Idaho Nonpoint Source Program

Field Evaluation Annual Report

2004

Idaho Department of Environmental Quality

(Cover photo: Surge irrigation system implemented near Weiser saves water and protects groundwater.)

Volunteers at the Mud Creek project near Cascade learn how to stabilize stream banks impacted by cattle.

Volunteers from Hailey helped convert a dysfunctional wastewater treatment pond into a useful storm water retention pond and popular fishing hole.

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Summary

During the summer and fall of 2004, staff from the Department of Environmental Quality (DEQ) traveled to 21 project sites across Idaho (Figure 1) to evaluate fieldwork related to 24 non-point source (NPS) water quality enhancement projects under contract. Evaluation reports were written for each of the project sites visited.

Over seventy-five percent of the project evaluations focused on a variety of best management practices (BMPs) for water quality protection related to agriculture. The remaining evaluations are related to hydrologic habitat modification, transportation, mining, and urban storm water runoff. All 21 evaluation reports, including photographs, are contained in the Appendix (page 53).

Four projects—each exemplifying outstanding coordination, design, and implementation—are highlighted in this year's annual report:

- Hailey Big Wood River Enhancement Project
- Thomas Fork Stream Restoration Project
- The Edson Fichter Nature Wetland Project
- Mud Creek BMP Implementation Project

The first two of these projects were evaluated last year; the last two are new to the evaluation process this year.

Introduction

DEQ currently oversees approximately 50 NPS regional projects in Idaho, employing the following principles to ensure that the goals of the NPS program are being met:

- To assist in tracking, each project is assigned a contract number, and if projects are extended to several years, with additional tasks and funding, additional contract numbers may be assigned to a project area.
- To assure that the projects are completed in a timely manner and achieve their overarching goal of cleaning up and preventing NPS water pollution, all projects are subject to field evaluations by DEQ. DEQ's Nonpoint Source Program manager set a goal to field evaluate the progress of approximately half of all current projects annually. Therefore, over a two-year period, all of the on-going projects will receive a field evaluation. During the summer and fall of 2004, staff from the DEQ State Office Technical Services Division attempted to evaluate 26 projects. However, two project evaluations were canceled due to scheduling conflicts with project representatives.

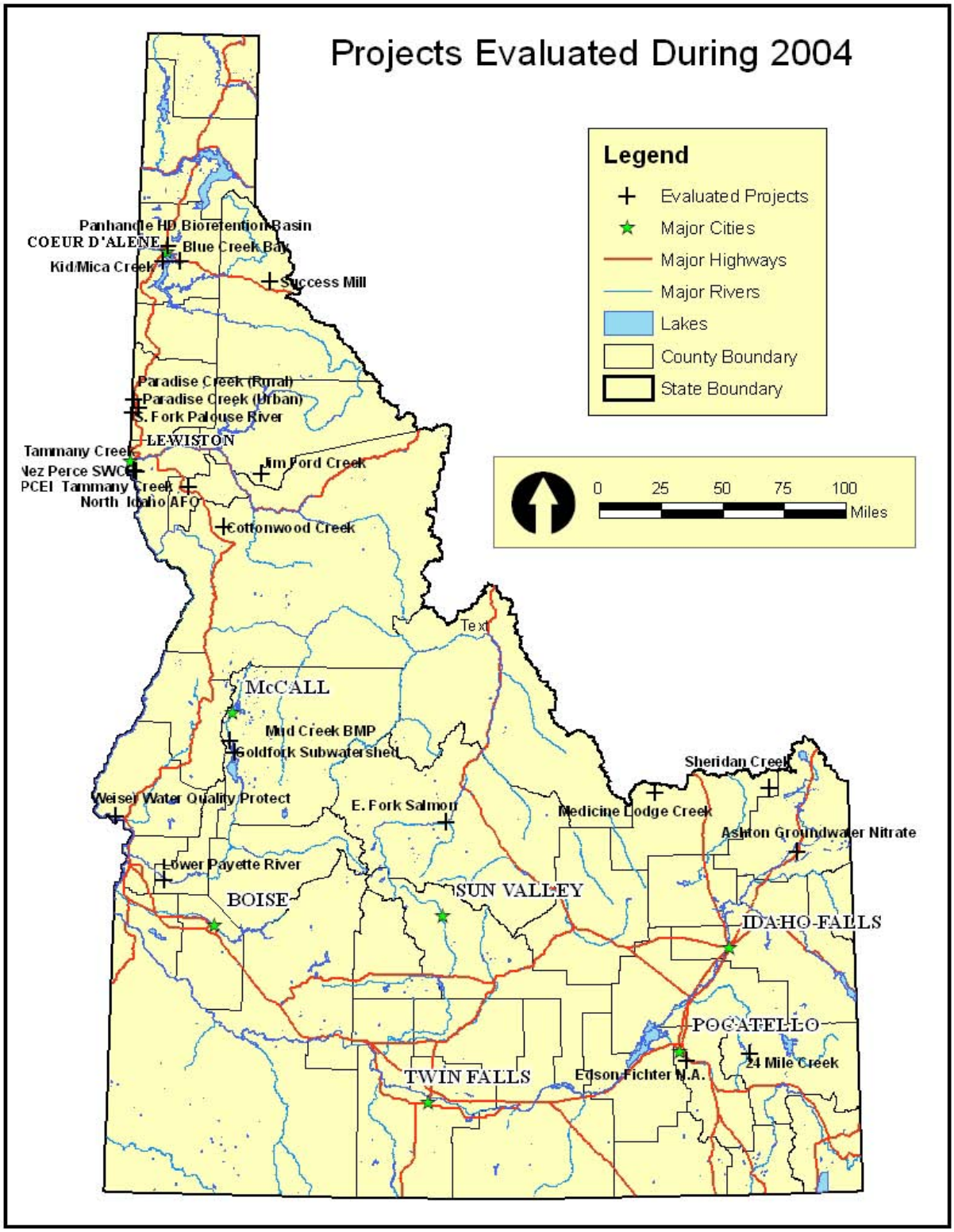

Figure 1. Locations of nonpoint source projects evaluated during 2004.

History of the Nonpoint Source Program

Congress established the national NPS program in 1987, when it amended the *Clean Water Act* with section 319, *Nonpoint Source Management Programs*. States were given the federally funded mandate to address NPS water pollution by 1) conducting statewide assessments of their waters, 2) developing NPS management programs to address those identified impaired or threatened waters, and 3) implementing EPA-approved, federally funded NPS management programs to clean up and prevent NPS pollution.

Initially, section 319 grants were awarded on a competitive basis to any state that wished to apply. Then, in 1995, EPA recognized that all states had developed maturity in effectively working to clean up and prevent NPS pollution, and they invited all fifty states to apply for grants on a non-competitive basis. This new approach allowed federal funds to be more widely distributed among the states, while still requiring that all projects meet certain strict standards. At that point, the EPA and the states formed the *Association of State and Interstate Water Pollution Control Administrators* (ASIWPCA), which led to the current NPS framework.

In Idaho, NPS funding has resulted in over 100 contracts for on-ground projects designed to clean up and prevent NPS pollution. Of the projects undertaken since the inception of the NPS program, Idaho currently oversees approximately 50 on-going projects, each of which is described in detail through formal contracts established between DEQ and a variety of federal and state agencies, counties, municipalities, and nonprofit organizations.

Field Evaluation Process

DEQ used its list of NPS field project requirements to generate a detailed evaluation form for staff to use for field evaluations. For all projects, the DEQ evaluator visiting the site carefully reviewed the project's subgrant agreement and made notes prior to going to the field. The evaluator routinely contacted appropriate DEQ regional staff to make arrangements to accompany the project manager, DEQ regional staff, and any other stakeholders to the field. In all cases the evaluation form was used as a guide to assure that all NPS requirements were being checked for and met in the field.

Results of the 2004 Field Evaluation

DEQ evaluators traveled to 21 geographical areas of Idaho and evaluated 24 contracted projects during the summer and fall of 2004. These evaluations showed the following:

- Of the 24 contracted projects evaluated, all appear to be fully meeting their contractual obligations by demonstrating substantial progress toward completion of their designated tasks to reduce, eliminate or prevent NPS water pollution.
- One contracted project appeared to be proceeding unsatisfactorily during our evaluation in April, but was on track in November as a result of our initial visit to the project site.

The project evaluations covered a variety of BMPs related to recognized NPS categories, including agriculture, hydrologic habitat modification, transportation, mining, and urban storm

water runoff. Examples of the projects DEQ evaluated within these categories include the following:

- Irrigation water cleanup, wetland creation, and settling ponds in south-central and southeast Idaho
- Animal Feeding Operations (AFOs) relocations, stream bank restoration, and livestock exclusion in north-central Idaho
- Zinc removal from groundwater associated with a large abandoned mine dump near Kellogg, Idaho
- Road and stream channel realignment to reduce sediment and nutrient pollution in upper Coeur d'Alene Lake

Table 1 lists all the NPS contracted projects (denoted as *Contracts* in the table) that were field evaluated during the summer and fall of 2004. Following the table, four project areas—The Hailey Big Wood River Enhancement Project, the Thomas Fork Stream Restoration Project, the Edson Fichter Nature Wetland Project, and the Mud Creek BMP Implementation Project—are highlighted because they exemplify outstanding coordination, design, and implementation.

Evaluation reports of all the projects are presented in the Appendix; these reports can also be accessed through the hyperlinks in Table 1.

Table 1. Active nonpoint source projects that were field evaluated during the summer/fall of 2004.

Grant Year	Contract Number*	Project Name	Hydrologic Unit Number (HUC)	Tasks or BMPs Evaluated	DEQ Region
2003	S072	Tammany Creek Watershed Improvement	1706010300023,24,25	BMPs observed include filter strips, willow plantings, sediment basins direct seeding, mulch seeding, conventional seeding, and grade control structures along road.	Lewiston
2003	S073	Blue Creek Bay Water Quality Improvement Project	17010303000273	BMPs observed include a settling pond, stream bank stabilization, road cut stabilization, and 300 feet of stream channel realignment.	Coeur d' Alene
2003	S074	Weiser Water Quality Protection	17050201000198	BMPs visited include drip irrigation and surge Irrigation with soil moisture sensors, ground water monitor wells, lysimeters, filter strips, and sediment basins.	Boise
2003	S076	South Fork Palouse River Restoration	17060108	BMPs visited during this evaluation include stream bank stabilization, riparian plantings, and habitat construction.	Boise
2003	S077	Mud Creek BMP Implementation	17050123000301	Visited 11 different Engineered Large Woody Debris (ELWd™) features (see photographs) designed to stabilize the stream bank. There are three livestock bridges and 14,000 feet of fencing yet to be installed.	Boise
2003	S080	Gold Fork Watershed BMP Implementation		.	Boise
2003	S081	Panhandle Health District Bioretention Demonstration	170103000001	This project compares treatment effectiveness between a conventional bioretention storm water BMP and StormTreat™ technology.	Coeur d'Alene
2003	S091	Kid Creek, Mica Creek Retention Ponds	17010303	A sediment retention pond and extensive plantings, including grass and woody plants, were visited during this evaluation.	Coeur d' Alene
2003	S098S	Lower Payette River TMDL Implementation	17050122	Future locations for sediment basins, fencing, pipeline, CAFO modifications, storm water diversions, and stream bank stabilization were observed during the evaluation.	Boise
2003	S093	Edson Fichter Nature Area	17040208	Revetments, seeding along stream bank, restoration of 700 feet of meandering stream channel, installation of 300 feet of stream channel to convey water to a settling pond, a settling pond, and meandering path, including a small class presentation area were seen during this evaluation.	Pocatello
2001	S099S & S017	Cottonwood Creek	17060305	BMPs observed include direct seed, AFO relocations, filter strips, sediment basins and rebuilt septic systems.	Lewiston
2004	S100S	Tammany Creek Restoration	17060103	BMPs observed during this evaluation include stream bank stabilization, plantings, filter strips, berms, swales, fencing, and a horse wash station relocation.	Lewiston
2001	S015	Jim Ford Creek Watershed Enhancement	17060306	Road rocking and culvert installation, six miles of exclusion fencing, and planted 9,200 willow cuttings, 3,300 lodgepole pine seedlings, 1100 dogwood seedlings, 2,500 hawthorne seedlings, 100 alders, 100 cottonwoods, 200 spirea.	Lewiston

Grant Year	Contract Number*	Project Name	Hydrologic Unit Number (HUC)	Tasks or BMPs Evaluated	DEQ Region
2002	S051	Medicine Lodge Creek TMDL Implementation	17040215050100	BMPs visited include stream bank stabilization including rock barbs, willow bundles, willow pole plantings, willow clumps, toe rock rip-rap, V-notch weirs, drop structures, grass and fencing. In total there are about 100 stream segments over a 12 mile span of Medicine Lodge Creek and its tributaries.	Idaho Falls
2001	S039 & S069	North-central AFO Relocation	17060306000230 17060306001857	Project involves relocation of numerous AFOs belonging to 27 operators over five conservation districts. BMPs include corral relocations, hardened crossings, fencing, culverts and water troughs.	Lewiston
1999	Q562	Paradise Creek (Urban) TMDL Implementation	17060108	Wetlands, stream channel restoration, extensive plantings, fencing, woody plant riparian buffers, wildlife habitat structures stream bank stabilization, noxious weed control, flood plain restoration.	Lewiston
2000	Q605	Paradise Creek (Rural) TMDL Implementation	17060108	Wetlands – Five projects totaling 522,700 square feet within 11 wetlands, gully plugs, fencing – 16,000 feet, woody vegetation – 10,547 plants, herbaceous vegetation – 168,680 plants Stream bank restoration – 18,750 feet, noxious weed control, storm water bioinfiltration ponds, vegetated buffer – 685,364 square feet.(Note: all figures are proposed amounts upon project completion)	Lewiston
2000	S008	Twenty Four Mile Creek	17040208000227	Water troughs, fencing, pipeline, water wells and injection wells were observed during this evaluation.	Pocatello
1999	S025	Success Millsite	17010302	This project involved the installation of an activated apatite filter system designed to filter out metals contained in contaminated mine water. The crystal lattice of apatite allows metal ions to enter the apatite and be chemically bonded there. On a set schedule, the apatite is then removed, sent to a hazardous waste site, and replaced with clean apatite.	Coeur d' Alene
2002	S056	East Fork Salmon River Restoration	17060201000655	BMPs observed include stream bank stabilization including bioengineering, plantings seeding, grading and soil lifts.	Idaho Falls
2004	S107	Ashton Ground Water Protection	17040202	Nutrient management education for farmers in the Ashton area is resulting in far less application of nitrogen and phosphorous to fields. Application rates have been evaluated and adjusted as a result of studies conducted by the University of Idaho Department of Agriculture.	Idaho Falls
1996	Q444	Sheridan Creek Restoration	17040202	Ten large diversions have been completed, 14 miles of fencing, 10 rock check dams, six culverts numerous rock drop structures, 0.5 mile of riparian plantings along stream banks, one water well	Idaho Falls

* More than one contract number for a project indicates that additional funding was later granted for additional tasks.

Outstanding Projects of 2004

Four projects in this year's annual progress report exemplify outstanding coordination, design, and implementation:

- Edson Fichter Nature Wetland Project
- Hailey Big Wood River Enhancement Project
- Mud Creek BMP Implementation Project
- Thomas Fork Stream Restoration Project

Summaries for each of these outstanding projects are presented in the following sections.

Edson Fichter Nature Wetland Project

Project Status

The Portneuf River is on the 303 (d) list as a water-quality limited river, high priority segment. Water quality has been compromised where intensive livestock and agricultural production have damaged riparian areas and increased erosion.

The Edson Fichter Nature Area (EFNA), a heavily visited nature area located on the south side of Pocatello, Idaho, adjacent to the Portneuf River, provides a unique opportunity to impact the water quality of the river and, at the same time, produce a public education program that will reach a large number of people. The goals of the Edson Fichter Nature Area water quality project include not only a construction component—restoring the river channel to its natural condition and creating a wetland that will reduce sediment loading —but also a public outreach component, accomplished by initiating a public education program on water quality.

Completed Tasks

Construction components completed include the following:

- The concrete diversion has been removed from the river, and the banks have been re-vegetated.
- Water rights (2.24 cubic feet per second) have been assigned to the area for wildlife use.
- A pump has been installed near the riverbank, and power has been extended underground to the site.
- All areas of the EFNA that were damaged or otherwise affected by construction have been rehabilitated, using a native grass seeding and, where appropriate, anchored with straw mats.
- Erosion control revetments have been installed in areas of extreme bank erosion. The revetments consist of large juniper trees anchored deep in the eroded bank. Willow shoots have been planted in the banks to help stabilize deposited silt and maintain the existing bank.
- A half-acre settling pond and the return flow stream with meanders and check-dams were constructed.
- Aquatic and riparian vegetation was planted. Species included: cattails, bulrush, water sedge, Baltic rush, golden currents, red-osier dogwood, water birch, and Pacific willows.
- The Three Rivers Resource Conservation and Development (RC&D) area has received an extension on their portion of the project to install a water quality monitoring station.

- Dr. Richard Inouye, of Idaho State University, conducted water-sampling tests in early July 2004 to determine if the project was functioning as desired. His results are attached. Even though the sampling was prior to the project being completed, he determined that "…the pond is functioning the way it's supposed to."

Public outreach components completed include implementation of a public outreach program, distribution of educational materials and a short course, erection of an information kiosk, delivery of presentations to groups and schools, and working with Pocatello Vision 12—a public access television station:

- "*Everything Needs Water to Live*!!"**…**is the theme for the water quality project at the EFNA**.** To get this message out to the public, 2,500 refrigerator magnets were developed, created, and distributed to various locations in Pocatello. The magnets feature a raindrop with a smiling face, the words, "Did you know… everything needs water to live?" and the logos of the Environmental Protection Agency (EPA), the Idaho Department of Environmental Quality (DEQ), and the Idaho Department of Fish and Game (IDFG). The magnets were distributed to the City of Pocatello water billing department, doctor's offices, health clubs, coffee shops, restaurants, Idaho State University offices, local hospitals, and the DEQ, EPA, IDFG offices.
- In cooperation with the Idaho State University Museum of Natural History, the project donated a HACH® water pollution test kit, a portable lab that contains six different water tests for seven key parameters that can indicate pollution. The goal is to give students the opportunity to take "hands on" tests and compare those results with the monitoring equipment installed at the EFNA. The data from the monitoring stations is available on the Internet. .
- Kevin Laughlin, of the Cooperative Extension Systems in Idaho, developed a program, in partnership with Oregon and Washington, called the *Pacific Northwest Water Quality and Monitoring Program*—a four-part program that includes short-course basics and a variety of options for educators.
- An informative kiosk was placed near the settling pond at the EFNA. The title and theme of the kiosk is "*Did you know… everything needs water to live?*" The kiosk describes the 319 non-point source water quality project and its goals for water quality: filtering sediments and lowering water temperature for general stream health. The pathway to the kiosk and pond is being upgraded and benches are being added.
- Information programs were given to the Bannock County Historical Society, the Portneuf Watershed Group, Kiwanis, Rotary and the local schools, regarding the water quality project and its goals. A version of the kiosk interpretive sign was made for sponsors to use while giving presentations. Plastic versions of the sign were made for IDFG, DEQ, and EPA for their use in giving presentations.
- Pocatello Vision 12, the local access channel, has been filming the Edson Fichter Nature Area work and will air a program regarding project.

Summary

The project has proceeded with minimal problems and will be completed within the contract period. Public response to the work has been extremely positive.

Additional Information and Pictures

Additional information regarding the EFNA project, including data from water sampling and photographs showing project work, are provided in the following.

Suspended Solids Sampling at Edson Fichter Nature Area

Dr. Richard Inouye, of Idaho State University, conducted water sampling at EFNA on July 1 and 5 of 2004. On each date, water samples were taken at the inlet of the pond (the pipe from the river), the outlet of the pond, and the end of the channel that flows back into the river. Data from these samplings are displayed in Figure 2.

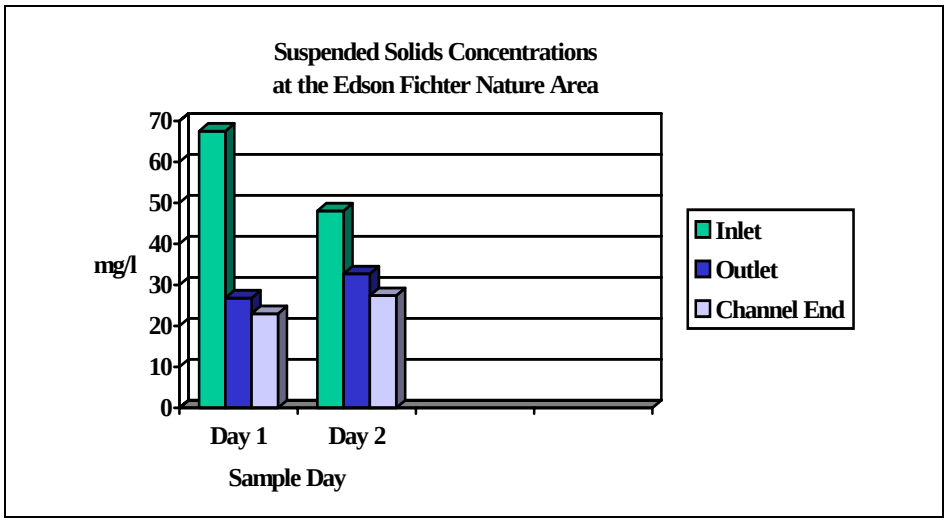

Figure 2. Results of water sampling conducted at Edson Fichter Nature Area

On both dates, the concentration of suspended solids was significantly lower in the outlet water than in the inlet water. On July 1, there was not a significant difference in the concentration at the outlet and the channel end. On July 5, the concentration at the channel end was significantly lower than at the outlet. Said Dr. Inouye, "I thought you would be interested in these data, which demonstrate that the pond is functioning the way it's supposed to."

Photographs

Figure 3. The settling pond was developed in an oxbow natural depression, where the Portneuf River once flowed.

Figure 4. After one growing season, the settling pond banks looked very good.

Figure 5. Inflow and outflow canals had to be constructed.


Figure 6. The inflow and outflow canals after one growing season.

Figure 7. This old irrigation diversion dam was removed.

Figure 8. The old diversion dam site now looks like this.

Figure 9. The water intake for the settling pond.

Figure 10. Part of the greenbelt path created for the public.

Figure 11. A small seating area was built so that environmental classes can be held for the public.

Figure 12. This kiosk explains the importance of good water quality for rivers.

Hailey Big Wood River Enhancement Project

Project Summary

The Hailey Big Wood Riverfront Improvement Project is almost complete. The overall project comprises two river restoration sub-projects:

- Stabilizing and restoring 1,700 linear-feet of river bank and installing rock structures at Lion's Park in Hailey to decrease scouring on the riverbed
- Removing the decommissioned Riverside Water Treatment Plant facility and creating a sediment-catch pond near Heagle Park in Hailey

At this time, the vast majority of the work is complete. There is currently $3,065 remaining in DEQ grant funds to plant additional vegetation this fall (estimated in late-October 2004). Additionally, due to changes in project design at the decommissioned wastewater treatment facility, an additional $16,500 in DEQ funds remain unspent. (See the budget section of this report for details.)

In October 2003, an extension of this grant was requested to determine the costs and benefits of connecting the Big Wood River to the pond; it has since been determined that continuing the effort to connect the pond to the river at the decommissioned wastewater treatment facility site is not feasible. A grant extension, until September 30, 2005 (Contract #S055, Amendment #01), was received, and DEQ was asked to transfer the remaining $16,500 to the Croy Bridge Abutment Removal and Restoration sub-project. (A full 319 Nonpoint Source application was submitted to DEQ in February 2004.) Final approval is anticipated in the near future, and implementation of this alternative sub-project is expected by September 31, 2005.

Once the above tasks are completed, this project will be finished, and a final report will be submitted to DEQ.

Project Location

The Big Wood River and its tributaries drain an area of approximately 2,900 square miles in south central Idaho. The river originates in the Boulder Mountains at nearly 9,000 feet above sea level and flows for over 125 miles to its confluence with the Snake River, near Hagerman, Idaho.

The project area comprises the riverbank and floodplain immediately adjacent to the Big Wood River as it flows through the City of Hailey. Over time, the Big Wood River has created the Wood River Valley, a flat basin approximately a mile and a half wide where this project site is located. The valley floor here is composed of alluvial materials deposited by the river, and typical floodplain vegetation—cottonwood and red twig dogwood—predominates.

Beneficial Uses

The Big Wood River is currently listed as a high priority 303(d) water body by the Idaho Department of Environmental Quality, and a TDML has been completed.

Designated beneficial uses for this water body include cold water aquatic life, salmonid spawning, primary contact recreation, domestic water supply, special resource water, wildlife habitats, and aesthetics (at the stretch of the Big Wood River near Croy Creek.) Since 1980, the protection of the Big Wood River as a special resource water body has been identified by

environmental agencies as a serious and critical consideration for beneficial use attainment. Point source influence has been minimized to three direct dischargers in this stretch of the Big Wood River.

Pollutants

According to Dr. Balthasar B. Buhidar, Ph.D., of the Idaho Department of Environmental Quality, Twin Falls Regional Office, DEQ has determined that sediments, excess nutrients, and pathogens are the primary pollutants in the Big Wood River. As of October 2004, DEQ has not obtained samples to determine the actual decrease in sediments, excess nutrients, and pathogens, but samples are expected to be taken within the month.

Project Tasks

The Hailey Big Wood Riverfront Improvement Project augmented the protection of the Big Wood River from total suspended solids, total phosphorus, and bacteria laden within the sediment. This project was composed of two separate sub-projects located within the one and one-quarter mile stretch of the Big Wood River:

- *Lions Park Bank Stabilization and Restoration Sub-Project*—designed to eliminate unnatural fill material inputs into the Big Wood River and decrease the scouring effect on the river channel during high flows
- 2) *Riverside Wastewater Treatment Plant Facility Removal and Sediment Catch Pond Sub-Project*—designed to catch excess sediment during high flows in the Big Wood River

Details on each task are described below.

Lions Park Bank Stabilization and Restoration Sub-Project Objectives and Tasks

Objective 1: Improve water quality along the Big Wood River by reducing sediments (gravel and sand) and fines (silt) from entering the river system

Task 1: After obtaining the necessary stream channel alteration permits, approximately 7,000 cubic yards of material above the river's high-water elevation was removed at Lion's Park in July 2002, decreasing the slope of the bank to a maximum of one foot of raise for every three feet of distance above high-water elevation. This effort also decreases flood potential for downstream landowners because of the removal of material from the floodplain.

Task 2: Approximately 200 willow-shoot bundles were planted to ground water depths (approximately 6-feet deep) to stabilize the riverbank.

Task 3: Idaho Power Co. moved electrical lines that ran parallel to the river channel. The lines were moved to run away from the river along the west side of Lion's Park, minimizing work along the river bank.

	Task 4: Seeded the riverbank and uplands using drought-tolerant native grasses and shrubs to stabilize the entire bank
	Task 5: Large boulders were placed at the top edge of the bank slope to prevent City of Hailey Street Crews from encroaching on the restored area.
Objective 2: Remove manmade material, which is hindering the river's ability to meander naturally and dissipate its energy during high flow.	*Task 1*: Removed unnecessary concrete blocks (acting as rip-rap) and other man-made material along the riverbank.
Objective 3: Improve and restore aquatic and wildlife habitat by installing rock structures and planting native riparian vegetation (grasses, sedges, rushes, cottonwoods, willows, red-osier dogwoods, etc.) that stabilize the riverbank.	*Task 1*: Installed woody root balls in river channel to improve fish habitat in four locations After installation, the 2003 flood altered the most downstream structure and removed these root balls. These rootballs have not been replaced due to the potential whitewater park improvements in this location.
	Task 2: Wood River Land Trust (WRLT) contracted Webb Landscaping to install the site's irrigation system, which will function for three years to fully establish riparian vegetation. Because an existing water line was tapped, a water right permit did not have to be acquired.
	Task 3: Seeded the riverbank and uplands using drought-tolerant native grasses and shrubs to stabilize the bank. Over 220 native shrubs were planted at this site, and native grasses and forbs have successfully established. Additional topsoil was brought to areas along the bank where vegetation did not germinate. WRLT and local high school students planted grass seed along these portions to further enhance the riparian buffer.
Objective 4: Stabilize the riverbed, reducing the river's incising action by slowing its flow through this section. This includes installation of modified vortex weirs and rootballs in the river channel	*Task 1*: Four modified vortex-weirs were placed in the river channel. These rock structures are semi-permanent structures designed to decrease the impact of high flows on the bottom of the river channel, decreasing the scouring effect, incision rate and amount of additional sediment inputs.
	Task 2: Rootball structures were stabilized along the riverbank to decrease flow velocities (and the scouring effect) along the outside edges of the channel. WRLT also created a trail to allow

easier access to the river while minimizing the public's impact on the riverbank.

Wastewater Treatment Plant Facility Removal and Sediment Catch Pond Sub-Project Objectives and Tasks

Objective 1: Remove decommissioned wastewater treatment facility infrastructure and foundations

Task 1: Removed a shed, in-ground equipment, concrete settling (aeration) basins, subsurface drainage pipes, fill material, and perimeter fencing that have altered the river's hydrology.

Objective 2: Create sediment catch pond designed to catch excess sediment during high flow runoffs

Task 1: Approximately 5,300 cubic yards of fill material was removed from the site to create a sediment catch pond approximately 100 feet long and up to 12 feet deep.

Note: It was discovered early on that the initial vision to create a sediment catch pond by pulling away the river's slope was not feasible from an engineering standpoint while maintaining safety for landowners downstream. As a result, a pond was created to catch sediment from high flows that run through the nearby neighborhood and around the adjacent Heagle Park, and then redirect this filtered water back to the river channel. Although this pond design is not physically connected to the river channel, it still catches sediment from flood events.

Objective 3: Restore wetlands surrounding sediment pond by replanting native sedges, grasses, shrubs and trees

Task 1: WRLT contracted Webb Landscaping to install the site's irrigation system. The irrigation system will function for three years to fully establish riparian vegetation. An existing water line was taped, so there was no need to acquire a water right permit.

Task 2: Seeded the wetland area using drought-tolerant native grasses and shrubs to stabilize the entire bank and restore wetland habitat and function. Planted over 3,000 wetland plugs and over 300 riparian shrubs at the site.

Task 3: WRLT partnered with Clearwater Landscaping to plant 2-4 inch alders, aspen and cottonwood along the pond to stabilize the soil surrounding the pond, and to shade the pond to minimize algae growth. Clearwater Landscaping offered a partial-donation.

Task 4: WRLT partnered with the Community School, the Environmental Resource Center, Blaine County Sheriff's Office, the local 4-H Club and

Mountain Adventure Tours to obtain volunteers to assist with riparian planting, forest restoration, and trail construction.

Objective 4: Install modified vortex weirs and rootballs along the river to slow the water flow and enhance aquatic habitat.

Task 1: Installed a bank barb and rootball structure along the riverbank to minimize scouring effect of river at the convergence of the pond and river.

Project Budget

The original project budget was amended in October 2003, and approved by DEQ. As of October 2004, project funding allocations and expenditures are presented in the following:

- Table 2 outlines total allocated funding and expenditures as of October 2004.
- Table 3 and Table 4 show the details of allocated funding and expenditures for the two sub-projects. (As stated, a transfer of $16,500 to the Croy Bridge Removal and Restoration Sub-project has been requested, with the anticipation of spending the remaining $3,065 of 319 Grant Funds for native trees at the sub-project sites and completion by late-October 2004.)

Table 2. Project Fund Allocation and Expenditures as of October 2004.

Project	319 Grant Amount Allocated	319 Grant Amount Spent as of Oct 2004	Match Amount Allocated	Match Amount Spent as of Oct 2004	Total Amount Spent
Riverside Plant Removal and Restoration	$135,585	$119,190	$72,415	$72,415	$191,605
Lions Park Restoration	$59,056	$55,886	$105,890	$105,890	$161,776
TOTAL	$194,641	$175,076	$178,305	$178,305	$353,381

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Table 3. Riverside Plant Removal and Restoration Funding Allocation and Expenditures as of October 2004.

Category	319 Grant Amount Allocated	319 Grant Amount Spent as of Oct 2004	Match Amount Allocated	Match Amount Spent as of Oct 2004	Total Amount Spent
Contractual (permit application)	$2,500	$2,500	$0	$0	$2,500
Contractual (site design/engineering)	$4,405	$4,405	$8,575	$8,575	$12,980
Contractual (site planning/restoration coordination)	$3,787	$3,787	$0	$0	$3,787
Contractual (install outlet structure)	$14,245	$14,245	$0	$0	$14,245
Contractual (install barbs)	$1,623	$2,163	$0	$0	$2,163
Contractual (pond excavation)	$64,769	$64,769	$0	$0	$64,769
Contractual (riparian planting)	$7,500	$6,566	$0	$0	$6,566
Contractual (willow planting)	$2,080	$2,080	$0	$0	$2,080
Contractual (install irrigation system)	$10,000	$12,175	$0	$0	$12,175
Contractual (install diversion)*	$1,750	--	$0	--	$0
Contractual (install weirs)*	$6,500	--	$0	--	$0
SUBTOTAL	*$119,159*	*$112,690*	*$8,575*	*$8,575*	*$121,265*
Equipment (for removal/disposal of concrete basins/in-ground equipment)	$0	$0	$36,130	$36,130	$36,130
Equipment (for removal/disposal of infrastructure pipes)	$0	$0	$11,900	$11,900	$11,900
SUBTOTAL	*$0*	*$0*	*$48,030*	*$48,030*	*$48,030*
Staffing (City employees) (for removal/disposal of concrete basins, 4 people @$25/hr	$0	$0	$10,970	$10,970	$10,970
Staffing (City employees) (for removal/disposal of subsurface infrastructure, 4 people @ $25/hr	$0	$0	$4,840	$4,840	$4,840
SUBTOTAL	*$0*	*$0*	*$15,810*	*$15,810*	*$15,810*
Supplies (wetland soil/riparian planting)	$7,500	$5,824	$0	$0	$5,824
Supplies (diversion material)*	$1,750	--	$0	--	$0
Supplies (weir material)*	$6,500	--	$0	--	$0
SUBTOTAL	*$15,750*	*$5,824*	*$0*	*$0*	*$5,824*
Indirect Costs	$676	$676	$0	$0	$676
GRAND TOTAL	**$135,585**	**$119,190**	**$72,415**	**$72,415**	**$191,605**

Table 4. Lion's Park Restoration Funding Allocation and Expenditures as of October 2004.

Category	319 Grant Amount Allocated	319 Grant Amount Spent as of Oct 2004	Match Amount Allocated	Match Amount Spent as of Oct 2004	Total Amount Spent
Contractual (permit application)	$2,500	$2,500	$0	$0	$2,500
Contractual (removal/disposal of 7,000 cubic yards fill/ final slope grade)	$27,142	$27,142	$94,200	$94,200	$121,342
Contractual (install root balls)	$500	$500	$0	$0	$500
Contractual (install weirs)	$7,313	$7,313	$0	$0	$7,313
Contractual (riparian planting)	$7,500	$2,765	$0	$0	$2,765
Contractual (willow planting)	$4,202	$4,202	$0	$0	$4,202
Contractual (purchase/install irrigation system)	$6,500	$7,535	$0	$0	$7,535
Contractual (relocate electric line)	$0	$0	$9,590	$9,590	$9,590
SUBTOTAL	*$55,657*	*$51,957*	*$103,790*	*$103,790*	*$155,747*
Supplies (rock for weirs)	$0	$0	$1,600	$1,600	$1,600
Supplies (root balls)	$0	$0	$500	$500	$500
Supplies (riparian plants)	$2,500	$3,030	$0	$0	$3,030
Supplies (silt fence)	$899	$899	$0	$0	$899
SUBTOTAL	*$3,399*	*$3,929*	*$2,100*	*$2,100*	*$6,029*
GRAND TOTAL	**$59,056**	**$55,886**	**$105,890**	**$105,890**	**$161,776**

* Riverside Treatment Plant- Contractual Labor and Supplies for all efforts to install diversion and weirs will not be spent. Requesting to transfer these funds ($16,500) to the Croy Bridge Removal and Restoration Project

Public Education

WRLT has been involved in various public education efforts to promote this project and the continued community support to restore and enhance the Big Wood River's water quality. Examples of our efforts to educate the public about this project include the following:

- This project has been in several newspaper articles in the *Mountain Express* and the *Wood River Journa*l.
- WRLT has partnered with Idaho Department of Fish & Game and multiple local businesses to stock the pond with 500 fish. Two "Kid's Fishing Day" events have been help; over 300 people attended each event, and each has been highly successful for educating people about the benefits of water quality and restoration. Fish & Game is looking to continually partner with WRLT and the City of Hailey to hold similar community events in the future.
- WRLT installed temporary signs outlining the benefits of water quality and habitat restoration at both restoration sites. Permanent signs are currently being constructed.
- WRLT partnered with the Environmental Resource Center and Mountain Adventure Tours to educate children, age 6-12, on water quality and restoration projects.
- WRLT partnered with Hemingway Middle School, Community School, and the local alternative school to use both restoration sites to teach school children from grades 6-12 about water quality, restoration, and the importance of riparian and fish habitat.
- WRLT has worked with the City of Hailey Parks and Lands Board to ensure that this restoration project is incorporated in the Lions Park Master Plan, adopted by Hailey City Council in September 2004.

Project Monitoring

Project monitoring has been addressed in several ways:

Photographic Documentation

WRLT has before and after photographs of both sites. Eleven sites have been established and photographed throughout the project area, with submittal of all photos to the DEQ Twin Falls Regional Office. Before and after photographs, and photographs of other efforts at the sites at the end of this report were included, along with a photographic location map.

Fish Monitoring

Idaho Department of Fish & Game conducted a mark and recapture study in September 2003 to continue their efforts in monitoring the fish population in this reach of the river. Results of these surveys will be presented in the final report.

River Channel Cross Section Monitoring

Mark Dallon, from the Soil Conservation Commission, has been assisting us in monitoring cross section depths along this section of the Big Wood River. The 2003 flood had a fairly significant effect on the river channel, and all data has been submitted to the DEQ Twin Falls Regional office.

Wolman Pebble Count Monitoring

WRLT has conducted Wolman pebble count surveys since before project implementation in 2001. Results of these surveys have been submitted to the DEQ Twin Falls Regional Office.

Summary

The Hailey Big Wood Riverfront Improvement Project is almost complete. Final tree planting at both sites is anticipated to occur in late October 2004. Additionally, the project is requesting to use the remaining $16,500 to implement the Croy Bridge Abutment Removal and Restoration Project, which would be completed by September 30, 2005.

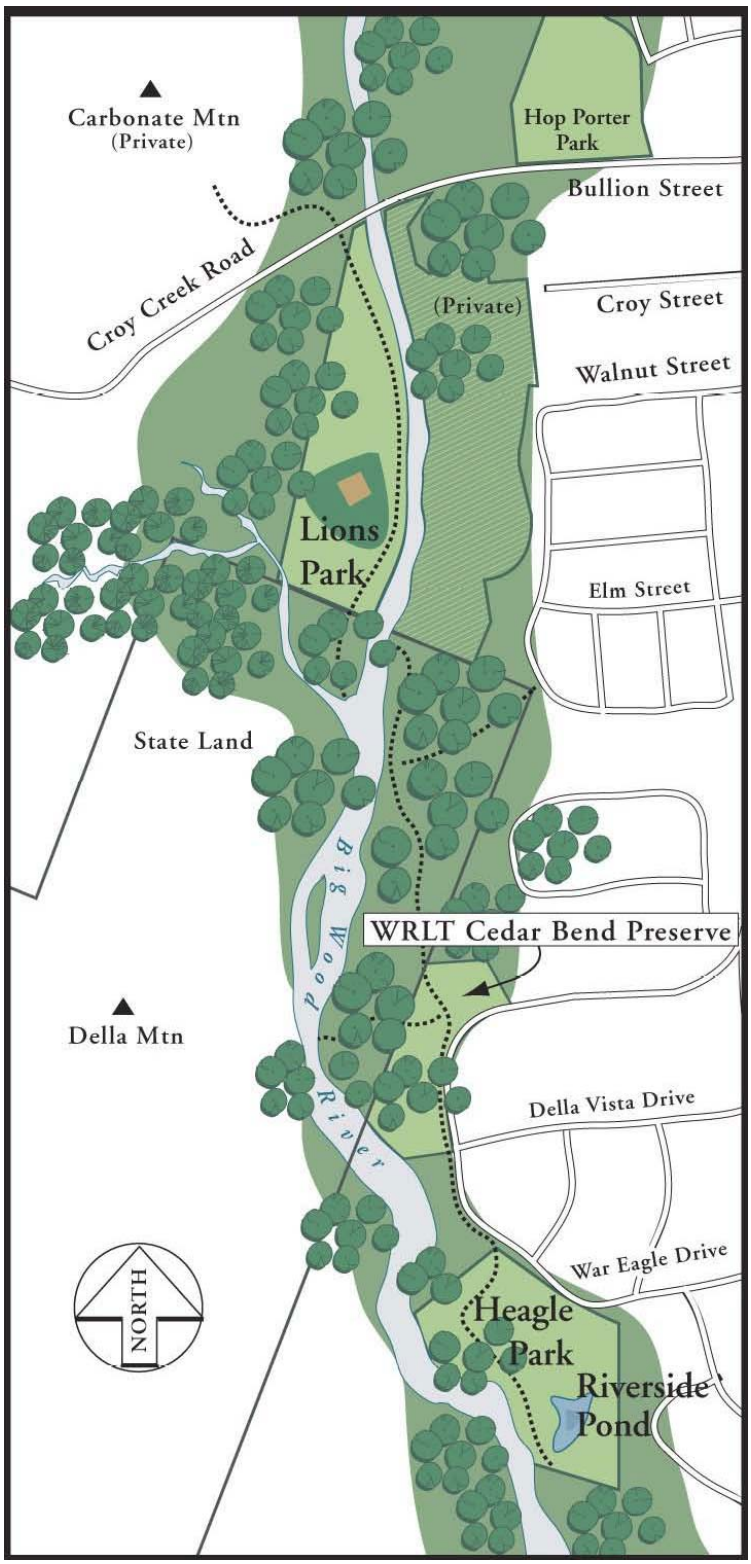

Figure 13. Overview of the Big Wood River Improvement Project.

Lions Park Bank Stabilization and Restoration Sub-Project

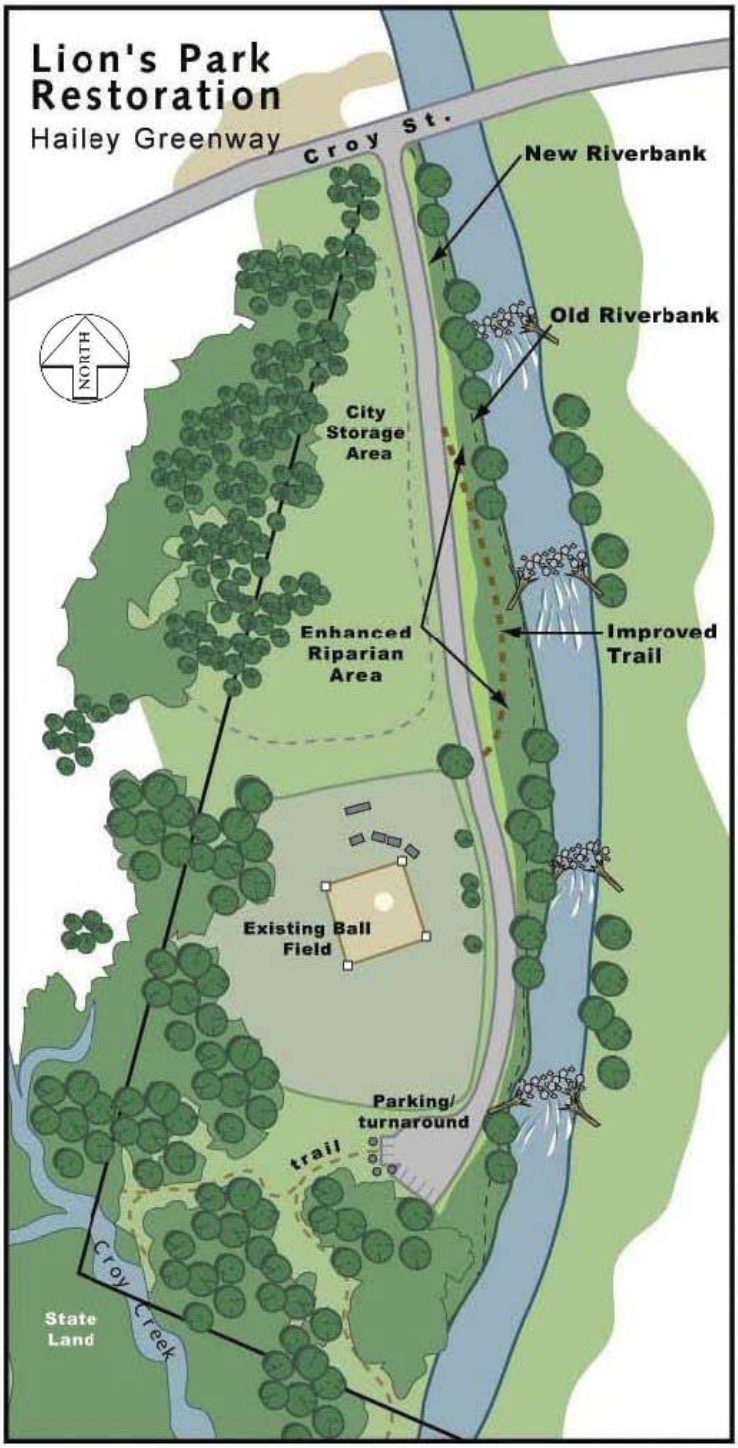

Figure 14. Close-up view of the Lyons Park portion of the project.

Figure 15. Decades ago, the Lyons Park area was an illegal landfill that encroached into the Big Wood River.

Figure 16. Approximately 4,000 cubic yards of material was removed from the area and properly disposed of in compliance with RCRA requirements.

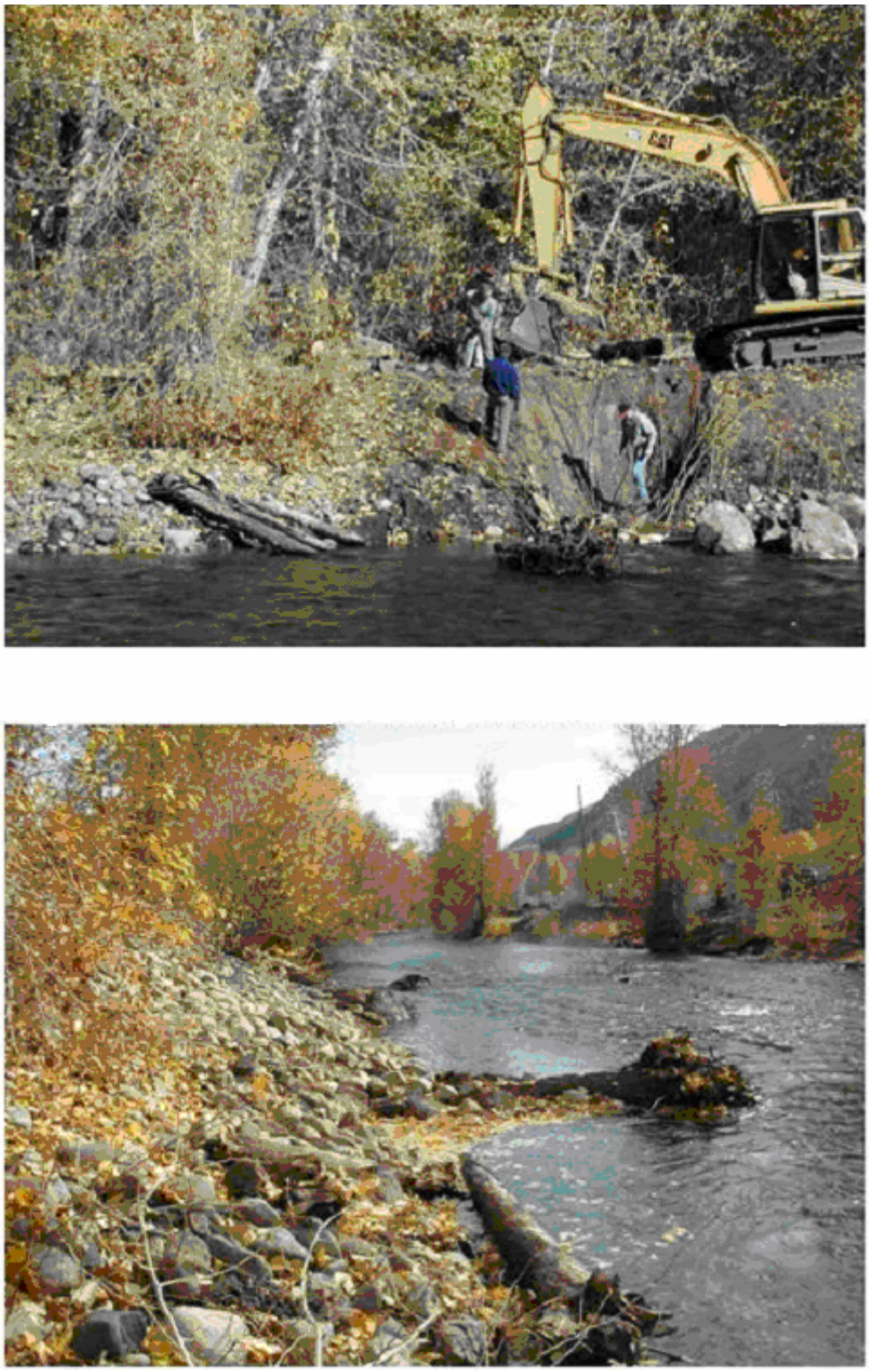

Figure 17. This rootball and barb structure was installed to stabilize the stream bank.

Figure 18. Four rock drop structures were installed to stabilize the stream gradient.

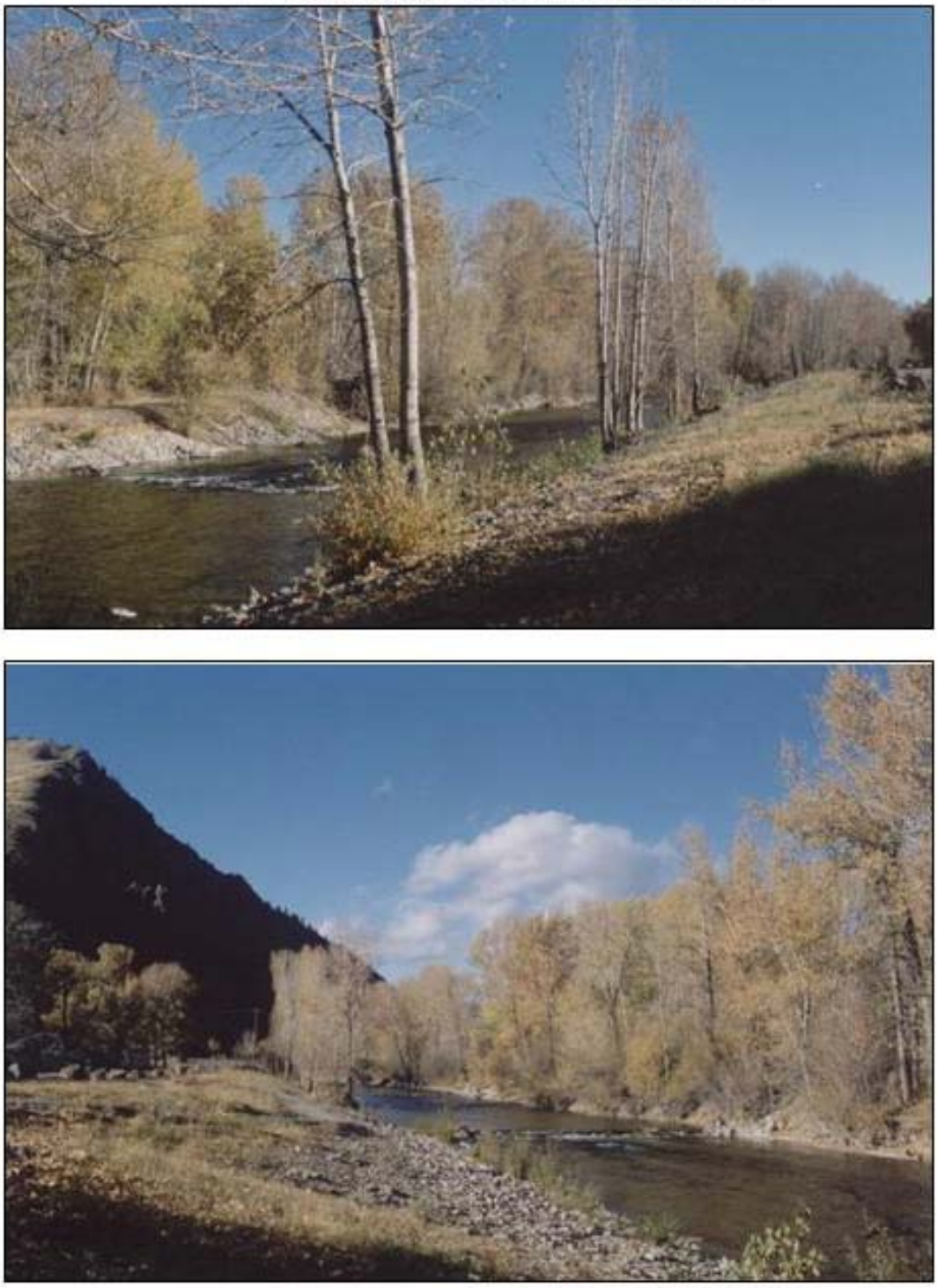

Figure 19. After reclamation, the Lyons Park area became an aesthetically pleasing and environmentally healthy addition to the Big Wood River and the City of Hailey.

Riverside Wastewater Treatment Plant Facility Removal and Sediment Catch Pond Sub-Project

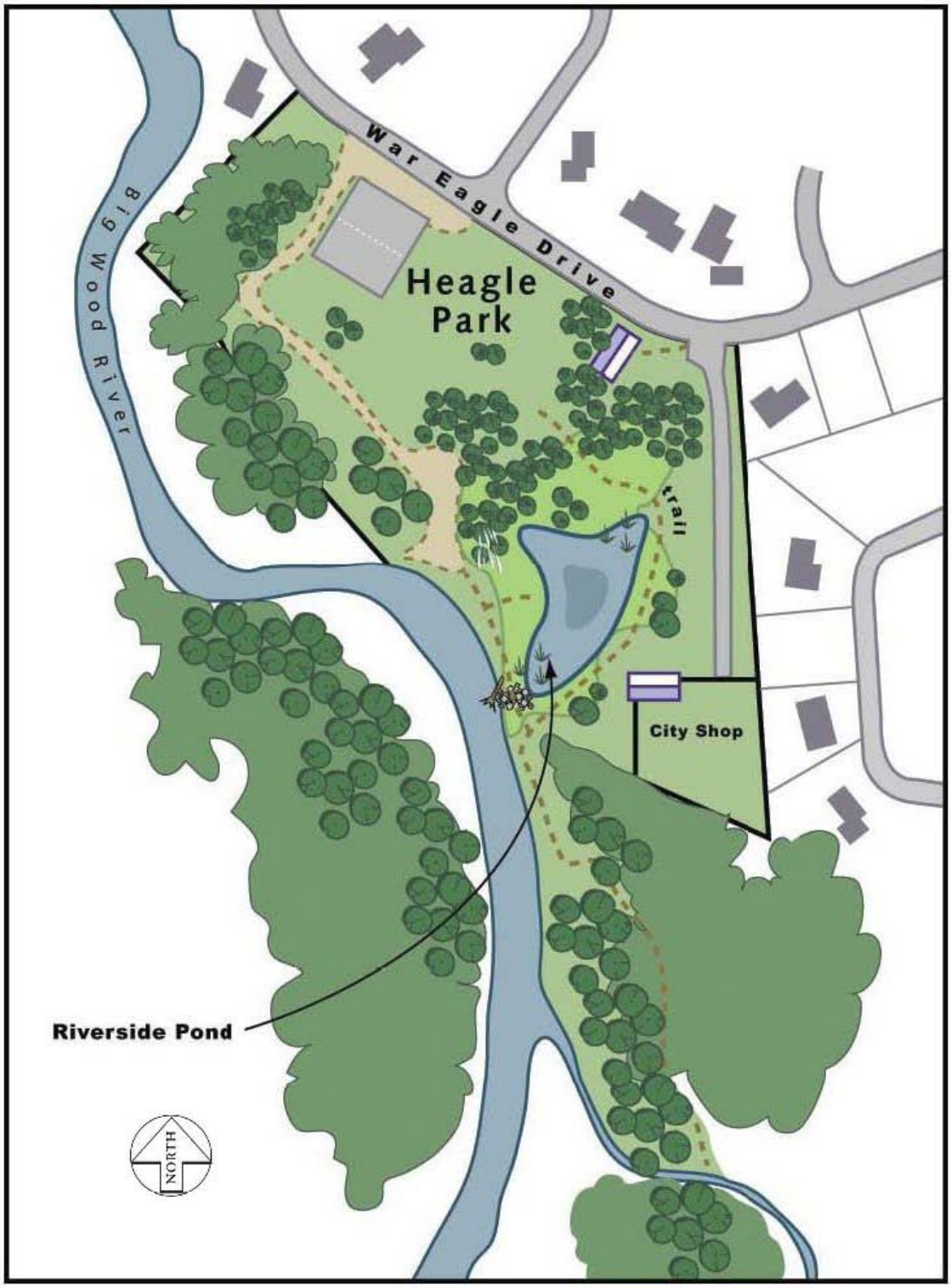

Figure 20. Close-up of the Riverside Water Treatment Facility reclamation project.

Figure 21. The wastewater treatment facility was decomissioned because it routinely became flooded by the Big Wood River, causing contaminated water to enter the river.

Figure 22. The abandoned wastewater treatment facility became an excellent location for a floodwater sediment settling pond.

Figure 23. What once was a eyesore was converted to a functioning settling pond and an aesthetically pleasing addition to the community.

Figure 24. Clockwise from top: pond at low water, pedestrian path surrounding pond, and view looking east at the pond. Locals now refer to this as 'Riverside Pond.'

Figure 25. Local volunteers played a major role in the conversion of the wastewater treatment facility into Riverside Pond.

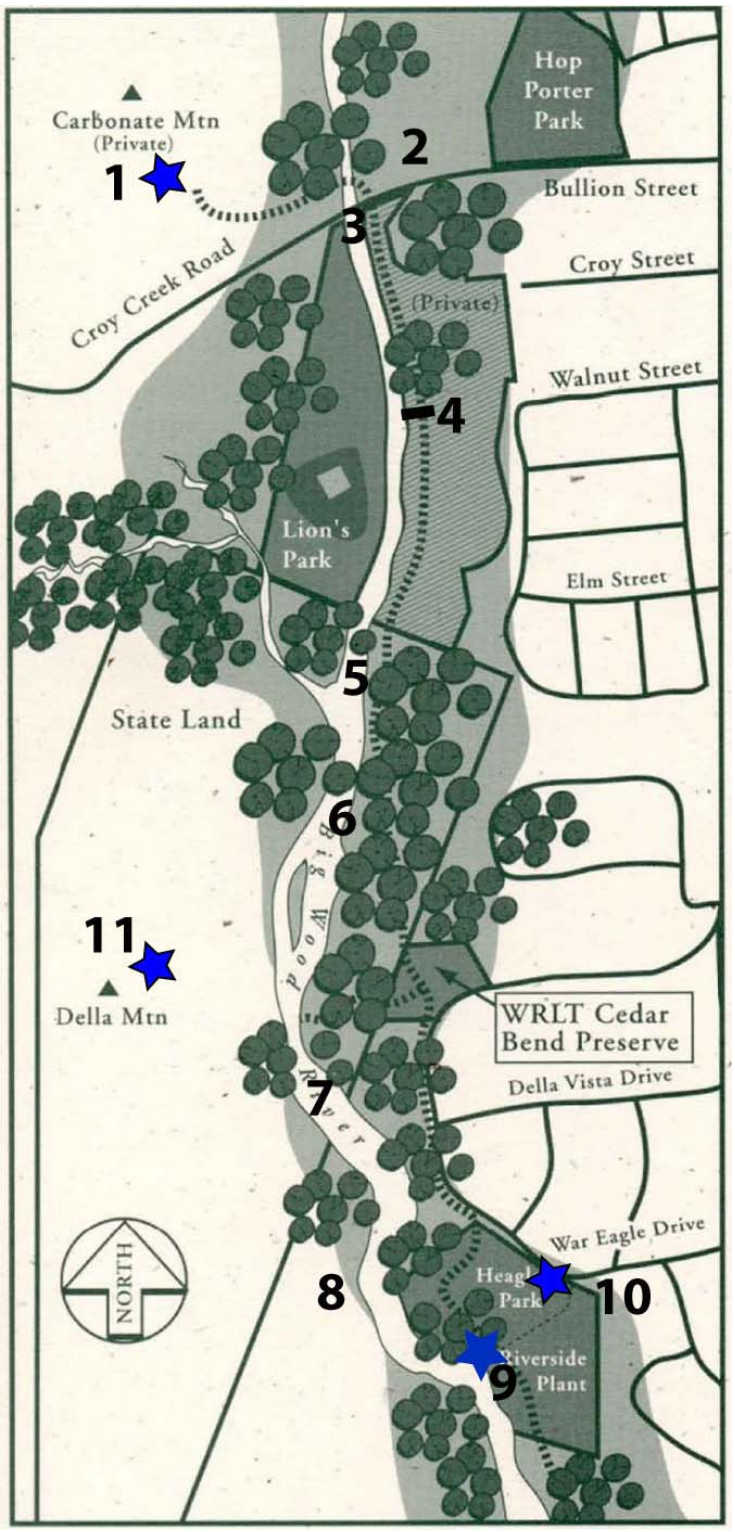

Figure 26. Photo monitoring is part of the on-going monitoring program.

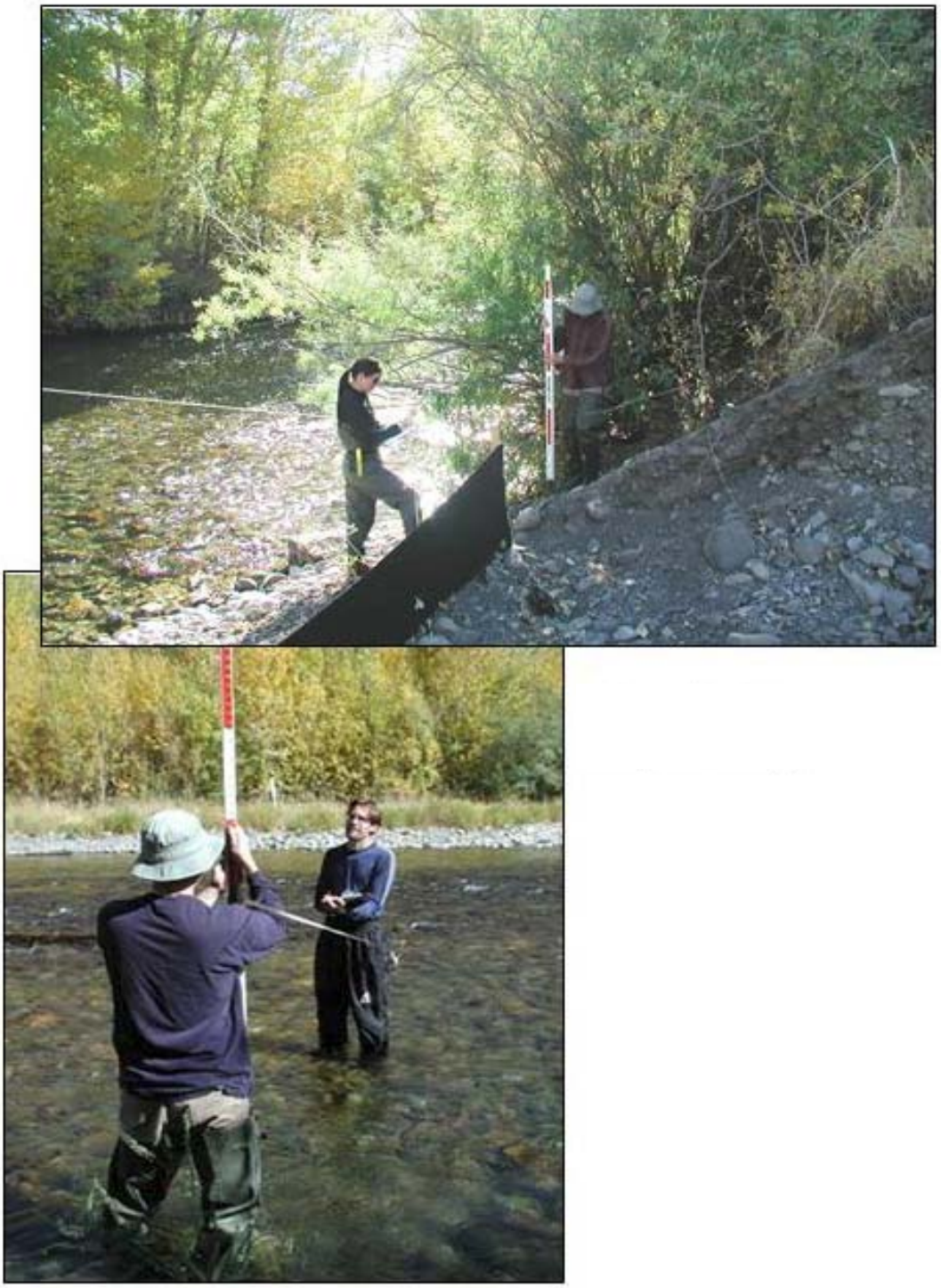

Figure 27. Before and after cross sections are also part of the monitoring process.

Figure 28. This project area has become a great place to educate Hailey kids and adults.

Figure 29. The fishing ain't bad either.

Mud Creek BMP Implementation Project

Introduction

The main goals of the Mud Creek Best Management Practices (BMP) Implementation Project are to reduce contributing nonpoint phosphorus loading and sedimentation being added to Cascade Reservoir by poor grazing practices along Mud Creek. This project will help meet the Cascade Reservoir Watershed Management Plan's (CRWMP) goal of decreasing the nonpoint source phosphorus loading by thirty percent.

Background

The Cascade Reservoir Watershed, located in the Payette River Basin of southwestern Idaho, was identified as water quality limited—according to the rules of section 303(d) of the Clean Water Act—in June 2000. The Mud Creek subwatershed, a major tributary to the reservoir, consists of predominantly open, flat agricultural land in which grazing practices and many irrigation ditches and diversions present sources of pollution.

The section of the Mud Creek subwatershed of interest for this project includes a roughly 7,000 ft stretch within a private landowner's property, approximately one and a half miles northwest of Cascade Reservoir. The land is located on Section 5 of the Donnelly and Lake Fork quad maps, west of Norwood Road and south of Nisula Road. Other private ranchers own the land to the north and south of this property.

Project Goals

Goals for this project included the following:

- Reduce total phosphorus and sediment loading to Cascade Reservoir.
- Reduce stream bank erosion caused by livestock.
- Improve riparian habitat for cold-water biota and wildlife.
- Raise awareness and accountability of Valley County ranchers to some of the grazing practices that are having detrimental effects on fish and wildlife habitat.
- Use the project as a public education tool, monitoring the project area before and after the BMPs are implemented to show rehabilitation progress.

Pollutant Issue

Poor grazing management practices are the primary source of pollutants targeted by this project; Mud Creek has been an unrestricted source of water and forage for livestock, resulting in the following:

- The shearing action of livestock hooves on stream banks has destabilized the soil and greatly increased the potential for erosion and sediment release into the creek.

- Grazing cattle have substantially reduced riparian vegetation, especially riparian shrubs, decreasing stream bank stability and depositional areas for sediment and increasing water temperatures.
- Vegetation is over-grazed in pastureland and is insufficient to retain sediment and absorb nutrients (dissolved phosphorus) during overland flow events.
- Current grazing practices contribute to nutrient loading through the deposition and transport of animal waste.

Treatment

The following Best Management Practices (BMPs) focus on restoring degraded riparian areas and modifying current grazing practices to reduce negative impacts. Their implementation will remove 15 kg of phosphorus and 87 tons of sediment from Cascade Reservoir each year.

- ***Bridges—***Three bridges will be built next season, providing cattle passage to pastureland across creek. Bridges drastically reduce stream bank erosion by providing an elevated passage for cattle and ranch equipment to cross the creek without causing soil compaction, streambank erosion, nutrient introduction or overutilization of riparian vegetation. Fencing will direct cattle over the bridge and safely through the riparian corridor.
- ***Fencing—***Fencing will exclude livestock from the riparian corridor, allowing regrowth of over utilized vegetation. A barbed wire laydown fence will have wildlife friendly wire spacing. Cattle will be excluded from the riparian corridor for three to four years, until full recovery of the vegetation and streambanks is achieved. Controlled grazing will be prescribed to maximize the health of riparian vegetation after recovery.
- ***Stream bank stabilization—***Seventeen *ELWd*® structures—engineered alternatives to woody debris—were installed on seven badly eroded banks in October 2003 by forty students from the advanced biology class at Cascade High School. These structures will stabilize stream banks, reduce soil erosion, and restore stream morphology.
- ***Riparian herbaceous cover—***About 230 native willows and alders, with established six-inch root systems, were planted in and around the ELWd Structures in late October 2003. The establishment of woody plants provides erosion control, consumes soil and water borne chemicals and nutrients, provides passerine habitat and ungulate cover, and decreases water temperatures. Once the ELWd structures erode away (in about ten years), the willow root systems will continue to stabilize the banks.
- ***Grazing management plan—***In order for the riparian BMPs to be fully effective, there must also be sound grazing management on the uplands. The riparian corridor alone cannot protect the health of the subwatershed because it will become overwhelmed with sediment and nutrient loading. The prescribed grazing plan will consist of rest rotations, leaving a specified stubble height, irrigation water management, etc.

October 2004 Semi-annual Progress Report:

In the October 2004 semi-annual progress report, the following aspects of the project were noted:

- **Photo monitoring**—Photos were taken at identical photo points at the beginning of the grazing season in June 2004 and will be compared to photos to be taken next year.
- **Breeding bird surveys**—A survey of breeding birds was conducted in June 2004, along the existing transect line. This data will be compared to data from future surveys.
- **Water quality monitoring**—Cascade High School students continued to take water quality samples at the northern and southern test sites on Mud Creek.
- **Fencing**—Riparian fencing line and gate locations were flagged. The contractor is currently building fence and is expected to complete work by December 1, 2004.
- **Grazing management plan**—Working with NRCS in Emmett to create a "Conservation Plan," project staff came out for a site visit and expect to complete a plan sometime this winter. The final plan should include a grazing rotation schedule, crossing fencing plan, pastureland re-establishment, and irrigation upgrade.





Figure 30. Students installing ELWd Structures along Mud Creek.

Figure 31. Mud Creek stream bank before and after ELWd Structures were installed.

Thomas Fork Stream Bank Stabilization Project

Introduction

The Bear Lake Regional Commission (BLRC) initiated this project to address an identified sediment and dissolved nutrient loading problem in the Thomas Fork Creek. Specifically, a targeted reach of the Thomas Fork Creek in Bear Lake County, Idaho was selected for implementation of stream bank stabilization practices that were proven effective on prior projects on the Thomas Fork.

Project Goal

The overall goal of the project was stated as follows:

> "Improve the quality of water in the Thomas Fork Creek and stabilize the banks within the targeted reach, so the stream can sustain its beneficial uses as well as improve water quality conditions within the Bear River and Bear Lake."

Project Objectives

To meet this goal, two objectives were defined:

Objective 1 Apply riparian and in-stream reclamation treatments along the Thomas Fork Creek for approximately 2,000 feet along degraded riparian zones.

Objective 2 Develop and implement a project administration, evaluation and environmental stewardship program that determines the effectiveness of the proposed activities and promotes their long-term care.

To meet the project goal and objectives, and to accommodate the needs of the landowner, this project addressed two issues at this site:

- Restricting livestock access to Thomas Fork Creek in this section with a fence and controlled water access.
- Restoring riparian vegetation to correct unstable bank conditions. Unstable bank conditions ultimately increase the total suspended solids within this reach of Thomas Fork Creek.

Best Management Practices (BMPs) were borrowed from Natural Resource Conservation Service (NRCS) designs and applied to suit site conditions. These practices were prepared by NRCS to mitigate impacts from U.S. Highway 89 construction in the same stream reach as this 319 project.

Description

The permitting and implementation of the BMPs were under the direction of the BLRC with assistance from the landowner. Monitoring by Ecosystem Research Institute of Logan, Utah included water quality chemistry and surveys of stream cross-sections. Extra effort was also made to coordinate and inform the following groups:

- Bear River Basin Advisory Group (Idaho).
- Bear River Basin Water Quality Task Force (Utah, Idaho, Wyoming).
- Bear Lake County Soil and Water Conservation District.
- U.S. Army Corp. of Engineers.
- Idaho Department of Water Resources.

Outputs from the project included the following:

- Installing BMPs on approximately 2,000 feet of stream bank and erection of electric fencing at strategic locations along =riparian areas adjacent to pastureland.
- Monitoring using three methods:

  - Water chemistry at two sites.

  - Photographic monitoring at each of the treatment sites (Figure 32).

  - Stream cross-section surveys at four locations in the project area.
- Presenting information about the project at the Bear Lake County Fair.
- Developing landowner maintenance agreements on completed project work.

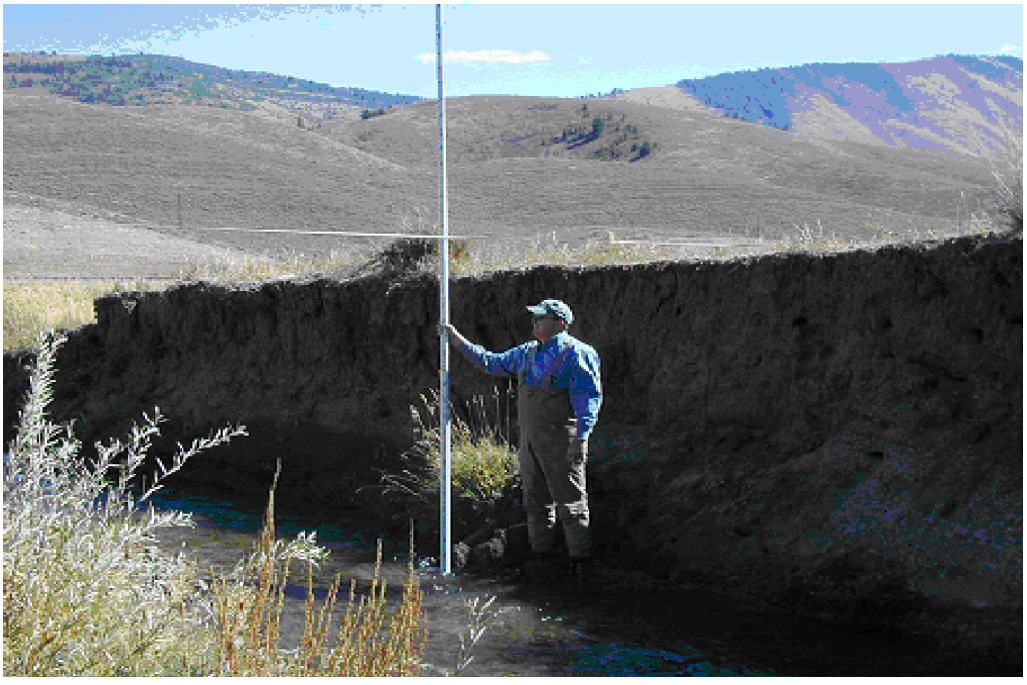

Figure 32. Photo monitoring site prior to bank reshaping

Background

The Thomas Fork Watershed consists of 150,100 acres located in Bear Lake County, Idaho and Lincoln County, Wyoming. The elevation of the valley floor of the watershed is about 6,600 feet above sea level.

Thomas Fork Creek is a tributary to the Bear River, immediately upstream from the diversion of the Bear River into Bear Lake—the latter designated by the State of Idaho as a *Special Resource Water*. Thomas Fork is listed as a 303(d) stream not supporting the beneficial uses of cold water biota, salmonid spawning, and primary and secondary contact recreation.

On its own, Thomas Fork Creek represents a valuable resource of concern. However, in addition to the values of the Thomas Fork, the eutrophication of Bear Lake and the degradation of the Bear River are due, in part, to excessive stream bank erosion from Thomas Fork.

Methods

This project employed BMPs used on prior treatment sites in the same general area for over six years. During the grant application process, for this project, five sections of stream bank were selected for the installation of these BMPs; construction of BMPs on the five sections was completed during the fall of 2003. Three different types of BMP treatments were employed, including stream barbs to direct the flow of the stream to the center of the stream channel, rip-rap along exposed stream bank, and re-vegetation using native vegetation and riparian vegetation seed mix. The stream sections completed are presented in Table 5.

Banks identified as significant contributors to turbidity of Thomas Fork have been *reshaped*, with banks evaluated based on the following criteria for shaping:

- Bank height in excess of five feet
- Riparian zone lacking vegetation
- Angle of bank approaching vertical
- Evidence of soil loss and recent caving

Shaping involves using heavy equipment to reduce the angle of the bank, place rock, and prepare for seeding. A trackhoe is used to excavate the banks to a 3:1 slope and remove excess material. Large angular rock is placed by the trackhoe at the toe of each slope and the bank is smoothed using the trackhoe to prepare the soil for grass-seed. (A trackhoe has proved to be superior to a backhoe based on reach and stability.)

Rip-rap is applied using landowner equipment. Rock—local geologic material quarried from a nearby site and composed of dense, angular material—is placed from the toe of the slope to near the crest of the bank to keep soil in place until vegetation can root.

Grass seed is planted on the upper portion of treated bank to keep soil in place and uptake nutrients. Each site is prepared by dragging a steel grate along the surface, after which seed—a mix of native material that encourages natural function: sheep fescue, crested wheatgrass, and stream bank wheatgrass—is spread by hand. The seeds are then covered to prevent predation by animals. (This seed mix was selected based on site conditions and agronomist recommendation.)

Stream barbs applied to this project were constructed of native geologic material mined from local quarries and use an NRCS design from a previous project along the same stretch. Core material is 1'-3' in diameter while cover material is 2"-10" in diameter and highly angular. Each barb was anchored into the bank and then extended into the flow along the streambed, at a 45° angle, and directed upstream.

Willow stock was produced on site from existing healthy communities and placed to maximize rooting. Cuttings were placed at half-foot intervals along treated areas, or other areas as needed, with each cutting pressed into the soil near the water's edge to make use of the water table. The density of cuttings was increased at rock barb locations, and willow bundles were also applied near barbs. Willow clumps were installed at locations where possible; this method involves excavating (using the trackhoe) complete willow bushes from one location and placing them at the water's edge along treated areas.

Table 5. BMPs applied along 2,230 feet of stream bank on Thomas Fork.

Segment	No. of Barbs	Length of total bank face rip-rap (ft)
A	2	464
B	2	632
C	2	376
D	3	623
E	2	135
Total bank BMPs	12	2,230

Monitoring

Monitoring of this project included the use of three methods: 1) photographs 2) stream transects and 3) water chemistry.

Photo monitoring

Photo monitoring includes taking photos before, during, and after construction, plus bi-annually thereafter. Photo monitoring has been an excellent method to track visual changes in treated areas, providing an educational tool for comparison of before and after effects of stabilized stream banks—as demonstrated by Figure 33 and Figure 34, which illustrate the short-term benefits to the riparian area. Photo monitoring will continue for two to three years, on semi-annual rotations, to document the longer-term success of treatments at this site.

Water chemistry and stream transects

Grab samples and cross-section surveys of the stream channel were taken above and below the project site to evaluate the efficacy of applied BMPs. Nutrients sampled included nitrate, nitrite, ammonia, and total suspended solids. Banks were surveyed to quantify sediment balance. (This work was performed by Ecosystems Research Institute of Logan, Utah, and the information collected will be included under separate cover.)

Maintenance agreement

An agreement for maintenance of the stream bank BMPs was signed by the landowner and is on file with the Bear Lake Regional Commission.

Figure 33. Segment B before construction (above) and six months after construction (below).

Figure 34. Segment C improvements prior to construction (above) and six months after implementation of BMPs (bottom).

Results

Rip-wrap is placed along banks that have been shaped to keep soil in place. This treatment appears to be the most effective method of keeping soil in place until seed can germinate and sprout. Areas of bank that begin to erode after construction are quickly and easily doctored using maintenance rock left on site as per the landowner maintenance agreement.

Barbs are used to deflect the flow of the water away from sensitive areas to encourage growth of riparian vegetation. This method is also highly effective in promoting re-growth of riparian vegetation. Rock for the barbs is provided by nearby quarries—a benefit to the project and the local economy. This method provides a very small cost benefit ratio, and it will continue to be used on Thomas Fork. Other benefits produced by implementing barbs include the creation of pool riffle sequences and the reduction of stream width during low flow. Examples of the improvements realized using barbs can be seen in Figure 35.

Figure 35. Illustration of the effectiveness of bank barbs at protecting degraded areas. The emergent vegetation near the bottom of the photo exists on an aggraded gravel bar produced by barb placement upstream.

Indirectly, barbs provide an environment to further accomplish all the goals of stream bank stabilization. The benefits of barbs include increased dissolved oxygen, reduced water temperature, and improved uptake of nutrients.

Reseeding using native grass seed and willow cuttings provides longevity to the project and improves nutrient uptake while reducing sediment entering the stream. Reseeding with native grass seed often provides results after the first rainstorm or spring thaw, whichever comes first. Once applied, the grass spreads to other areas, stabilizing the soil with the grasses' root mass.

Experimental reseeding was applied at several locations as an impromptu pilot project. After banks are reshaped and toe armoring is completed, re-vegetation was applied using the trackhoe. Strips of pasture grass were grafted from the pasture and applied to the stream bank in a mosaic

pattern. It is anticipated that these dormant grass strips will revive and root during the spring, providing an accelerated initial stage of revegetation.

Willow wattles were placed near bank barbs to further facilitate the precipitation of sediment out of the water column. This method was introduced late in the project and, therefore, only at few locations. Additional experimentation using this method will be pursued to improve survival rate. Those wattles that were constructed effectively reduced velocity in the immediate vicinity of the stream bank.

The success of Thomas Fork stream bank stabilization projects are dependent upon active landowner participation. Donations are provided by the landowner in the form of labor and equipment, and landowners have been encouraged by the amount of farmable acres that are available to them as their banks are stabilized. The 40% match component is being met by the landowner for this project.

Conclusions

The BMPs applied to this section of Thomas Fork Creek have proved adequate, but, based on field observations, additional improvements can be made. Modifications will be made to enhance the success of these efforts to stabilize the Thomas Fork.

Public awareness and attitudes have been influenced by the projects implemented along the Thomas Fork. Proximity to U.S. Highway 89 has prompted passersby to stop and inquire about the project. Local members of the Bear Lake Soil and Water Conservation District have been impressed by these projects and have requested assistance for similar projects on their own property bordering the Thomas Fork—a major paradigm shift in local landowner attitudes toward stream bank stabilization efforts. Other participants included the Idaho Department of Transportation, which is interested in applying BMPs to several segments of the Bear River that threaten the integrity of State Highway 30 from Montpelier to Border at Wyoming

The success of these projects and the level of local interest generated by them have far surpassed any expectations:

- The treatments applied to the Thomas Fork—historically a source of sediment and nutrients to the Bear River and Bear Lake—have proven effective in removing nutrients and reducing sediment. The application of treatments to stream banks has reduced, and will continue to reduce, the sediment and nutrient loading problem for Thomas Fork Creek.
- Moreover, landowner support has been positive in implementing these treatments and changing perceptions. Collaborative partnerships between landowners and the Department of Environmental Quality will continue to reduce the pollutants in the Thomas Fork until its beneficial uses of cold water biota, salmonid spawning and secondary contact are met.

Appendix: 2004 Evaluation Reports

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Tammany Creek Watershed Improvement

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S072 Tammany Creek Watershed Improvement

2) Latitude/Longitude: 46.3582° N, 116.9973° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

1706010300023,24,25

4) Project Start Date: April 15, 2003 **5) Today's Date:** July 8, 2004

6) Anticipated Completion Date:

December 30, 2004

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

No reports have been received to date.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Lynn Rasmussen	Project Manager	The Nez Perce Soil & Water Conservation District (NPSWCD)	1630 23rd Avenue, Lewiston, Idaho	(208) 790-3982
Joe Kaufman	Engineering Technician	NPSWCD	1630 23rd Avenue, Lewiston, Idaho	(208) 746-9886 #3
Todd Whitman	Chairman	NPSWCD	1630 23rd Avenue, Lewiston, Idaho	(208) 843-2325
John Cardwell		DEQ- Lewiston Regional Office		
Jerry West		DEQ- State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMPs observed include filter strips, willow plantings, sediment basins direct seeding, mulch seeding, conventional seeding, and grade control structures along road.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

Joe Kaufman and Lynn Rasmussen will supply load reduction estimates via WEP modeling by September 1, 2004.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project will likely require a time extension. I instructed Lynn Rasmussen to send an email to Todd Maguire asking for an extension if needed.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

The Nez Perce Soil and Water Conservation District will continue to monitor the agricultural BMPs and long term sediment monitoring.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is part of the TMDL implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original plan.

15) Additional comments:

See attached photographs taken during the July 9, 2004 evaluation.

Figure 36. Low till farming techniques involve barely scratching the land surface and protecting the soil profile rather than disking and turning the soil over.

Figure 37. Low till farming techniques were applied to this field.

Figure 38. These folks are standing in a storm water and irrigation catchment basin that allows sediment to settle out.

Figure 39. This is another view of the catchment basin.

Figure 40. This is some of the area that drains to the catchment basin.

Figure 41. Low till farming techniques have been applied here.

Figure 42. A closer view of the field shows that the wheat stalks are still preserved due to low till farming. Low till farming saves topsoil, requires less fertilizer, and results in a better soil profile. All of this ultimately results in a better crop yield.

Blue Creek Bay Water Quality Improvement Project

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number:

S073 Blue Creek Bay Water Quality Improvement Project

2) Latitude/Longitude: 47.6338° N, 116.6661° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code: 17010303000273

4) Project Start Date: April 15, 2003 **5) Today's Date:** August 9, 2004

6) Anticipated Completion Date:

December 31, 2004

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

May 20, 2004

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Mike Stevenson	District Hydrologist	Bureau of Land Management (BLM)	1808 N. 3rd Coeur d' Alene, Idaho 83814	(208) 769-5024
John Pankratz	District Supervisor	East Side Highway District	6095 E Mullen Trail Coeur d' Alene, Idaho 83814	(208) 765-4714
Shallon Dawson		DEQ – Coeur d' Alene Regional Office		
Jerry West		DEQ- State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMPs observed include settling pond, stream bank stabilization, road cut stabilization, and 300 feet of stream channel realignment.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

Direct calculations were made, indicating that 135 tons of sediment per year and 267 pounds of phosphorous per year will be kept from entering Coeur d' Alene due to this project.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project is on schedule and has been completed.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Direct measurements in the settling pond will be made.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

Coeur d' Alene Lake is listed for metals. By reducing nutrients and associated sediment it will be easier to maintain eutrophic conditions in the lake.

14) Have there been any deviations from the approved work plan? If so, please explain.

There were no deviations from the original plan.

15) Additional comments:

See attached photographs taken during construction and during the August 9, 2004 site evaluation.

Figure 43. This is a tough situation to deal with: Blue Creek and the road occupy the same narrow valley. This photograph was taken during the early construction phase.

Figure 44. Upon completion, the creek bed (right side of road) and road are much less vulnerable to erosion.

Figure 45. Some of the road cuts had to be sloped, vegetated, and armored.

Figure 46. Woody vegetation was added, along with grass.

Figure 47. Woody vegetation is quickly establishing itself.

Figure 48. Blue Creek only flows during spring runoff or during storm events.

Figure 49. This bench slows the velocity of storm water, channeling some of the water off the vulnerable road cut.

Figure 50. Some road cuts are in solid bedrock and need no special BMP treatment.

Figure 51. Although erosion has been greatly reduced, some sediment is still generated and needs to be trapped. The lake is about a half mile below this point.

Figure 52. The lake is only about a quarter mile from this point. The valley is wider and has a lower gradient, allowing room for the stream channel to be removed from its former position adjacent to the road.

Weiser Water Quality Protection

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S074

2) Latitude/Longitude: 44.2675° N, 117.0338° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

The stream reach code for Scott Creek is 17050201000198

4) Project Start Date: 4-15-2003 **5) Today's Date:** 6-23-2004

6) Anticipated Completion Date:

12-30-2004

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

April 21, 2004

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Mike Hartnett	Supervisor	Weiser River Soil & Water District	849 E. 9th Ave. Weiser, Idaho 83672	(208) 549-4250
Mark Carpenter	District. Conservationist	Weiser River Soil & Water Dist	849 E. 9th Ave. Weiser, Idaho 83672	(208) 549-4250
Pam Smolczynski		DEQ—Boise Regional Office		
Jerry West		DEQ—State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMPs visited include drip irrigation and surge irrigation with soil moisture sensors, ground water monitor wells, lysimeters, filter strips, and sediment basins.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

Robin Hadeler (National Resources Conservation Service at same office) will send us calculations by August 1, 2004. They will be using the Soil Induced surface Loss method for calculations.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

Funding came late, therefore work did not start until August rather than April 2003. The project is now back on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

The main thrust of this project is to improve ground water quality. Therefore ground water monitoring from 15 wells will be ongoing. There will be photo monitoring of surface water conditions and BURP sampling will continue.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is the main component of the Ground Water Management Plan for Weiser.

14) Have there been any deviations from the approved work plan? If so, please explain.

A wetland was part of the original plan but has since been determined to not be necessary. That money was reallocated to the other BMPs listed.

15) Additional comments:

See photographs taken during evaluation. Mark will send load reduction calculations by August 1, 2004.

Property owners involved in the project are listed in the following table. The numbers of systems are shown in parentheses.

Property Owner	Acreage	BMPs
Garold Dick	38	Soil grid testing; (4) moisture sensor systems; surge system; (9) lysimeters; to install a sediment basin; no monitoring wells - not accessible to equipment
Saito Bros.	39.8	Soil grid testing; (4) moisture sensor systems; drip system; (4) monitoring wells; (4) lysimeters; filter strip not needed; leak in discharge hose
Ernie Chandler	38	Sediment basin; (4) moisture sensors; (3) wells; 3 lysimeters; surge system; split wheat and onion
Wayne Chandler	9.2	Soil grid testing; (1) moisture sensor system; surge system; (3) lysimeters; no filter strip
Nakamura Bros.	34.2	Soil grid testing; (2) soil moisture sensor systems; filter strip; sediment basin (already installed); surge system; (5) monitoring wells
Nakamura Bros.	16.4	Soil grid testing; (2) soil moisture sensor systems; kidney beans
Dyke Nagasaka	23	Drip system; (6) lysimeters; filter strips; 1/2 onion/
Stuart Syme	30.8	Soil grid testing; surge system; (2) moisture sensor systems - next year; no filter strip needed; (3) monitoring wells; existing sediment basin; (3) lysimeters

Figure 53. The department of Agriculture is monitoring wells in this high nitrate ground water area to determine if the work is reducing nitrate.

Figure 54. This is a filter system designed to keep solid debris from clogging the irrigation system.

Figure 55. This filter strip will remove most of the sediment before irrigation water is returned to the river.

Figure 56. This filter has just been cleaned out.

Figure 57. A cleanout valve for a drip irrigation system.

Figure 58. A lysimeter connected to a surge irrigation system.

Figure 59. A moisture sensor connected to a surge system.

Figure 60. This is the monitor for the moisture sensor.

Figure 61. One of fifteen monitor wells in the Weiser nitrogen non-attainment area.

Figure 62. All fifteen monitor wells are securely locked for security.

Figure 63. The Weiser River is just beyond this field, and ground water is only a few feet below the surface.

Figure 64. The surge irrigation system in this field will automatically allow part of the field to be irrigated at a time, using water more efficiently and reducing water pollution.

Figure 65. This settling pond reduces sediment and allows irrigation water to be re-circulated to the fields.

Figure 66. This is a surge system control valve.

South Fork Palouse River Restoration

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S076 South Fork Palouse River Restoration

2) Latitude/Longitude: 46.7136°N, 117.0188° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17060108

4) Project Start Date: April 30, 2003 **5) Today's Date:** July 22, 2004

6) Anticipated Completion Date:

December 30, 2004

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

The last semiannual report was submitted on June 4, 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Kajsa Stromberg	Watersheds Program Coordinator	Palouse Clearwater Environmental Institute	PO Box 8596, 112 West 4th Street, Moscow, Idaho 83843	(208) 882-1444
Ken Hopson	Technician	Palouse Clearwater Environmental Institute (PCEI)	PO Box 8596, 112 West 4th Street, Moscow, Idaho 83843	(208) 882-1444
Jerry West		DEQ – State Office		
John Cardwell		DEQ – Lewiston Regional Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMPs visited during this evaluation include stream bank stabilization, riparian plantings, and habitat construction.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

Ken Hobson will make direct calculations for sediment, phosphorous and nitrogen.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

The project is on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Palouse Clearwater Environmental Institute (PCEI) will contract with University of Idaho graduate students to conduct stream monitoring.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is part of the South Fork Palouse River TMDL.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original work plan.

15) Additional comments:

See photographs taken during the site evaluation.

Figure 67. Part of the public education/awareness process that PCEI stresses for all of its projects.

Figure 68. Protective collars give newly planted woody plants some protection from animals that dine on such plants.

Figure 69. A Hawthorn plant—one of hundreds of woody plants planted during this project.

Figure 70. Ponderosa doing well.

Figure 71. Wetland pond that benefits wildlife and treats storm water.

Figure 72. Many of the hundreds of plants.

Figure 73. Here is another wetland pond.

Figure 74. The three folk on the left managed and worked on this project. The other two are DEQ regional office staff.

Mud Creek BMP Implementation

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S077

2) Latitude/Longitude: 44.7461° N, 116.1128° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17050123000301

4) Project Start Date: 4/15/2003

5) Today's Date: 6/15/2004

6) Anticipated Completion Date:

12/30/2004

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

The last semi annual report was submitted on April 21, 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Hilary Smith	Natural Resource Specialist	Tamarack Resort	101 East lake Street, McCall Idaho	(208) 634-8475
Pam Smolczynski		DEQ Boise Regional Office		
Jerry West		DEQ State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

We visited eleven different Engineered Large Woody Debris (ELWd™) features (see photographs) designed to stabilize the stream bank. There are three livestock bridges and 14,000 feet of fencing yet to be installed this summer.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

Hilary to notify me ASAP (6/16/030).

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

Yes.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Water quality samples will be collected at specified sites located at the top and bottom ends of the work area during spring, and again in the fall of each year. Supervised local high school kids will do the sampling.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is part of the implementation plan for Cascade Reservoir.

14) Have there been any deviations from the approved work plan? If so, please explain.

There are no deviations from the original work plan

15) Additional comments:

See photographs taken during the site evaluation.

Figure 75. This stretch of Mud Creek has suffered from overgrazing and associated head cutting and erosion.

Figure 76. Prefabricated structures with the trademark name "ELWd Structures" were employed on 11 areas along Mud Creek to repair the damage.

Figure 77. Biodegradable geonetting is stapled over the damaged area and the ELWd structures are anchored in place with heavy steel cables and stakes.

Figure 78. Vegetation then naturally takes root.

Figure 79. The ELWd structures may not be very attractive during the first year or two. . .

Figure 80. . . . but, with time, they begin to blend in with their surroundings.

Figure 81. Some of the damaged areas require several ELWd structures in line.

Figure 82. In a few years, this entire segment of Mud Creek will look like this.

Gold Fork Watershed BMP Implementation

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S080 Gold Fork Watershed BMP Implementation Project

2) Latitude/Longitude: 44.6740° N, 116.0771° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

The HUC and stream reach code for the confluence of Gold Fork River with N. Fork Payette River in Cascade Reservoir is 17050123000009.

4) Project Start Date: April 15, 2003 **5) Today's Date:** October 27, 2004

6) Anticipated Completion Date:

The completion date was originally set for December 30, 2004. However this project was delayed by coordination complications with Paradise Creek Home Owners Association and narrow time restrictions for required low water level at Cascade Reservoir.

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

The last report was received in October 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Pam Smolczynski		DEQ Boise Regional Office		
Jerry West		DEQ State Office		
Kathy Taylor	President	Paradise Cove Home Owner's Association		325-8740
Guy Hopkens				
Leslie Freeman		DEQ Cascade		(208) 382-6808

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

We observed approximately 1,200 feet of shoreline stabilization including retaining walls constructed of "Versa-Block", tree revetments, log breakers and root wads. Other stabilization BMPs includes bank sloping, French drains, and vegetative plantings.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

Unknown.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

The project is on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Unknown.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project should be part of the Implementation Plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

The Soil Conservation District has requested and received $91,835. However, the Paradise Cove Home Owners Association has not completed any of the work and the District has not made any payments to the association.

15) Additional comments:

See the photos taken during the evaluation.

Figure 83. During high water periods, unprotected shoreline becomes a major source of sediment and nutrients to Cascade Reservoir. Well engineered and built retaining walls are the best solution to this source of water pollution.

Figure 84. Interlocking manufactured blocks mounted on a properly engineered concrete footer is one good method to prevent lake pollution resulting from stormwater runoff.

Figure 85. French drain pipe runs along the shore side of the retaining wall and drains into this sump. This prevents water and ice pressure against the wall.

Figure 86. The drain and sump system discharges to the lake.

Figure 87. This span of wall will look similar to the one in the distance once completed. All of the work described can only be completed during low water level periods on the lake.

Panhandle Health District Bioretention Demonstration

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S081 Panhandle Health District Bioretention Demonstration Project

2) Latitude/Longitude: 47.7210° N, 116.7770° W, Coeur d'Alene High School

3) Project location, including 8-digit HUC and/or 14-digit stream reach code: 170103000001, St Joe River at Coeur d' Alene Lake

4) Project Start Date: June 15, 2003 **5) Today's Date:** August 9, 2004

6) Anticipated Completion Date:

June 15, 2005

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

May 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Annette Duerock	Storm Water Coordinator	Panhandle Health District	2195 Ironwood Ct Coeur d'Alene, Idaho 83814	(208) 667-9513
Shallan Dawson		DEQ – Coeur d' Alene Regional Office		
Jerry West		DEQ – State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

This project compares treatment effectiveness between conventional bioretention storm water BMP and "Stormtreat" technology.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

This project does not deal with a surface water body.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

Although there was a delay, due to funding, the project was completed on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

The district health department will be sampling the facility after each major storm event.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is not part of a TMDL.

14) Have there been any deviations from the approved work plan? If so, please explain.

The location of the demonstration project had to be changed from the district health district parking lot to the Coeur d' Alene High School parking lot

15) Additional comments:

See attached photographs.

Figure 88. Annette Duerock, Storm Water Program Coordinator for the Panhandle Health District, stands in the laboratory where storm water samples are analyzed for contaminants.

Figure 89. This is Annette's Storm Water Mobile lab, which she uses for education.

Figure 90. This sign explains the need for storm water BMPs and what this particular project entails.


Figure 91. This is the "Stormtreat" system.

Figure 92. This shows the inner working of the system.

Figure 93. This is the high school parking lot setting for the Stormtreat system.

Figure 94. This is the conventional bioretention basin that is being compared to the Stormtreat system.

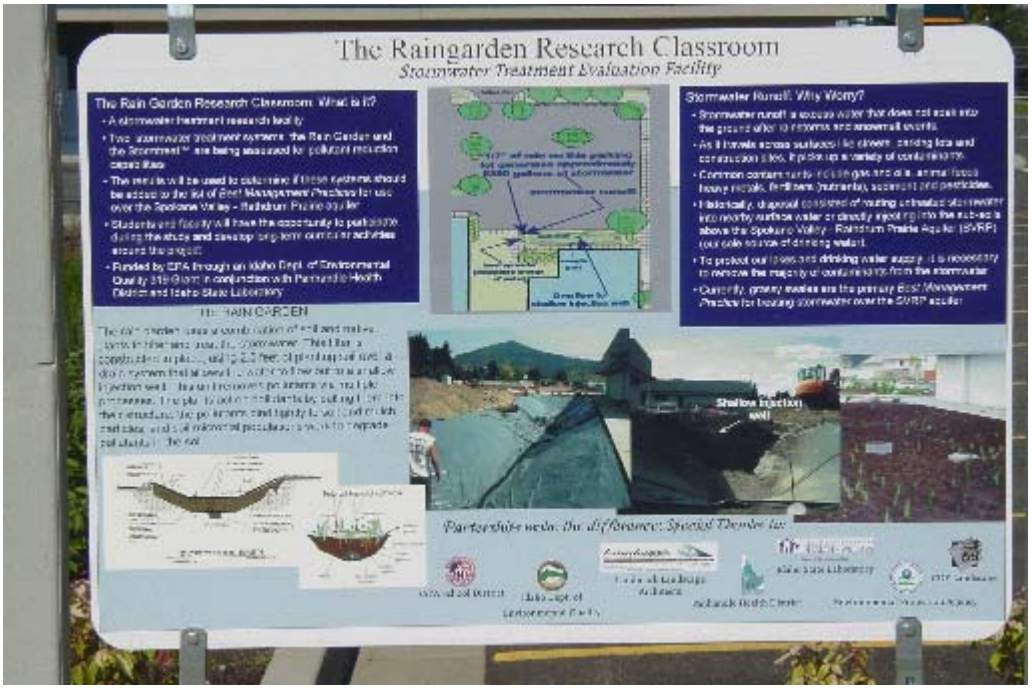

Figure 95. This sign explains to the public how both technologies work.

Kid Creek Mica Creek Retention Ponds

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number:

S091 Kid Creek Mica Creek Retention Ponds

2) Latitude/Longitude:

Kid Creek – 47.6294° N, 116.8115° W

Mica Creek – 47.6013° N, 116. 8740° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code: 17010303

4) Project Start Date: July 15, 2003

5) Today's Date: August 10, 2004

6) Anticipated Completion Date:

December 31, 2004.

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

April 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Mark Hogan		Soil Conservation Commission		
Bob Flagor		Kootenai-Shoshone Soil and Water Conservation District		
Shallon Dawson		DEQ – Coeur d' Alene RO		
Jerry West		DEQ – State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

Sediment retention pond and extensive plantings, including grass and woody plants.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

STEPL load reduction estimates were completed by DEQ based on BMP information supplied by the project officer. Sediment load reductions are estimated to be 160 tons per year. Bacteria levels will also be reduced.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project is on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

This project will be monitored for sediment reduction by DEQ.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is part of the TMDL for lake Coeur d'Alene.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original plan

15) Additional comments:

See the attached photographs taken during the August 9, 2004 site evaluation.

Mark Hogan will send the electronic version of the May 2004 report completed by Kootenai-Shoshone Soil and Water Conservation District.

Figure 96. As development expands south of Coeur d'Alene Lake, storm water must be addressed. This sediment basin treats storm water from the Kid Creek watershed.

Figure 97. Woody plants have been planted along the shore of the settling pond.

Figure 98. Various grasses have also been planted.

Figure 99. Homes will soon be built here. This storm water BMP will also have aesthetic value.

Figure 100. Right now, the shoreline looks barren. But an aspen grove will soon be growing in the area where this photograph was taken.

Figure 101. To ensure structural integrity, no trees will be planted on the dam.

Lower Payette River TMDL Implementation

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S098S

2) Latitude/Longitude: 43.8952° N, 116.6218°

Lower Payette River TMDL Implementation Project

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17050122

4) Project Start Date: 11-30-2003 **5) Today's Date:** 6-23-2004

6) Anticipated Completion Date:

9-30-2005

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

The last report was submitted on April 21, 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Levi Montoya	District. Conservationist	Gem Co. Soil & Water Conservation District.	1805 Hwy 16, Emmett, Idaho	(208) 365-4212 #101
Loretta Obrian	Tech Support	"	"	"
Sheryl Stelling	Administrative Assistant	"	"	"
Pam Smolczynski		DEQ—Boise Regional Office		
Jerry West		DEQ—State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

Sediment basins, fencing, pipeline, Confined Animal Feeding Operations (CAFO) modifications, storm water diversions, stream bank stabilization.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

Project Officer Loretta Obrian will email to me the dimensions and numbers of BMPs by September 1, 2004, and we will run the STEPL model for basins, fencing, pipeline, stream bank stabilization, and CAFO modifications.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project is on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Bissel Creek and Lower Payette River will be sampled monthly this year and will move to quarterly sampling thereafter. Photo monitoring will also be conducted annually.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is part of the Lower Payette River TMDL Implementation Plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original plan.

15) Additional comments:

See photographs taken during the evaluation.

Figure 102. This photo, and the next three, demonstrates how bad the problem of silt laden irrigation water is in the project area.

Figure 103. Here is more contaminated irrigation water. Untreated irrigation return water is a major contributor of silt and nutrients to the Lower Payette River.

Figure 104. This section of open ditch will be replaced with PVC irrigation pipe.

Figure 105. Silt and nutrients are generated by high-energy flow through irrigation ditches and from this roadbed. The installation of PVC pipe to transfer irrigation return flow will reduce silt in irrigation water.

Figure 106. Contaminated irrigation return water runs along the far end of this field.

Figure 107. This is more silt-laden irrigation return water.

Figure 108. This makeshift settling pond quickly gets filled with silt and nutrients.

Figure 109. Cattle are allowed to water in this irrigation ditch. This practice will be eliminated through exclusionary fencing.

Figure 110. This Animal Feeding Operation (AFO) will be fenced off from surface water.

Edson Fichter Nature Area

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number:

S093 Edson Fichter Nature Area

2) Latitude/Longitude: 42.8206° N, 112.4009° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17040208

4) Project Start Date: March 2003 **5) Today's Date:** August 24, 2004

6) Anticipated Completion Date:

March 2004

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

April 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Lynn Van Every		DEQ Pocatello Regional Office		
Dean Rose	Project manager	Idaho Fish and Game	Pocatello, Idaho	(208) 232-4703
Joan Hansen	Consultant		Pocatello, IDIdaho	
Jerry West		DEQ- State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMPs visited include revetments, seeding along stream bank, restoration of 700 feet of meandering stream channel, installation of 300 feet of water channel to convey water to a settling pond, and a small settling pond.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

STEPL was used.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project was completed on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

There are currently five monitoring stations and one more scheduled to be added. These stations send real time data, every ten minutes, to a computer at Idaho State University.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is reducing sediment to the Portneuf River and is part of the River's TMDL implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

Originally the plan called for installation of a temporary bridge to bring in construction equipment. Instead, a hard crossing was installed at less cost.

15) Additional comments:

See photographs taken during the site evaluation.

Figure 111. When we arrived at the site for the evaluation, this sign, explaining to the public the purpose of the project, was about to be placed at the trailhead. The Portneuf River carries excessive sediment and nutrients, and this project will reduce those contaminants, while providing an aesthetically pleasing, park-like environment for this heavily used area situated on the edge of Pocatello.

Figure 112. Some finishing touches are being completed along the greenbelt walkway.

Figure 113. This will be a small seating area, designed for public presentations and education.

Figure 114. This footbridge spans the settling pond water intake canal.

Figure 115. This is the water intake canal for the settling pond.

Figure 116. This settling pond is now removing sediment from the Portneuf River.

Figure 117. This is another view of the settling pond.

Figure 118. Joan Hansen, who helped design this project, is showing us a gravel hardened access point where dogs can take a swim under their owners' supervision.

Figure 119. This is return water, going back to the Portneuf River after depositing some of its sediment and nutrient load into the settling pond.

Figure 120. This is the pump that lifts water from the Portneuf River to the inlet canal.

Figure 121. This is the intake port.

Figure 122. This is the Portneuf River, just below the project.

Cottonwood Creek

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S099S & S017 Cottonwood Creek **2) Latitude/Longitude:**

The confluence of Stockney Creek and Cottonwood Creek is 46.0396° N, 116.2146° W.

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

Sub-watershed: Stockney Creek HUC: 17060305

4) Project Start Date: S017 - March 1, 2001 **5) Today's Date:**

S099S - November 30, 2003 July 9, 2004

6) Anticipated Completion Date:

S017 – December 31, 2004; S099S - September 9, 2005

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

June 23, 2004

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Scott Wasem	Board Chairman	Idaho County Soil and Water Conservation District (ISWCD)	Rt. 1, Box 2 Grangeville, Idaho 83530	208-983-1046 ext. 3
Leon Slichter	Board Vice Chairman.	ISWCD	Rt. 1, Box 2 Grangeville, Idaho 83530	208-983-1046 ext. 3
Pete Lane	Board Treasurer	ISWCD	Rt. 1, Box 2 Grangeville, Idaho 83530	208-983-1046 ext. 3
Holly Cotton	District Administrator	ISWCD	Rt. 1, Box 2 Grangeville, Idaho 83530	208-983-1046 ext. 3
Eileen Rowan	Water Quality Specialist	Idaho Soil Conservation Commission (ISCC)	2200 Michigan Avenue, Orofino, Idaho 83544	208- 476-5313
Richard Spencer	DC	Natural Resources Conservation Service	Rt. 1, Box 2 Grangeville, Idaho 83530	208-983-1046 ext. 3
Cliff Tacke	Chairman	Cottonwood Water Advisory Group (WAG)	Rt. 1, Box 141 Greencreek, Idaho 83533	208-962-3902
Leslie Workman	ISWCD staff	ISWCD	Rt. 1, Box 2 Grangeville, Idaho	208-983-1046 ext.3
Jerry West		DEQ – State Office		

9) List the BMPs or features visited during this evaluation:

BMPs observed include direct seed, AFO relocations, filter strips, sediment basins, and rebuilt septic systems.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

The project officer used RUSLE soil data and actual on-site monitoring.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

The project is on schedule for the majority of tasks. There has been great interest in BMPs involving direct seeding, minimal tilling, and nutrient management. There has been less community interest in settling ponds and filter strips. There has been minimal intreat in riparian and critical habitat creation. There have been some complications regarding installation of septic system drain fields due to low permeability soils. Instead, evaporation lagoon systems have been built.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Project monitoring has been conducted by the Idaho Association of Soil Conservation Districts (IASCD) in 2002 and is on scheduled for follow-up monitoring in 2005. The Nezperce Tribe has and will continue to conduct grab sample monitoring as necessary.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This is the implementation of the TMDL implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

Use of some BMPs, including sediment basins, filter strips, and drain fields have been reduced in favor of the other BMPs mentioned under #9 above.

15) Additional comments:

See attached photographs taken during the July 9, 2004 evaluation.

Figure 123. This hardened crossing keeps the cattle and sediment out of the creek.

Figure 124. The rancher learned to contain small water tanks within the corral and to fence the cattle out of the creek.

Figure 125. The creek was piped under the cattle crossing—instead of allowing water to run on the surface where cattle walk.

Figure 126. Members of the Watershed Area Group including ranchers, Soil Conservation Commission, Natural Resources Conservation Service, and DEQ that were along on the tour.

Figure 127. This plow can be adjusted to cause minimal disturbance to the field, creating less sediment runoff while allowing better soil profile and crop yield.

Figure 128. This exclusionary fencing keeps cattle out of the creek.

Figure 129. Gutters were added to numerous barns. This diverts storm water around manure-filled corrals.

Figure 130. Captured storm water is piped to an infiltration pond where pollutants are greatly reduced prior to contact with groundwater.

Figure 131. Residential sewage lagoons treat septic waste in sealed ponds, rather than letting untreated waste flow to surface water or to groundwater.

Figure 132. Numerous sediment basins have been installed in waterways in wheat fields. The trapped nutrient-laden sediment is routinely hauled back up on the fields, where it can nourish the crops.

Tammany Creek Restoration

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S100S Tammany Creek Restoration Project

2) Latitude/Longitude: 46N X 117W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

HUC Code: 17060103 Township and Range: T35N R6W

4) Project Start Date: **5) Today's Date:**

11/30/04 07/22/04

6) Anticipated Completion Date:

09/30/05

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

Implementation of the project began in April 2004. Therefore, the first semi-annual report will be submitted in October 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Kajsa Stromberg	Watersheds Program Coordinator	Palouse-Clearwater Environmental Institute	PO Box 8596, 112 West Fourth St, Suite 1, Moscow, Idaho 83843 stromberg@pcei.org	(208) 882-1444
Levi Berquist	Owner	Lucky Acres Horse Stables	4066 Luck lane, Lewiston, Idaho, 83501	
John Cardwell	DEQ – Lewiston Regional Office			
Jerry West	DEQ – State Office			

9) List the BMPs or features visited during this evaluation:

BMPs observed during this evaluation included stream bank stabilization, plantings, filter strips, berms, swales, fencing, and a horse wash station relocation.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

STEPL modeling will be used by DEQ once BMP dimensions are supplied by project officer.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

The project was delayed due to weather but is now on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Photographs will be taken and BURP water samples will be taken annually.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is part of the TMDL implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original work plan.

15) Additional comments:

See attached photographs taken during the site evaluation.

Figure 133. The metal barrier on the left side of Tammany Creek prevents sediment from eroding into the creek.

Figure 134. The horse arena, which was a constant source of sediment, had to be pulled back away from the creek.

Figure 135. Vegetation was established to help reduce erosion.

Figure 136. All buildings that used to shed storm water to the creek are now guttered. The storm water is conveyed to infiltration trenches and no longer comes in contact with horse manure.

Figure 137. A berm was added to the right side of the creek and the concrete horse trailer wash station on the left side of the photograph is no longer used.

Figure 138. Horse trailers are now washed where the parking lot slopes away from the creek.

Figure 139. Creek banks are sloped and grassed to prevent erosion.

Figure 140. This parking lot used to slope towards the creek; it has now been resloped away from the creek. Storm water from this area is collected in a settling pond, where water now evaporates or slowly infiltrates.

Jim Ford Creek Watershed Enhancement

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S015 Jim Ford Creek

2) Latitude/Longitude:

Subprojects:	**Latitude (°N)**	**Longitude (°W)**
Haywood Creek	46.3764	115.8723
Grasshopper Creek	46.3924	115.9323
Roy Lacey	46.3547	115.8902
Chapman Wetland	46.3626	115.9067
Green Road	46.4252	116.0435
Johnson Road	46.4247	115.8999
Winter Creek	46.4334	115.9497
Miles Creek	46.3167	115.8780

3) Project location, including 8-digit HUC and/or 14-digit stream reach code: 17060306

4) Project Start Date: May 31, 2001 **5) Today's Date:** July 8, 2004

6) Anticipated Completion Date: October 31, 2003

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report? September 30, 2003

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Mike Hoffman, SCC, 2200 Michigan Ave. Orofino, ID 83544		Soil Conservation commission	2200 Michigan Ave. Orofino. Idaho, 83544	476-5310 #101
John Cardwell		DEQ – Lewiston Regional Office		
Jerry West		DEQ- State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMPs visited include gully plugs, road rocking, fish friendly culvert installation, and six miles of fencing; plantings, including 9,200 willow cuttings, 3,300 lodge pole pine, 1,100 dogwood, 2,500 hawthorn, 100 alder, 100 cottonwood, and 200 spirea were placed along 1,350 feet of stream bank for stabilization.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

N/A. This project predates this requirement.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

Yes, this project is on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Water in the Jim Ford watershed will continue to be monitored through DEQ's BURP sampling program.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is a major component of the TMDL implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations.

15) Additional comments:

See attached photos taken during the July 8, 2004 evaluation.

Figure 141. Formerly, this AFO drained directly to the creek below with no segregation of storm water.

Figure 142. Now, storm water from the barn roof runs to an infiltration trench that is fenced off from the cattle.

Figure 143. Storm water from above this AFO is being diverted around the facility to prevent contamination.

Figure 144. Animals are fed and housed within this barn during winter months to prevent excessive manure build up outside, where heavy snow falls can cause infiltration of nutrients to ground water.

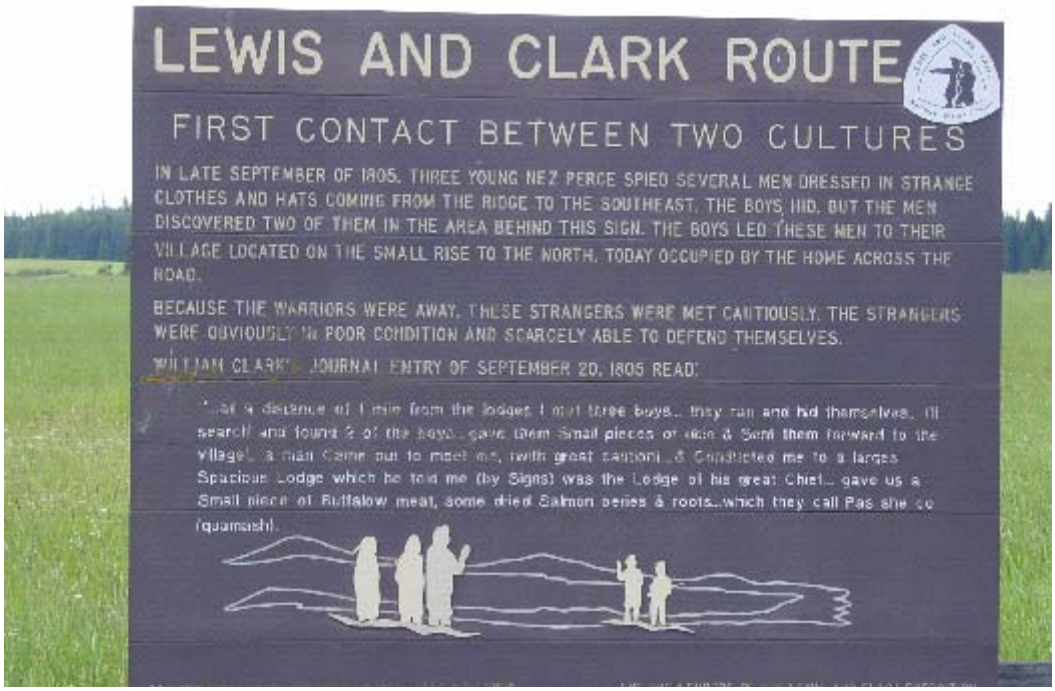

Figure 145. Historic areas like this can also receive BMPs if the work is conducted with special care.

Figure 146. This section of private land is being converted from agricultural land to a wetland.

Figure 147. This segment of creek has recently been fenced off from cattle.

Medicine Lodge Creek TMDL Implementation

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S051 Medicine Lodge Creek

2) Latitude/Longitude:

44.4402° N, 112.6105° W (upper end)

44.4366° N, 112.6158° W (lower end)

3) Project location, including 8-digit HUC and/or 14-digit stream reach code: 17040215050100

4) Project Start Date: April 2002 **5) Today's Date:** July 27, 2004

6) Anticipated Completion Date:

This project should be completed by March 31, 2006.,

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

The most recent report was submitted in April 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Cleve Bagley	Soil Conservationist	Natural Resources Conservation Service	263 East, 4 North, Rexburg, ID 83440	(208) 356-5701
Denise Adkins	District Conservationist	Natural Resources Conservation Service	263 East, 4 North, Rexburg, ID 83440	
Troy Saffle		DEQ – Idaho Falls Regional Office		
Jerry West		DEQ – State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMPs visited include stream bank stabilization, including rock barbs, willow bundles, willow pole plantings, willow clumps, toe rock rip-rap, V-Notch weirs, drop structures, grass, and fencing. In total there are about 100 stream segments over a 12-mile span of Medicine Lodge Creek and its tributaries.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

STEPL modeling was used to estimate stream load reductions.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project is on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Christine Fisher of the Idaho Association of Soil Conservation Districts (IASCD) has been contacted to continue sampling six sites over the next two years.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is part of the TMDL for Medicine Lodge Creek.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations.

15) Additional comments:

See photographs taken during the last site visit on July 27, 2004.

Figure 148. This rock barb installed one year ago is serving its purpose of bank protection.

Figure 149. Sediment and vegetation is becoming established on the upstream side of this rock barb.

Figure 150. After one year willows and grassy vegetation are slowly being established.

Figure 151. Woody and grassy vegetation are regaining a foothold since cattle have been excluded and stream bank stabilization have been conducted.

Figure 152. This new hard crossing with a drop-down fence confines cattle to a narrow section of Medicine Lodge Creek while protecting the stream bank.

Figure 153. In another year the rip rap material along this section of stream bank will barely be visible.

Figure 154. Any sediment that sloughs off of this bank will be captured and used by the rip rap and vegetation planted at the toe of the bank.

Figure 155. Vegetation is coming in nicely and the biodegradable silt fencing is breaking down.

Figure 156. In another year or so this area will look completely natural with excillent vegetative overhang for shade.

Figure 157. Rip rap is allowing vegetation to become established.

Figure 158. Again, BMPs along Medicine Lodge Creek are having a positive effect.

North Central AFO Relocation

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number:

S039 North Idaho Animal Feeding Operation (AFO) Relocation, Phase I and S069 North Idaho AFO Relocation, Phase II

2) Latitude/Longitude:

There are numerous AFO relocation subprojects spread over a very large area of north central Idaho within this contract. During this evaluation we visited the Higgins and Zinner AFO relocations. All of these subprojects fall under the FY2001 grant (#S039)

Sub-project	Latitude (°N)	Longitude (°W)
N. Central Idaho AFO Relocations	46.2700	116.5200
Subprojects:		
Bayly	46.7755	116.6850
Boyer (Home lot)	46.4133	116.7687
Boyer (Sorting lot)	46.4017	116.7771
Boyer (Spalding lot)	46.4456	116.8132
Chicane 1	46.0242	116.0774
Chicane 2	46.0354	116.0499
Fitzsimmons	45.9456	116.3762
Griffin	46.7894	116.6889
Halvorson	46.6067	116.7135
Heath	46.5262	116.6652
Higgins	46.2127	116.0585
Humphrey	46.2225	116.6404
Lettenmaier	46.6131	116.4747
Mills	45.9248	116.3909
Ownbey	46.8834	116.8260
Rehder	46.0791	116.3607
Silflow (Johnson)	46.5878	116.5683
Silflow (Meyer)	46.5923	116.5875
Sonnen	46.1532	116.0397
Stowers	45.6859	116.3609
Swanson	46.5885	116.6921
Van Bargen	45.9385	116.3801
Wenhoff	46.1139	116.0332
Wilkinson 1	46.8948	116.8782
Wilkinson 2	46.8800	116.8921
Wolff	46.5776	116.6040
Zenner	46.4842	116.7733

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

Higgins - 17060306000230

Zinner - 17060306001857

4) Project Start Date: April 15, 2003 **5) Today's Date:** July 9, 2004

6) Anticipated Completion Date:

December 31, 2005

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

April 2004

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Vern McMaster	Soil Conservationist	Natural Resources Conservation Service	PO Box 237 Nez Perce, Idaho 83543	(208) 937-2291 #3
Bill Lillibridge	Engineer	State Dept. of Agriculture	1118 F Street Lewiston, Idaho 83501	(208) 799-5039
John Cardwell		DEQ- Lewiston Regional Office		
Jerry West		DEQ- State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMP s observed during this evaluation include fencing, spring development, hardened crossings, filter strips, pipeline, culverts, and road access to relocated AFOs

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

Bill Lillibridge will supply necessary information so that DEQ can run STEPL calculations.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project is currently on schedule but may fall behind due to obligations under the previous contract (S039).

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Idaho Soil Conservation District (ISCD) takes annual water samples, and photographs are taken during and after AFO relocations.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

All of the AFO relocations are part of the TMDL implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original plan.

15) Additional comments:

Bill Lillibridge agreed to supply to me the average number of cattle and the areas of each AFO relocation. This requirement applies for the AFO relocations that are associated with the FY 2003 contract (contract # S069) only and does not apply to work accomplished under the previous contract (contract #S039). All expenditures to date come from the FY 2001 grant.

See attached photographs taken during the site evaluation for Higgins and Zinner AFO relocations.

Figure 159. This photograph looks from the new location of the AFO down to the previous location in the canyon floor.

Figure 160. Another look down at the previous location for the AFO.

Figure 161. The noxious weed Yellow Star Thistle has taken over much of this area.

Figure 162. Although the new AFO location is far away from the creek, it is also quite dry and subject to poor vegetative cover.

Figure 163. This is typical overgrazing.

Figure 164. A well had to be drilled in order to bring water to the new AFO location.

Figure 165. This is a water trough in one of the AFOs built under this project.

Paradise Creek TMDL Implementation

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: Q605 Paradise Creek (Rural); Q562 Paradise Creek (Urban)

2) Latitude/Longitude:

46.7872° N, 117.9746° W (Rural)

46.7420 N, 117.9707 W (Urban)

3) Project location, including 8-digit HUC and/or 14-digit stream reach code: 17060108

4) Project Start Date: May 1,2000 **5) Today's Date:** July 22, 2004

6) Completion Date: June 30, 2004

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

The last semiannual report was submitted in October 2003. A project completion report will be submitted in August 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Kajsa Stromberg	Watersheds Program Coordinator	Palouse-Clearwater Environmental Institute (PCEI)	Box 8596, 112 West 4th Street, #1 Moscow, Idaho 83843	(208) 882-1444
Ken Hobson	Project Manager	PCEI	Box 8596, 112 West 4th Street, #1 Moscow, Idaho 83843	(208) 882-1444
John Cardwell		DEQ – Lewiston Regional Office		
Jerry West		DEQ- State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

This evaluation was an overview of some of the work conducted over the life of the project, with an emphasis on work conducted last spring, including wetlands, stream channel restoration, extensive plantings, fencing, woody plant riparian buffers, wildlife habitat structures, stream bank stabilization, noxious weed control, and flood plain restoration. The photographs at the end of this report include work conducted last spring and BMPs visited during this evaluation.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

N/A. This project was planned and approved prior to this requirement.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

Some of the milestones were missed due to weather and delays in funding. However, all tasks have now been accomplished.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

University of Idaho environmental science students are conducting long-term monitoring, including water sampling, biological monitoring, and photographs.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is a major component of the Paradise Creek TMDL implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original general plan.

15) Additional comments:

See attached photographs taken during work conducted last spring and during this evaluation.

Figure 166. Two years ago, work began on this section of Paradise Creek. Figure 167 shows how it looked as of July 2004

Figure 167. The same section of Paradise Creek shown in Figure 166, following completion of tasks.

Figure 168. An observation deck has been installed for public education.

Figure 169. Public education is an important aspect of the 319 program.

Figure 170. Work is paying off along the rural portion of Paradise Creek north of the City of Moscow.

Figure 171. The grassy area just to the right of the waterway acts as sediment filter strip and provides farm equipment access to the fields.

Figure 172. PCEI has done a good job of public education.

Twenty Four Mile Creek

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number:

S008 Twenty Four Mile Creek

2) Latitude/Longitude:

42.8503° N, 111.8949° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17040208000227, Twenty Four Mile Creek

4) Project Start Date: 2000 **5) Today's Date:** August 24, 2004

6) Anticipated Completion Date: December 30, 2005

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

The last report was submitted in March 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Ben Evens	Water Quality Resource Conservationist	Idaho Association of Soil Conservation District	390 E. Boulder Avenue, Soda Springs, Idaho 83276	(208) 547-4396
Darlene Bassett	Administrative Assistant	Caribou Soil and Water Conservation District	390 E. Boulder Avenue, Soda Springs, Idaho 83276	(208) 547-4396
Larry Nickelson	District Conservationist	National Resources Conservation Service	390 E. Boulder Avenue, Soda Springs, Idaho 83276	(208) 547-4396
Lynn Van Every		DEQ – Pocatello Regional Office		
Jerry West		DEQ- State Office		
Dubb Hatch	Board Supervisor	Caribou Conservation District	390 E. Boulder Avenue, Soda Springs, Idaho 83276	(208) 547-4396

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

Water troughs, fencing, pipeline, water wells, and injection wells were observed during this evaluation.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

This project began in 2000 and therefore does not require load reduction calculations.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project was originally delayed due to lack of technical assistance but is now on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

The Idaho Association of Soil Conservation Districts will continue to monitor water quality and conduct photograph monitoring.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is a major part of the TMDL implementation plan for Twenty Four Mile Creek.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original plan.

15) Additional comments:

See attached photographs taken during the August 24, 2004 evaluation.

Figure 173. A pipeline has been installed from a spring on this mountain that conveys irrigation water to holding ponds in the valley.

Figure 174. This is a holding pond used for irrigation.

Figure 175. Irrigation holding pond and pump

Figure 176. Holding pond pump.

Figure 177. Cattle are limited to a narrow water gap along 24 Mile Creek.

Figure 178. Where feasible, water is brought to troughs, and cattle are completely excluded from 24 Mile Creek

Figure 179. A simple shut off valve controls inflow.

Figure 180. A used tractor tire is put to use as a water trough.

Figure 181. Cattle are being excluded from 24 Mile Creek.

Success Millsite

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: S025 Success Mill Site

2) Latitude/Longitude: 47.5263° N, 115.8795° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17010302

4) Project Start Date: Summer 1999 **5) Today's Date:** August 9, 2004

6) Anticipated Completion Date: This project was completed in Fall 2000.

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

This project was evaluated on July 10, 2002 and the last report was submitted in May 2001.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Robert Higdem		DEQ – Coeur d' Alene Regional Office		
Shallan Dawson		DEQ – Coeur d' Alene Regional Office		
Jerry West		DEQ- State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

This project involved the installation of an activated apatite filter system designed to filter out metals contained in contaminated mine water. The crystal lattice of apatite allows metal ions to enter the apatite and be chemically bonded there. On a set schedule, the apatite is then removed, sent to a hazardous waste site, and replaced with clean apatite.)10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

N/A. this project predates the requirement for modeling.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project was completed on time.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Metals uptake by the apatite filter system is being monitored on a regular basis for zinc, cadmium and lead as the system is maintained.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project is part of the TMDL implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

There were no deviations from the original plan.

15) Additional comments:

See attached photographs taken during the August 9 evaluation. A report covering the effectiveness of the system was submitted to DEQ on September 8, 2003 and should be on file at the DEQ Coeur d' Alene office. Contacts are Golder Associates (208) 676-9933 and Tom Bourque of TerraGraphics (208) 882-7858.

Figure 182. This is the mine dump and adjacent stream. Ground water from the two has been successfully separated with a subsurface grout screen.

Figure 183. The fishbone apatite filter system is located beneath this PVC liner.

Figure 184. DEQ employee Shallan Dawson sits adjacent to the apatite filter outflow.

Figure 185. Zinc, cadmium, and lead are being filtered out of mine dump water. The white substance is calcium carbonate.

Figure 186. Calcium carbonate is being discharged to the stream with minimal adverse effects.

East Fork Salmon River Restoration

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number:

S056 East Fork Salmon River Restoration

2) Latitude/Longitude: 44.2683° N, 114.3258° W

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17060201000655

4) Project Start Date: April 31, 2002 **5) Today's Date:** July 28, 2004

6) Anticipated Completion Date:

December 31, 2003

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

April 2004

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Stewart Churchwell	Central Idaho Preserve Manager	Western Watersheds Project	HC 67PO Box 2096 Challis, Idaho 83226	(208) 838-2374
Steve Pausen	Restoration Ecologist	Conservation Seeding & Restoration, Inc.	1409 Bitterroot Drive, Twin Falls Idaho 83301	(208) 420-6900
Jerry West		DEQ State Office		
Troy Saffle		DEQ Idaho Falls Regional Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

BMPs observed include stream bank stabilization including bioengineering, plantings seeding, grading and soil lifts.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

STEPL modeling was used.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

No, the project was initially delayed due to a conflict with the Department of Lands regarding lease agreements.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Annual photos from set points will be crucial for some of the work. Also, sediment sampling will be conducted.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

There is no TMDL for this stretch of the Salmon River, as of yet.

14) Have there been any deviations from the approved work plan? If so, please explain.

Yes. The Department of Lands refused to allow some to the original work to go forward due to a lease conflict. Some additional steam bank stabilization work was conducted instead.

15) Additional comments:

See attached photographs from the July 28, 2004 evaluation.

Figure 187. One goal of the project was to stabilize an entire drainage field with native wild flowers and woody plants.

Figure 188. Geomatting used to protect plants is well on its way to breaking down as planned.

Figure 189. Western Watersheds Project Manager, Stewart Churchwell, is standing in the replanted field of wildflowers.

Figure 190. This island was stabilized with bioengineered soil lifts along the entire channel face.

Figure 191. The backside of this island is now preserved for fish spawning.

Figure 192. Backside of the island.

Ashton Ground Water Protection

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

Contract Number: S107 Ashton Ground Water Protection Project

2) Latitude/Longitude:

N/A This project deals with ground water protection education and application of associated BMPs in numerous areas around and near the city of Ashton.

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17040202

4) Project Start Date: April 1, 2004 **5) Today's Date:** July 27, 2004

6) Anticipated Completion Date:

October 30, 2005

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report?

This is a new project. The first report will not be due until October, 2004.

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Ken Beckmann	District Conservationist	Natural Resources Conservation Service	315 East 5th North, Ashton, Idaho	(208) 624-3541
Tamara Cikaitoga	Technician	Yellowstone Soil Conservation District	315 East 5th North, Ashton, Idaho	(208) 624-3541
Denise Dalling	Technician	Yellowstone Soil Conservation District	315 East 5th North, Ashton, Idaho	(208) 624-3541
Jerry West		DEQ- State Office		
Troy Saffle		DEQ – Idaho Falls Regional Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

Nutrient management education for farmers in the Ashton area is resulting in far less application of nitrogen and phosphorous to fields. Application rates have been evaluated and adjusted because of studies conducted by the University of Idaho Department of Agriculture.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

This project deals with elevated nutrients in ground water and does not apply to surface water.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project is on schedule.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

Ground water will be monitored in city wells and in domestic wells

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

This project does not deal with a TMDL. The City of Ashton is in a nitrate priority area, and the goal of this project is to lower nutrient levels in ground water.

14) Have there been any deviations from the approved work plan? If so, please explain.

There have been no deviations from the original plan.

15) Additional comments:

See attached photographs taken during the July 27, 2004 evaluation.

Figure 193. It is perhaps too early to tell conclusively, but there appears to be no reduction in crop yield by reducing the fertilizer application rate. This field received a reduced rate of application.

Figure 194. This field received the normal higher rate of fertilizer application.

Figure 195. At this time, both fields appear to have the same production rate.

Figure 196. However, a true test of the effectiveness of the reduced application rate will take more than one growing season. Further evaluations will monitor the crop production rate and the effect on nitrogen levels in ground water.

Sheridan Creek

Idaho NPS Management Program

Field Evaluation Checklist

Evaluators: Please take numerous digital photographs of all BMPs and other observations made in the field. Label all photos as Figure1, Figure2, etc., and include them (JPEG format) along with a Word document of this completed checklist. Due to new tracking requirements, questions 2 and 3 are required information for project contracts dated from 2002 forward.

1) Contract Number: Q444

2) Latitude/Longitude:

This project covers several linear miles along Sheridan Creek. The approximate center of the project area is 44.4560° N, 111.6779° W.

3) Project location, including 8-digit HUC and/or 14-digit stream reach code:

17040202000253

4) Project Start Date: June 6, 1996 **5) Today's Date:** August 18, 2004

6) Anticipated Completion Date: December 31, 2003

7) Semi-annual reports are due each April and October after project start date; what is the date of the latest semi-annual report? April 2004

8) List the project manager's name, title, organization, address, and phone number—do the same for any other individuals present during the field inspection:

Name	Title	Organization	Address	Phone
Cleve Bagley	Soil Conservation Technician		263 East, 4 North, Rexburg, Idaho 83440	(208) 356-5701
Melissa Thompson		DEQ – Idaho Falls Regional Office		
Todd Maguire		DEQ- State Office		

(Evaluators: To add a new row, place cursor in last cell and press Tab)

9) List the BMPs or features visited during this evaluation:

Ten irrigation diversion structures, 14 miles of fencing, 10 rock check dams, six culverts, numerous rock drop structures, 0.5 mile of riparian plantings along stream banks, and one water well have been completed.

10) Identify the pollutant load reduction model used for BMPs in this project (STEPL, Region 5, or other):

This project was approved prior to this requirement.

11) Does this project appear to be on schedule based on the application's Project Schedule; the timeline outlining the Tasks, Outputs and Milestones; and your field evaluation of the project?

This project has been extended over the years since 1996 due to labor shortages and weather but is now complete.

12) How will the quantitative results of pollutant stream load reduction efforts be monitored?

BURP monitoring will be collected along Sheridan Creek every five years and annual photo points will be revisited.

13) How is this project tied into this watershed's overall water quality management program and/or TMDL implementation plan?

The TMDL for Sheridan Creek is not yet completed. However, this project will be a major part of the implementation plan.

14) Have there been any deviations from the approved work plan? If so, please explain.

No deviations have occurred.

15) Additional comments:

See attached photographs taken during this evaluation.

Figure 197. This photograph was taken from atop the concrete head gate and looks down the irrigation diversion. Concrete head gates greatly reduce erosion and sedimentation.

Figure 198. Concrete drop structure with fish ladder on right side

Figure 199. Fish ladder

Figure 200. Fish ladder

Figure 201. Another drop structure and irrigation diversion on Sheridan Creek

Figure 202. Cattle have been fenced off from this section of Sheridan Creek, allowing natural reclamation of cut bank

Figure 203. Natural stabilization of banks due to exclusion of cattle

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