refueling occurred at the Harlowton Milwaukee Roundhouse from 1900 to 1979. Diesel released during these operations has impacted approximately 25,000 cubic yards of soil. Free-phase diesel is present on the groundwater surface over an area of approximately 2 acres. Groundwater is shallow and in direct hydraulic communication with nearby wetlands and the Musselshell River. The Milwaukee declared bankruptcy in 1980 and property ownership was transferred to the City of Harlowton in 1985. Historical recovery operations by the Milwaukee Railroad and the City of Harlowton have removed tens of thousands of gallons of free-phase diesel from the aquifer. Investigations conducted by Department of Environmental Quality (DEQ) in 2014 and 2015 identified remaining pockets of diesel in soil and groundwater at the site.

Proposed Solution

Goals and Objectives

The goal of the Harlowton Roundhouse project is to remove diesel contamination from a shallow regional aquifer located in the Musselshell River flood plain. Achievement of this goal will reduce impacts to nearby surface water resources. The objectives of the Harlowton Roundhouse project are to excavate diesel-contaminated soil from four source areas, recover free-phase diesel from the groundwater surface at the former refueling area, and conduct remedy performance monitoring at all of the source areas.

Tasks or Activities

The objectives will be accomplished by completion of five tasks, as described below.

Task 1: Design and Install Free Product Recovery System

This task is funded from the DEQ Orphan Share Account and will involve installation of wells and a pump system to recover diesel from the groundwater surface. The work began in 2015 through initiation of pre-design sampling and preparation of construction bid specifications for the recovery system. Recovery system construction is scheduled to go out to bid and be completed in 2016.

Task 2: Excavate Diesel-Contaminated Soil in the Former Settling Pond Area

Funded through the DEQ Orphan Share Account, soil with diesel contamination exceeding DEQ cleanup levels in the former settling pond area will be excavated and transported to a one-time land treatment unit. Approximately 1,200 cubic yards of soil will be removed during this phase. The work will be completed by May 2017.

Task 3. Excavate Diesel-Contaminated Soil in Three Remaining Source Areas

Soil with diesel contamination exceeding DEQ cleanup levels from the three remaining source areas will be excavated and transported to four one-time land farms for treatment. Up to 5,800 cubic yards of soil will be removed during this phase. The work will be completed by September 2018.

Task 4. Install and Sample Remedy Performance Monitoring Wells

Five groundwater monitoring wells will be installed and sampled to document effectiveness of the remedial activities. Wells will be installed in October 2018 and two groundwater monitoring events will be conducted. Sampling will be completed by June 2019.

Task 5. Prepare an Interim-Action Construction Completion Report

A report will be prepared documenting cleanup activities, groundwater monitoring results, and recommendations for future actions to bring the facility to closure. The report will be completed by March 2020.

Monitoring Plan

In addition to groundwater monitoring, remediated areas will be monitored for revegetation success.

Other

The project will be overseen by the DEQ Brownfields program in coordination with the DEQ State Superfund Unit (SSU). Remedial actions will comply with SSU cleanup requirements.

Public Benefits Assessment

Several phases of investigation have identified five areas of diesel contamination to soil and groundwater related to historical fueling operations at the former Harlowton Roundhouse. The impacts include free-phase diesel on the groundwater surface and contaminated soils. These contaminant sources are located in the floodplain of the Musselshell River and are in direct hydraulic communication with adjacent wetlands. The 2011 Musselshell River flood scoured this area, releasing diesel from portions of the site. Soil removal is a proven and permanent technology for remediating petroleum contamination.

Direct benefits include improved water quality in the wetlands that drain to the Musselshell River, prevention of future releases of diesel to the Musselshell River during flooding, and improved soils. The project will have a short term benefit in construction employment. The City of Harlowton currently owns the property and is the only viable responsible party. Cleanup of the site will reduce the financial liability to the City and inhabitants of Harlowton.

The project has a letter of support from the DEQ Director.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Free Product Recovery System Install	\$0	\$220,000	\$220,000
Excavate Former Settling Pond	\$0	\$160,000	\$160,000
Excavate Remaining Source Areas	\$250,000	\$40,000	\$290,000
Groundwater Monitoring	\$30,000	\$0	\$30,000
Construction Report	\$20,000	\$0	\$20,000
Administration	\$0	\$28,245	\$28,245
Total	\$300,000	\$448,245	\$748,245

The project budget is based on preliminary soil volume estimates. Funding may not be adequate to remove all soil to DEQ cleanup levels. Excavation activities will be prioritized so that worst-case areas are addressed first. DEQ matching funds are committed and free product recovery system design has been initiated. The City of Harlowton will provide the property as well as operations and maintenance for one of the four required land farms as an in-kind contribution.

Funding Recommendation

DNRC recommends grant funding of \$300,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 4

Applicant Name	City of Lewistown		
Project Name	Cleanup of the Central Post and Treating Company in Lewistown, MT		
Amount Requested	\$ 475,000		
Other Funding Sources	\$ 51,737	EPA Brownfields Grant	
	\$ 150,000	DEQ Orphan Share Funds	
Total Project Cost	\$ 676,737		
Amount Recommended	\$ 475,000		

Project Summary

The project is to remove, treat, and dispose of contaminated soil and historic landfill material from a former wood post treating site at the Central Post and Treating Company. This facility is listed on Montana's Comprehensive Environmental Cleanup and Responsibility Act (CECRA) Priority List. Removal of the contaminated material will prevent groundwater contamination and protect future lessees of the site.

Project History

The former Central Post and Treating Facility is owned by the City of Lewistown and encompasses approximately 6.3 acres, with a historic landfill area comprising roughly 4.4 acres. The post treatment operations occupied an estimated 2 acres within the historic landfill area.

The site of the facility was originally used as the principal municipal landfill for the City of Lewistown from the early 20th century until disposal stopped in the 1960s. In an effort to minimize and compact waste at this unlined and unregulated landfill, the dump was routinely burned throughout its operational life. The dump was officially closed in 1990, after which the city spread 2 feet of street sweepings as cover over the site. In the interim, the property was leased from 1968 to 1973 to Lyle "Bud" Smith for a post and pole wood treating operation. The cutting and treating operation consisted of peeling and cutting the trees to size, air drying, vertically placing the logs into a cage, dipping the posts into a heated mixture of diesel and pentachlorophenol (PCP), and then stacking the treated posts on the ground to air dry. Currently, a mill and biofuels operation occupies the footprint of the old post-and-pole treatment area. The current operator and his partner live part-time at the Facility which contains multiple areas for staging transportation equipment, milling equipment, and boneyards for industrial equipment and agricultural implements. Large bulk containers, drums, and pallets associated with the biofuel production can also be found close to the operator's residence around the south side of the property.

In February of 2016, DEQ, in collaboration with the City, used a DNRC Planning grant and SB96 Orphan Share Account funds to complete the first environmental site assessment at this site. DEQ and its consultant sampled the current surface soil, the buried historic cap of the landfill (the old surface during the time of the wood-treating operation), and subsurface/groundwater interphase soils. DEQ also collected groundwater samples. Results showed no discernable impacts to groundwater. Surface soils contain high levels of lead in places with potential for direct human contact and leaching to groundwater. The historic cap contains PCP and dioxins/furans in places with potential for direct human contact and leaching to groundwater screening levels. PCP contamination is present in the former wood-treating area while dioxins/furans contamination is found throughout the site.

Proposed Solution

Goals and Objectives

The City is proposing to use this DNRC RDGP grant in addition to DEQ Orphan Share Funds and EPA Brownfields Funds, to address contamination from the former wood operations at the Central Post and Treating Company CECRA Facility. The excavation and capping of these contaminants will protect groundwater from contamination and will eliminate unacceptable risks to human health or the environment. The project goals will be met by accomplishing the following objectives:

1. Pre-design sampling to quantify the vertical and horizontal volumes of PCP- and dioxin-contaminated soils to be removed.
2. Partial removal of PCP contamination in the wood treating source area. PCP contaminated soils will be hauled to a licensed hazardous waste incinerator located in Utah.
3. Permanent capping of dioxins/furans and lead contaminated soils in areas outside of the wood-treating source area.
4. The completion of an Environmental Assessment (EA) and Remediation Proposal (RP) Voluntary Cleanup Plan (VCP) which would be submitted to and approved by DEQ. This will include placement of an institutional control restricting future excavation of soils, installation of groundwater wells, and residential structures on the property.

Tasks or Activities

The objectives will be accomplished by completion of four tasks, as described below.

Task 1: Pre-Design Sampling

Pre-design sampling to quantify the volume of PCP- and dioxin-contaminated soils in the areas of the former wood-treating operation will be completed in 2016 and funded through DEQ Orphan Share Account funds. These results will be presented in a summary design report and summarized in the EA VCP.

Task 2: RP VCP

The completion of a Remediation Proposal Voluntary Cleanup Plan (RP VCP) will be submitted in 2017 to DEQ for review and approval. This will include a plan for the removal of PCP contamination exceeding leaching to groundwater cleanup levels and the capping of the remaining areas exceeding direct human contact cleanup levels.

Task 3: Implementation of RP VCP Cleanup Plan

Following the approved RP VCP, the cleanup plan described in the RP VCP will be implemented in 2018. This will include partial removal and disposal of contamination followed by compliance sampling. Remaining soil and material will be sampled to verify cleanup levels have been met and contaminated soil and material from the wood-treating source area will be removed to a licensed hazardous waste incinerator. The project also includes permanent capping of all contamination exceeding cleanup goals in the areas outside of the wood treating source area. Results of this remedial action will be summarized in the RP VCP Construction Completion Report (CCR) shown in Task 4.

Task 4: Construction Completion Report (CCR)

The completion of a CCR in 2018 will include the filed institutional control and a summary of all cleanup activities to be submitted to DEQ for approval. If all CECRA requirements are met, a successful Remediation Proposal Voluntary Cleanup Plan (RP VCP) will result in the delisting of the property from the CECRA list.

Monitoring Plan

The application monitoring plan is not detailed. Prior to submittal of the RP VCP all areas of excavation will be properly backfilled and revegetated with approval from DEQ and the Fergus County weed control board.

Public Benefits Assessment

Cleanup of the contamination would benefit soil and groundwater resources, and eliminate human contact with source contaminants. More specifically, the cleanup of both surface and subsurface contamination at the Central Post and Treating Company CECRA Facility ensures that unacceptable risks to both human health and the environment (surface soils, subsurface soils, groundwater, and native fauna) will no longer be present. The cleanup will also ensure that the potential of on-site contamination impacting groundwater and potential neighboring properties is greatly reduced. Currently, contaminated material presents a danger for direct human contact and leaching to groundwater contamination of lead, PCP, and dioxins/furans. By addressing this, both human health and groundwater will be protected.

The applicant uses a risk model to predict contaminant leaching concentrations and provides a removal threshold for partial cleanup of the former wood treating site. An environmentally protective cap would be designed to further mitigate residual contaminant migration that would have an adverse impact to ground water resources. Targeted removal would focus on the more mobile contaminants and conserve energy by not removing soils unnecessarily. Removal would also help prevent ground and surface water contamination.

As the owner, the City of Lewistown, by definition under CECRA, would be considered a responsible party and therefore liable for the investigation and cleanup of all contamination at this facility. By leveraging these multiple funding sources, the City of Lewistown, in partnership with DEQ, will be able to delist this facility and therefore eliminate the financial burden for the city and the inhabitants of Lewistown. In addition, once delisted, the property could be leased by the city, without concerns due to exposure of the leases.

By removing the contaminants and delisting the Central Post and Treating Company CECRA Facility, not only would the regional shallow aquifer be protected, but the stigma of a nearby state superfund facility will be removed for the surrounding area. This could eliminate fears for nearby commercial and residential developments and potentially raise property values and increase the tax base of the city and the county. Montana's restoration economy, a growing economic sector that recognizes the long-term value that is added through the restoration of natural resources, will benefit with the creation of short-term but highly paid construction jobs. The economic benefits of these jobs will be felt in the Fergus County, Montana economy. Removing unacceptable risks to on-site workers will facilitate continued and future use of this property for industrial and commercial opportunities. Removing the sources of contamination and ultimately delisting the property will provide tangible and long term benefits for this property, the regional groundwater aquifer, and neighboring properties for generations to come.

A letter of support was submitted with the application from the Director of DEQ.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Administration	\$0	\$51,737	\$51,737
Task 1 Pre-Design Sampling	\$0	\$150,000	\$150,000
Task 2 RP VCP	\$40,000	\$0	\$40,000
Task 3 Implementation of RP VCR Cleanup Plan	\$405,000	\$0	\$405,000
Task 4 Construction Completion Report (CCR)	\$30,000	\$0	\$30,000
Total	\$475,000	\$201,737	\$676,737

The projected budget appears reasonable. The eventual sampling and removal design will determine final costs.

Funding Recommendation

DNRC recommends grant funding of \$475,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 5

Applicant Name	East Helena Public Schools	
Project Name	Dartman Field Reclamation Project	
Amount Requested	\$ 500,000	
Other Funding Source	<u>\$ 55,298</u>	Applicant
Total Project Cost	\$ 555,298	
Amount Recommended	\$ 500,000	

Project Summary

East Helena Public Schools (EHPS) is seeking to remediate heavy metals contamination, particularly arsenic and lead, in the Dartman Field surface soil so that the property can be developed for construction of up to three school structures and associated facilities on a 50-acre parcel to accommodate increasing school enrollment. Resource benefits include improvements to soil in the Dartman Field, and the project will address a public health and safety concern.

Project History

The City of East Helena is located within the East Helena Superfund Site. Cleanup of the Superfund site is administered by the U.S. Environmental Protection Agency (EPA) Region 8. The East Helena Superfund Site consists of the decommissioned ASARCO smelter, an industrial facility operated by American Chemet Corporation; all of the City of East Helena, Montana; nearby residential subdivisions; numerous rural developments such as homes on small acreage plots; and several large farms or ranches and their associated cultivated fields or pastures, including the Dartman Field. Land within the Superfund site has been impacted by heavy metals, including lead, arsenic, cadmium, copper, and zinc. A settlement has been reached at the facility, however, the site manager, Montana Environmental Trust Group (METG), has indicated that they cannot provide funding for this site at this time.

Numerous studies and investigations of the East Helena Superfund Site have been completed by or on behalf of the U.S. Environmental Protection Agency and/or ASARCO. The Dartman Field is part of Operable Unit 2 (OU2) of the Superfund Site, which includes residential soils and undeveloped lands. Currently, concentrations of arsenic and lead at Dartman Field exceed cleanup levels established by the EPA.

The school district in East Helena has 1,205 students that are educated in three school buildings that are located within the East Helena Superfund Site. East Helena is a growing community experiencing new home construction in multiple subdivisions, and classroom space is currently limited. With anticipated future expansion of classroom space necessitated by this growth, it is imperative that the school district locate property for up to three new elementary and/or middle schools, which are projected to serve the district for the next 50 years. Completion of this project will allow Dartman Field to be suitable for school development. Although the financial settlement at the facility was meant to cover the financial burden of cleaning up this site, METG has stated that this will not occur within the timeframe necessitated by the growth of the city and the need for additional schools.

Proposed Solution

Goals and Objectives

The goal of the project is to reduce heavy metal concentrations, particularly arsenic and lead, so that the property can be developed for up to three schools to reduce school overcrowding. Project objectives to accomplish the goals are as follows:

1. Prepare project design and bid documents through hiring a qualified engineering firm to provide construction oversight and administration.
2. Complete the in-place treatment, soil amendments, oversize rock removal, and reclamation seeding.

Tasks or Activities

Project goals and objectives will be accomplished by the completion of the following tasks:

Task 1: Select Qualified Engineering Firm:

In 2017 EHPS will contract with a qualified engineering firm to complete an engineering design, develop bid documents for the project, and assist with construction oversight and project management.

Task 2: Project Bidding and Reclamation Construction:

The project will be advertised in 2017 for reclamation contractors and construction will be completed. Work will be completed according to the requirements of the OU2 Record of Decision (ROD) for the East Helena Superfund Site and the Lewis and Clark County Soil Ordinance. The proposed alternative selected was Alternative 4U, In-Place Treatment. This approach consists of deep tillage of the surface and near-surface soils and simultaneous application and incorporation of lime and other soil amendments. Highly specialized plows that mix, rather than turn over, the soil are used in this innovative technique. Multiple, perpendicular passes of the plow ensure mixing and incorporation of the amendments.

Task 3: Complete Reclamation Seeding and Closeout:

After completion of reclamation in fall 2017, the project area will be re-seeded and closeout paperwork will be conducted.

Monitoring Plan

Soil samples will be collected after the in-place treatment has been completed and analyzed for arsenic and lead to ensure that the cleanup levels specified in the OU2 ROD have been met before EHPS proceeds with developing the property according to the EHPS conceptual plan.

Public Benefits Assessment

The project will reclaim surface soils that are contaminated with arsenic and lead from over 100 years of smelter emissions so that the property can be put into productive use. The property is currently vacant and is not suitable for development because of the elevated concentrations of heavy metals in the soil. Because lead levels in soils exceed the "action level" for ecological receptors, including migratory birds, the project will contribute to the protection of migratory birds. The project will also protect water quality by reducing metal concentrations in surface water runoff and in the portion of the property within the Prickly Pear Creek floodplain. By reclaiming the native surface soil, the project will reduce environmental degradation through direct contact with the soil by humans and animals, wind erosion, and potential leaching of metals to groundwater. The Dartman Field will no longer remain a source of elevated lead and arsenic that is subject to wind erosion, storm water runoff, and leaching of metals to groundwater. The project will protect human health and the environment by remediating soils to the cleanup levels for single-family residential standards for undeveloped land as set forth in the EPA OU2 ROD. Montanans will benefit in the short term from reduced exposure to heavy metals in the environment and in the long term from enhanced public education, which will be afforded by reclamation of contaminated soil. Economic benefits would be realized through the creation of short term construction jobs for this project and the additional job creation if new school(s) is built on the property. The Dartman Field is expected to satisfy the EHPS school construction needs for the next 50 years.

The project has multiple letters of support from the Montana DEQ, Montana Department of Justice-Natural Resource Damage Program, U.S. Environmental Protection Agency, Mayor of East Helena, Montana Environmental Trust Group, State Senator Jill Cohenour, State Representative Mary Ann Dunwell, and Helena Small Fry Football Association.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Personnel Cost	\$0	\$14,780	\$14,780
Engineering Design/Oversight	\$70,502	\$0	\$70,502
Reclamation Construction	\$429,498	\$40,518	\$470,016
Total	\$500,000	\$55,298	\$555,298

Cost effectiveness of the selected alternative is demonstrated when compared with other approved EPA remediation alternatives. The applicant does not specify a backup plan in case the RDGP grant is not awarded. Due to the fact that the EHPS has purchased the property and the apparent urgency of the project due to existing space limitations, it appears the project would move forward with a different funding source. Matching funds in the application included the land purchase; however, since these costs were not associated with the reclamation project they were removed.

Funding Recommendation

DNRC recommends grant funding of \$500,000 upon DNRC approval of the project scope of work, administration, budget, and funding package. The applicant should verify that soil removal and capping work are going to be completed prior to or during school construction in order to ensure that remediation is fully protective of intended future uses, and to meet the conditions of the Real Estate Agreement between EHPS and the Montana Environmental Trust Group. If future funds become available through the Trust, DNRC should be reimbursed for the reclamation work completed on this project.

Project No. 6

Applicant Name Confederated Salish and Kootenai Tribes (CSKT)
Project Name Revais Creek Mine Tailings Reclamation

Amount Requested \$ 302,074
Other Funding Source \$ 12,000 Applicant
Total Project Cost \$ 314,074

Amount Recommended \$ 302,074

Project Summary

The Revais Creek Mine Tailings Reclamation project is located on Tribal Trust Land approximately 6.5 miles southwest of Dixon in Sanders County. Over 3,000 cubic yards of abandoned mine tailings are in the floodplain adjacent to Revais Creek, and the bluish-green tailings erode to the creek during high water. Concentrations of multiple metals are well above levels safe for aquatic life when the tailings erode to the creek, including concentrations of copper that are more than 1,000 times higher than the threshold concentration for fish health. The unvegetated tailings area is easily accessible and is used as a paintball course, where recreationists are exposed to arsenic at concentrations more than 10 times higher than the applicable recreational screening level. The Confederated Salish and Kootenai Tribes (CSKT) seek to protect human health, water quality, and aquatic life, including pure westslope cutthroat, in Revais Creek by removing the tailings to an engineered repository located out of the floodplain on Tribal Trust Land, and reclaiming and revegetating both the repository and the former tailings area.

Project History

The Revais Creek Mining District opened to mining in 1910 and the Green Mountain Mine primarily produced copper, gold, and silver. Most of the ore from the mine, which contained 5 to 35 percent copper, was shipped to the Anaconda smelter for processing. Starting in 1941, a 50-ton-per-day mill was operated on the hill immediately east of Revais Creek and the current tailings area. Sandy tailings from the mill were deposited in the floodplain of Revais Creek, at the bottom of the valley below the mine. The mill closed operations in 1949, and the mine was idle starting in 1954. In 1974, the Montana State Office of the Bureau of Land Management (BLM) declared local mining claims null and void. The decision was upheld in 1975 by the Department of the Interior Board of Land Appeals, and jurisdiction over the claims was then returned to the CSKT.

From current conditions, it appears that the only structure partially controlling the tailings during operations in the 1940's was a crude, dry-stacked rock dam approximately 2 to 3 feet high at the downstream edge of the tailings area. No known structure was ever in place to prevent erosion of tailings eastward to the creek and the small dam on the downstream (northern) edge has since been compromised in multiple locations, releasing tailings during periods of high runoff. In the over 65 years since milling ceased the tailings have been devoid of vegetation. The unvegetated tailings area contains bluish-green oxidized copper. Based on boreholes advanced through tailings in March 2016, the tailings are water-saturated and groundwater immediately beneath the tailings exceeds Montana Numerical Water Quality Standards for copper and iron. The presence of shallow impacted groundwater proximal to Revais Creek poses a risk to surface water quality.

Proposed Solution

Goals and Objectives

The goals of the Revais Creek Mine Tailings Reclamation project are to eliminate safety and human-health risks from fine-grained mine tailings containing arsenic, and to mitigate risks to the Revais Creek aquatic system from sedimentation and multiple metals, including copper. The following objectives will help reach the project goals:

1. Remove tailings and impacted soil from Revais Creek floodplain.
2. Transport and isolate tailings in a secure, engineered waste repository located approximately 1.8 miles by road from the site.

3. Reclaim the site, incorporating proper drainage and a native vegetative cover, and monitor naturalization and reclamation success of the site and repository until self-sustaining vegetation is established.

Tasks or Activities

The objectives will be accomplished by the completion of five tasks, described below:

Task 1: CSKT Selection of Final Repository Site

The CSKT planning director will coordinate review of proposed repository locations by natural resource specialists including the Tribal Wildlife Management Program, a Tribal hydrologist, and the Wildland Recreation Program. After the final repository site is recommended, the CSKT will perform internal cultural clearance of proposed excavation areas. Cultural clearance will be requested by the CSKT Brownfields Program, and will be performed by the Tribal Historic Preservation Office. Selection of the final repository site will be completed in 2017.

Task 2: Construction

The contractor would begin work with installation of sediment control structures at both the tailings area and repository. A contracted field Quality Control Engineer separate from the excavation firm would oversee the entire construction project, including evaluation of sediment control. The repository area would then be prepared along with a section of temporary haul road that would extend approximately 0.4 miles along a sparsely-forested ridge from the existing road to the repository site. Preparation of the repository site would also include stripping and stockpiling topsoil within the footprint of the repository, excavating subsoil to a depth of approximately 3 feet within the footprint of the repository, and compacting the subgrade at the base of the repository. Next, the tailings would be excavated and placed in the repository. Contaminated tailings and 6 inches of underlying soil would be loaded directly into haul trucks and transported approximately 1.8 miles to the proposed repository location, where it would be compacted in 12-inch lifts to reach 90 percent of maximum dry density. After the tailings have been removed from the Revais Creek Mine Tailings site and placed in the repository, both the floodplain and the repository site would be reclaimed. The repository cover system would consist of 2.5 feet of subsoil to separate the metals-laden tailings from the root zone of reclamation plants, and then a 6-inch-thick growth media layer at the surface. The growth media layer would consist of salvaged topsoil amended with imported compost to add organic matter and nutrients. The repository area would be contoured to have minimal effect on the surrounding topography, and would be surrounded by a shallow runoff diversion ditch containing an erosion control mat. At the former tailings area, reclamation would consist of regrading the remaining floodplain soil to provide smooth transitions between adjacent slopes and even drainage to the northeast, placement of a 6-inch-thick layer of imported topsoil over the regraded area, and installing erosion control materials including straw wattles perpendicular to drainage paths. After all earthwork and placement of materials, both locations would be hydroseeded with a CSKT-approved seed mix and a tackifier. The final construction task would be to collect data and provide documentation of the reclaimed areas to provide as-built information in support of subsequent reporting and long-term maintenance. Construction work is anticipated to occur from May–July 2018.

Task 3: Reporting

The contracted environmental engineer would prepare a completion report documenting construction and reclamation activities, including as-built information and record of actual construction units relevant to contractor payment, photographs, field notes, and draft use restrictions applicable to the repository area. Reporting will be completed by August 2018.

Task 4: Engineering and Administrative Support

Contracted personnel will work with CSKT Brownfields Program personnel to provide engineering support for the project. Engineering support activities will include production of bid specifications, review/tabulation of contractor bids, construction inspection and administration, and preparing draft status reports for CSKT review and transmittal to DNRC. This work will be completed by August 2018.

Task 5: CSKT Post-Construction Weed and Erosion Control

After construction, the CSKT Tribal Lands Department will inspect the reclaimed areas for invasive weeds and erosion. CSKT personnel will perform two field inspections in 2019, and annual inspections thereafter through 2024.

Monitoring Plan

The applicant's monitoring plan includes construction oversight, administration, and reporting. Post-construction monitoring is included in Task 5, discussed above, which includes vegetation and erosion monitoring.

Public Benefits Assessment

Removal of the tailings would benefit soil and water resources, aquatic life, local wildlife, and eliminate human contact with the source contaminants. More specifically, the project would eliminate current human health risk from direct-contact exposure to the tailings; eliminate exposure of wildlife that inhabit the area; reduce metals loading to shallow groundwater and Revais Creek surface water; and protect fish and aquatic life from further exposure to tailings eroding to the creek. Direct benefits from the project are realized by those who recreate at the site who would be protected from future exposure to unsafe concentrations of arsenic in the exposed tailings. The project would also remove a long-term threat to aquatic life in Revais Creek. This would result in increased long-term stability of westslope cutthroat trout populations in the creek, and provide better, more diverse fishing opportunities for Montanans.

The project serves as demonstration of collaboration between tribal government, state funding, and EPA technical assistance to perform waste removal and reclamation at an abandoned mine on Tribal Trust Land. Successful implementation of this project would indirectly promote future collaboration, and provide an example for similar efforts to reclaim abandoned mines and mine waste on tribal land. Local hiring and career training associated with the project would be a positive development on the Flathead Indian Reservation, where the unemployment rate is nearly twice the statewide average. The Tribal Employment Rights Ordinance would likely result in hiring of an Indian owned excavation firm (if original bid is within 10% of low-bid, and Indian-owned firm is willing to match low-bid), and that firm would be likely to employ laborers and equipment from the local area to ensure competitive mobilization costs. A CSKT Brownfields Program intern from the tribal college would career-shadow with the Brownfields Program Coordinator during the project. The intern would receive real-world experience that could assist them in transition from education at the Salish Kootenai College into active work in the field of natural resources management and mine reclamation.

Project benefits may be certain and long-term by selection of a nearly flat repository site located a substantial distance from the creek (i.e. with minimal chance of erosion and failure), and by CSKT institutional capacity and commitment to perform long-term inspection and maintenance.

A letter from the EPA was included in Appendix E of the application that acknowledged EPA's Brownfields Program involvement with project, with committed technical assistance by way of review of cleanup plans and completion reports.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Selection of Final Repository Site	\$7,500	\$0	\$7,500
Task 2 Construction	\$239,074	\$0	\$239,074
Task 3 Reporting	\$14,200	\$0	\$14,200
Task 4 Engineering and Administrative	\$41,300	\$6,500	\$47,800
Task 5 Post-Construction Weed and Erosion Control	\$0	\$5,500	\$5,500
Total	\$302,074	\$12,000	\$314,074

The projected budget is reasonable, clear, complete, and supported in the project application. Cost effectiveness of the selected alternative is demonstrated in the project application.

DNRC Concerns

The monitoring plan does not include long-term groundwater monitoring of the repository or removal site which would ensure both successful removal of contamination and timely discovery of any migration of contamination at the repository site. Groundwater monitoring at the repository site would ensure that the project benefits are certain and long-term. DNRC recommends that the applicant consider incorporation of either a cap liner system to prevent infiltration into the contaminated materials, or data and analysis that justifies the use of an ET cap that would prevent infiltration into the waste material. The applicant should also include State and EPA guidance for justifying an unlined repository in order to assure no infiltration or groundwater interaction with waste materials. Furthermore, the applicant should include a confirmation sampling plan during tailings removal to confirm that contamination goals are met.

Funding Recommendation

DNRC recommends grant funding of \$302,074 upon DNRC approval of the project scope of work, administration, budget, and funding package. This funding is contingent upon long term monitoring of the repository site to ensure contaminants do not migrate and confirmation sampling to confirm removal of contaminants from the site.

Project No. 7

Applicant Name Missoula County Community and Planning Services
Project Name Ninemile Creek Housem Placer Mine Reclamation.

Amount Requested	\$ 420,000	
Other Funding Sources	\$ 16,000	Applicant In-kind
	\$ 50,000	Lolo National Forest
	\$ 15,000	Lolo National Forest In-kind
	\$ 50,000	Trout Unlimited
	\$ 15,000	Trout Unlimited In-kind
	\$ 200,000	EPA 319 Grant
	\$ 30,000	MT FWP Future Fisheries
	<u>\$ 20,000</u>	Landowners In-kind
Total Project Cost	\$ 816,000	
Amount Recommended	\$ 420,000	

Project Summary

This project will reclaim approximately 3,600 feet of Ninemile Creek and its associated floodplain and tributary connections through restoring the stream to a natural channel configuration, regrading placer tail piles and dredge ponds, and reconnecting two tributary confluences. This work will improve water quality, aquatic habitat, fisheries, soil and vegetation in the stream and riparian area.

Project History

Ninemile Creek, in the Clark Fork River watershed near Missoula, Montana, was extensively mined from the late 1800s to the 1940s using manual placer, hydraulic mining, and dragline dredge methods. The creek alignment was dramatically altered, and the floodplain was severely impacted by the placement of mine tails, the creation of dredge ponds, and other landform alterations. This results in a stream and floodplain with poor fish and wildlife habitat values, and a stream that erodes excessively, harming infrastructure and water quality.

Proposed Solution

Goals

The goals of the project are to improve water quality, reclaim mining impacts and reconnect previously damaged tributaries. These goals will be accomplished through five objectives and their corresponding tasks, as summarized below.

Objectives and Tasks

Objective 1: Remove and regrade mining spoils and settling ponds in the Ninemile Creek floodplain through reach 4 by summer 2018.

- Task 1: Finalize engineering drawings and design specifications
- Task 2: Prepare agency/landowner agreements and contracts, acquire permits.
- Task 3: Establish site survey and project staking.
- Task 4: Site preparation, including haul road construction and stream diversion.
- Task 5: Rough grading of floodplain, including filling of dredge ponds and excavating tail piles. Salvage and stockpile vegetation.

Objective 2: Establish naturally functioning and appropriate channel type, including stream planform, dimensions, gradient, bedform, and floodplain connections for Ninemile Creek by fall 2018.

- Task 6: Rough grading of Ninemile Creek channel to reconstructed alignment.
- Task 7: Final grading of Ninemile Creek channel.
- Task 8: Construct large woody debris jams and other channel features.
- Task 9: Construct wood/brush fascines.

Objective 3: Create conditions that sustain diverse and robust vegetation, wetlands, improve stability, and improve fish and wildlife habitat by fall 2018.

Task 10: Revegetate streambanks.

Task 11: Revegetate floodplain.

Task 12: Site cleanup and demobilization.

Objective 4: Reconnect Burnt Creek to Ninemile Creek by regrading mine waste piles and establishing naturally functioning stream and floodplain connections at the confluence area by fall 2018.

Task 13: Reconnect Burnt Fork Creek Confluence.

Objective 5: Reconnect Twin Creek to Ninemile Creek by regrading mine waste piles and establishing naturally functioning stream and floodplain connections at the confluence area by fall of 2018.

Task 14: Reconnect Twin Creek Confluence.

Monitoring plan

Performance monitoring will consist of assessing four parameters: bank erosion, fish population, water temperature, and stream/floodplain vegetation. The monitoring term will be four years post construction. Bank erosion and fish population will be assessed in years two and four, whereas water temperature and vegetation will be assessed in each of the four years. Water temperature will be monitored twice per year, above and below the project reach. Fish population will be monitored at three locations, one each above, within, and below the project reach. Bank erosion and vegetation will each be monitored at multiple locations within the project reach.

Other

The preferred alternative consists of a combination of major and minor earthworks operations that would remove levees and berms, fill dredge ponds, realign and regrade the stream channel in many places, while performing less intensive alterations to the stream channel and floodplain in others. In many places, the stream channel will be enhanced with the placement of habitat structures such as large woody debris jams, wood and brush fascines, or rock steps. The floodplain will be terraced and given microtopographic features.

This plan is well formed and comprehensive. The amount of floodplain earthwork is large, and given the extensive filling of floodplain areas and dredge ponds anticipated, it is likely that there will be a need to mitigate for wetland impacts. The project may produce sufficient compensatory wetlands to offset planned fill actions.

Public Benefits Assessment

The project is intended to restore publically owned and/or publically accessible natural resources damaged by historic mining practices. This project will conserve natural resources including fish, wildlife, surface water quality, and wetlands, and improve floodplain conditions, aesthetics, and public access to public lands and a fishery. In addition, the project complements other RDGP funded projects in the same drainage, increasing the overall benefit of all of the projects. Direct benefits from the project will accrue to Ninemile valley water users, and Montana hunters, anglers, hikers and others who make recreational use of the Ninemile Valley and will include reduced sedimentation and improved land and stream access. Indirect benefits from improved fish and wildlife habitat will accrue to sportsmen and other users of the Ninemile valley's fish and wildlife resources, and to all Montanans from improved habitat for the conservation of sensitive species. Barring a catastrophic flood event that harms the remedy prior to the establishment of stream stabilizing vegetation, the remediation methods specified, if properly designed and implemented, should result in permanent improvements to Ninemile Creek, its floodplain, and tributary connectivity. The impacts to be remediated occurred long ago, and are generally not worsening, but "no action" would permit chronic harms to continue accruing. Economic benefits would be realized through the creation of short term construction jobs for this project.

Letters of support for the project have been provided by government agencies, including the United States Forest Service, the Montana Departments of Environmental Quality and Fish, Wildlife and Parks, the University Of Montana College Of Forestry and Conservation, and the Missoula Conservation District

and City/County Health Departments. Additional support has been voiced by non-governmental organizations including the Clark Fork Coalition, Ninemile Wildlife Workgroup, and Nine Mile Community Center, Streamside Services LLC and four local landowners.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Final design and permitting	\$0	\$32,700	\$32,700
Construction survey/oversight	\$82,000	\$18,325	\$100,325
Site Prep	\$10,150	\$41,500	\$51,650
Floodplain earthworks	\$200,000	\$96,370	\$296,370
Channel earthworks	\$9,000	\$29,000	\$38,000
Structure/Bank installation	\$49,500	\$128,320	\$177,820
Revegetation	\$8,350	\$28,785	\$37,135
Site cleanup/demobilization	\$1,500	\$5,000	\$6,500
Contingency	\$38,500	\$0	\$38,500
Administration	\$21,000	\$16,000	\$37,000
Total	\$420,000	\$396,000	\$816,000

The project budget was generally clear and included the essential components. The budget is generally of an appropriate level of detail for the current stage of design and for seeking grant funding.

Funding Recommendation

DNRC recommends grant funding of \$420,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 8

Applicant Name	Lincoln Conservation District		
Project Name	Tobacco River Restoration Project – Engineering and Implementation		
Amount Requested	\$ 395,136		
Other Funding Sources	\$ 288,996	EPA 319 Grant	
	<u>\$ 192,664</u>	Landowner In-Kind	
Total Project Cost	\$ 876,796		
Amount Recommended	\$ 395,136		

Project Summary

The proposed project would repair a one-half-mile long reach of the Tobacco River from impacts related to instream gravel mining. Restoration of the stream will reduce sediment input into the Tobacco River and improve water quality, aquatic habitat, and terrestrial habitat. It will also protect threatened and endangered species (bull trout and westslope cutthroat trout).

Project History

The Tobacco River in and near the project reach has been subject to impacts related to stream mining activities, agriculture, logging, and other development related activities. Channelization, bank degradation, floodplain incisement, and other alterations to the stream have resulted in excessive bank erosion and stream sedimentation. In 2013, the landowner of the project reach completed a conceptual design for the restoration of the one mile of the Tobacco River within their property. In 2014, the Lincoln Conservation District was awarded a \$50,000 DNRC RDGP planning grant to complete the preliminary design. Earlier this year, Lincoln CD was awarded an EPA Section 319 grant to complete design and implementation of approximately one-half mile of the project. This application seeks funding to complete the design and implement the restoration of the remaining one-half mile.

Proposed Solution

Goals and Objectives

The project has three primary goals and supporting objectives:

1. Reduce water pollution resulting from past gravel-mining operations, overgrazing, and riparian clearing that altered streambank and flood plain conditions by constructing appropriate channel and floodplain dimensions. Address eroding stream banks with bioengineered treatments.
2. Improve aquatic, riparian, and terrestrial resources by establishing an ecologically complex, vegetated floodplain and channel migration zone capable of supporting natural channel and floodplain processes.
3. Create complex aquatic habitat components to support life history stages of Endangered Species Act (ESA) listed bull trout and westslope cutthroat trout, a Montana Species of Special Concern, by constructing riffle-pool sequences that support desired hydraulic and aquatic habitat conditions including depth, velocity, cover and substrate.

The preferred alternative will use natural channel design and restoration techniques to reconstruct approximately 3,000 feet of stream channel to a meandering riffle-pool, gravel bed stream type, to create or restore 2.25 acres of floodplain and riparian zone wetlands, and to restore approximately 3,300 feet of highly eroding stream banks. The proposed plan will correct the chronic impacts resulting from historic development practices by reconstructing the stream and its adjacent floodplain to their pre-impact, natural condition.

Tasks or Activities

The project is composed of four tasks:

Task 1: Finalize Engineering, Bid Package, and Prepare and Submit Regulatory Permits

This task will finalize the project design, obtain all necessary permits, and advertise for and select a contractor to perform the work. Work will be completed by November 2017.

Task 2: Materials Acquisition, Staging and Construction Staking

This task, to be completed by July 2018, would identify approved sources for the soil, alluvium, large woody vegetation and other materials necessary to construct the project, and perform stakeout of the final grading plan using survey-grade GPS equipment.

Task 3: Construction Implementation

Construction activities would occur midsummer to fall 2018, limiting instream work to the period outside of bull trout migration and spawning. All work would be completed by November 2018.

Task 4: As-built Survey and Effectiveness Monitoring

Document project performance against the goals and objectives by assessing instream sediment reduction and revegetation success. This will be completed by December 2018.

Monitoring Plan

The project monitoring plan would be developed as part of the final design task, with input from DNRC, DEQ, and project stakeholders. The plan is expected to specify performance monitoring of two functional components: 1) reduction in streambank erosion and sediment loading to the Tobacco River; and 2) revegetation success. Sedimentation would be estimated pre- and post-project using the BANCS streambank sediment production model, while stream geomorphology would be measured with six analytic cross sections, a longitudinal profile of the entire project reach, and two Wolman pebble counts. Revegetation success would be monitored with greenline transects along the streambank, riparian vegetation transects across the floodplain, and assessments of containerized planting survival.

Public Benefits Assessment

The proposed project would repair a one-half-mile long reach of the Tobacco River from impacts related to instream gravel mining, historic logging, agriculture, and other development related activities. The Tobacco River is listed under the State and Federal Total Maximum Daily Load (TMDL) program as impaired for sediment and siltation, is an important component of the recovery of Federally Listed Threatened and Endangered Species (bull trout, westslope cutthroat trout) and the project reach is an important recreational and economic asset to Eureka, Montana. The proposed project would improve all of these circumstances and provide significant benefits to water quality and aquatic and terrestrial wildlife habitat.

Downstream water users and recreationists will directly benefit from increased water quality, improved wildlife habitat, improved stream geomorphology, and improved aesthetics of the river and riparian corridor. Indirect benefits would accrue to the local community, and to Montanans generally, in the form of improved economic base, improved recreational opportunities, improved water quality in the Tobacco River watershed, and improved recovery of threatened and endangered species. The project will prevent ongoing stream erosion within the project reach. As the project occurs within a reach of the river well used by kayakers and other river recreationists and adjoins a popular rails-to-trails public recreation site, the economic effects of the project on the town of Eureka may be important.

Although most of the harm occurred some time ago and is not worsening, chronic impairments continue and are not likely to attenuate on near-term timeframes. Additional immediacy is provided by the fact that the proposed project is the second half of a larger overall project that is currently funded by other sources and being implemented, and by the State's obligation to recover endangered species. If this project does not take place continued impairment would accrue to Tobacco River water quality, function and aesthetics, and to critical habitat for endangered species. Barring a catastrophic flood event that occurs prior to establishment of bank stabilizing vegetation (a low probability possibility) the project benefits should be certain and long term.

Letters of support for the project were provided by the Federal Natural Resources Conservation Service, the Montana Departments of Environmental Quality and Fish, Wildlife and Parks, Montana Legislator Mike Cuffe, the Town of Eureka, the Kootenai River Network conservation organization, and two local landowners.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Final design/permitting	\$25,500	\$25,500	\$51,000
Task 2 Materials and staking	\$175,727	\$192,664	\$368,391
Task 3 Construction	\$168,909	\$231,746	\$400,655
Task 4 Monitoring	\$7,500	\$7,500	\$15,000
Administration	\$17,500	\$24,250	\$41,750
Total	\$395,136	\$481,660	\$876,796

The project appears to be well budgeted for the presented level of design, and the estimated costs are in line with expectations for projects of this type. More than 20% of the overall budget is expected to come from non-state sources, principally in-kind contribution of materials by the hosting landowner. The expected match of funds from the DEQ EPA Section 319 grant program has been received, putting this project on solid financial footing.

DNRC Concerns

The preliminary project design submitted with the application forces a regularly sinuous pattern on the landscape that may cause removal of well-established vegetation. DNRC recommends but does not require revising the proposed channel realignment to incorporate existing stands of trees and shrubs to reduce site prep and construction cost for those reaches. This change would also eliminate both the cost of revegetating those reaches and the increased risk of project failure during the time that it takes newly planted vegetation to establish, mature, and achieve its full channel stabilizing function. In addition, monitoring for the project is short term and only includes monitoring for immediately after completion of the project. DNRC recommends a longer monitoring period to effectively measure the success of the project.

Funding Recommendation

DNRC recommends grant funding of \$395,136 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 9

Applicant Name	Richland County Conservation District	
Project Name	Mitigating Impacts to the Fox Hills/Hell Creek Aquifer, Richland County	
Amount Requested	\$ 499,469	
Other Funding Source	<u>\$ 50,000</u>	Applicant
Total Project Cost	\$ 549,469	
Amount Recommended	\$ 454,419	

Project Summary

This project will identify and remediate approximately 50 free-flowing artesian wells in Richland County to conserve an important regional aquifer. The project will help to mitigate the declining static water levels and pressure heads in the Fox Hills-Hell Creek (FHHC) aquifer.

Project History

The FHHC aquifer underlies the eastern one-third of Montana and is listed as an aquifer of concern in the 2015 Montana State Water Plan. Oil exploration practices in the 1970s and 1980s left hundreds of uncapped artesian wells in place resulting in depletion of the aquifer. Historical water-level monitoring documents declines in the FHHC aquifer of one to four feet per year over the past 40 years in Richland County. In 2015, the Montana Bureau of Mines and Geology (MBMG) completed an inventory of FHHC wells for the Richland County Conservation District (CD). MBMG determined that approximately 25 percent of wells located in low elevation areas in the Yellowstone River Valley between Glendive and Fairview need capping. Additionally, relatively low-lying areas in nearby counties including Dawson, Prairie, Wibaux, Roosevelt, and Sheridan either have experienced similar problems or have the potential to encounter similar problems. The project is designed to concentrate on problem wells in Richland County, but the applicant states that the project may expand to other parts of eastern Montana as the need arises.

Proposed Solution

Goals and Objectives

The goal of this project is to reduce the volume of water wasted by free-flowing FHHC wells in Richland County. The project will evaluate the condition of 50 targeted wells to determine appropriate remedial actions, in cooperation with the well owner. Current static water levels will be measured in the initial evaluation and aquifer response will be monitored following actions to assess the effectiveness of the project. These project actions aim to mitigate the current water level decline in the FHHC aquifer and restore pressure heads for area wells. Other alternatives considered included no action and implementing water use restrictions to users of the aquifer. These alternatives were not selected due to lack of effectiveness in solving the drawdown issue, difficulty of enforcement, cost of implementation, and unpopularity.

Tasks or Activities

The objectives of this project will be accomplished by the following four tasks, as described below.

Task 1: Evaluate the Well Condition of Identified Wells

Each well casing and plumbing system will be evaluated for leaks visually and with a downhole camera, when necessary. The current pressure or static water level will be measured. An in-person or phone meeting will be scheduled with the well owner to discuss the well evaluation and remediation options. The well assessment report will be written to Natural Resources Conservation Service (NRCS) specifications. A report of findings will be sent to the Richland County CD following the completion of each well evaluation, with all work completed by June 2020.

Task 2: Coordinate for Wellhead Repairs and Modifications

The Richland County CD and MBMG will review the well assessment to select a well remediation plan, estimate costs, and coordinate with the well owner. This work will be completed by June 2020.

Task 3: Repair and Modify the Wellheads and Monitor the Aquifer Response

Well pit, valve systems, heated structures, PVC liners, and packers will be installed as needed. Water pressures will be monitored to evaluate effectiveness. Several wells will be repaired each year, with all wells completed by June 2020.

Task 4: Final Reporting

The results of remediation efforts and aquifer monitoring will be compiled and a final report will be prepared and submitted to funding agencies by October 1, 2020.

Monitoring Plan

The applicant states aquifer monitoring as part of this project (Task 1). This includes documenting the static water level and current well pressure during the initial evaluation of each target well and following the completion of repairs or modifications to the wells. The water-level data will be compiled and stored in the MBMG Ground Water Information Center (GWIC) database for public access.

Other

NRCS strongly supports the project and intends to provide matching funds in the form of Farm Bill program payments through the Environmental Quality Incentives Program (EQIP) to help qualifying farmers and ranchers pay for the construction costs associated with valving or decommissioning flowing wells. NRCS program payments for construction are contracted in advance for a fixed amount, which is approximately 75 percent of the construction costs. NRCS cannot pay for the well assessment, but MBMG will write the well assessment reports to NRCS specifications and work with NRCS to coordinate wellhead repairs and modifications. Well owners will then have the option to work with NRCS using EQIP funds to remediate their well, or they can enter into an agreement with the Richland County CD to do the necessary repairs. Approval by NRCS will be required for well owners seeking NRCS funding.

Public Benefits Assessment

Reducing water losses from flowing aquifer wells will likely mitigate declining trends in groundwater levels. This conservation measure, in conjunction with other conservation efforts, may increase the lifetime of existing wells and preserve the groundwater resource. This initiative is in-line with the 2015 Montana State Water Plan, which recommends water conservation incentives and measures.

This project also has the potential to improve long-term surface water quality and mitigate erosion impacts by reducing water overflows at the wellhead. Wasted water from these wells that flow over land contributes to erosion and increased salinity to soil and receiving waters. Measures to control or eliminate unused water discharges would therefore improve soil and surface water quality. The applicant demonstrates the need of this project. Aquifer pressures measured in the mid-1990s showed significant decline from previous levels and many wells stopped flowing between 2000 and 2009. Conservation efforts are needed to mitigate the current aquifer decline.

Direct, long-term benefits to Montanans include the maintenance of a reliable water source for well owners in the FHHC aquifer. Furthermore, this aquifer is a municipal water source for the communities of Richey, Lambert, and Circle. Residents of these communities could directly benefit from this project if the water levels rebound significantly enough to make an impact. An indirect benefit of this project is an example of its potential application to other areas in Montana where similar aquifer drawdown issues occur.

The impact of no action is the continued drawdown of the FHHC aquifer. The long-term implications of this alternative may force well owners to abandon wells due to production decline. Users would then be forced to find alternative water sources which might include drilling new wells or hauling water. Alternative water sources may not be available or may be of inferior quality. This would place additional economic burden on the livestock industry and may force the abandonment of some pastures.

The project has letters of support from the Montana DNRC Water Resources Division, Richland County Environmental Health, United States Department of Agriculture NRCS, and three ranchers and residents of Richland County.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Salary and Wages	\$74,524	\$0	\$74,524
Fringe Benefits	\$35,085	\$0	\$35,085
Contract Services (Well Repair)	\$300,000	\$0	\$300,000
Supplies	\$1,500	\$0	\$1,500
Travel	\$30,160	\$0	\$30,160
Rent	\$4,000	\$0	\$4,000
Equipment	\$4,200	\$0	\$4,200
Administrative*	\$50,000*	\$50,000	\$100,000*
Total	\$499,469*	\$50,000	\$549,469

*These amounts are reduced in the funding recommendation below.

The project budget is adequate.

Funding Recommendation

DNRC recommends reduced grant funding of \$454,419 upon DNRC approval of project scope of work, administration, budget, and funding package. This amount reflects a reduction of total administration costs of the project from the proposed 18 percent to 10 percent of the project total or \$54,950. Additionally, as the greatest good for the aquifer can be met through utilization of NRCS matching funds, DNRC recommends that only wells that qualify for NRCS matching funds or equivalent matching funds be included in the project.

Project No. 10

Applicant Name Montana Department of Environmental Quality
Project Name Upper Blackfoot Mining Complex – Wetland Connection Project

Amount Requested \$ 300,000
Other Funding Source \$ 161,156 Applicant
Total Project Cost \$ 461,156

Amount Recommended \$ 300,000

Project Summary

The project involves the relocation of buried power and phone lines under the Mike Horse Mine Road in order to remove the road and complete remediation and restoration efforts in the Upper Marsh wetland area of the State Superfund site. Power and phone infrastructure is needed for the continued operations of the Mike Horse water treatment plant (WTP), which treats approximately 26 million gallons of metals-contaminated, mine-impacted water annually. The removal of the Mike Horse Mine Road would also help reestablish hydraulic connectivity of groundwater and surface water through the wetland area. Resources impacted by the existing Mike Horse Mine Road are surface and groundwater connectivity, wetlands, soils, and fisheries, including native cutthroat and bull trout.

Project History

Historic mining in the Upper Blackfoot Mining Complex (UBMC) Superfund site has resulted in human health and environmental issues from elevated concentrations of metals in the mine waste piles, tailings, surface water, groundwater, sediments, water discharging from mine adits, and contaminated waste redeposited as stream sediments. In June 1975, heavy precipitation and blockage of a surface water diversion ditch by mudslide debris caused the Mike Horse Tailings impoundment to be breached and thousands of cubic yards of tailings to be washed downstream and deposited in the Upper Blackfoot River floodplain. Numerous investigations were completed to characterize the contaminated areas. State and Federal Agencies selected cleanup alternatives that included total removal of the Mike Horse Dam and tailings impoundment, along with removal of concentrated and intermixed tailings from the active floodplain. The Upper Marsh wetland area remediation plan includes removing contaminated tailings, sediments, and soil, including the removal of the old Mike Horse Mine Road which crosses the Upper Marsh wetland area. The Upper Marsh wetland area is over 60 acres in size. Removing the old Mike Horse Mine Road requires removal of underground power and phone lines within the roadbed and relocating them so the Mike Horse WTP can continue its needed operations.

Proposed Solution

Goals and Objectives

The preferred alternative would involve removing and relocating power and phone lines associated with the Mike Horse WTP so remediation and restoration efforts can be completed in the Upper Marsh wetland area and the water treatment plant can continue necessary operations.

Objective 1: Remove the Mike Horse Mine Road, including buried power and phone line infrastructure for the Mike Horse WTP, to help reestablish hydraulic connectivity of groundwater and surface water in the Upper Marsh wetland area.

Objective 2: Relocate underground power and phone lines to the Meadow Creek Road so that the Mike Horse WTP can continue treating heavy metals in mine adit water from the Mike Horse and Anaconda mines.

Tasks or Activities

NorthWestern Energy will relocate existing powerlines for the Mike Horse WTP in the summer of 2019. Relocating the Mike Horse WTP power and phone lines would require close coordination and scheduling with utility companies in order to complete work at the desired time.

Monitoring plan

Relocating underground power and phone lines would not require monitoring.

Other

No permits are necessary to complete the project since the project lies within a State Superfund project boundary. If the grant is successfully funded, the entire sum of the grant would be used to pay NorthWestern Energy for relocating and installing the new power line.

Public Benefits Assessment

The Upper Marsh wetland area is physically separated by the Mike Horse Mine Road bed. This unnatural barrier was constructed over 100 years ago and has resulted in hydrologic and biologic barriers within the wetland vegetation communities. Fish passage is also impaired by the road. This project would help repair and reestablish hydraulic connectivity of surface water and groundwater in the Upper Marsh wetland area. The Blackfoot River would be the direct benefactor of the road removal and power and phone line relocation project. Montanans would benefit directly as a result of the Mike Horse WTP infrastructure relocation project by improved surface water quality in the Blackfoot River headwaters area. Approximately 26 million gallons of contaminated mine-impacted water is treated annually at Mike Horse WTP and discharged into the Upper Blackfoot River. Montanans would also benefit indirectly from greater recreational opportunities in the area due to improved surface water quality and restored riverine habitat within the Blackfoot River headwaters area.

Removing the Mike Horse Mine Road and contaminated tailings and soils in the floodplain would also help reestablish natural streamflow between Pass Creek and the Blackfoot River through the Upper Marsh wetland area. Fish passage from Pass Creek is currently disconnected from the Upper Blackfoot River by the Mike Horse Mine Road. Removing the road would potentially allow native cutthroat trout from Pass Creek to repopulate the Upper Blackfoot River. Additionally, critical bull trout habitat found in the Blackfoot River just downstream of this location may be extended into this tributary.

The primary aquatic resources in the Upper Marsh wetland area affected by the road are surface water, bed and bank sediments, and aquatic life. Surface water provides habitat for migratory birds, fish, benthic macroinvertebrates, aquatic, semi-aquatic, and amphibious animals. Bed sediments provide habitat for biological resources that are dependent on the aquatic habitats in the Upper Marsh area. The contaminated tailings and soil removal activities in the Upper Marsh wetland area would be incomplete without removing the road and restoring the wetland.

The UBMC remediation cleanup activities, including removal of the Mike Horse Mine Road and relocation of power and phone lines, requires specialized contractors to complete a wide range of jobs. The jobs created would range from general laborers to specialized equipment operators and environmental engineers and scientists. The economic benefits of these jobs would be felt in Lincoln, Lewis and Clark County, and the greater Montana economies. Cleaning up the UBMC Blackfoot River headwaters would provide tangible and long term benefits to aquatic and terrestrial species for generations.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
DEQ Oversight (Personnel Cost)	\$0	\$5,599	\$5,599
DEQ Travel	\$0	\$507	\$507
Contracted Engineering/Design/Oversight	\$0	\$24,914	\$24,914
Infrastructure Relocation	\$300,000	\$37,920	\$337,920
Mike Horse Road Removal	\$0	\$80,000	\$80,000
Administration	\$0	\$12,215	\$12,215
Total	\$300,000	\$161,155	\$461,155

The budget items were complete and clear. The major costs are associated with contracting NorthWestern Energy to relocate two miles of the underground power line at \$32 per foot. According to

verbal communications with NorthWestern Energy, underground power installation can vary from \$15 per foot to over \$100 per foot. Installing the underground power line in a rural setting is typically less expensive, so \$32 per foot is a reasonable estimate. The hours and costs for DEQ personnel to complete a minimal amount of oversight for this project are also reasonable.

Funding Recommendation

DNRC recommends grant funding of \$300,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 11

Applicant Name City of Deer Lodge
Project Name Milwaukee Roundhouse CECRA Site Passenger Refueling Area
VCRA Program Remediation

Amount Requested	\$ 294,250	
Other Funding Sources	\$ 732	City of Deer Lodge
	\$ 4,000	Powell County
Total Project Cost	\$ 298,982	
Amount Recommended	\$ 294,250	

Project Summary

Historic railroad operations at the former Milwaukee Roundhouse in Deer Lodge released diesel and other contaminants damaging soil, groundwater, surface water, and aquatic habitat. This project involves further characterization of soil and groundwater impacts, followed by soil removal and groundwater remediation.

Project History

The Milwaukee Roundhouse Facility operated from 1908 to 1980. The Passenger and Refueling Area (PRA) of the facility included a passenger depot and refueling facilities. Releases from refueling operations resulted in metals and petroleum contamination of soil, groundwater, and surface water. Interim soil removal actions have only partially addressed those threats.

Proposed Solution

Goals and Objectives

The goal for the facility is to transform it into an open-space park with trail system that connects the City of Deer Lodge to the Grant-Kohrs Ranch National Historic Site. The objectives for this project are to evaluate, select, and implement soil and groundwater remedies. The project will include additional soil, sediment, and groundwater sampling, which will be followed by soil removal, as needed, and evaluation of groundwater remedies.

Tasks or Activities

The Milwaukee Roundhouse Facility is on the Comprehensive Environmental Cleanup and Responsibility Act (CECRA) priority list and is being addressed through the Voluntary Cleanup and Redevelopment Act (VCRA) process. The objectives will be accomplished by the completion of five tasks, as described below.

Task 1: Define Nature and Extent of Contamination

Investigations have been conducted by various entities at the facility since 1987. All of the soil sample data will be compiled and average concentrations calculated, as applicable, for comparison to cleanup levels. Hot spots will be identified and the results will be used to optimize removal actions. The work will be performed in the third quarter of 2017. Plans for soil removal are included under Task 1 in the grant application but scheduled and budgeted under Task 4. This will occur during the first quarter of 2018.

Task 2: Groundwater Sampling and Remediation

Six additional groundwater monitoring wells will be installed and sampled, along with up to twelve existing monitoring wells, to assess the extent of petroleum impacts to groundwater. The data will be used to evaluate and implement remedial alternatives. Installation is scheduled to occur in 2017.

Task 3: Characterization of Cottonwood Creek

Elevated concentrations of arsenic and chromium detected in sediment samples collected from Cottonwood Creek may be a result of an off-site source. This task was completed by Department of Environmental Quality (DEQ) in 2016, and both on- and off-site contaminant sources are indicated.

Task 4: Waste Management

Excavated soil will be hauled to the Butte-Silver Bow County landfill for disposal. Excavation will occur in early 2018.

Task 5: Implementation of the Approved Plan: Confirmation Sampling, Backfill, and Revegetation

Confirmation soil samples will be collected from the floor and sidewalls of the excavation, in accordance with DEQ guidance, to document achievement of cleanup goals. The excavation will be backfilled and revegetated. The work will be completed by August 2018.

Monitoring Plan

Monitoring will include collection of confirmation soil samples from the excavation.

Public Benefits Assessment

Soil, sediment, surface water, and groundwater at the facility are impacted by historic railroad operations. Petroleum hydrocarbons and metals occur at concentrations that exceed human health and environmental risk based screening levels. The planned remedial activities will restore those natural resources and allow broad use of the area. Remediation will also reduce continuing impacts to nearby surface water resources via overland flow of contaminated soil during run-off events and from discharge of contaminated groundwater. There is the possibility of short-term adverse environmental impacts if a well-defined work plan, including proper handling, management, and disposal of wastes, is not in place prior to implementation of the preferred alternative. This can be lessened or mitigated through a DEQ approved Voluntary Clean-Up plan (VCP).

Soil contaminants are restricting the ability of the city to move forward with development of the facility as an open space park. Completion of this project will be a positive step in converting the facility from a liability to a community asset. The project will create short-term engineering and construction jobs.

Remediation, to the extent completed, will provide certain and long-term benefits. The soil remediation volumes are not yet known and a groundwater remedy is yet to be determined. The proposed project budget is unlikely to be adequate to fully remediate the facility such that CECRA delisting can occur. Additional phases of remediation are likely.

The facility has been in its current state since the Milwaukee railroad ceased operations in 1980. The project is needed to reduce health threats and prevent further migration of contaminants. Due to the persistent nature of the contaminants, these threats will continue if no action is taken.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Define Nature and Extent of Contamination	\$15,620	\$0	\$15,620
Groundwater Monitoring and Remediation	\$93,120	\$0	\$93,120
Waste Management	\$154,820	\$0	\$154,820
Implementation of the Approved Plan	\$30,690	\$0	\$30,690
Administration	\$0	\$4,732	\$4,732
Total	\$294,250	\$4,732	\$298,982

While removal has been selected as the soil remediation technology, the volume of soil to be removed has not yet been determined. It is possible that the requested budget will not be adequate to fully remediate contaminated soil at the facility.

A groundwater remedy will not be selected until additional monitoring wells are installed and sampling is completed. The proposed budget is adequate for groundwater monitoring and remedy evaluation but only includes \$35,000 for remedy implementation. This estimate is low and it is likely that it will not be adequate to fully remediate groundwater.

Funding Recommendation

DNRC recommends grant funding of \$294,250 upon DNRC approval of the project scope of work, administration, budget, and funding package. To ensure that funds are going to remediation rather than work plan development, DNRC recommends that funding be limited to no more than three submittals (original and two responses) to DEQ for each plan requiring their approval.

Project No. 12

Applicant Name	City and County of Butte-Silver Bow, Planning Department		
Project Name	Butte-Silver Bow Erosion Control and Vegetation Enhancement Program		
Amount Requested	\$ 439,850		
Other Funding Source	<u>\$ 125,470</u>	Applicant	
Total Project Cost	\$ 565,320		
Amount Recommended	\$ 185,307		

Project Summary

A century of mining and smelting within the city's urban area has had substantial adverse impacts on Butte's urban center that are under remediation under the CERCLA federal program. Some areas of the designated Butte Priority Soils Operable Unit (BPSOU) are not reclaimed because they do not exceed human health action levels for contaminants of concern and are therefore ineligible for action under Superfund. Elevated metals concentrations exceeding environmental standards at these sites inhibit the growth of healthy vegetation, causing erosion of contaminated soils to Silver Bow Creek during rain events. The goal of the project is to reduce erosion of heavy-metal-laden sediments from poorly vegetated sites within the Superfund site into the Silver Bow Creek. This project will implement engineering designs for vegetation enhancements and storm water management infrastructure for 11 sites that are ineligible for remedy under Superfund.

Project History

The use of Silver Bow Creek for recreation, drinking water, and aquatic life is impaired due to mining impacts characterized by the presence of cadmium, copper, lead, mercury, nitrates, physical substrate habitat alterations, sedimentation-siltation, zinc, total nitrogen, total phosphorus, and arsenic. The Superfund program lists the BPSOU as one of the active operable units comprising the Butte-area Superfund Site. The BPSOU includes the dense city center and historic mining district. Substantial remedial and reclamation actions have been implemented in this area to eliminate exposure to contaminants of concern that pose a threat to human health and the environment. These efforts have included removal and remediation of EPA-identified hot spots. However, many sites do not meet the EPA threshold for reclamation and remain un-reclaimed today. Previous cleanup decisions were based on the human-health impacts of concentrations of lead and arsenic. Concentrations of copper and zinc, which negatively impact aquatic life, were not part of the screening process. Preliminary analysis indicates elevated levels of metals in the soils, including cadmium, copper, lead, and zinc. The presence of these contaminants impairs vegetation growth, which contributes to increased erosion and metals loading to area streams.

Proposed Solution

Goals and Objectives

The objective of the Butte-Silver Bow Erosion Control and Vegetation Enhancement Project is to reclaim mining-impacted lands ineligible for action under Superfund. This will be accomplished by improving vegetation cover and habitat, reducing sediment delivery to the storm water system and area receiving waters, and to improve water quality in area receiving waters, specifically Blacktail Creek and Silver Bow Creek.

Tasks or Activities

The objectives will be accomplished by the completion of eight tasks, as described below.

Task 1: Select Sites for Program

A site selection logic model has been developed and used to score land parcels according to property ownership, parcel location, type of development, reclamation need, and zoning. This decision-making logic was used to screen 761 properties on the Butte Hill as part of a 2015 Preliminary Engineering Report (PER) and resulted in 30 properties selected for further evaluation. This task will be completed in 2017, although the grant has already identified 11 sites within the application.

Task 2: Site Condition Evaluation

This evaluation involves ranking the observed density of vegetative cover, drainage, storm water infrastructure, impact upon surrounding storm water system, and the site's surface water impacts. Photographs of each element will be taken. Sites with poor conditions will rank high. Task 2 has been already been completed for five sites, with an additional six sites to be completed in 2017.

Task 3: Soil Concentration Analysis

Soil screening will be performed during the site evaluations and samples analyzed for arsenic, lead, cadmium, copper and zinc using X-Ray Fluorescence. This task was completed for the first five sites and will be completed for an additional six sites in 2017.

Task 4: Digital Data Documentation

Data management processes will be used to monitor and maintain sites reclaimed under the proposed Vegetation Enhancement and Erosion Control Project. The documentation will be housed in a database accessible through Microsoft Access. Site evaluation materials, including site documentation and photographs, will be collected using Butte-Silver Bow's ArcGIS Online tools accessible through ArcGIS Collector App. Like tasks 1-3, this task has already been completed for the 5 sites. Digital data documentation of an additional 6 sites will be completed in 2017.

Task 5: Determination of Reclamation Work

In 2017, sites will receive a preliminary design for reclamation work that will describe the site, including the site address, approximate location, its drainage patterns, current vegetation, and soil concentrations. A short list of reclamation work necessary will be provided including necessary dirt work, revegetation plan, locations for forbs, shrubs, and trees, storm water infrastructure, and long-term operations and maintenance plans.

Task 6: Solicit Engineering Services

The process will begin with the development of a Request for Qualifications (RFQ) for Engineering Design Services. The RFQ will be published in local resources and made available for solicitation electronically. After a competitive selection process, a firm will be selected to develop engineering designs for the 11 sites selected for incorporation in the Project. An agreed-upon fee will be determined and a contract will be submitted for authorization by the Butte-Silver Bow governing body. Engineering designs will require the development of bid documents to hire contracted services for completion of remedial work on each site. This task will be completed in early 2018.

Task 7: Hire Contractors and Proceed with Implementation

Construction activities will incorporate dirt work, storm-water feature installation, final surface grading, seeding, and native plant installation. Construction activities will likely require at least nine months for completion making it possible to complete three to four sites per year. All construction will be completed by 2020.

Task 8: Construction Completion

In accordance with requirements for remedial action, the selected consulting engineer will provide construction-completion reports to Butte-Silver Bow Planning Department for archival in the Superfund archives. In addition, a second copy will be filed with the Deed of Record in the Butte-Silver Bow Clerk and Recorder's office with the required documentation of institutional controls in place to maintain the remedy in the long term. Construction activities will likely require at least nine months for completion making it possible to complete three to four sites per year. All construction will be completed by 2020.

Monitoring Plan

The project proposes a long term maintenance plan similar to those used to manage existing sites in the Butte Reclamation Evaluation System (BRES). The targeted sites will be incorporated into long-term monitoring and maintenance plans already in place on the Butte Hill. Monitoring will include a review process every four years whereby objective evaluation crews complete a site visit to assess reclamation

effectiveness and site deficiencies. Analytical sampling of receiving stream waters occurs currently as part of Superfund activities. No additional water sampling is needed or planned.

Other

The project would benefit from coordination between the applicant and the Native Plant Restoration Program at Montana Tech of the University of Montana. Metals in soils may be contributing to stressed vegetation, but a clear understanding of soil chemistry for each site is important to understand the need for adding soil amendments to enhance vegetation growth.

Public Benefits Assessment

Storm water runoff from the sites targeted by this project drains to Silver Bow Creek. Millions of dollars have been spent to restore the creek and limit metals-contaminated sediments from reaching the creek. This project will contribute to the effort across the Butte Hill to minimize storm water runoff containing metals, thereby promoting stream health in the creek and the receiving waters of the Clark Fork River. Natural resource benefits of this project include improvements to soil, water quality, and terrestrial habitat. Direct public benefits of this program are likely long-term and include erosion mitigation, benefits to aquatic life, return of viable fisheries, enhanced aesthetics in Butte, and enhanced recreational use of the stream and river. The project is also expected to have a positive impact on the Butte community by providing short-term work for engineers and contractors and the longer-term effect of higher property assessments on the Butte Hill.

No action will likely result in continued water quality deterioration in Silver Bow Creek. During storm-water events, copper concentrations in the stream exceed the standards for aquatic life. The no action alternative will perpetuate this unhealthy stream condition.

A letter of support was received from Senator Jon Tester.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1-4 Site Selection, Evaluation, Analysis and Documentation	\$15,000	\$0	\$15,000
Task 5 Engineering Design	\$64,808	\$0	\$64,808
Task 6 Personnel Activity Costs	\$0	\$65,102	\$65,102
Task 8 Construction	\$360,042	\$0	\$360,042
Administration	\$0	\$60,368	\$60,368
Total	\$439,850	\$125,470	\$565,320

The projected budget is reasonable, clear, complete, and supported in the project application. The applicant demonstrates experience in managing projects similar in purpose, scope, and expense. The applicant does not specify a backup plan in case the RDGP grant is not awarded, but indicates that additional funding will be sought to move forward with the project.

Funding Recommendation

Due to questions on project design and the degree to which the reclamation activities will meet the project goals, DNRC recommends reduced grant funding of \$185,307 upon DNRC approval of the project scope of work, administration, budget, and funding package. This amount includes construction for the five sites already assessed in the PER and removes funding for a walking path and recreational amenities that are outside the scope of funding from the RDGP.

Project No. 13

Applicant Name	Fort Belknap Indian Community (FBIC)	
Project Name	Landusky Pit and Swift Gulch Capture Wells to Reduce Acid Mine Discharge to State Waters and the Fort Belknap Indian Reservation, Montana	
Amount Requested	\$ 489,966	
Other Funding Sources	\$ 92,396	Applicant
	<u>\$ 3,000</u>	Montana DEQ
Total Project Cost	\$ 585,362	
Amount Recommended	\$ 132,000	

Project Summary

The Landusky Pit complex continues to seep contaminated groundwater into Swift Gulch. The project proposes installation of shallow and deep capture wells in the Landusky Pit and Swift Gulch. Capture wells would intercept acid mine drainage (AMD) that exhibits low pH and elevated concentrations of iron, manganese, and heavy metals. AMD beneath the pit and within Swift Gulch would be collected and directed to existing water treatment plants prior to discharge into Swift Gulch. If the wells are productive, they would become part of the permanent pollution control infrastructure on the Landusky site.

Project History

The Landusky Mine site is located in Phillips County adjacent to the Fort Belknap Reservation, 10 miles southeast of Hays and 50 miles southwest of Malta, Montana. The site is located in the Little Rocky Mountains on a combination of private lands and federal lands administered by the Bureau of Land Management (BLM). Pegasus Gold Corporation (PGC), through its subsidiary, Zortman Mining, Inc. conducted open pit mining operations at the Zortman and Landusky sites between 1979 and 1996. Water quality monitoring programs identified the development of acid rock drainage (ARD) in 1992 and a Consent Decree was reached between PGC and DEQ/EPA, and PGC and Gros Ventre Tribe, Assiniboine Tribe, Fort Belknap Community Council, and Island Mountain Protectors (Consolidated) to address the ARD issue. PGC began Chapter 11 bankruptcy proceedings in 1998. The Montana Department of Environmental Quality (DEQ) and BLM have been directing reclamation of the Zortman and Landusky sites since the bankruptcy of PGC and its subsidiary, Zortman Mining, Inc., in 1998 and 1999. There was insufficient bond revenue to complete all necessary reclamation at the mines.

Water quality deterioration in Swift Gulch began in 1999, and Swift Gulch surface water is currently diverted and treated. The AMD is not completely captured by the surface water diversion, and contaminated groundwater continues to seep into Swift Gulch. Swift Gulch flows onto the Fort Belknap Indian Reservation 1 mile below the site (Tribal waters). This project aims to control and capture AMD in groundwater on the Landusky site before it discharges to Swift Gulch.

Proposed Solution

Goals and Objectives

The project goal is to install and test permanent groundwater recovery wells to capture contaminated groundwater (AMD) from the shear zone fracture systems beneath the former pits within the Landusky site, treat the contaminated groundwater in an existing water treatment plant, and return the same quantity of treated water to Swift Gulch.

Specific objectives for attaining the project goals are:

1. Perform the pre-drilling evaluations required to accurately intersect the largest known shear zones with capture wells at two to three sites on the north bench of the Landusky pit complex.
2. Successfully drill and complete three AMD control and capture wells on the north Landusky bench. These wells would be constructed at production-scale and capable of long-term use. At present, three wells are planned and are included in the proposed budget. However, with the

uncertainty in the future cost of stainless steel well casing, the project may have to adjust the number of deep wells. The project AMD control objectives could be met with just two wells of adequate yields.

3. Drill and complete two shallow groundwater capture wells in the valley of Swift Gulch. These wells would capture AMD-contaminated groundwater that lies beneath the channel, or that cannot be controlled by the Landusky on-site wells.
4. Conduct well-yield and aquifer tests and collect water quality samples from the new wells to demonstrate the effectiveness of each well to control and capture AMD before it reaches Swift Gulch.
5. Evaluate the overall success of the project and the collective effectiveness of AMD control and capture and recommend a plan for conveyance and treatment along with any suggested improvements to optimize overall future effectiveness of the operation.

Tasks or Activities

The above objectives will be accomplished through five tasks, described below:

Task 1: Geologic and Hydrogeologic Pre-Drilling Evaluations

Task 1 is subdivided into four tasks that include assessing the technical gains and gaps from a DNRC Planning Grant, optimizing well designs to consider potential effects of water level drawdown on groundwater chemistry, selecting shear zone targets for wells, and consulting with FBIC, DEQ, BLM site operator and project staff to affirm project objectives and strategies. These tasks will be completed by August 2017.

Task 2: Well Drilling and Installation

Specifications and big package details for permanent groundwater source wells on the mine-site and capture wells in Swift Gulch will be developed. This task also includes drilling and completing two to three deep vertical source control wells on the Landusky pit rim and two to four shallow wells in Swift Gulch, above and below the treatment plant. Well drilling and installation will be completed six to twelve months after receipt of grant funds.

Task 3: Well Performance and Aquifer Response Testing

Well performance and aquifer response testing will include seven-day well performance and aquifer tests of the on-mine source control wells, 24-hour well performance and aquifer tests of the Swift Gulch capture wells, monitoring discharge and water-quality field parameters of acidic seeps and of Swift Gulch during the tests, and utilizing applicable aquifer test analysis procedures to determine aquifer parameters for the shear zone and the matrix and quantify the yield and aquifer response of each new well along with the responses in the existing well network. Well performance and aquifer response testing will be completed 10 to 16 months after funding is awarded.

Task 4: Assessment of Source Control and Capture Methods

Task 4 will include modelling and evaluating AMD control in Swift Gulch, evaluating groundwater quality implications, evaluating full implementation and alternative source controls and ongoing water monitoring by FBIC. This task will be completed 14 to 20 months following receipt of project award.

Task 5: Project Analysis, Report Preparation and Presentations

Project reports will be prepared per RDGP guidelines and findings from the project will be communicated with FBIC, DEQ, BLM, and stakeholders. Project analysis, report preparation, and presentations are anticipated to occur 24 to 32 months after receipt of grant funds.

Monitoring plan

The selected contractor will monitor project outcomes and quality of each task and will provide final quality-control review. The results of tasks 1 and 2 will be available for review by all stakeholders. The FBIC Environmental Department will conduct ongoing water quality monitoring throughout the project duration.

Public Benefits Assessment

Based on the reduced scope under DNRC's funding recommendation this project would help characterize AMD at the Landusky site, and result in the installation of recovery wells that could be fitted with pumps at a later date, and thus be incorporated into future remedial activities. If the wells are able to capture enough AMD to stop the flow into Swift Gulch, direct benefits of improved water quality will occur in the project area and indirect benefits will be realized to the FBIC downstream of the project site. Implementation of the project will result in the creation of short-term jobs. The overall impact of no action would be that the wells would not be installed, and no investigation would be conducted. The wells would also not be available for future remedial activities.

The project has received letters of support from DEQ and FBIC.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Personnel Cost	\$0	\$14,443	\$14,443
FBIC Water Quality Monitoring and Analysis	\$0	\$50,676	\$50,676
FBIC Technical Consultant	\$0	\$12,500	\$12,500
Task 1 Hydrogeologic Pre-Drilling Evaluation	\$39,023	\$0	\$39,023
Task 2 Well Drilling and Installation	\$251,901	\$0	\$251,901
Task 3 Conduct Well Performance and Aquifer Response Testing	\$110,094	\$0	\$110,094
Task 4 Assessment of Source Control and Capture Methods	\$50,784	\$0	\$50,784
Task 5 Project analysis and Report Preparation; Presentations	\$38,164	\$0	\$38,164
Administration	\$0	\$17,777	\$17,777
Total	\$489,966	\$95,396	\$585,362

The budget items appear to be appropriate for cost estimating purposes. As noted above, the budget does not include pumps or infrastructure to move captured AMD to the water treatment plant.

DNRC Concerns

- The project is part of a much larger project with an uncertain final outcome because of funding issues. It is possible that all benefits from the proposed project would be lost if the larger project stops.
- About half the funds (\$251,901) would be spent on contractors and materials to construct the extraction wells. If one or more wells do not perform as required, then the project would be a failure. Informed decisions can be made as to where to place the wells, but there is no certainty the project goals can be fully met, and the prospect of failure is real.
- About half of the funds (\$238,065) would be spent on environmental consultants to test and evaluate the wells. No money is allocated within the grant to install pumps and infrastructure to operate the wells. No prospective source for the money for infrastructure or operation is listed in the grant application.

Funding Recommendation

As the project is exploratory and the feasibility is not well understood, DNRC recommends reduced grant funding of \$132,000 for installation and testing of two shallow capture wells and infrastructure to treat the captured AMD. Funding is contingent upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 14

Applicant Name	Montana Department of Environmental Quality – Remediation Division
Project Name	Basin Creek Mine – Phase 2 Site Stability Project
Amount Requested	\$ 500,000.00
Other Funding Source	\$ <u>22,404.72</u> HW CERCLA
Total Project Cost	\$ 522,404.72
Amount Recommended	\$ 300,000.00

Project Summary

As part of the overall reclamation plan for the abandoned Basin Creek Mine, this project will provide erosional stability in reclaimed areas by reducing embankment slopes to achieve revegetation objectives, reduce the size of active haul roads, remove and reclaim haul roads not in use, remove an obsolete sedimentation pond, and revegetate exposed areas to minimize erosion. The project will positively impact water quality, soil, and terrestrial habitat.

Project History

The Basin Creek Mine (BCM) was operated by Basin Creek Mining, Inc., owned by Pegasus Mining Company, before its bankruptcy in June 1998. It is currently an inactive open-pit gold mine located within the Upper Tenmile Creek Mining Area National Priorities List (NPL) site and the Basin Mining Area NPL site. BCM was operated historically as an open-pit heap leach facility. Approximately 3,000,000 tons of ore were mined during its operation. Two cyanide heap leach pads were developed and are now closed. Three open pits were developed and two pits were backfilled. One open pit remains (Luttrell Repository) and is currently being used by the U.S. Environmental Protection Agency (EPA) as a mine waste repository for Superfund remedial activities within the two NPL sites. Starting in 1998, significant reclamation activities have occurred at the site. Most recently, reclamation activities have focused on erosion prevention and slope reduction in areas that are to be revegetated. This application is for work to continue reclamation activities as described in the Project Summary.

Proposed Solution

Goals and Objectives

The project goals and objectives are to maintain erosional stability in reclaimed areas; achieve reclamation objectives for revegetation cover, production, and diversity; stabilize the site to prevent off-site erosion and sedimentation to surrounding surface waters; and remove an obsolete sedimentation pond.

Tasks or Activities

Task 1: Engineering Design and Construction Oversight

An engineering firm will be selected by DEQ to fully measure, assess, and characterize the material to be removed. The firm will also design road reduction, removal/reclamation of abandoned haul roads, and slope stabilization plans for the site. The intent will be to conduct the work in a phased manner. The engineering firm will develop construction plans and technical specifications, as well as provide guidance for construction contract bids and awards. Mine road reduction consists of two subtasks: reducing the size of active haul and access roads and removing and reclaiming abandoned or unused haul and access roads. An obsolete sediment pond is to be removed and reclaimed. Removed material--if it includes cyanide-contaminated sediments--will be relocated to and treated at an appropriate mine site location. The designs will include revegetation plans. The engineering firm will provide oversight of construction activities to maintain conformance to plans and specifications. These tasks will be completed by 2018.

Task 2: Construction Activities

In 2018, a construction contractor will be selected and will conduct material removal and stabilization activities to meet the objectives of the project. Work will consist of road reduction/stabilization, removing

an obsolete sedimentation pond, and relocating and treating the contained cyanide-contaminated sediments at an appropriate mine site location. Revegetation will be part of the work as well.

Task 3: Final Reporting and Administrative Costs

A project report will be completed for the work in 2019. The report will document construction activities and any changes to the original plans. Any data results will also be presented.

Monitoring Plan

DEQ project staff will periodically monitor the site for robust and diverse vegetation establishment, use by wildlife species, and for site stability, thus assuring off-site erosion is minimized. Visual and field observations will be documented.

Public Benefits Assessment

The proposed project will benefit soil and surface water resources through reducing oversized mine roads to make them more suitable for present-day uses (site maintenance and monitoring and Luttrell Repository access for nearby EPA-led remedial activities). Reducing the roads and stabilizing the steep slopes associated with the roads will reduce erosion throughout the mine site. In addition, the decommissioning of inactive sedimentation pond and treatment of cyanide-laden sediments will help assure contaminated materials are mitigated and removed from potential release into the environment.

Off-site sedimentation and fugitive dust would be addressed through the project. As a result, water and air quality would be improved, as would aquatic and terrestrial habitat. Greater species diversity will also occur now and in the future. By controlling off-site sedimentation through mine road reduction and slope stabilization, the project will reduce continued degradation of the Upper Tenmile Creek and Basin Creek Watersheds and terrestrial and riparian areas will once again thrive in the absence of the smothering effects of sediment deposition. Cyanide from the contaminated and obsolete sedimentation pond would be permanently treated, further preventing potential human contact with these sediments.

Montanans will benefit directly as a result of the project due to the improved surface water quality of the Upper Tenmile and Basin Creek Watersheds. The applicant contends that improved surface water quality within the Upper Tenmile Watershed will also result in lower operating costs for the City of Helena’s Water Treatment Facility because less sediment loading of the system will occur. Montanans will also benefit indirectly from improved surface water quality of the Upper Tenmile and Basin Creek Watersheds and greater recreation opportunities that will manifest due to improved habitat surrounding the mine site. The majority of benefits will be long term and measurable and include improved air and surface water quality in the area, removal and mitigation of cyanide impacted sediments, decreased water treatment costs for the City of Helena, improved recreational opportunities for the public and improved habitat conditions for aquatic and terrestrial species. The short-term benefit includes an economic boost to the counties of Jefferson and Lewis and Clark by the jobs created from implementation of the project.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Engineering Design and Oversight	\$100,000	\$0	\$100,000.00
Construction Activities	\$400,000	\$0	\$400,000.00
Final Reporting and Administrative	\$0	\$22,404.72	\$22,404.72
Total	\$500,000	\$22,404.72	\$522,404.72

The project budget is likely reasonable.

DNRC Concerns

- The applicant does not justify the assertion that this project will have long-term benefits, nor is there a discussion about how long the reclaimed areas will need to be maintained to create stable slopes. Additionally, it is not clear how the cyanide contaminated sediments will be treated.
- A detailed monitoring plan should be developed and needs to be specific about frequency, duration, and measurement criteria. The applicant lists long-term benefits from implementing the

project and many of these end results are measurable. A thorough and well implemented monitoring plan would document the success of the project.

- The budget contains insufficient information to determine whether it is reasonable and justified. The applicant is requesting \$500,000 for the grant. The expected project cost is \$1,600,000. The project applicant did not provide adequate documentation as to how the costs were derived. It is unclear in the grant proposal where the additional \$1,100,000 will be derived from and if those monies are in-kind (matching) funds.

Funding Recommendation

Because the project does not adequately address financial need or impacts to natural resources, DNRC recommends reduced grant funding of \$300,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 15

Applicant Name Ruby Valley Conservation District
Project Name California Creek Mining Reclamation – Multi-Phase Stream and Floodplain Restoration

Amount Requested	\$ 62,625	
Other Funding Sources	\$ 9,450	Applicant
	\$ 5,000	MT FWP
	\$ 57,720	US BLM
	\$ 6,500	US FS
	<u>\$ 1,000</u>	The Nature Conservancy
Total Project Cost	\$ 142,295	
Amount Recommended	\$ 62,625	

Project Summary

California Creek, a tributary to the Ruby River, has been significantly altered by historic hydraulic and placer mining for gold and silver. The project will reduce sediment loads in the creek to meet Total Maximum Daily Loads (TMDL) and re-establish stream and floodplain processes by installing grade control structures in the channel, installing rock baffles to induce meandering, seeding rill erosion areas, installing gully plugs, and stabilizing a channel headcut on the lower end of the creek. Resource benefits include improvements to water quality, fish and wildlife habitat, and riparian vegetation.

Project History

Up until the 1940s, California Creek was hydraulic and placer mined. Dryland dredging disturbed the streambed and floodplain, essentially destroying and impacting floodplain and riparian areas. California Creek was changed, the base level was lowered, high sediment lodes were deposited further downstream, and large cobble walls disconnected the creek from its floodplain. During the development of TMDLs for the Ruby River, the Department of Environmental Quality (DEQ) expressed concerns about the amount of sediment that California Creek contributes to the Ruby River. The creek had been listed on the 1996 303(d) list for aquatic life support, cold water fishery, drinking water, and recreation. The 2006 TMDL for the Ruby River Watershed identified sediment as a source of concern. California Creek supports a small population of nearly pure westslope cutthroat and is of interest to Fish, Wildlife, and Parks (FWP) for possible cutthroat restoration projects.

Proposed Solution

Goals and Objectives

The goals/objectives of this project are to achieve a 25 percent reduction in sediment loads and re-establish stream and floodplain processes and function that restore riparian areas in the mining affected reaches on public property of California Creek.

Tasks or Activities

The objectives will be accomplished by the completion of 3 tasks and 9 total subtasks tasks, as summarized below.

Task 1: Project Management and Planning

The applicant plans on contracting a restoration professional to complete topographic survey, develop final plans and specifications, oversee channel headcut stabilization, and acquire necessary permits. These tasks will be completed by 2019.

Task 2: Project Implementation

Project construction includes: stabilizing channel headcut (year 1 only), installing grade control structures, installing meander inducing structures, seeding of rill erosion areas, and installing gully plugs. Project construction will be completed in 2019.

Task 3: Monitoring

Project monitoring includes: fish population, temperature, and restoration-approach monitoring. The final report will summarize the success/failure of each installed element and conditions of the installed element. Observations and photographs documenting the outcome of the restoration efforts on California Creek will be included as well. Monitoring will be completed in 2019

Monitoring Plan

As described in Task 3, the project includes a robust monitoring plan to document effectiveness of each restoration element; however, there is no apparent plan to document the reduction in sediment loading to meet TMDLs.

Other

These tasks are not to be completed along the entire creek, but in select reaches that can be accessed, have the best potential for success, and provide the most benefit for the resources allocated. This passive restoration approach will provide cost-effective improvements and could serve as a model for other streams. All objectives support the goals of reducing sediment loading and restoring stream and floodplain processes. The end result will be an improvement in water quality and stream habitat.

The project employs hand work in an area that is difficult to access and includes methods that are experimental. Because of this, the project will only be able to reclaim areas with readily available material in a size able to be moved by workers. The level to which the project goals are attainable and effective depends on these factors. The project explores lower technology, lower cost, experimental, and innovative methods for stream restoration. A similar pilot project is being implemented in the Ruby Valley and results are not yet available.

Stream restoration projects carry the risk of failure if a large flood takes place within a couple of years after construction. Due to this risk, the benefits may not be certain or long term. However, because of the type of work for this project (hand labor) the risk is less than engineered stream restoration projects.

Public Benefits Assessment

The selected plan is stated to meet the objectives of reducing sediment loads and restoring floodplain and stream function in a cost-effective manner. Stabilizing the channel headcut is a cost effective way to stop the lowering of the stream base level which will prevent the problem from getting worse. Stabilizing the upgradient rill and gully erosion reduces sediment sources. Installing grade control and meander inducing structures will reconnect the channel to the floodplain, induce meanders, stabilize the channel, and create habitat.

The public benefit is a reduction in sediment loading to the California Creek watershed and ultimately the Ruby River. This benefits human health (water quality) and protects the natural resource. Fish habitat will improve, which may result in increased recreation and land value to the public. Indirect benefits include sediment load reductions to the Ruby River downstream and providing better habitat to conserve populations of the westslope cutthroat.

Project construction will not provide opportunities for on-the-job training and short-term employment opportunities as this is specialized work. However, currently employed individuals will be provided with seasonal work as a fair amount of hand work will be necessary due to difficult access to the stream.

The current situation has the potential to continue threats to human health and the environment. The no-action alternative will result in continued headcutting and channel instability; a stream that is disconnected from the floodplain does not provide desirable riparian habitat and creates potential increases in late season base flows.

The project has letters of support from the Bureau of Land Management, Montana Fish, Wildlife and Parks, Beaverhead-Deerlodge National Forest District Ranger, The Nature Conservancy, Department of Natural Resources and Conservation, and Ruby Valley Conservation District (applicant).

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Administrative Costs	\$6,600	\$0	\$6,600
Activity Costs	\$56,025	\$79,670	\$135,695
Total	\$62,625	\$79,670	\$142,295

The project budget was broken down into individual tasks; however, it was difficult to follow how the tasks and funding sources were allocated. Some errors and differences in project totals were identified in the grant application; however, all of the costs added up correctly for the project (RDGP and match) totals, and the project appears feasible.

Considering the overall cost of the project, the amount requested by the applicant, and the project scope, this type of alternative analysis is reasonable. The selected project alternative uses cost-effective and simple approaches that can be implemented even on areas with marginal access. If successful, this approach could be used at similar sites throughout Montana.

DNRC Concerns

One concern is the amount of project management and administrative fees is high compared to the overall project costs. Smaller projects often have higher administrative costs; however, the totals appear higher than normal, especially considering the large amount of in-kind time provided by project partners.

Funding Recommendation

DNRC recommends grant funding of \$62,625 upon DNRC approval of the project scope of work, administration, budget, and funding package. Details on the amount of project management and administrative time should be discussed with the applicant.

Project No. 16

Applicant Name	Deer Lodge Valley Conservation District	
Project Name	Mount Haggin Uplands Restoration Project	
Amount Requested	\$ 299,796	
Other Funding Source	<u>\$ 21,000</u>	Natural Resource Damage Program
Total Project Cost	\$ 320,796	
Amount Recommended	\$ 74,405	

Project Summary

The Deer Lodge Valley Conservation District (CD) in partnership with the Big Hole Watershed Committee (BHWC), the Natural Resource Damage Program (NRDP), and Montana Fish, Wildlife and Parks (FWP) seek funds to implement on-the-ground restoration work for the Mt. Haggin Uplands Sediment Mitigation and Habitat Restoration Project. The two main goals include 1) abate sediment delivery to California and Joiner Creeks and downstream waterways, and 2) improve upland wildlife habitat and forage. This area has been negatively impacted by past mining activities and excessive logging. The soil is contaminated with metals and has a low pH. A significant amount of soil has eroded from the Mt. Haggin Uplands. The resources affected include: soil, surface water, wetlands, vegetation, fish, and wildlife.

Project History

The Mt. Haggin wildlife management area (WMA), which is managed by FWP, was severely impaired by copper smelting emissions coupled with extensive logging for nearly 100 years. The smelter aerial emissions killed vegetation by contaminating the soils and lowering the soil pH. Much of the uplands have lost several feet of topsoil to erosion. Erosion and sediment delivery to nearby streams remain active forces on this landscape, causing declining ecologic trends. These impacts have decreased the bio-physical resiliency of the area.

Proposed Solution

Goals and Objectives

Project goals include: (1) reduce sediment delivery to California and Joiner Creeks and downstream waterways, and (2) improve upland wildlife habitat and establish vegetation on bare slopes.

The objectives include:

1. Install steep slope best management practices (BMPs) in gullies, rills, and upland slopes to capture sediment, prevent surface erosion, and hold moisture on the landscape
2. Amend bare soils with a combination of compost and organic fertilizer
3. Seed areas with a native seed mix
4. Transplant woody shrubs, trees, elk sedge mats from on-site sources for erosion control features
5. Incorporate and place woody debris and native soils on the soil surface for erosion control as well as to enhance biologic processes on the landscape

Areas selected for treatment include a total of 93.8 acres in five restoration areas with the highest erosion and sediment contribution rates on both sides of the continental divide.

Tasks or Activities

Task 1: Design Drawings (75 percent) and Project Plan

The NRDP and its steep-slope re-vegetation contractor, in collaboration with FWP, would develop detailed project plans, identify treatment prescriptions, determine soil amendment ratios and locations, define aspen and willow stands for transplant stock, and prepare implementation maps between the fall of 2016 and spring of 2017. The 75 percent complete design drawings and project plan would be presented for agency review before preparing the final designs and are expected to be completed by spring of 2017.

Task 2: Project Management

Overall project management, including communicating with the Deer Lodge Valley CD, tracking project progress, sub-contracting the construction contractors, construction oversight and coordination of all stakeholders would be provided by the BHWC. This task will be completed by 2018.

Task 3: Project Construction

Construction would proceed according to the drawings and plans developed in Task 1 on an area by area basis and is expected to be completed in 2018. Work would be implemented from bottom to top in each area completely before moving to the next area. Each area would receive customized treatment that would include the following activities:

- Stake and flag construction areas, borrow pits, and thinning units
- Create access and mobilize equipment to construction areas
- Mobilize compost, fertilizer seed, and construction materials to ridgeline staging areas
- Thin surrounding trees for construction material
- Install micro-topography enhancements, amended contour berms, check dam structures, transplant woody shrubs and trees, and place woody material for surface roughness.

Monitoring plan

The NRDP and its contractors, in coordination with FWP, would provide monitoring for this project to ensure its congruence with the NRDP's long-term restoration and remediation objectives as well as FWP's long-term management objectives for the Mt. Haggin WMA. Project monitoring results, documentation, and photos would be provided to the RDGP program as part of the final reporting process.

Other

NRDP funds are earmarked for specific techniques according to the Record of Decision, and ongoing negotiations between the U.S. Environmental Protection Agency (EPA), Atlantic Richfield Company (ARCO), DEQ, and NRDP would establish the overall picture of funding allocations available for the various remedial and restoration units.

This project would adhere to statutory and regulatory standards under the overarching regulatory environment of the Mount Haggin WMA, as determined by the NRDP's standards within the context of a Superfund restoration area. The project locations are within a Superfund site; thus, project actions were designed according to consent decree documents, as administered and interpreted by the NRDP. Project plans would be approved by the NRDP, with consent by FWP and the landowners and reported directly to the EPA.

Public Benefits Assessment

The proposed project would repair and reclaim the most heavily altered hillsides associated with the Joiner and California Creek uplands. This restoration effort would lead to a more productive landscape and would allow natural ecological processes to occur. It would restore slope stability, vegetation, and habitat, and more crucially begin the long process of development on soil that has eroded down to its mineral layer. In less damaged areas, the Mt. Haggin Uplands have established timber stands, healthy wetland complexes, and diverse plant communities. While the proposed project does not remedy all of the damage from logging and smelter emissions in the Mt. Haggin Uplands, it does restore natural function to the areas that would have the greatest terrestrial, riparian, and water quality benefit, and it addresses the most severely degraded sites at the top of the watersheds. This project will directly benefit fisheries and habitat. Indirect benefits from this work will occur through water-quality improvements downstream. No action would allow continued erosion from the site and sediment impairment of the downstream system. The project will result in the creation of short-term jobs.

Letters were received by FWP, NRDP, DEQ, Anaconda-Deer Lodge County Planning Department, Anaconda Sportsmen Club, Trout Unlimited, and a local landowner.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 (Design)	\$0	\$ 21,000	\$ 21,000
Task 2 (Oversight)	\$ 15,000	\$0	\$ 15,000
Task 3 (Construction)	\$ 263,700	\$0	\$ 263,700
Administration	\$ 21,096	\$0	\$21,096
Total	\$ 299,796	\$ 21,000	\$ 320,796

The budget is a rough estimate because the design and detailed project plan still need to be prepared. FWP is expected to contribute helicopter time. Administrative costs and project management costs seem high.

DNRC Concerns

- A planning grant project referenced in the application is not yet complete. The results of some of the practices tested looked promising, but are not verified. In addition, although not documented in the application, NRDP already implemented part of the applicant's proposal in April 2016. Results of this action will be available the summer of 2017 after spring runoff. At that time, the Deer Lodge Valley CD can better assess the effectiveness of this project's proposed methodology.
- The Mt. Haggin WMA is managed by FWP, but funds have not been committed for this project. Forest thinning is planned in this project, but there is no mention of any needed permits.
- There seems to be some duplicate task work by the Big Hole Watershed Committee and the Deer Lodge Valley CD.
- Although NRDP is listed as a contributor to this project, recent NRDP activities (implementing Alternative 1 with no mention in this application) and no listed FWP contributions indicate a lack of communication between participants in this project.
- The timeline indicates a final report for July, 2018, but the report would likely be delayed to 2019 so that current information can be incorporated into the design. If not done correctly, removing vegetation from the general area to replant in impaired soil may not be a net benefit to the Mount Haggin WMA. Also, if vegetation is established, weed control would be needed.
- Supporting documentation from all stakeholders indicated an interest in reclaiming only 1 of the 5 proposed areas (Unit C.47).

Funding Recommendation

Because project planning and design has not yet taken place and the degree to which the reclamation activities will meet project goals is unknown, DNRC recommends reduced grant funding of \$74,405 upon DNRC approval of the project scope of work, administration, budget, and funding package. This amount limits construction activities to the body of water of greatest concern to the project supporters: California Creek (Unit C.47) and includes funding for project management, oversight and administration (\$9,705), remediation of Unit C.47 (\$53,700), post construction monitoring to determine effectiveness of the remedy (\$5,000) and project reporting (\$6,000). The project cannot move forward as proposed until project planning and design is completed. To ensure RDGP funds are committed to a viable project, DNRC will contract with Deer Lodge Valley CD for the construction portion of the project after design is complete.

Project No. 17

Applicant Name	Mile High Conservation District		
Project Name	Conifer Encroachment Reduction Project		
Amount Requested	\$	195,744	
Other Funding Sources	\$	36,813	USFS
	\$	2,047	BLM
	\$	35,485	NRCS
	\$	750	Mule Deer Foundation
	\$	<u>2,762</u>	DNRC Forestry
Total Project Cost	\$	273,601	
Amount Recommended	\$	32,809	

Project Summary

This is a pilot project with a long-term goal of establishing a state-wide program to control conifer encroachment through prescribed burns and conservation practices. Prescribed burning and mechanical treatments will occur on 400 acres in two project areas to demonstrate the benefits of conifer encroachment control on a watershed scale and test the feasibility of implementing a large-scale program. Potential resource benefits of this project include reductions in the scale of wildfires and renovation of sagebrush habitat in the immediate vicinity of the project areas as well as personnel training for the Mile High Conservation District (CD) to respond to similar wildfire conditions.

Project History

Rocky Mountain juniper, Douglas-fir, and other conifers have expanded in southwest Montana since the late 1800s. Conifer encroachment resulting from past fire suppression is a recognized threat to watershed integrity and grassland habitats in Montana and across the west. Several watershed studies and related efforts have established a framework to initiate control efforts, yet there are no programs or organizations to proactively address this issue on a landscape scale in Montana. The Mile High CD poses this pilot project as a member of the Conifer Encroachment Working Group to determine financial and practical effectiveness of restoration tools using an approach modeled after a successful conifer encroachment control program underway in Oregon.

Proposed Solution

Goals and Objectives

The objective of this project is to establish a program that coordinates federal, state, and local resources to implement prescribed burns and other conservation practices in a coordinated effort to control conifer encroachment on state and private lands. Prescribed burns and mechanical treatments will be implemented in the Big Pipestone and Brown's Gulch drainages to develop protocols, train volunteers, and evaluate effectiveness for application to other areas.

Tasks or Activities

The objectives will be accomplished by the completion of five tasks, as described below.

Task 1: Establish Baseline Conditions

By October 2017, baseline conditions will be established for the selected sites through the following deliverables: 1) a detailed monitoring plan to guide effectiveness monitoring and reporting (the cost of this is included as part of Task 4); 2) determination of sampling sites according to the monitoring plan; 3) establishment of networked sites to facilitate pre- and post-treatment monitoring and comparison; and 4) documentation of baseline data.

Task 2: Completion of Plans for Selected Sites

Vegetative treatment and interagency burn plans will be completed for the two selected sites in the Browns Gulch and Big Pipestone Creek Drainages by October 31, 2017. The following activities are included in this task: 1) site visits and reconnaissance by working group members and contractors; and 2)

development of burn and mechanical treatment plans for project sites with an annotated map and approval from United States Forest Service (USFS), Bureau of Land Management (BLM), or Department of Natural Resources and Conservation (DNRC) fire burn boss.

Task 3: Conifer Reduction

By June 2019, conifer cover will be reduced on at least 400 acres through the following activities: 1) generate a list of support needs; 2) develop inter-agency memorandums of understanding (MOU) and liability waivers for signature, and initiate liability insurance coverage; 3) complete technical training for ten rural fire fighters; and 4) implement burn and mastication plans for the selected sites. Also included in task 3 is fire crew training and work group project planning and outreach meetings.

Task 4: Analyze Treatment Effectiveness

A monitoring plan will be developed in the early stages of the project that will outline the protocols to be used for measuring effectiveness. Treatment effectiveness will be analyzed through post-treatment monitoring and a dataset will be generated that consists of hard-copy forms, photos, GPS data, and data compiled in an electronic database and GIS project. This will be complete by December 2019. Continued monitoring will be conducted by Montana State University (MSU).

Task 5: Project Report and Outreach

Complete project reporting and outreach to local resource management and recreation groups, resource management agencies, and policy makers will be completed by December 2019. A final report will be generated to document the project and evaluate its overall effectiveness. All project feedback will be integrated to evaluate the implementation of a statewide program for rural fire management programs and policy. Recommendations will be made for program expansion and improvements.

Monitoring Plan

The project outcomes will be monitored through pre- and post-treatment evaluations lead by an MSU professor and assisted by graduate students and field technicians. The monitoring team will use evaluation of vegetation, soil, watershed attributes, livestock, wildlife forage production, wildlife habitat characteristics, fuels abundance, soil erosion potential, and water movement. Shallow groundwater observation wells will be installed to define sub-surface water movement and groundwater recharge. The following parameters will be evaluated as part of the monitoring plan: plant density, canopy cover, basal and foliar gap, above ground net primary productivity for herbaceous and shrub species, fuel loading, gravimetric soil moisture (bi-weekly throughout the growing season), depth to groundwater (bi-weekly), stream channel cross sectional dimensions, rainfall, and ambient temperature.

The applicant plans to pursue additional funding to extend the monitoring period beyond the three-year timeframe established by RDGP funding.

Public Benefits Assessment

Any direct benefits to Montanans from this project would be the result of a program that would be implemented on a state-wide scale. The benefits of successful implementation of such a program would likely include enhanced forage and wildlife species diversity, restoration of natural hydrologic regimes, ecosystem enhancement, wildfire suppression, improved water quality, and enhanced soil conditions. These benefits are uncertain, will take several years to manifest, and are not a direct result of the proposed project. A direct benefit of the proposed project includes training of ten rural firefighters and the above named benefits of conifer reduction to the 400 acres where prescribed burns and mechanical treatments will occur. Furthermore, assessing the efficiency of the removal methods presented in the proposal would allow management agencies to fine-tune their approaches of when to use mechanical removal versus prescribed burning.

The applicant adequately documents the importance of reducing conifer extent in watersheds historically dominated by grasslands. However, the benefit to public health and safety from this level of treatment is minimal because of the limited geographic scope. Individuals whose lands were adjacent to or included in treatment areas would directly benefit from the project, but it is unlikely that benefits would extend beyond

the areas treated. The studies as presented would not substantially reduce the level of conifer encroachment across an entire watershed area.

Although the study approach appears scientifically sound, there is a degree of uncertainty that a single control event or removal would have long-term effects on the vegetative community. The project benefits analysis suggests that the treatment should last for 15 to 20 years. The current schedule is unclear and seems to allow only six months between the completion of actual treatments and the end of monitoring (June 2019- December 2019). There is no specific funding committed to monitor the project beyond the project timeline of three years although the proposal states they will pursue additional funding.

The impacts of no action include the continued advancement of conifers into historic grassland areas and the negative implications associated with this movement. This may lead to increased cost to the public of wildfire suppression and resource management.

The project has letters of support from Montana DNRC Forestry Division, Butte-Silver Bow Fire Council, Butte-Jefferson Ranger District, Mule Deer Foundation, BLM Butte Field Office, Jefferson River Watershed Council, and Watershed Restoration Coalition for the Upper Clark Fork.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Establish Baseline Conditions	\$2,080	\$0	\$2,080
Task 2 Plans for Selected Sites	\$2,080	\$8,801	\$10,881
Task 3 Conifer Reduction	\$92,764	\$69,056	\$161,820
Task 4 Analyze Treatment Effectiveness	\$53,588	\$0	\$53,588
Task 5 Project Report and Outreach	\$10,400	\$0	\$10,400
Administration	\$18,271	\$0	\$18,271
Contingency 10%	\$16,561	\$0	\$16,561
Total	\$195,744	\$77,857	\$273,601

The budget and cost and benefits tables were clarified by the applicant, but some aspects of how the project implementation costs were derived are still not clear. In the cost and benefits table, the cost per acre for the preferred alternative is not provided. The cost per acre for the single component alternatives are \$200/acre for prescribed burns and \$400/acre for mastication, and the in-kind match from different agencies reduces the cost per acre for the burn alternative. However, the budget provided includes costs of \$683/acre for mastication in the project areas. These costs are unsubstantiated. Additionally, administration, meetings, and outreach costs for the project are high. Meetings and outreach are included in the budget twice.

DNRC Concerns

- The proposal splits the project into two sites in distinct watersheds more than 18 miles apart. Studies referenced in the proposal suggest that the project area be significantly larger than the proposed area (at least 25 percent watershed scale) to offer any measureable success. Additionally, it is unclear why the project areas were chosen and how those areas will model state-wide success for conifer encroachment reduction.
- Monitoring of the project is not long term and ends shortly after project implementation is completed. As this is a pilot project with anticipated hopes of starting a program for conifer encroachment, longer monitoring is necessary to determine project success and its value to other areas in Montana.
- The proposal lists several watershed studies and related efforts including previous work on conifer encroachment in Montana, but fails to provide the results of these studies.

Additional scientific information to justify the selection of the project sites and the benefit of having two sites in distinct watersheds more than 18 miles apart is needed. Including detail on long-term monitoring objectives and a more fully developed study plan with criteria for selecting or prioritizing sites for

treatment would make this a more scientifically defensible project. The following changes would improve this proposal substantially:

- Expanding the acreage treated by the project to better mimic the Oregon model cited;
- Grouping treatment areas within a single watershed, such as Brown's Gulch, to treat a larger percentage of a single watershed;
- Locating a treatment area within or near sage grouse habitat to evaluate its effectiveness at restoring this habitat type; and
- Expanding the monitoring period and structuring it to evaluate real changes in the vegetative community. Perennial vegetation cannot be established in just three years.

Funding Recommendation

Because mastication work for other projects is being completed in the Brown's Gulch project area, which increases the chance that the proposed project may have significance within a watershed, DNRC recommends funding for this project area only. Because other funding is available for implementation of the project, DNRC recommends reduced grant funding of \$32,809 for task 4 (analyze treatment effectiveness) of the Browns Gulch area only (\$30,009) and final reporting (\$2,800) upon approval of the project scope of work, administration, budget and funding package.

Project No. 18

Applicant Name	Deer Lodge Valley Conservation District		
Project Name	Oregon Creek Placer Mine Reclamation Project		
Amount Requested	\$ 450,000		
Other Funding Sources	\$ 152,743	EPA 319 Grant	
	\$ 31,500	MT FWP Future Fisheries	
	\$ 5,000	MT FWP In-kind	
	<u>\$ 11,691</u>	Private Sources	
Total Project Cost	\$ 650,934		
Amount Recommended	\$ 58,610		

Project Summary

Oregon Creek has been impacted by historic placer mining in the French Creek drainage on the Mt. Haggin Wildlife Management Area (WMA). This project would remediate historic mining impacts by reconstructing the stream channel and regrading and revegetating portions of the floodplain of Oregon Creek. Approximately 1,600 feet of stream channel would be reconstructed over a 2,700 foot project reach, and an improved floodplain and riparian zone for the stream would be created. The project will benefit water, aquatic resources (fisheries) and riparian vegetation.

Project History

Oregon Creek was subjected to manual and hydraulic placer mining in the late 1800s. These activities realigned the natural stream channel to a steeper and straighter configuration that has few habitat features and that erodes excessively, contributing to sedimentation in Oregon Creek and downstream waters. Oregon Creek is a headwater of the French Creek/Deep Creek drainage, which has seen a significant amount of mining impact remediation work in recent years. This basin-wide work seeks to correct impacts not only from placer mining activities, but also from mining related logging and smelter fallout. Restoring Oregon Creek is a component of this larger framework of interrelated projects intended to recover natural resource values over a large area of southwest Montana.

Proposed Solution

Goals and Objectives

The goal of the Oregon Creek restoration is to restore stream, riparian zone, and wetland functions to the mining impacted reaches of the stream. This will be achieved by completing four primary objectives:

1. Increase channel sinuosity and decrease channel slope.
2. Decrease channel entrenchment and increase floodplain connectivity.
3. Increase riparian and wetland habitat.
4. Eliminate channel headcutting and revegetate eroding streambanks.

The proposed project divides the 2,700 foot project reach into nine treatment reaches, that would each receive remediation actions tailored to that treatment reaches impacts and current conditions. The remediation actions range from very intensive treatment such as channel realignment and floodplain reconnection, to simple revegetation via willow plantings and sod mats. Intermediate intensity treatments would include the installation of bio-engineered streambanks and in channel structures. These treatments would achieve the four primary objectives.

Tasks or Activities

The applicant has broken the project into two phases: Design and construction. Funding from this grant program is only sought for Phase 2. Phase 1 funding has not yet been secured. Phase 2 tasks include:

Task 1: Project Management

Through 2019, Project management, including communicating with Deer Lodge Valley Conservation District (CD), tracking, reporting, sub-contracting, and coordination will be provided by the Big Hole Watershed Committee (BHWC) who will serve as the administrative lead on this project.

Task 2: Construction

Construction activities will include floodplain excavation to reconnect the channel with its floodplain and regrade placer mine tails; channel construction to realign the channel and restore its proper geomorphology; log structure installation to improve instream habitat; riparian and wetland planting to revegetate the floodplain for stream stabilization and habitat enhancement; and fencing and livestock access to protect the restored streambanks and riparian zone from livestock damage during establishment, while providing stockwater access. These tasks will be completed by 2019.

Monitoring plan

The performance monitoring plan is not yet defined, but is intended to monitor stream geomorphology, fisheries, and sediment-load reduction. Monitoring is a Phase 1 task in the applicants work breakdown, and development of the monitoring plan would be completed under other funding, if secured.

Public Benefits Assessment

The proposed project will reclaim impacted natural resources by placing the channel of Oregon Creek into an alignment and geomorphic configuration that replicates its pre-mining status. The project will also improve the impacted floodplain by reconnecting it to the stream, and re-grading the placer tails to widen the current riparian zone to better approximate the pre-mining condition.

These actions will improve natural resources including water quality, aquatic habitat (fisheries), and riparian vegetation. A minor benefit to public health may be realized due to reduced sedimentation from the Oregon Creek banks, which are currently composed of placer tails with some heavy metal content. As the metals content is not well quantified and the design of the remedy is in a rudimentary state, it remains an open possibility that significant work would need to be done to realize this resource benefit and in fact to keep it from becoming a resource impact if more metals were mobilized or otherwise subject to increased delivery to the stream. Reconfiguring the stream to a less erosive form, removing some placer tails from the near vicinity of the stream, and providing improved riparian vegetation should all act to reduce impacts from those sediments on water quality and downstream private property. Barring a catastrophic flood event that harms the remedy prior to the establishment of stream stabilizing vegetation, the remediation methods specified, if properly designed and implemented, should result in permanent improvements to Oregon Creek and its floodplain.

The project is intended to restore publically owned and/or publically accessible natural resources damaged by historic mining practices. Local water users, sportsmen and other recreationalists, and Montanans generally will benefit. Indirect benefits will accrue to downstream water users, sportsmen, and other recreationalists on the Mt. Haggin WMA, in the form of improved fish and wildlife habitat, and recreation area aesthetics. Little to no benefit to job creation for unskilled or chronically unemployed workers is likely to arise from the project. The impacts to be remediated occurred long ago, and are generally not worsening. Although most of the damage has already occurred, "no action" would permit chronic harms to continue.

Letters of support for the Oregon Creek Project have been submitted by the Montana Department of Justice's Natural Resource Damage Program, the Montana Department of Fish, Wildlife and Parks, the Montana Department of Environmental Quality, the Anaconda Sportsmen's Club, Trout Unlimited, and a local rancher and adjoining landowner.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Project Development	\$0	\$96,829	\$96,829
Construction Oversight	\$0	\$45,914	\$45,914
Monitoring	\$0	\$25,000	\$25,000
Other Costs (Engineering and Oversight, Administration, Management)	\$0	\$32,600	\$32,600
Task 1: BHWC Project Management	\$22,500	\$0	\$22,500
Task 2: Construction	\$414,000	\$591	\$414,591
Administration: Deer Lodge Valley CD	\$13,500	\$0	\$13,500
Total	\$450,000	\$200,934	\$650,934

Review of the budget detail provided by the applicant found that the project budget is organized to a level of detail and completeness typical of applications for this grant program. However, estimated costs are high for this type of work. In particular, the estimated costs for the stream channel work are extraordinarily high. With approximately 1,600 feet of stream channel to be reconstructed, the overall project budget works out to over \$400 per linear foot for basic channel realignment without extensive bank reconstruction or stabilization techniques. The dedicated line item for stream channel construction is \$150 per linear foot, with floodplain excavation, bank treatment, and revegetation as additional costs. These costs are several times the typical level for this work and far larger than other RDG proposals for similar work reconstructing much larger stream channels in similar conditions – including the applicant's own competing proposal for the French Creek restoration. The applicant's design consultant was contacted for clarification and justification of these costs. The consultant acknowledges the high estimates, and indicated that the level of uncertainty with certain aspects of the project, in particular the uncertainty attendant to the reconstruction of a stream channel in placer mining tails that have recognition as a cultural resource on the National Register of Historic Places, lead to a conservative cost estimating approach that incorporates large contingency costs into the stream channel construction items.

DNRC Concerns

Though beneficial in concept, the project is beset with significant uncertainties in both project components and costs. In large part, this is due to the applicant's strategy of seeking construction funding via this grant program prior to securing design and engineering funding from other sources. In particular, completing additional investigation and design would better pin down the fate of the placer tails (complicated by their status as National Historic Resources) and the known but poorly quantified mercury contamination. Completing the design prior to seeking construction funding would also remove the substantial uncertainties in construction cost estimates that have caused the applicant to request stream restoration funding that is extraordinarily high when compared to both industry standard costs and to other comparable projects seeking funding from this program. As currently documented, the cost/benefit for the project does not support the funding requested.

Funding Recommendation

Because project planning and design has not yet taken place and the degree to which the reclamation activities will meet project goals is unknown, a grant for construction is premature. However, the concept has merit and could be useful as a pilot project after design and specifications are finalized. DNRC recommends grant funding of \$58,610 for the uppermost stretch of Oregon Creek identified as having placer mining impacts in the application, Reach 8, upon DNRC approval of the project scope of work, administration, budget, and funding package.

This project is not recommended for the requested funding due to the extraordinarily high estimated costs for project construction items. These high estimates are driven by large uncertainties in project conditions. All conceptual designs have uncertainties, but it would not be responsible to fund a project when the uncertainties are so large as to result in estimated costs that are several times higher than those commonly realized on similar construction projects, and equally in excess of costs estimated by other applicants to this program for more well-constrained projects.

Project No. 19

Applicant Name	Roosevelt County	
Project Name	Kenco Refinery Cleanup	
Amount Requested	\$ 487,469	
Other Funding Sources	\$ 17,200	Site Owner
	<u>\$ 7,500</u>	Great Northern Development Corporation
Total Project Cost	\$ 512,169	
Amount Recommended	\$ 275,000	

Project Summary

The former Kenco Refinery site produced fuel which has contaminated the site. This project funds remedial design, remedial construction, remedial systems operation, and phytoremediation technology research at the former refinery site east of Wolf Point where soil and groundwater are contaminated. The redevelopment plan for the property is an energy campus (a new refinery) for a private landowner. Natural resources affected by the contamination include local groundwater, air, and soils.

Project History

Historical records indicate that the former Kenco Refinery operated from approximately 1962 to 1985, during which time jet fuel, diesel fuel, leaded gasoline, and fuel oil were produced. The site covers approximately 110 acres, of which 65 are contaminated with petroleum products. Ten tanks used to refine petroleum are present at the site and contain historic refining liquids. Site soils and groundwater are contaminated with petroleum products from operations and historic spills. The site has remained vacant for the past 30 years. The property was recently purchased by Wolf Point Green, LLC, which plans to develop a refinery at this location.

With the exception of the plume of jet fuel that extends beyond the southern boundary of the site onto Burlington Northern and Santa Fe (BNSF) property, investigation data suggest all other contamination is limited to the site. It appears that groundwater beneath the site flows to the southwest. In addition, subsurface transport of petroleum contaminants is assumed to be slow because of the relatively flat groundwater gradient and the presence of tight, thick clays that underlie the site. The extent of contamination is documented in a U.S. Environmental Protection Agency (EPA) Brownfields Phase II Environmental Site Assessment from April 2013.

Proposed Solution

Goals and Objectives

The project goals as stated in the grant application are to eliminate direct exposure risks to contaminants, prevent additional releases and contamination, reduce the impact of past releases to soil and groundwater, evaluate innovative soil remediation techniques, and implement petroleum hydrocarbon free-product recovery.

The above goals will be accomplished through the following objectives:

1. Remove immediate threats to human health through the removal and on-site treatment of sludge (Tank 6) and the offsite disposal of methanol (Tanks 9 and 10). In some cases the contents are directly accessible to the public through breached sidewalls
2. Excavate surface soil directly adjacent to Tank 6 and subsurface soil contaminated with petroleum hydrocarbons at the former railcar loading rack area
3. Remediate the contaminated soil using a combination of traditional landfarming techniques and phytoremediation using industrial hemp on the site
4. Design, construct, and operate a free-product recovery system at the former railcar loading rack area
5. Document environmental cleanup activities to facilitate redevelopment of the facility

Tasks or Activities

Seven tasks were identified in the application:

Task 1: Remedial Planning and Logistics

Additional information will be obtained to finalize the design for soil excavation and free-product recovery to allow for the development of a technically defensible Interim Remedial Action Plan (IRAP). This includes surveying the boundary of the site and BNSF right-of-way, draw-down testing, and a Laser Induced Fluorescence (LIF) plume evaluation to better understand the spatial characteristics of the free product plume in the rail loading area.

Task 2: Interim Remedial Action Plan (IRAP)

By the spring of 2018, an IRAP will be prepared to summarize the findings of the LIF and draw-down study and to describe the cleanup actions proposed for the site, including appropriate design elements developed by a professional engineer. A draft of the plan will be submitted to the Fort Peck Office of Environmental Protection (OEP) and the EPA for review and approval, as these are the agencies which will be involved in the regulatory oversight of the work on this Fort Peck Reservation site. The IRAP will be submitted to the DEQ as a courtesy to keep them informed of actions at the facility.

Task 3: Bid Specifications and Selection of Contractors

Roosevelt County will request statements of qualifications from engineering consulting firms in 2017 and select a qualified project engineer to oversee the project.

Task 4: Site Cleanup

Site cleanup activities will include removal of tank contents (tanks 6, 9 and 10), soil excavation near the Rail Spur (Rail Car Loading Rack) source area, product recovery system installation, and product recovery system operation. Contaminated soil removed during Task 4 will be trucked to a location designated for onsite treatment using traditional landfarming and phytoremediation technologies (Task 5). A free product recovery system will be installed and operated for one year. Clean-up activities will be completed in 2019.

Task 5: Onsite Remediation of Petroleum Impacted Soils

In 2018, approximately half of the soil excavated from the former railroad loading rack area will be landfarmed using traditional bioremediation methods of periodic tilling to enhance aeration and aerobic degradation of petroleum compounds. The remainder will be used to evaluate the efficacy of using industrial hemp to remediate the soil.

Task 6: Cleanup Reporting

Within 90 days of completion of remediation activities, reports documenting project activities will be prepared and provided to the DNRC, EPA, OEP, and DEQ.

Task 7: Project Management

Roosevelt County will contract an experienced engineering consultant to plan and implement cleanup activities, as well as to assist with public outreach and attend public meetings. Project status summaries of costs and accomplishments will be prepared by the consultant. Great Northern Development Corporation (GNDC) will assist Roosevelt County with grant administration and quarterly reporting.

Monitoring Plan

The monitoring plan submitted with the application was extremely vague. An environmental/engineering consultant will be selected to plan and oversee cleanup, including writing all deliverables. Project outcomes will be measured in terms of volume of soils excavated and product removed, yards of soil treated, and tank solids treated and removed. The plan does not include sampling to confirm removal of contaminants or monitoring of groundwater contamination.

Public Benefits Assessment

The project has potential for public benefits. The proposal suggests the site may eventually be developed for use as a new refinery, and partially rehabilitating the petroleum-contaminated property would stimulate the local economy, including creating jobs. However, the work should be conducted with DEQ oversight to ensure protection of public health, safety, and the environment. If the proposed plan is implemented without oversight, the potential for vapor intrusion into buildings, additional contamination, or additional work due to incorrect methods is possible. Risk assessments have not been performed for the site; however, it is unlikely that the proposed cleanup described in this grant application would allow for any subsurface disturbance by construction or utility workers.

The overall impact of no action would be minimal. The soils beneath the site are characterized as clay, and contamination does not appear to be migrating at a rapid rate. Further site contamination may occur if the product storage tanks currently in place begin to leak. In that case, the energy campus would not be constructed, and visitors to the site could be exposed to petroleum-contaminated surface soil and vapors. If the site was remediated to a level acceptable for redevelopment, the benefits of this project might be directly realized by people employed at the energy campus and the local community.

The project has received letters of support from the Great Northern Development Corporation, Roosevelt County (applicant), the Fort Peck Tribes, Montana Tech, Montana State University Northern, Montana Department of Agriculture, Montana Farmers Union, Senator Jon Tester, Senator Steve Daines, and Congressman Ryan Zinke. A letter was also submitted from the Environmental Protection Agency to provide technical support and oversight.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Remedial Planning	\$40,145	\$12,500	\$52,645
Task 2 Draft and Final IRAP	\$30,975	\$0	\$30,975
Task 3 Bid Specifications and Procurement	\$12,505	\$0	\$12,505
Task 4 Site Cleanup	\$248,085	\$2,500	\$250,585
Task 5 Soils Remediation	\$87,035	\$2,200	\$89,235
Task 6 Cleanup Reporting	\$32,615	\$0	\$32,615
Administration	\$18,054	\$7,500	\$25,554
Total	\$469,414*	\$24,700	\$512,169

*The total amount for the project reflected in the financial assessment is different than the requested amount above because the budget provided in the grant does not add up to the requested amount.

The budget is appropriate for the proposed activities. However, the budget does not include preparation of a voluntary cleanup plan (VCP) environmental assessment. VCP environmental assessments can cost tens of thousands of dollars. If the applicant wants to redevelop the property, funding should be directed toward preparation of a VCP. Other funding may be available for this project through PetroFund and other responsible parties identified through a PRP search. Removing hazards such as the tank contents at the site is warranted. All remedial work at this site should be performed under DEQ oversight.

DNRC Concerns

The grant application states the plan must be approved by the Fort Peck OEP. However, the site is located on fee land and is not under the jurisdiction of the OEP, which would place the site under Montana Department of Environmental Quality (DEQ) authority. The Kenco Refinery is ranked a high priority State Comprehensive Environmental Cleanup and Responsibility Act (CECRA) site, but DEQ is not actively working on the site.

Project sponsors are proposing to clean up the site using public grant funds when a potentially responsible party (PRP) search has not been performed for the site. Tesoro and BNSF Railroad operated at the site and are considered PRPs. If a PRP for the site could be found, the site could be remediated using private funding instead of public funding.

If the applicant does not want to pursue a PRP for site cleanup funds, the applicant should address the site cleanup with a Voluntary Cleanup Plan (VCP). Since the refinery is a CECRA site, the proposed work should be performed with DEQ oversight to protect public health, safety, and the environment. DEQ Remediation Division oversight under the State Voluntary Cleanup and Redevelopment Act (VCRA) would be the appropriate program to ensure the cleanup protects both construction workers and future workers at the proposed energy campus. Importantly, doing so would also protect Roosevelt County from incurring Superfund liability for moving contamination at the site. Roosevelt County would need to start the Voluntary Cleanup process by preparing a voluntary cleanup plan (VCP). The VCP would have two components: an environmental assessment and a remediation proposal. Without additional information from the VCP environmental assessment, it is not possible to assess whether tank disposal and the removal and disposal of the top 2.5 feet of soil at the site would be approved by DEQ under the VCP. The previous Brownfields investigations at the site may provide enough information to prepare a VCP.

The application presents an incomplete alternatives analysis. It is unclear how and why the proposed remedial strategy for this site was selected or how they would be successful. DNRC concerns with the proposed remedial strategies are:

- The phytoremediation methodology proposed for bench-scale and pilot-scale testing at the site has been shown to be ineffective on high-molecular weight polycyclic aromatic hydrocarbons and aged petroleum products expected to be found at the site. Landfarming of petroleum-contaminated soils is likely the most appropriate remedial strategy at this site.
- The proposed free-product recovery system is proposed to be installed upgradient, not down gradient or in situ with the plume, and site soils are characterized by the presence of tight clays and associated low permeability. These soil characteristics are unlikely to yield hydrocarbons from a free product recovery system alone.

Funding Recommendation

Because of the concerns listed above, if this project is funded, DNRC will require that the applicant continue to work with DEQ through the VCRA process to assure that contaminants are properly and safely addressed at the site. DNRC recommends reduced grant funding to \$275,000 for a DEQ approved environmental assessment of the entire site, sampling to remove data gaps within the research at the facility, and removal of tanks at the site containing hydrocarbons. Funding is contingent upon DNRC approval of the project scope of work, administration, budget, and funding package.

Part 2. Other Projects Submitted for Funding Consideration

Applicant Name	Meagher County		
Project Name	Meagher County Road Department Maintenance Yard Soil Remediation		
Amount Requested	\$ 175,083		
Other Funding Source	<u>\$ 40,080</u>	Applicant	
Total Project Cost	\$ 215,163		
Amount Recommended	\$ 0	(Application withdrawn by the Applicant)	

Project Summary

The project aims to mitigate impacts to groundwater from petroleum contaminated soils in White Sulphur Springs. The project will remove contaminated soils, dispose of them off site, and replace them with clean backfill. Full reclamation is expected by the end of 2017.

Funding Recommendation

This project was withdrawn by the applicant. Funding was received from another source.

Applicant Name	Deer Lodge Valley Conservation District		
Project Name	French Creek Placer Mining Restoration, Phase 2		
Amount Requested	\$ 300,000		
Other Funding Sources	\$ 250,000	EPA 319 Grant	
	\$ 36,018	Private Funds	
	\$ 5,000	MT FWP In Kind	
	<u>\$ 105,000</u>	MT FWP Future Fisheries	
Total Project Cost	\$ 696,018		
Amount Recommended	\$ 0		

Project Summary

Over 4,000 feet of French Creek stream channel was straightened and diked in place. The applicant asserts that this action was pursuant to historic mining activities, though the evidence presented for that conclusion is lacking. The project would restore the straightened stream channel to a more natural shape that features riffle/pool habitat that the straightened channel lacks. The project may benefit water quality, aquatic habitat, and terrestrial habitat.

Funding Recommendation

The applicant was unable to document that damage to the stream is the result of mineral exploration or extraction. It appears to be caused by road construction. Because the applicant failed to demonstrate eligibility of the project for funding under the RDGP, DNRC does not recommend this project for funding.

Applicant Name City of Deer Lodge
Project Name Replacement of Public Water Supply Well

Amount Requested \$ 303,540
Other Funding Sources \$ 4,800 Applicant
Total Project Cost \$ 308,340

Amount Recommended \$ 0

Project Summary

Water from the Park Street municipal supply well exceeded Montana Numeric Water Quality Standards for arsenic in 2014. The goal of the project is to locate a new water source for the City of Deer Lodge that is located outside the area affected by arsenic.

Funding Recommendation

The applicant was unable to document that the arsenic in the public water supply well is due to mineral development and not natural. Because the applicant failed to demonstrate eligibility of the project for funding under the RDGP, DNRC does not recommend this project for funding. This project was recommended to the RRGL program for funding.

Applicant Name Sweet Grass County Conservation District
Project Name Yellowstone River Channel Stabilization and Surface Water Protection

Amount Requested \$ 125,000
Other Funding Sources \$ 385,000 Federal Water Resources Development Act Sec. 595
 \$ 10,000 Sweet Grass County
 \$ 100,000 RRGL
Total Project Cost \$ 620,000

Amount Recommended \$ 0

Project Summary

The Sweet Grass County Conservation District requests funding to stabilize the Yellowstone River channel and protect surface water near Grey Cliff, Montana. Upstream of the Grey Cliff Bridge, accelerated bank erosion and channel migration has occurred and is threatening vital public transportation infrastructure.

Funding Recommendation

The application does not meet eligibility under the criteria described earlier in Chapter 1. Because the applicant failed to demonstrate eligibility of the project for funding under the RDGP, DNRC does not recommend this project for funding. This project was recommended to the RRGL program for funding.

CHAPTER III

Status Report of Active 2005–2015 Projects

This chapter briefly summarizes the status (as of October 30, 2016) of active projects and projects completed this biennium. Projects are grouped according to the year in which they received legislative approval; within each grouping, projects are presented in the order of their relative funding priority.

Projects Approved by the 2015 Legislature

1. Montana DEQ – Belt Water Treatment Project

The Montana Department of Environmental Quality (DEQ) is preparing the site for construction by acquiring property, providing public outreach on the project, procuring services, and preparing the engineering evaluation and cost analysis. Grant funds are for construction of the plant, which is set to begin in 2017.

2. Montana DEQ – Black Pine Mine/South Fork Lower Willow Creek Fluvially Deposited Mill Tailings

A public bid for the project was held in November 2015. Construction on the project commenced in spring 2016 and will conclude by fall 2017. DNRC grant funds for this project are for contracted construction services on private lands downstream from Trust designated property.

3. Missoula County – Martina Creek and Ninemile Creek Reclamation

Construction for the project started in mid-July 2016 and is scheduled to be completed in November 2016. As of October 2016 roughly 100,000 cubic yards of placer mine piles have been removed, 3,300 feet of Ninemile Creek channel was constructed, and 800 feet of Martina Creek was reconstructed.

4. Deer Lodge Valley Conservation District – French Gulch Placer Mining Restoration

Project designs, procurement, and permitting are complete. The French Gulch notice to proceed was issued July 2016 and construction commenced in July and will continue through fall 2016. The project is scheduled for completion in June 2017.

5. Montana DEQ – Landusky Bio-Reactor Rehabilitation

The primary goal of this project is to improve the water treatment system for water that collects within the reclaimed leach pads on Landusky mine so that the treated effluent discharged to Montana Gulch will consistently achieve human health standards for selenium (0.05 ppm) and nitrate (10 ppm). All project tasks are complete, project goals were met, and the project was closed out January 2016.

6. Montana DEQ – Basin Creek Mine – Site Stability Project

DEQ is coordinating with U.S. Environmental Protection Agency (EPA), EPA consultants, and DEQ consultants to plan and coordinate project construction activities. The project was publicly advertised and awarded in July 2016. Construction began in July. The project will be completed in fall 2016.

7. Montana DEQ – Sand Coulee Acid Mine Drainage Source Control

Project activities include installation of discharge monitoring stations. Continuous monitoring will continue through September 2018. The hydrological investigation will continue through 2017. Horizontal and vertical well installation is scheduled for summer 2017. The project is scheduled for completion in fall 2018.

8. Deer Lodge Valley Conservation District – Moose-French Placer Mining Restoration

The contract for this project was executed in August 2016. Construction is scheduled to commence in May 2017.

9. Montana DEQ – Mitigation of Threat to Harlowton Public Drinking Water Supply

This project has not yet been contracted. DNRC has requested an updated scope, schedule, and budget from DEQ in order to get the project under contract.

10. Madison County – North Willow Creek Reclamation

This project received partial funding from the 2015 Legislature. It is anticipated that RDGP funds will not be available until spring 2017, at which time the project will be contracted. The primary goal of this project is to reclaim six abandoned mines in the Pony and Cataract Creek drainages within the North Willow Creek watershed.

Active Projects Approved by the 2013 Legislature

1. Missoula County / Kennedy Creek – Lost Cabin and Nugget Mine Reclamation

Missoula County and its partners completed mine waste removal and relocation from the Lost Cabin and Nugget mines. The project also addresses adit discharge from the Nugget Mine in an infiltration gallery. The project was completed February 2016.

2. Montana DEQ - AML Bureau / South Fork Lower Willow Creek – Black Pine Mine Reclamation

The DEQ advertised publicly for bids on construction of the Black Pine Mine repository in October 2014. Construction began June 2016. Funds from this grant will be used to remove contaminated materials on USFS and private lands downstream from mine property and reclaim these areas. The project is expected to be completed by 2018.

3. Philipsburg, Town of – Tailings Contaminated Sludge Disposal from Decommissioned Wastewater Lagoons

Mining activities have resulted in contaminated sludge in the Philipsburg municipal wastewater lagoons. DEQ has agreed to accept the lagoon sludge at the Black Pine Mine waste repository. This project is not yet under contract with DNRC. The community is investigating an alternative to address the closure of the lagoons. Tasks leading up to project work began in October 2016.

4. Montana DEQ - LUST - Brownfields / Harlowton Petroleum Product Delineation and Mitigation

Petroleum has contaminated groundwater beneath a large part of Harlowton and threatens the town's public water supply well. Work accomplished through this grant includes: delineation of the extent of the free product plume; identification of additional sources of petroleum, mitigation of threats to the Thompson Supply Well, and determination of the vapor intrusion risks to reduce environmental impact associated with the petroleum release. The project closed October 2016.

5. Confederated Salish and Kootenai Tribes – Elmo Cash Store and Joseph Allotment Cleanup Implementation

The tribe excavated contaminated soil at the Joseph Allotment and Elmo Cash Store property in fall 2013. The contaminated soil is being land-farmed. Confirmation sampling was conducted in December 2014, and the recommendation was made to perform no further remedial action at the site, based on the lack of remaining contamination in soil and soil vapor. The project closed August 2015.

6. Powell County – Milwaukee Roundhouse Recreational Subarea Interim Cleanup Action, Phase 2

Powell County removed and disposed of a temporary repository of lead and arsenic contaminated soils at the former Milwaukee Roundhouse site in Deer Lodge. The project closed July 2015.

8. Malta, City of / Former Malta Airport Facility – Herbicide/Pesticide Cleanup

The City of Malta is addressing herbicide and pesticide contamination from spilled agricultural chemicals in surface soil at the former Malta Airport. The VCP was approved by DEQ in May 2016. Remaining tasks include bid specification, soil excavation and disposal, and backfill. An estimated 2,000 cy of contaminated soil will be excavated, removed, and disposed at a licensed landfill in fall 2016 and the project is scheduled to close by the end of 2016.

9. Cascade County CD – Barkers-Hughesville Reclamation Area Fish Barrier

EPA is reclaiming the Barker-Hughesville mining district near Monarch in Cascade County. As part of the overall project, DNRC funded installation of a fish barrier on Dry Fork Belt Creek to prevent non-native fish from passing through newly reclaimed areas into upstream areas with native westslope cutthroat trout populations. The project closed January 2016.

10. Butte-Silver Bow Consolidated City-County Government Planning Department – Butte Mining District: Reclamation and Protection Project Phase 4 – Orphan Girl

Butte-Silver Bow has started work on this project. The rebuild of the Orphan Girl decline tunnel has been designed and the surface runoff drainage system has been installed. Exterior repairs to the mine yard building are 90% complete. Final construction and project reporting will be completed in 2017.

11. Ryegate, Town of/ Former Ryegate Conoco Groundwater Remediation

A dissolved phase hydrocarbon plume with concentrations of petroleum hydrocarbons exceeding water quality standards extends about 150 ft. from the abandoned Ryegate Conoco gas station beneath and south of Highway 12. Ryegate has installed fluid injection wells, a remedial system, and is in the process of monitoring the groundwater. Remedial system dismantling and monitoring well abandonment is scheduled for November 2017.

12. Cascade County Commission – County Shops Continued Remediation of Wood Treatment Preservatives

Cascade County sold the county shops site in June 2014 after the RDG grant funds were awarded. The new owner is not willing to work with DEQ on the voluntary clean-up process, which is a condition of the grant. As such, the county reverted the funds in June 2016.

13. Butte–Silver Bow Local Government Planning Department – Irrigation Project for Butte Acidic Mine Waters

Butte–Silver Bow acquired the equipment needed to repair and upgrade the water treatment system including increased pumping capacity and automated data monitoring devices. Butte–Silver Bow started to operate the system in summer 2014. Butte–Silver Bow has analyzed existing groundwater data, but no pump testing has been performed pending the outcome of regulatory issues related to releases of untreated groundwater that may impact Silver Bow Creek. The project is expected to close by December 2017.

14. Custer County Conservation District – Addressing Cumulative Effects on the Yellowstone River through BMP Development and Implementation

The Yellowstone River CD Council has prepared a cumulative effects study on the Yellowstone River that will be the final step in preparing locally-driven BMP for activities on the river. The council has completed the study and is waiting for the Army Corps of Engineers approval/edits. While it is unclear when the Corp will act, the project is scheduled to close December 2016.

15. Ruby Valley Conservation District – Upper Missouri Headwaters River/Flood Hazard Map Development

The main output of this project is channel migration maps for a large area in the upper Missouri Headwaters. Ruby Valley procured a contractor that has completed purchase of the orthorectify imagery and is in the process of channel migration development for the Beaverhead, East Gallatin, Jefferson, Madison and Ruby rivers. This project started in spring 2015. The project will be complete May 2017.

16. Montana DEQ Prevention and Assistance Division, Water Quality Planning Bureau, Monitoring and Assessment Section – Baseline Groundwater Sampling in Areas of Anticipated Oil and Gas Development

Public concerns about potential impacts to water resources from hydraulic fracturing and associated activities have increased as the interest in oil and gas development spreads in eastern Montana. The purpose of this study was to characterize groundwater quality near oil and gas activity. Montana Bureau of Mines and Geology collected 100 groundwater samples from sites in Fallon, Dawson, Richland, Roosevelt and Sheridan Counties during the 2015 field season. The samples were analyzed for organic and inorganic chemistry. All of the water-quality information is available on the MBMG Groundwater Information Center (GWIC) database. The project closed June 2016.

17. Yellowstone Conservation District – Lower Pryor Creek Stabilization and Restoration

The purpose of this project was to stabilize and restore lower Pryor Creek for the purpose of fish passage. The CD hired a contractor to design, plan, and construct the rock shelf fish barrier near the I-94 overpass and to complete design, planning and bid package for fixing the privately owned Siewert diversion just upstream of the I-90 overpass. Completion of these two projects has opened up the entire length of Pryor Creek for fish passage. The project closed June 2016.

19. Montana DNRC–WRD – State Water Projects Bureau / Deadman’s Basin Diversion Dam

To facilitate fish passage over the dam crest and for safe boater passage, a rock ramp diversion dam was designed and constructed to replace the former Deadman’s Basin Diversion Dam. The project was complete January 2016.

Active Projects Approved by the 2011 Legislature

1. Montana Board of Oil and Gas Conservation – 2011 Eastern District Orphaned Well Plug and Abandonment, and Site Restoration

Plugging operations started in October 2013. As of fall 2014, four wells have been plugged and two pit/surface restoration projects have been completed, as well as an unsuccessful attempt to cap the Kopp #1. The grant has expired and DNRC is awaiting final reporting and close-out documentation

2. Montana Board of Oil and Gas Conservation – 2011 Northeastern District Orphaned Well Plug and Abandonment, and Site Restoration

Plugging operations started in July 2014 on six well sites. Surface restoration was completed immediately after plugging these wells. Plugging operations started on the remaining 14 sites in this project in late September 2014. Work will continue in winter and spring 2015. The grant has expired and DNRC is awaiting final reporting and close-out documentation.

3. Ruby Valley Conservation District – Alder Gulch Phase 1 Improvement

This reclamation project on Alder Gulch addressed dam safety at the Horseshoe and Kid’s fishing ponds near Virginia City. The project was delayed due to permitting issues and staff changes at the Montana Heritage Commission, the land owner. A site investigation and preliminary designs have been completed. Construction began spring 2015 and was completed in August 2016. DNRC is awaiting a final report and closeout documentation.

9. Montana Department of Environmental Quality – Sand Coulee Public Water Supply System Restoration

This project addressed impacts to the Sand Coulee public water supply system from historic coal mining. DEQ replaced the town’s water distribution system and the water storage tank in August 2014. Substantial completion inspection occurred in June 2015, and Sand Coulee has a clean and abundant drinking water supply. The project closed February 2016.

12. Fort Peck Assiniboine and Sioux Tribes – Reclamation of the Philip Red Eagle 2-25 Salt Water Disposal Well on the Fort Peck Indian Reservation, Northeastern Montana

This project is to reclaim the Philip Red Eagle 2-25 salt water disposal injection well site and plug and abandon the injection well. Plugging was complete in August 2015 and the grant closed.

13. Montana Board of Oil and Gas Conservation – Southern District Lease Battery Site Restoration, Part 2

This project completes the reclamation of an orphaned improperly-abandoned tank battery facility in Musselshell County. The project was originally funded in 2007. BOGC started additional excavation at the site in July 2012. Contaminated soil is being land-farmed.

20. Meagher County CD – Thomas Creek Placer Surface Flow Enhancement and Stream Stabilization

This placer mine reclamation project was contracted in fall 2012. Reclamation construction occurred in 2013. The project closed in October 2015.

22. Crow Tribe / Little Bighorn River Restoration

Phase 1 of this project, which entailed site survey and investigation, is complete. The Tribe is awaiting approval from FEMA for Phase 2, which is anticipated for November 2016. Pending FEMA approval, construction is expected to take place in 2017.

Active Projects Approved by the 2009 Legislature

1. Montana Board of Oil and Gas Conservation – 2009 Northern District Orphaned Well Plug and Abandonment, and Site Restoration

Fifteen wells were plugged and properly abandoned. The project closed October 2016.

2. Montana Board of Oil and Gas Conservation – 2009 Southern District Orphaned Well Plug and Abandonment, and Site Restoration

Seven wells have been plugged and restored. The project closed January 2016.

Active Projects approved by the 2005 Legislature

8. Butte-Silver Bow Local Government – Belmont Shaft Failure and Subsidence Mitigation

This project has reclaimed many mine shaft failures in Butte. Butte-Silver Bow uses remaining funds to inventory shafts, mitigate subsidence, and reclaim shafts. This project is expected to be complete in 2017.

CHAPTER IV

Reclamation and Development Grants Program—Project Planning Grants

Program Information

The 2015 Legislature authorized \$800,000 for RDGP project planning grants. These grants are intended to assist local governments with the planning and design of technically feasible natural resource projects eligible for funding consideration under the RDGP. Planning grant funds must be used primarily for contracted consulting or engineering services.

Grant applications were accepted in May 2015, October 2015, and January 2016. As of fall 2016, the planning grant funding was used to assist more than 26 projects across Montana (Table 2). Review and ranking methodology was patterned after and was conducted similar to the RDGP projects grant program. The maximum amount for a planning grant is \$50,000. Of the 26 planning grants, 15 planning projects resulted in an application for a RDGP project grant by the May 16, 2016 deadline. Some of the projects are still in planning stages and do not expect to submit applications for RDGP project grants until the 2018 cycle. Projects submitted by applicants that received a planning grant tended to rank higher relative to those that did not seek a planning grant.

Funding for the planning grant projects has proven invaluable for applicants in preparing and submitting a high quality and competitive grant application under the major RDGP. DNRC intends to seek planning grant re-authorization from the 2017 Legislature.

Table 2. Project Planning Grants Awarded During the 2017 Biennium (as of October 30, 2016)

Project Sponsor	Project Name	Awarded
Bozeman, City of	Bozeman Water Bank Groundwater Model	\$20,000
Butte-Silver Bow County	Erosion Control and Vegetation Enhancement Program Planning	\$34,500 ¹
Choteau, City of	P and L Automotive Petroleum Release	\$15,000
Confederated Salish and Kootenai Tribes	Agency Post and Pole Cleanup	\$38,000
Confederated Salish and Kootenai Tribes	Revais Creek Mine Tailings Cleanup	\$34,000
Deer Lodge Valley CD	French Creek Placer Mining Restoration Planning	\$3,000
Deer Lodge Valley CD	Lily Orphan Boy Mine Reclamation Planning	\$50,000
Deer Lodge Valley CD	Oregon Creek Placer Mining Reclamation Planning	\$20,000
Deer Lodge Valley CD	Mount Haggin Uplands Sediment Restoration	\$50,000
Deer Lodge Valley CD	Tramway Creek Mine Reclamation Project	\$50,000
Deer Lodge, City of	Milwaukee Roundhouse CECRA VCRA Plan	\$30,000
East Helena Public Schools	Land Reclamation and Remediation for School Property	\$20,000
Ft. Belknap Indian Community	Landusky Groundwater Source Control Investigation	\$50,000
Lewis and Clark County	Poorman Creek Restoration	\$30,000 ²
Lewistown, City of	Central Post and Treating Company Investigation	\$35,000
Lincoln CD	Tobacco River Restoration – Phase 2	\$4,980
Meagher County	Meagher County Road Dept. Site	\$18,215
Meagher County	Meagher County Road Dept. Site Closure Contingency	\$30,000
Mile High CD	Conifer Encroachment	\$6,000
Missoula County	McCormick Creek Mine Reclamation	\$35,000
Powell County	Blackfeet No. 1 Mine Reclamation	\$40,000
Powell County	Milwaukee Roundhouse Planning	\$15,000
Rosebud County	Coal Seam Fire Inventory	\$40,000
Ruby Valley CD	California Creek Placer Mining Reclamation Investigation and Project Design	\$15,000
Sheridan County	Sherwood Airport Coal Mine Assessment	\$45,000
Valley County	Magruder Motors	\$2,800 ³
Total		\$731,495

Note: CD = Conservation District; VCRA = Voluntary Cleanup and Redevelopment Act; CECRA = State Superfund Program

Total Available \$ 800,000

Total Grants Awarded \$ 680,578

Remainder Amount \$ 119,422

¹ Awarded in 2017 biennium. Funded with 2015 biennium funds.

² Awarded \$16,383.33 in 2017 biennium funds and 13,616.67 in 2015 biennium funds.

³ Awarded in 2017 biennium. Funded with 2015 biennium funds.

CHAPTER V

Reclamation and Development Grants Program

Aquatic Invasive Species Grants

Program Information

The 2015 legislature authorized \$500,000 in funding for control of aquatic invasive species (AIS). DNRC conducted a grant cycle in March 2016, and DNRC plans to conduct another in March 2017 for the remaining funds.

Projects were ranked based on the demonstration of a critical and urgent need to protect Montana's environment from severe and unacceptable damage to natural resources from aquatic invasive species. Public benefit from implementation of the projects is increased control of aquatic invasive species. Projects were also ranked based on their demonstrated coordination with other projects, state control efforts, and comprehensive invasive species plans. Activities included: 1) on-the-ground treatment; 2) aquatic invasive species surveys; 3) environmental monitoring; 4) preparation of action plans; and 5) treatment demonstration.

As of October 30, 2016 DNRC has funded 14 projects for aquatic invasive species survey and control, as well as providing contracted technical support for local efforts.

Table 3. Aquatic Invasive Species Grants and Contracts Awarded During the 2017 Biennium (as of October 30, 2016)

Project Sponsor	Project Title	Amount
Confederated Salish and Kootenai Tribes	Curly Leaf Pondweed Monitoring and Control	\$8,000
Fish, Wildlife and Parks	2016 Monitoring Support	\$27,000
Fish, Wildlife and Parks	AIS Management Database	\$20,000
Jefferson County	Jefferson Slough Eurasian Watermilfoil Project Monitoring	\$45,661
Madison Conservation District	AIS Education and Outreach Boot-cleaning Stations	\$5,500
Missoula County Weed District	Montana Invasive Species Advisory Council Strategic Plan-Aquatics Component and Council Support	\$15,000
Missoula County Weed District	2016 Monitoring in Missoula County Education and Outreach	\$7,500
Montana State University--Extension	MSU Extension-Gallatin County Monitoring 2016	\$10,000
MSU-Office of Sponsored Programs	Hybrid Eurasian Watermilfoil in Noxon Reservoir – Growth, Spread, Treatment Efficacy	\$20,000
Sanders County	Eurasian Watermilfoil Management Plan	\$30,000
University of Montana--Office of Sponsored Programs	Biocontrol Agents for Flowering Rush--Year 4	\$28,300
Total		\$216,961
Direct Contracts for Technical Support		
Greater Yellowstone Coordination Council	Greater Yellowstone Coordination Council AIS Pocket Guide – Teaching and Outreach	\$2,501
Invasive Species Action Network	Application review and technical assistance	\$4,900
State Printers	Invasive Species Program for Summit	\$408
Total		\$7,809

Note: AIS = Aquatic Invasive Species

Total Available	\$ 500,000
Total Grants Awarded	\$ 216,961
Total Direct Service Contracts	\$ 7,809
Remainder Amount	\$ 275,230

CHAPTER VI

Reclamation and Development Grants Program

Groundwater Baseline Sampling Grants

The 2013 Legislature authorized \$300,000 to assist Montana Conservation Districts (CDs) with baseline groundwater sampling of wells at risk from oil field activities. This monitoring effort characterizes the quality and availability of well water and aquifers currently used for domestic or stock water. Information collected will be acceptable for use as comparative data if a participating well is resampled after the landowner notices a change in water quality and availability, and for use as data for current and future aquifer characteristic studies conducted by Montana agencies.

Agency Roles and Responsibilities

Conservation Districts and the Montana Bureau of Mines and Geology (MBMG) were responsible for selecting wells and distributing results to well owners. Twelve CDs participated in the sampling effort. CDs in the high priority areas (eastern Montana) received a small grant for expenses incurred in the administration of the sampling effort. As of October 30, 2016, 150 well samples have been collected.

Sampling services were contracted to the Montana Salinity Control Association and the MBMG.

Sample and well characterization results are recorded in the MBMG Groundwater Information Center well database and will be available as a stand-alone report to the general public.

CHAPTER VII
Reclamation and Development Grants Program
Montana Salinity Control Association

The 2015 Legislature authorized \$214,000 to assist the Montana Salinity Control Association (MSCA) with one-time-only funding to upgrade aging vehicles and outdated office and field equipment and staff salary for managing the project. MSCA refurbished its drill rig in June 2016, expending \$114,000. The remaining \$99,000 is allocated to: 1) purchase a groundwater investigation vehicle; 2) replace/upgrade existing field and office equipment; and 3) staff salaries. The project is expected to be complete December 2017.

2017

Montana Department of Natural Resources and Conservation



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