2011 Performance and Progress Report

State of Idaho Nonpoint Source Management Program

State of Idaho
Department of Environmental Quality

March 2012

Cover photo: The first in a series of three settling ponds that handle irrigation return flow from cultivated farmland associated with the E Coulee Drain Elimination project (page 29). Two settling ponds and one finishing pond and wetland have been completed to treat irrigation return flow from 1,000 acres of farmland.

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Acknowledgments

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Acronyms and Abbreviations

AFO	animal feeding operation
BAG	basin advisory group
BMP	best management practice
CWA	Clean Water Act
DEQ	Idaho Department of Environmental Quality
EPA	US Environmental Protection Agency
GRTS	grants reporting and tracking system
MOU	memorandum of understanding
NPS	nonpoint source
Section 319 (§319)	Section 319(h) of the Clean Water Act
TMDL	total maximum daily load
WAG	watershed advisory group

Fishing along the East Fork of the Big Lost River

Section 1. Overview

This document summarizes the State of Idaho Nonpoint Source Management Program's performance and progress for the period from December 1, 2010, through November 30, 2011. The Department of Environmental Quality (DEQ) administers the program for the State of Idaho.

1.1 Introduction

The Clean Water Act (CWA), Section 319(h), requires the US Environmental Protection Agency (EPA) to make an annual determination of satisfactory progress in meeting the milestones of each state's nonpoint source (NPS) management plan. To assist EPA in making this determination, DEQ provides an annual report that assesses the program's performance and progress toward meeting the goals and milestones in Idaho's plan.

Idaho's Nonpoint Source Program

Congress established the national NPS program in 1987 when it amended the CWA with §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 identified impaired or threatened waters, and 3) implementing EPA-approved, federally funded NPS management programs to remediate and prevent NPS pollution.

In accordance with the congressional mandate, DEQ places strong emphasis on ensuring that §319 funds are directed to on-the-ground projects that prevent, reduce, or eliminate NPS pollution in Idaho's surface water and ground water. Idaho's NPS Program has funded hundreds of on-the-ground projects since 1998. The majority of these projects were designed to remediate and prevent NPS pollution, thereby resulting in measurable pollution reduction.

Scope of the Program

DEQ managed 66 active projects (Table 1) in 2011. Each project is described in a subgrant agreement established between DEQ and the project sponsor. Project sponsors may include federal or state agencies, counties, municipalities, nonprofit organizations, or private individuals.

Table 1. Nonpoint source funding summary for projects active during 2011, including projects closed during 2011.

Sub-grant	Project Name	Project Sponsor	Start Date	End Date	§319 Grant Amount	Total Spent (through 11/30/2011)	Balance (as of 11/30/2011)
S175	Palouse River Water Quality Improvement	Latah Soil and Water Conservation District	5/15/2006	1/18/2011	$215,491.00	$215,491.00	$0.00
S180	SF Clearwater, Kirtner	Palouse-Clearwater Environmental Institute	5/15/2006	3/18/2011	$181,435.00	$181,435.00	$0.00
S209	Flannigan Creek Riparian Restoration	Palouse-Clearwater Environmental Institute	7/15/2007	1/11/2011	$96,046.00	$95,777.11	$268.89
S212	American Red River Water Quality Improvement	Framing Our Community, Inc.	7/9/2007	1/5/2012	$238,242.00	$238,242.00	$0.00
S213	Owyhee Restoration Incentive	Owyhee Watershed Council	7/16/2007	2/27/2012	$201,785.00	$162,900.00	$38,885.00
S215	Copper Creek Restoration	Lava Lake Land & Livestock	8/15/2007	12/12/2011	$161,000.00	$161,000.00	$0.00
S217	Island Ranch Bank Stabilization	Island Ranch	8/20/2007	11/2/2011	$12,590.00	$12,590.00	$0.00
S219	Big Lost River Temp and Sediment Reduction	Trout Unlimited	8/27/2007	1/30/2012	$112,200.00	$75,378.15	$36,821.85
S223	Marsh Creek Watershed, Phase 1,	Portneuf Soil and Water Conservation District	10/15/2007	10/15/2012	$250,000.00	$223,992.00	$26,008.00
S226	Northwest Owyhee Co. Water Quality Improvement,	Owyhee Soil Conservation District	11/14/2007	8/18/2011	$249,543.00	$249,543.00	$0.00
S227	Lindsay Creek Riparian Management	Palouse-Clearwater Environmental Institute	12/10/2007	1/31/2012	$149,774.00	$66,141.00	$83,633.00
S246	Croy Creek Wetland Restoration	Wood River Land Trust	6/15/2008	3/15/2013	$99,419.00	$48,657.56	$50,761.44
S247	Little Weiser R. Streambank Protection	Adams Soil & Water Conservation District	6/15/2008	3/15/2013	$201,050.00	$87,120.00	$113,930.00
S248	S. Fork Palouse River Riparian Restoration	Palouse-Clearwater Environmental Institute	6/30/2008	3/20/2013	$158,971.00	$92,220.81	$66,750.19
S250	N. Idaho AFO Implementation Phase 4	Latah Soil and Water Conservation District	6/20/2008	3/20/2013	$215,086.00	$0.00	$215,086.00
S251	Lawyer Creek Water Quality	Lewis Soil Conservation District	6/20/2008	3/20/2013	$250,000.00	$89,700.00	$160,300.00
S252	E. Coulee Drain Elimination	Balanced Rock Soil Conservation Dist.	6/30/2008	6/30/2012	$204,500.00	$0.00	$204,500.00
S274	N. Fork Payette River Streambank Stabilization	Friends of Cascade Water Park	9/1/2008	1/6/2011	$43,320.00	$43,320.00	$0.00
S279	Tammany Road Erosion Reduction–Phase 2	Nez Perce Soil & Water Conservation Dist.	10/1/2008	12/31/2011	$185,247.00	$101,494.07	$83,752.93
S280	American Red River	Framing Our Community, Inc.	10/15/2008	12/31/2012	$247,943.00	$162,776.00	$85,167.00
S292	N. Idaho AFO Implementation, Phase 3-B (Formerly S181)	Idaho Association of Soil Conservation Districts	4/9/2009	12/31/2011	$67,100.00	$59,270.75	$7,829.25
S295	Marsh Creek Watershed Project, Phase 2	Portneuf Soil and Water Conservation District	4/1/2009	4/1/2011	$540,800.00	$503,795.90	$37,004.10
S307	Bruneau–Grand View Ground Water Quality Management Plan	Bruneau River Soil Conservation District	6/2/2009	12/31/2013	$238,707.00	$52,800.00	$185,907.00

Sub-grant	Project Name	Project Sponsor	Start Date	End Date	§319 Grant Amount	Total Spent (through 11/30/2011)	Balance (as of 11/30/2011)
S310	Potlatch River Watershed Management Plan, Phase 1	Latah Soil and Water Conservation District	6/15/2009	12/31/2013	$205,028.00	$28,585.87	$176,442.13
S311	Pend Oreille Lake *A*Syst	Bonner Soil and Water Conservation District	6/15/2009	12/31/2013	$36,368.00	$26,441.99	$9,926.01
S312	Camas Prairie Ground Water Nitrate Priority Area, Phase 3	Lewis Soil Conservation District	6/15/2009	12/31/2013	$245,000.00	$73,480.05	$171,519.95
S313	Fish Creek Road Improvement	Bonner Soil and Water Conservation District	6/15/2009	12/31/2013	$147,268.00	$89,244.89	$58,023.11
S321	Latour Creek Road Improvement	Idaho Department of Lands	7/1/2009	12/31/2013	$250,000.00	$94,500.00	$155,500.00
S323	Canyon County BMPs for Water Quality Improvement	Lower Boise Watershed Council	7/1/2009	12/31/2013	$250,000.00	$225,000.00	$25,000.00
S326	Short-Riley Creeks Porter Memorial	North Idaho Fly Casters	7/27/2009	1/25/2012	$20,000.00	$19,979.10	$20.90
S327	Lower Payette River TMDL Implementation, Phase 3	Gem Soil and Water Conservation District	7/20/2009	12/31/2013	$180,000.00	$36,326.56	$143,673.44
S328	Salmon Falls Creek Agricultural Implementation	Twin Falls Soil and Water Conservation District	7/21/2009	6/13/2011	$67,080.00	$67,080.00	$0.00
S329	Mores Creek Floodplain Restoration	West Central Highlands Resource Conservation & Development	8/1/2009	1/6/2012	$96,000.00	$96,000.00	$0.00
S330	Boulder Ridge Ranch Wetlands	Balanced Rock Soil Conservation District	8/1/2009	12/31/2013	$249,000.00	$40,500.00	$208,500.00
S331	East Fork Potlatch River Riparian	Idaho Department of Fish and Game	8/1/2009	12/31/2013	$80,000.00	$22,239.93	$57,760.07
S332	Lapwai Creek Integrated Analysis	University of Idaho	8/14/2009	12/31/2013	$59,301.00	$26,431.20	$32,869.80
S333	North Idaho AFO Implementation, Phase 3C	Idaho Association of Soil Conservation Districts	10/1/2009	12/31/2012	$41,965.00	$37,768.50	$4,196.50
S356	Ada County BMPs: Four Corners	Ada Soil and Water Conservation District	12/10/2009	12/31/2013	$48,000.00	$12,000.00	$36,000.00
S367	N. Fork Payette River Watershed Restoration	Trout Unlimited	3/1/2010	2/22/2011	$10,823.00	$10,024.82	$798.18
S381	Boulder Creek Restoration	Trout Unlimited	5/28/2010	12/31/2014	$5,400.00	$4,000.00	$1,400.00
S382	Twentymile Creek Road Improvement	Idaho Department of Lands	5/28/2010	3/25/2011	$40,000.00	$40,000.00	$0.00
S385	I Coulee Wetland	Balanced Rock Soil and Water Conservation District	6/1/2010	12/31/2014	$52,200.00	$11,500.00	$40,700.00
S389	Little Salmon River Riparian Restoration	Idaho Department of Fish and Game	6/15/2010	12/31/2014	$41,405.00	$6,144.50	$35,260.50
S392	Upper Bear River Streambank Stabilization	Bear Lake Regional Commission	7/2/2010	12/31/2014	$24,970.00	$15,693.67	$9,276.33
S393	Blackfoot River Water Quality	Three Rivers Resource Conservation and Development Council	6/22/2010	12/31/2014	$93,474.00	$46,552.93	$46,921.07
S394	South Fork Clearwater Watershed Vegetation	Palouse-Clearwater Environmental Institute	6/2/2010	12/31/2014	$246,261.00	$15.00	$246,246.00

Sub-grant	Project Name	Project Sponsor	Start Date	End Date	§319 Grant Amount	Total Spent (through 11/30/2011)	Balance (as of 11/30/2011)
S395	Upper Hangman Creek Watershed Road and Culvert	Benewah Soil and Water Conservation District	6/21/2010	12/31/2014	$17,538.00	$15,747.00	$1,791.00
S396	Potlatch River Watershed Management Plan, Phase 2	Latah Soil and Water Conservation District	6/1/2010	12/31/2014	$207,302.00	$20,730.15	$186,571.85
S397	Mica Creek Sediment & Nutrient Reduction, Phase 2	Kootenai–Shoshone Soil and Water Conservation District	7/1/2010	12/31/2014	$91,080.00	$58,093.71	$32,986.29
S399	Marsh Creek–Middle Portneuf Watershed	Portneuf Soil and Water Conservation District	7/1/2010	12/31/2014	$249,550.00	$70,933.66	$178,616.34
S400	Teton Creek Restoration Phase 2	Friends of Teton River	7/19/2010	3/7/2011	$200,000.00	$200,000.00	$0.00
S401	Little Weiser River Streambank Stabilization and Restoration	Adams Soil and Water Conservation District	7/19/2010	12/31/2014	187,386.00	$74,235.00	$113,151.00
S402	Daniels Reservoir Sediment Reduction	Oneida Soil and Water Conservation District	7/20/2010	12/31/2014	170,329.00	$126,749.60	$43,579.40
S404	Bear Valley–Casner Creek Restoration	Trout Unlimited	7/27/2010	12/31/2013	$33,000.00	$15,099.00	$17,901.00
S405	Payette Ditch Discharge Treatment	Weiser River Soil Conservation District	8/10/2010	12/31/2014	$51,737.00	$46,493.00	$5,244.00
S406	American Red River, Phase 2	Framing Our Community, Inc.	9/13/2010	12/31/2014	$250,000.00	$168,086.45	$81,913.55
S425	Potlatch River Watershed Management Plan, Phase 3	Latah Soil and Water Conservation District	7/25/2011	5/31/2015	$207,523.00	$0.00	$207,523.00
S426	Palisades Creek	Trout Unlimited	7/25/2011	6/1/2015	$90,000.00	$9,000.00	$81,000.00
S427	St. Maries River Road Improvement	Benewah County	7/25/2011	5/31/2015	$237,504.00	$0.00	$237,504.00
S428	Grimes Creek Restoration Cooling Waters	Trout Unlimited	8/1/2011	5/31/2015	$60,000.00	$0.00	$60,000.00
S429	Kootenai River Bank Restoration	Kootenai Tribe of Idaho	8/15/2011	5/31/2015	$250,000.00	$0.00	$250,000.00
S430	Upper Blackfoot River Implementation Phase 1	Caribou Soil Conservation District	8/15/2011	5/31/2015	$195,255.00	$19,525.49	$175,729.51
S431	Bear River and Whiskey Creek AFOs	Caribou Soil Conservation District	8/15/2011	5/31/2015	$212,615.00	$21,261.50	$191,353.50
S432	Boulder Willow Creek Restoration	Idaho Department of Fish and Game	8/18/2011	5/31/2015	$10,250.00	$0.00	$10,250.00
S433	Little Salmon River Watershed Improvement	Idaho Department of Fish and Game	8/18/2011	5/31/2015	$51,700.00	$0.00	$51,700.00
S434	Upper Bear River Streambank (Peterson Property)	Bear Lake Regional Commission	9/1/2011	4/1/2014	$75,488.00	$0.00	$75,488.00

[a] AFO = animal feeding operation

1.2 Assessing Program Performance

DEQ operates under the goals and objectives incorporated in the 1999 *Idaho Nonpoint Source Management Plan*, which provides guidance for developing an annual work plan required to effectively administer the program (DEQ 1999). Work plan tasks for fiscal year 2011 are presented in section 1.3.

Framework of the Program

NPS Program functions include the following:

- Implementing watershed plans that target meeting total maximum daily loads (TMDLs) for pollutants and require adhering to drinking water, source water protection, and ground water management plans developed for the watershed
- Targeting compliance with water quality standards
- Evaluating the successful implementation of projects proceeding under their respective work plans and approved watershed plans, through water quality and various forms of effectiveness monitoring

Program Emphasis and Focus

Most program-managed projects focus on reducing NPS pollution associated with agricultural and grazing practices. Other NPS pollution sources in which the program has invested resources include the following:

- Fisheries
- Forestry
- Mining
- Transportation
- Urban and rural stormwater

Determining Pollutant Load Reductions

DEQ requires project sponsors to submit estimated load reductions of sediment, phosphorous, and nitrogen resulting from the completion of each project. Most projects take place within or close to a particular water body. A project's pollution load reduction can be added to load reductions resulting from other projects within the watershed to show a cumulative load reduction over the entire basin.

Providing Technical Support

Idaho's NPS Program provides technical support through various actions:

- Facilitating and coordinating implementation of the *Idaho Nonpoint Source Management Plan*
- Developing and assisting with new technical approaches aimed at improving surface water and ground water quality
- Promoting the development of natural resource partnerships, interagency collaboration, environmental education, and information transfer
- Ensuring consistency of base-level implementation activities related to TMDLs
- Training for project application, invoicing, and reporting
- Managing §319 funds in accordance with standard accounting and reporting practices

Public Participation

Public participation is an important component of the NPS Program and is mainly achieved through interaction with watershed advisory groups (WAGs) and basin advisory groups (BAGs) in accordance with Idaho Code 39-3601. Both WAGs and BAGs are required to evaluate and recommend actions necessary for improving water quality across the state.

In addition, the NPS Program works to coordinate activities with local, state, tribal, and federal agencies, whose support is essential to ensure closing the feedback loop as provided for in the *1999 Idaho Nonpoint Source Management Plan*, project-by-project, within each of the major river basins in the state.

1.3 Calendar Year 2011 Nonpoint Source §319 Grant Work Plan

NPS Program tasks are defined in terms of "outputs," as described for the following tasks.

Task 1: Continue DEQ State Office Administration

Output:	Maintain a process for soliciting new NPS-related projects, monitor program activities, and process and track grant expenditures to ensure compliance with CWA §319 program requirements.
Milestone:	As needed from June 1, 2011, through May 31, 2012
Estimated cost:	$146,326
Staffing level:	1.58 fulltime positions

Task 2: Develop Procedures and Guidance Materials

Output:	Draft procedures and guidance to support new and ongoing program implementation efforts, analysis, and reviews.
Milestone:	As needed
Estimated cost:	$50,010
Staffing level:	0.54 fulltime positions

Task 3: Revise Memoranda of Understanding (MOU) with Designated Management Agencies

Output:	Revised MOU for implementation of the NPS Program plan.
Milestone:	June 1, 2011, through May 31, 2012—complete all remaining MOUs by April 30, 2013
Estimated cost:	$22,228
Staffing level:	0.24 fulltime positions

Task 4: Implement Program

Output 4A:	Promote the NPS Program. Work with all parties to target areas within the state for NPS project design and implementation.
Milestone:	Annually
Output 4B:	Implement program objectives aimed at meeting the key elements of TMDL implementation plans. In partnership with designated management agencies, water quality monitoring will be performed to assess success in meeting water quality goals. Routine evaluation of results will provide insight on implementation effectiveness and allow adjustments to be made, as needed.
Milestone:	Ongoing, with comprehensive evaluation on an annual basis by June 1
Output 4C:	Support the Idaho Water Quality Monitoring and Management Conference.
Milestone:	February 2012
Estimated cost of 4A–4C:	$149,104
Staffing level:	1.61 fulltime positions

Task 5: Evaluate Nonpoint Source Projects

Output:	Review on-site a minimum of 50% of active and completed projects to assess compliance with the work plan and the success of best management practices (BMPs).
Milestone:	May–October, each year
Estimated cost:	$50,010
Staffing level:	0.54 fulltime positions

Task 6: Integrate NPS Program Protocols with Water Pollution Control Loan (State Revolving Fund) Program Protocols

Output:	Achieve mutual goal of leveraging funding to projects that meet respective program criteria.
Milestone:	Annually
Estimated cost:	$9,261
Staffing level:	0.10 fulltime positions

Task 7: Provide Technical Support, Education, and Information Transfer on Watershed-Based Plan and TMDL Implementation Activities

Output:	Provide base-level support on watershed-based plan and TMDL implementation plan development.
Milestone:	Annually, as requested
Estimated cost:	$17,596
Staffing level:	0.19 fulltime positions

Task 8: Develop, Review, and Distribute the Annual Program Performance and Progress Report

Output:	Submit report to EPA Region 10.
Milestone:	Annually, in March
Estimated cost:	$20,374
Staffing level:	0.22 fulltime positions

Task 9: Conduct Required Reporting to the Federal Grants Reporting and Tracking System (GRTS) Database

Output:	Complete entry of mandatory data into GRTS.
Milestone:	Ongoing, to be completed by February 15 each year
Estimated cost:	$20,374
Staffing level:	0.22 fulltime positions

Task 10: Update Idaho Nonpoint Source Management Plan

Output:	Continue revision of the *Idaho Nonpoint Source Management Plan* (DEQ 1999).
Milestone:	Ongoing work toward the revision for the period of June 1, 2011, through May 31, 2012. Revised plan scheduled for completion by December 31, 2013.
Estimated cost:	$20,374
Staffing level:	0.22 fulltime positions

Task 11: Support Surface Water Quality Management Goals and Objectives

Output:	Support §319 program goals and objectives by developing water quality standards, conducting assessments, and completing the biennial Integrated Report.
Milestone:	Ongoing
Estimated cost:	$339,010
Staffing level:	3.61 fulltime positions

1.4 Schedule and Budget Utilization

For active projects, Figure 1 illustrates how much time each project has been underway in comparison to the amount of time provided to complete the project. Figure 2 shows the NPS §319 funds expended through November 30, 2011, for each project, in comparison to the total amount of NPS §319 funds provided.

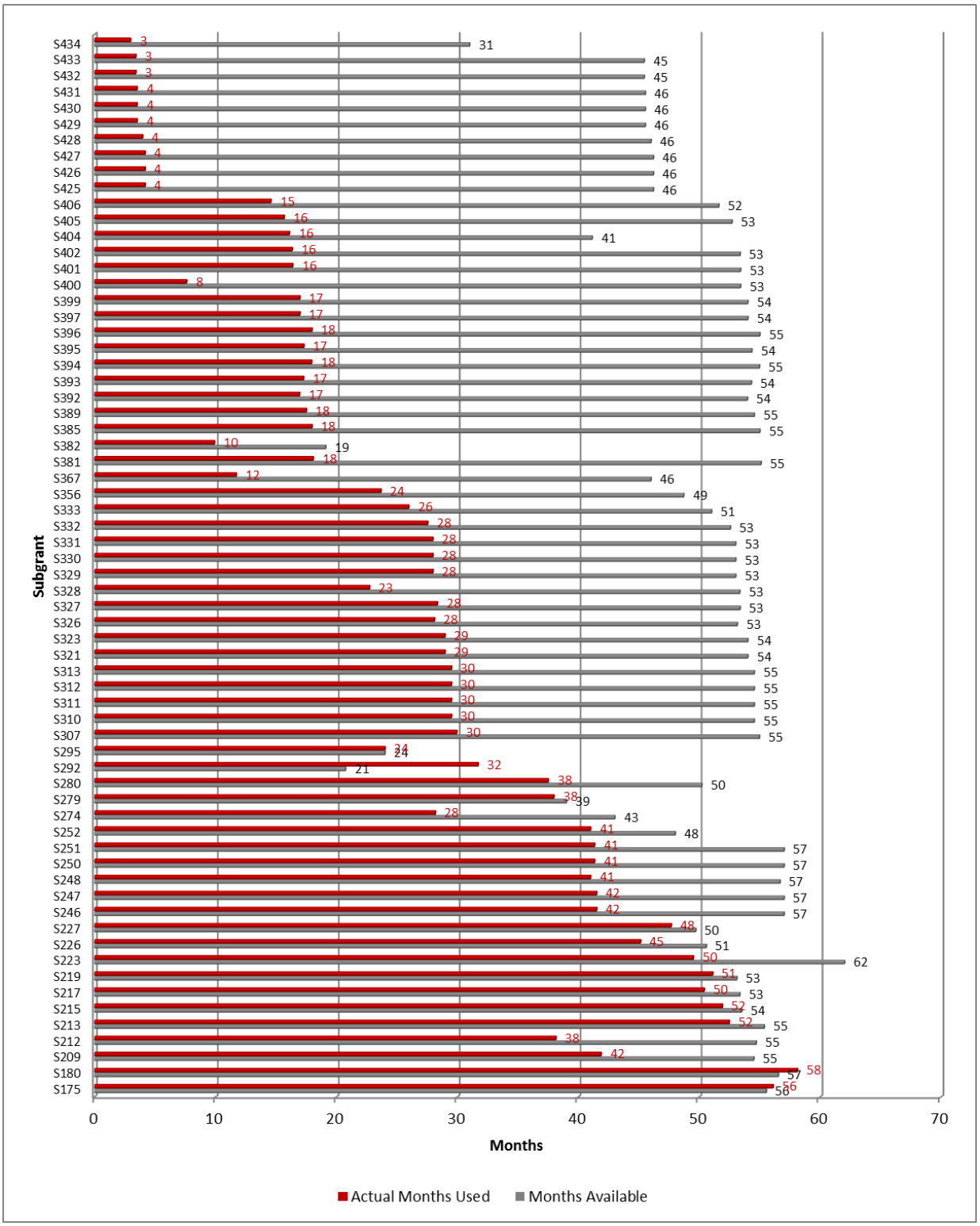

Figure 1. Active projects, time used and total time available. The red bars represent the total number of months the project has been underway. The gray bars represent total months available for project completion.

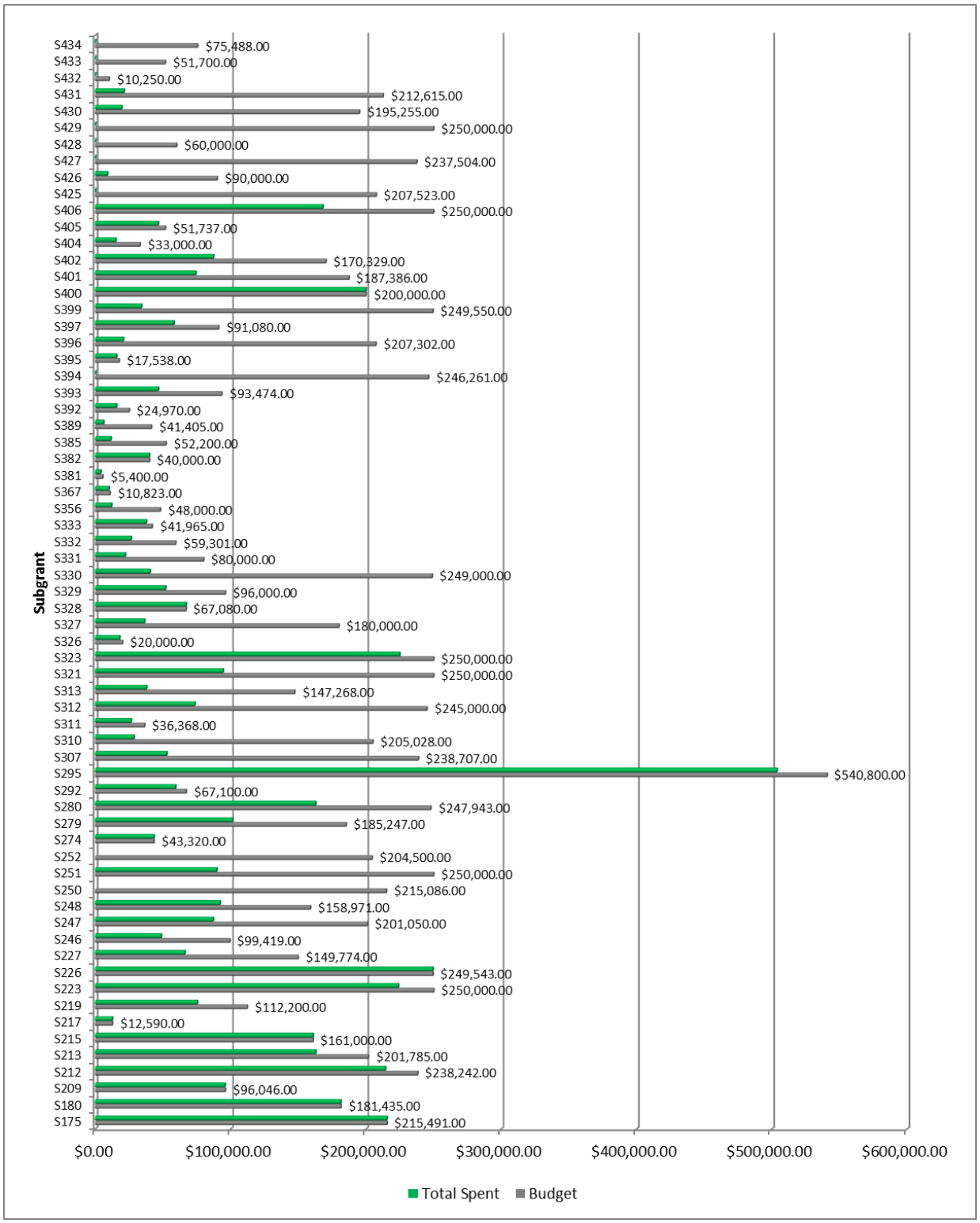

Figure 2. Budget usage by active projects. The gray bars represent the total federally funded budget for each project. The green bars show the amount expended through November 30, 2011.

Section 2. Project Field Evaluations—2011

This section summarizes the project field evaluations performed in 2011. Section 3 contains an abbreviated version of each of the 32 evaluations.

2.1 Introduction

During this reporting period (December 1, 2010–November 30, 2011), DEQ managed 66 projects in Idaho (Figure 3). Of these, 12 closed out during this reporting period. In 2011, DEQ evaluated 32 projects (Figure 4).

2.2 Field Evaluation Process

The field evaluation process begins with a review of the project's subgrant agreement. DEQ staff later field check compliance with the agreement. A standard evaluation form helps to ensure that all project requirements are being met. A more detailed description of the evaluation process can be found in chapter 8 of the *Idaho Nonpoint Source Management Plan* (DEQ 1999). The full report on each field evaluation is available at the DEQ State Office.

2.3 Results

Table 2 lists and briefly describes all projects that were field-evaluated during 2011.

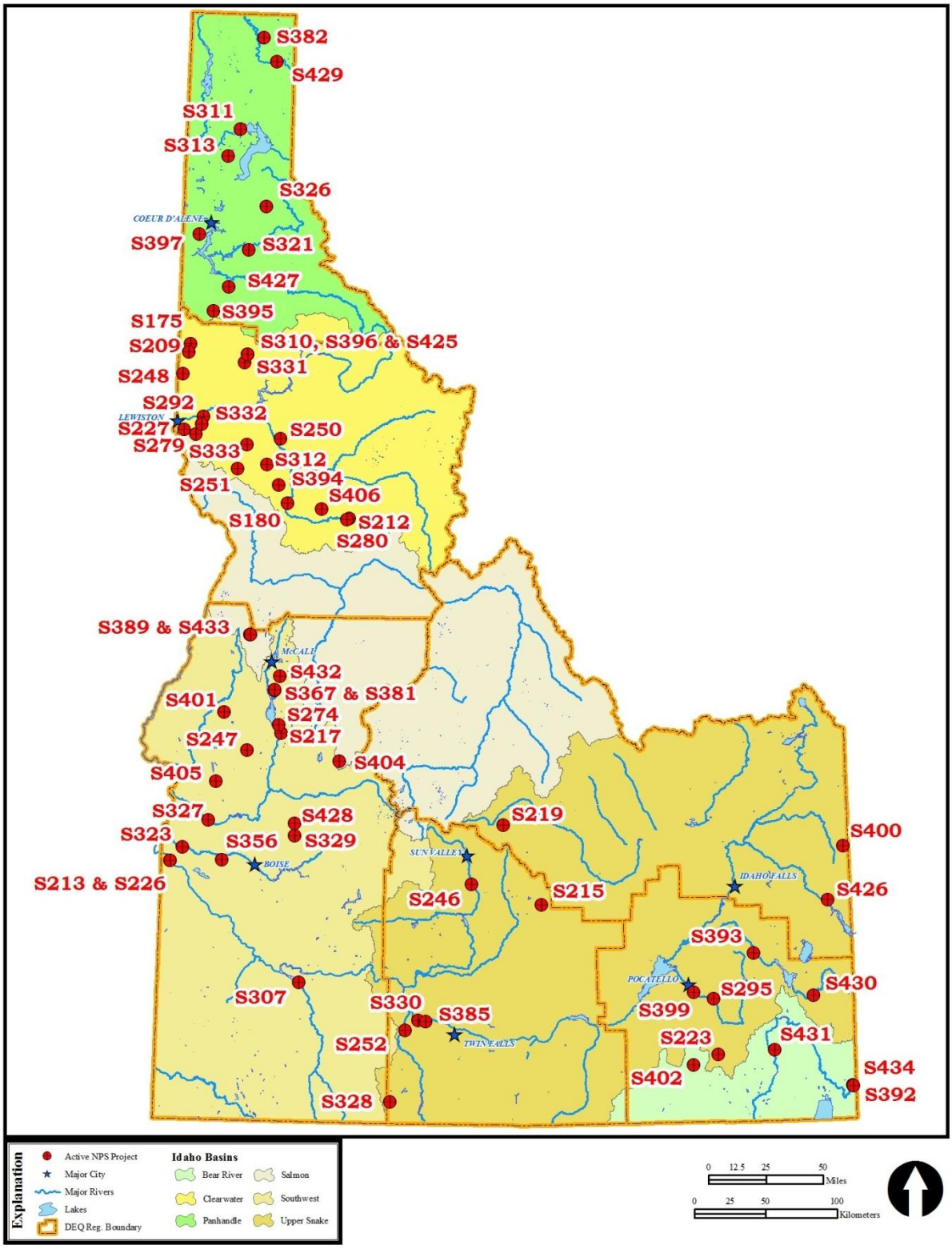

Figure 3. Active or recently closed nonpoint source projects, as of November 30, 2011.

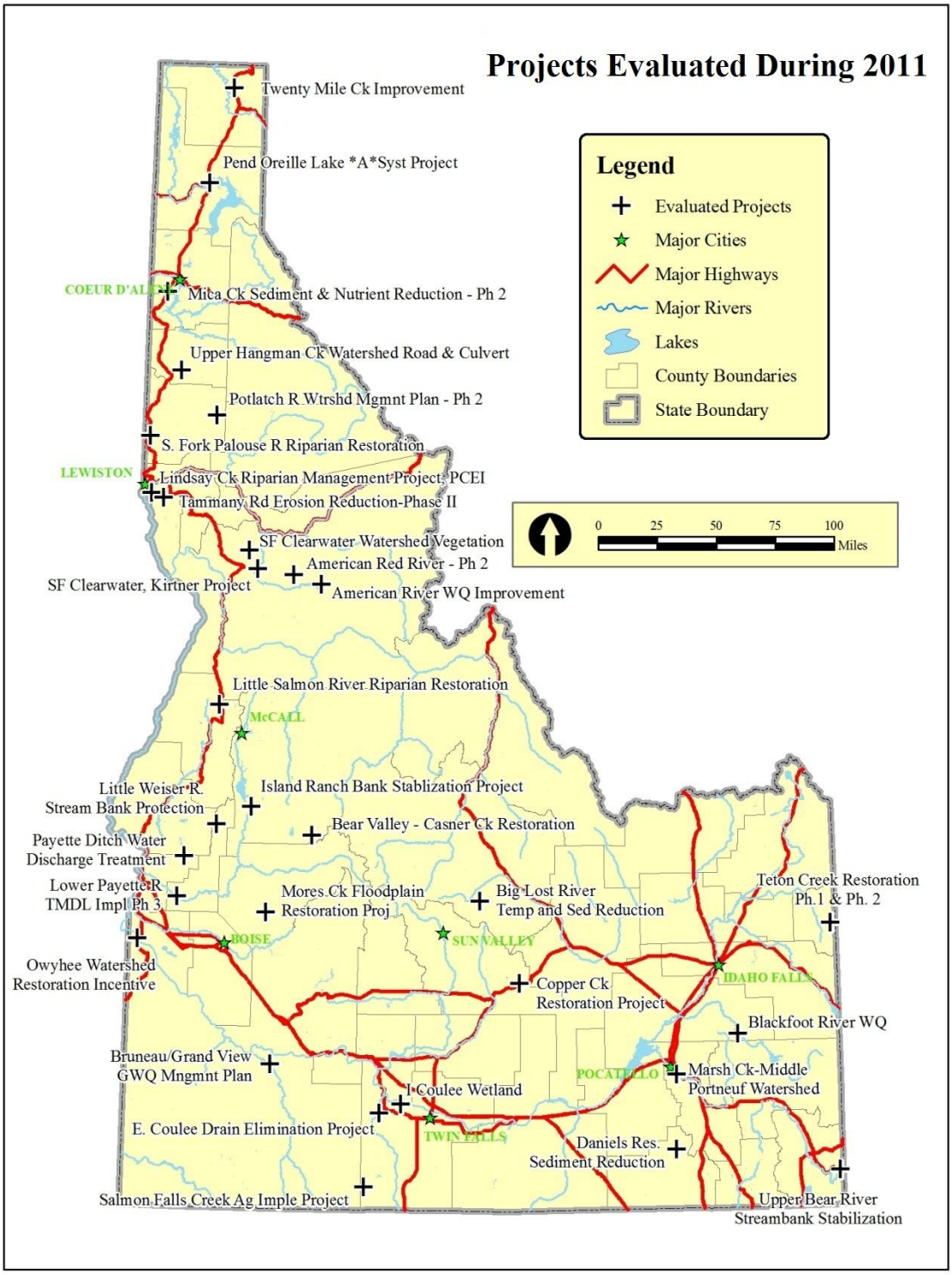

Figure 4. Nonpoint source projects evaluated during 2011.

Table 2. Projects that were field-evaluated during 2011.

Sub-grant Number	Project Name	Project Goals and Evaluation Conclusions	Category	DEQ Region
S212	American Red River Water Quality	This is the first of several projects to exclude cattle from the streams and stabilize impacted streambanks. All BMPs are functioning as intended. (See page 18 for more information.)	Agriculture	Lewiston
S215	Copper Creek Restoration	New landowners are making efforts to reverse previous bad practices by fencing livestock out of surface water and reducing the amount of time each field is grazed. Major stream restoration has been achieved. All BMPs are functioning as intended. (See page 19 for more information.)	Agriculture	Twin Falls
S217	Island Ranch Bank Stabilization	Exclusionary fence and installation/anchoring of dead trees are stabilizing streambanks along the Payette River. All BMPs are functioning as intended. (See page 20 for more information.)	Agriculture	Boise
S249	Teton Creek Phase 1	All BMPs, including restored channel sinuosity and engineered rock toe armoring, are functioning as intended to prevent head cutting and erosion of streambanks. (See page 21 for more information.)	Urban and Rural Storm Water	Idaho Falls
S329	Mores Creek Floodplain Restoration	All BMPs, including resloped and vegetated streambanks along approximately 10 acres of abandoned placer mine tails, are functioning as intended. Improved or closed recreational roads have also contributed to reduced sediment deposition to Mores Creek. (See page 22 for more information.)	Mining	Boise
S180	SF Clearwater Kirtner Project	The project involves resloping, rip-rapping, and vegetating streambanks. All hardscape BMPs are functioning as intended. Replanting vegetation, required due to extremely high spring runoff, will soon occur. (See page 23 for more information.)	Agriculture	Lewiston
S213	Owyhee Watershed Restoration Incentive	This project helps landowners repair streambanks and waterways that were improperly grazed and replaces flood irrigation with sprinkler irrigation. All BMPs are functioning as intended. (See page 24 for more information.)	Agriculture	Boise
S219	Big Lost River	Livestock exclusion through installation of thousands of feet of jack-pole fencing and removal of over 100 rotten and dislodged log drop structures is stabilizing banks along several miles of the East Fork Big Lost River. All BMPs except one short span of fencing are functioning as intended. (See page 25 for more information.)	Agriculture	Idaho Falls
S227	Lindsay Creek Riparian Management	Streambank restoration and livestock exclusion BMPs are reducing erosion, water velocity, and water temperature. These BMPs are reducing inputs of bacteria and nutrients, thus supporting secondary contact recreation and cold water aquatic life. (See page 26 for more information.)	Agriculture	Lewiston
S247	Little Weiser River Bank Stabilization & Restoration	All BMPs—including resloped streambanks, tree plantings, and embedded rootwads, barbs, and other treatments—are functioning as intended. Some vegetation will be replanted due to exceptionally high 2011 spring runoff. (See page 27 for more information.)	Agriculture	Boise
S248	South Fork Palouse River Riparian Restoration	All BMPs are functioning as intended, including streambank resloping, vegetative planting, and a temporary irrigation system along 1,800 feet of the South Fork Palouse River. (See page 28 for more information.)	Agriculture	Lewiston
S252	E. Coulee Drain Elimination	Settling ponds and wetlands are treating irrigation return flow from 1,000 acres of farmland. All BMPs are functioning as intended. (See page 29 for more information.)	Agriculture	Twin Falls
S279	Tammany Road Erosion Phase 2	Installing rock check dams, culverts, stormwater settling ponds, and no-till farming techniques adjacent to Vollmer Road will reduce sediment runoff. The project was in the planning phase during evaluation and will be reevaluated next year. (See page 30 for more information.)	Transportation	Lewiston
S307	Bruneau Grand View Ground Water Quality Management Plan	Farmers are learning to apply less fertilizer and protect wellheads, thereby decreasing nitrogen in ground water in this nitrate priority area. All BMPs are functioning as intended. (See page 31 for more information.)	Agriculture	Boise
S311	Pend Oreille Lake *A*Syst	Through education, informed watershed residents and lake users are learning how their activities affect the lake and what BMPs can be used to improve and protect water quality. Shoreline stabilization BMPs are functioning as intended. (See page 32 for more information.)	Urban and Rural Storm Water	Coeur d'Alene

Sub-grant Number	Project Name	Project Goals and Evaluation Conclusions	Category	DEQ Region
S327	Lower Payette River TMDL	This project involves working with local landowners and irrigation districts to install BMPs that reduce sediment, phosphorous, and nitrogen discharge to the Lower Payette River. All BMPs are functioning as intended. (See page 33 for more information.)	Agriculture	Boise
S328	Salmon Falls Creek Agricultural Implementation	The project involves excluding cattle from 13.4 acres of land adjacent to a tributary to Salmon Falls Creek and the Snake River. All BMPs are functioning as intended. (See page 34 for more information.)	Agriculture	Twin Falls
S382	Twenty Mile Creek Road Improvements	Road improvements are reducing sedimentation to Twenty Mile Creek. All BMPs are functioning as intended. (See page 35 for more information.)	Transportation	Coeur d'Alene
S385	I Coulee Wetland	Settling ponds and constructed wetlands are treating large volumes of heavily contaminated irrigation return flow. All BMPs are functioning as intended. (See page 36 for more information.)	Agriculture	Twin Falls
S389	Little Salmon River Riparian Restoration	Fencing is excluding cattle from Fourmile Creek. Streambanks have been stabilized with riparian plantings including willow weavings. An off-creek watering and shelter area now services hundreds of head of cattle. All BMPs are functioning as intended. (See page 37 for more information.)	Agriculture	Boise
S392	Upper Bear River Streambank Stabilization	The Bear Lake Regional Commission, working with local farmers and ranchers, is reversing damage caused by decades of unrestricted grazing. All BMPs are functioning as intended. (See page 38 for more information.)	Agriculture	Pocatello
S393	Blackfoot River Water Quality	A new fence is excluding 500 to 600 cattle annually from 520 acres. Ranchers are implementing a prescribed grazing plan over 770 acres. All BMPs are functioning as intended. (See page 39 for more information.)	Agriculture	Pocatello
S394	SF Clearwater Watershed Vegetation	Exclusionary fencing has allowed riparian planting of stream buffers, wetlands, and vegetative filter strips. All BMPs are functioning as intended. (See page 40 for more information.)	Agriculture	Lewiston
S395	Upper Hangman Creek Watershed Road and Culvert	Road rocking and a large, fish-friendly 60-inch arch culvert replaced an old, undersized, and damaged culvert. BMPs are functioning as intended. (See page 41 for more information.)	Agriculture	Coeur d'Alene
S396	Potlatch River Watershed Management Plan Phase 2	The plan includes decommissioning old logging roads, rerocking currently used logging roads, installing cattle exclusionary fencing, installing cattle watering tanks, and planting vegetation along streambanks and abandoned railroad spurs. All BMPs are functioning as intended. (See page 42 for more information.)	Agriculture	Lewiston
S397	Mica Creek Sediment and Nutrient Reduction	Exclusionary fencing is protecting extensive stream channel and streambank rehabilitation, including willow and other woody plantings. All BMPs are functioning as intended on this award-winning project. (See page 43 for more information.)	Agriculture	Coeur d'Alene
S399	Marsh Creek–Middle Portneuf Watershed	Four subprojects deal with AFO improvements or AFO relocations that protect and improve water quality. All BMPs are functioning as intended. (See page 44 for more information.)	Agriculture	Pocatello
S400	Teton Creek Phase 2	A series of V-weirs and extensive streambank stabilization are reversing down cutting and helping maintain a low-flow channel with pools. All BMPs are functioning as intended. (See page 45 for more information.)	Urban and Rural Stormwater	Idaho Falls
S402	Daniels Reservoir Sediment Reduction	Settling basins and terraces capture soils from disturbed dry crop fields. Watering troughs and buried water supply pipelines bring water to cattle. All BMPs are functioning as intended. (See page 46 for more information.)	Agriculture	Pocatello
S404	Bear Valley–Casner Creek Restoration	Removal of a man-made berm and installation of coconut fiber bio logs across the stream channel are reversing down cutting. All BMPs are functioning as intended. (See page 47 for more information.)	Mining	Boise
S405	Payette Ditch Discharge Treatment	A settling pond and constructed wetland is treating contaminated irrigation return flow coming from the Payette Ditch. All BMPs are functioning as intended. (See page 48 for more information.)	Agriculture	Boise
S406	American Red River Phase 2	Thousands of feet of cattle-excluding jack-pole fencing are stabilizing streambanks. All BMPs are functioning as intended. (See page 49 for more information.)	Agriculture	Lewiston

Section 3. Field Evaluation Reports (Subgrants)—2011

DEQ staff traveled to 32 project sites to evaluate and document progress and results of the funded work. A breakdown of the projects evaluated showed the following:

- 25 projects focus on water quality protection related to agriculture or grazing.
- Two projects focus on mining.
- Two projects focus on transportation.
- Three projects focus on urban and rural stormwater treatment.

The following pages summarize the evaluation reports completed during 2011. More detailed evaluation reports for each project are available from DEQ upon request.

3.1 American Red River Water Quality Improvement

Subgrant: S212 **Latitude and Longitude:** 45.930000, -116.010000

Description:
Historic mining, logging, and cattle grazing have impacted American River and Red River. This project is the first of several to exclude cattle from the streams and stabilize impacted streambanks. Unemployment is high in this area, so one key aspect of this project is using local labor to harvest trees for the fencing and install BMPs.

Projected completion date:
The project's subgrant expired on 1/30/2012.

Features evaluated:
BMPs evaluated included a bridge, 2.5 miles of jack-pole fencing, a culvert, plantings along Little Elk Creek, and a large settling pond used for helicopter supported forest fire suppression (Figures 5–8).

Project status:
Fieldwork is to be completed by the end of October 2012 and the final report submitted by early November 2012.

Figure 5. Approximately 2.5 miles of jack-pole fencing and a bridge installation are part of the work accomplished. Local labor harvested the trees for the fence. Note the lush vegetation within the fenced cattle exclusion area along Elk Creek.

Figure 6. Another BMP, this new culvert near the mouth of Telephone Creek, handles heavy spring runoff in the area and reduces sediment transport to American River.

Figure 7. This is the confluence of Telephone Creek at American River. Framing Our Communities Executive Director Joyce Dearstyne is explaining that Telephone Creek only flows during summer storms and spring runoff, but prior to culvert installation and additional channel work further upstream; it was a major contributor of sediment to American River.

Figure 8. With all of the fencing in place, cattle are excluded from Elk Creek.

3.2 Copper Creek Restoration

Subgrant: S215 **Latitude and Longitude:** 43.631000, -116.945000

Description:
New landowners are making considerable effort to reverse previous bad ranching practices. Stream channel restoration, fencing livestock out of surface water, and reducing the amount of time each field is grazed are paying off. The effects are dramatic: badly eroding streambanks have stabilized, and water quality has improved over the past 2 years.

Projected completion date:
12/12/2011

Features evaluated:
The evaluation covered several thousand feet of restored stream channel and floodplain that are planted with native species. Newly constructed ponds are enhancing waterfowl habitat (Figures 9–12).

Project status:
The project had some delays due to weather and permitting but is now on schedule.

Figure 9. A section of Copper Creek restored 2 years ago was formerly cluttered with debris from an illegal landfill. Now there is a meandering channel and floodplain planted with bitterbrush, chokecherry, willow, alfalfa, currant, silver sage, big sage, and a variety of grasses.

Figure 10. Willow canes planted deep with the help of a hydraulic stinger along Copper Creek are resulting in a very high survival rate.

Figure 11. The constructed floodplain along Copper Creek also acts as a filter strip between the creek and the sprinkler-irrigated field.

Figure 12. In a few more years, the willows and other plantings along Copper Creek will provide excellent streambank stability and shading for the creek.

3.3 Island Ranch Bank Stabilization

Subgrant: S217 **Latitude and Longitude:** 43.388000, -113.715000

Description:
This project involves streambank protection through installation of an exclusionary fence and installation and anchoring of dead trees along the meander-cut banks along 1 mile of the Payette River.

Projected completion date:
11/2/2011

Features evaluated:
The evaluation checked to see how the older BMPs are holding up after a very heavy spring runoff and to see the latest recently installed streambank protection. All BMPs are holding up as intended (Figures 13–16).

Project status:
The expected completion date is still a reasonable target.

Figure 13. Landowner Harry Adams stands beside his solar-powered electric fence. A mile of fencing keeps cattle from the riverbank. Section 319 funding paid for the materials; Harry and his son supplied the labor.

Figure 14. The other part of this project involved installation of dead trees to capture sediment and encourage vegetation along the riverbank. The trees came from downed timber from a recent windstorm on the landowner's ranchland.

Figure 15. Dead trees were initially anchored to the shore with cable, which lasted for a couple of years, during which time the trees became permanently encased with tons of sediment.

Figure 16. These BMPs may not be aesthetically pleasing, but they slow down the current and encourage deposition of sediment. The trees also offer good habitat for fish.

3.4 Teton Creek Restoration

Subgrant: S249 **Latitude and Longitude:** 43.731700, -111.078600

Description:
A land developer, who was subsequently criminally prosecuted and sent to prison, channelized a section of Teton Creek. By reshaping, toe armoring, and rip-rapping banks with native rounded river rock, this project aimed to stabilize the affected areas of the creek, restoring channel sinuosity and preventing head cutting and streambank erosion.

Projected completion date:
1/20/2010

Features evaluated:
We looked at a portion of the 900 feet of streambank restoration completed several years ago in an area that is highly visible to the public. BMPs—including buried rock toe armor protection, anchored rootwads, and a variety of woody and grass plantings all placed in an aesthetically pleasing manner—are all functioning as intended (Figures 17–20).

Project status:
The work was completed well ahead of schedule.

Figure 17. This rock weir has been in place for several spring runoff periods and has successfully trapped about 2.5 feet of gravel in an area that formerly experienced extreme down cutting.

Figure 18. An exceptionally good example of rootwads installation: the trees are located on less than 5-foot centers, and about 20 feet of tree trunk is keyed into the bank for each tree.

Figure 19. Project Manager Mike Lien is standing in a scourer pool that naturally formed below a rock weir after just one spring runoff.

Figure 20. Vegetation is flourishing along the floodplain.

3.5 Mores Creek Floodplain Restoration

Subgrant: S329 **Latitude and Longitude:** 43.810000, -115.865000

Description:
This project is stabilizing and vegetating approximately 10 acres of abandoned placer mine hill slopes and improving 5 acres of roads used for recreational activities. The project has also stabilized five stream segments and created 7 acres of riparian buffer adjacent to Mores Creek.

Projected completion date:
12/1/2011

Features evaluated:
Although Mores Creek received very high levels of spring runoff this year, the streambank stabilization efforts—including resloping, rock toe armoring, rock barbs, willow plantings, and road closures—were determined to be functioning well during the evaluation (Figures 21–24).

Project status:
This project was completed on 12/1/2011.

Figure 21. Beaver have taken advantage of a rock barb installed to deflect high velocity water away from an unstable bank. In this case, the beaver dam should help stabilize the bank.

Figure 22. Large rock toe armor was added along this stretch. Most of the planted willows died, but the unstable bank behind the rock will naturally slough to a stable state, allowing vegetation to reestablish on its own.

Figure 23. This unnecessary section of dirt road was unstable and contributing to sedimentation of Mores Creek. It has been closed and reseeded.

Figure 24. The streambank here was nearly vertical and was a major contributor of sediment to Mores Creek. It was resloped and reseeded and rock toe armor was added to the slope base. The work held up well during the high spring runoff.

3.6 South Fork Clearwater River Kirtner Subproject

Subgrant: S180 **Latitude and Longitude:** 45.934400, -116.008100

Description:
There are two subprojects within this now completed project. The previously evaluated Rylaarsdam subproject (evaluated May 2006), included removal of cattle from the riparian area, fencing, and bridge access across the creek. Additional work within the Rylaarsdam subproject included off-stream watering; sloping and stabilizing 2,800 feet of eroding streambank; redeveloping 400 feet of low-flow channel; and planting 42,000 square feet of variable riparian buffer.

Projected completion date:
3/18/2011

Features evaluated:
This evaluation reviewed work on the Kirtner subproject, including resloping of the streambank on the South Fork Clearwater River, placement of large angular rocks along the toe of the bank, and planting of riparian vegetation (Figures 25–28).

Project status:
The work was completed on schedule, and this subgrant is closed as of 1/31/2011. Some follow-up work will involve replacing plants destroyed after last spring's heavy runoff using funds from subgrant S394.

Figure 25. Prior to this project, this section of streambank was nearly vertical, unstable, and a major source of sediment to the river.

Figure 26. Although some minor erosion has occurred during high flows, most of the bank is now stable.

Figure 27. Large, angular rock toe armor remains in place and is allowing some of the grass planted and some natural vegetation to take hold. Funding ($1,150–$1,900) will soon be obtained from S394 to replant woody vegetation destroyed during last spring's very high flows.

Figure 28. Coconut fiber fabric is still in place reducing erosion while helping the vegetation become established.

3.7 Owyhee Restoration Incentive

Subgrant: S213 **Latitude and Longitude:** 45.827000, -115.441000

Description:
This project provides technical and financial assistance to landowners in the Middle Owyhee, Upper Owyhee, Mid-Snake Succor, and Jordan sub basins for restoration of streams and waterways, development of animal waste management plans for AFOs, grazing management systems, irrigation water management plans, reduction of nutrient loading to local waterways, and implementation of invasive juniper control. The entire project area covers hundreds of square miles and 12 subprojects.

Projected completion date:
2/31/2011

Features evaluated:
A-8 Lateral, a major source of irrigation water in the area (Figures 29–32).

Project status:
This project was completed on 2/31/2011.

Figure 29. DEQ's Lance Holloway is looking at the A-8 Lateral project, where a new efficient sprinkler and piped pumping system replaced a wasteful flood irrigation system that caused massive irrigation return flow to the Snake River. With the new system, there is seldom any irrigation return flow to the river.

Figure 30. This photograph shows where the pipeline is buried.

Figure 31. This is a view of a portion of the 800 acres of farmland that previously discharged thousands of gallons of contaminated irrigation return flow to the Snake River when it was flood irrigated.

Figure 32. To prevent sprinkler system clogging, the head gate required this filter screen to keep out moss and other debris.

3.8 Big Lost River Temperature and Sediment Reduction

Subgrant: S219 **Latitude and Longitude:** 44.457000, -116.008000

Description:
By fencing off cattle and planting willows, this Trout Unlimited project reduces sediment and thermal input and stabilizes banks in and along several miles of the East Fork Big Lost River. The project also involves removing over 100 rotten log drop structures, installed decades ago, that are impeding fish migration as they fail.

Projected completion date:
12/15/2011

Features evaluated:
We visited older BMPs installed 2–3 years ago, including thousands of feet of jack-pole fencing and areas where over 100 old malfunctioning log weirs were removed from the East Fork Big Lost River. There are reportedly willow plantings along portions of the river, but we were unable to find them (Figures 33–36).

Project status:
Trout Unlimited will not complete the electronic fencing portion of the project due to landowner conflicts and will be returning over $30,000 §319 funds.

Figure 33. A 300-foot section of jack-pole fencing was toppled last winter by snow buildup and high winds. Although it still functions well enough to exclude cattle, it will soon be repaired.

Figure 34. This section of the river adjacent to the toppled fence was cattle free during our evaluation.

Figure 35. Most of the thousands of feet of fencing are in good shape. Jack-pole fencing is preferred in areas of Idaho where severe winter conditions combined with bear, elk, and moose traffic routinely destroy metal fencing.

Figure 36. The fencing is doing its intended job of keeping cattle (seen in the distance) out of the river.

3.9 Lindsay Creek Riparian Management

Subgrant: S227 **Latitude and Longitude:** 43.893000, -114.048000

Description:
This project complements restoration activities on adjacent properties by extending riparian restoration to over 1 mile of degraded Lindsey Creek. Streambank restoration and livestock exclusion BMPs are reducing erosion, water velocity, water temperature, and inputs of bacteria and nutrients to support secondary contact recreation and cold water aquatic life. One small subproject area (Buffalo Corral) is complete and has been evaluated twice, but there is still over $51,000 of unissued funds and some portion of the last $32,000 invoice yet to be spent on other subprojects.

Projected completion date:
12/15/2011

Features evaluated:
We visited resloped streambanks that are planted with willow, dogwood, and other native species (Figures 37–40).

Project status:
Project Manager Tracy Brown finished the project on schedule.

Figure 37. Work on the Walton property was completed in 2009 on a former buffalo corral. Prior to the work, streambanks were barren and badly caving in. Weeds continue to be an issue, but this site is no longer an eyesore or a major contributor of sediment and coliform bacteria to Lindsay Creek.

Figure 38. Work on the Cowger property includes livestock exclusion and vegetative plantings. This work is creating a much more stable riparian environment.

Figure 39. After several more growing seasons, these trees will contribute to shading along Lindsay Creek.

Figure 40. This proposed subproject on the Rodgers property would clean up some illegal dumping along Lindsay Creek. Work would also include some minor resloping of the streambanks and removal of weeds.

3.10 Little Weiser River Streambank

Subgrant: S247 **Latitude and Longitude:** 44.345700, -116.305300

Description:
Several decades ago, the Army Corps of Engineers straightened and channelized a section of the Little Weiser River to give farmers more land to cultivate. This work resulted in decreasing the length of the stream, thereby increasing gradient and velocity. Consequently, the stream is down cutting and attempting to reestablish a meandering pattern. This project's goal is to stabilize the streambanks by resloping them, planting trees, and adding rootwads, barbs, and other treatments.

Projected completion date:
5/15/2013

Features evaluated:
The evaluation covered several thousand feet of streambank restoration and stabilization, consisting of resloping, planting vegetation, and installing rock and rootwads constructed barbs and rip-rap. Overall, the BMPs held up well under a very high spring runoff (Figures 41–44).

Project status:
This project is on schedule.

Figure 41. Although some vegetation was damaged last spring, much of it is still growing in place. These willow branches are attached to a willow cane that was planted deep into the streambank using a compressor-powered hydraulic stinger.

Figure 42. This span of the Little Weiser River was resloped and planted with vegetation. Rip-rap at the toe of the bank is holding up, even during very high spring runoff. Temporary concrete barriers in the foreground will be replaced with a permanent diversion.

Figure 43. This log barb was keyed into the bank at too shallow of an angle and will be reset in the near future to an angle of about 35–40 degrees.

Figure 44. Log barbs installed here were also set incorrectly and were washed out during last spring's very high runoff. This area will be redone with log barbs set at an angle so that the current will be diverted away from the bank instead of towards it.

3.11 South Fork Palouse River Riparian Restoration

Subgrant: S248 **Latitude and Longitude:** 46.712300, -116.990900

Description:
This project involves streambank resloping, vegetative planting, and a temporary irrigation system along 1,800 feet of the South Fork Palouse River.

Projected completion date:
3/20/2013

Features evaluated:
Slope improvements and riparian plantings (Figures 45–48).

Project status:
The hardscape resloping held up but some of the woody riparian plantings were destroyed during the exceptionally heavy spring runoff of 2011. Additional woody plantings are being replaced this summer.

Figure 45. Palouse-Clearwater Environmental Institute Executive Director Tom Lamar and Project Manager Tracy Brown stand beside one of their famous signs posted at all their projects.

Figure 46. Sedges and rushes have taken over since the vertical banks were knocked down, re-sloped, and planted.

Figure 47. Blue plastic collars protect plants from browsing deer and elk and allow easy identification as weed control crews work in the area.

Figure 48. Although some of the woody vegetation was destroyed during spring runoff, most of the grass is coming in very well.

3.12 E Coulee Drain Elimination

Subgrant: S252 **Latitude and Longitude:** 42.591100, -114.883900

Description:
Two settling ponds and one finishing pond and wetland have been completed on a 4-acre conservation easement. These BMPs treat irrigation return flow from 1,000 acres of farmland.

Projected completion date:
6/30/2012

Features evaluated:
The settling ponds and finishing pond that were evaluated during the first visit to this project continue to function as designed, but the first pond was near its holding capacity for sediment. DEQ's regional staff will notify the canal company that it is time to clean the pond out (Figures 49–52).

Project status:
This project was completed on schedule.

Figure 49. The first in a series of three settling ponds that handle irrigation return flow from cultivated farmland.

Figure 50. Partially treated water from the first pond flows to the second settling/wetland pond.

Figure 51. The settling/wetland pond will eventually be filled with a variety of wetland plants.

Figure 52. Irrigation return flow leaving the second settling/wetland pond is shown flowing to the final wetland pond for final treatment prior to release to the Snake River.

3.13 Tammany Road Erosion Reduction, Phase 2

Subgrant: S279 **Latitude and Longitude:** 46.358500, -116.927400

Description:
A road situated along a poorly located right-of-way cannot be relocated due to adjacent development. The road is discharging many tons of sediment into Tammany Creek, a tributary to the Snake River. The project involves rock check dams, culverts, and stormwater settling ponds. Other BMPs include direct-seed, no-till farming techniques on highly erosive agricultural land adjacent to the road.

Projected completion date:
12/31/2011

Features evaluated:
We traveled Vollmer Road and saw the effects of stormwater erosion along this poorly located and designed roadway. The soon-to-be-installed BMPs should reduce sediment transport to Tammany Creek (Figures 53–56). This project will be reevaluated next year.

Project status:
The road BMP construction was delayed by the highway department but began on 9/19/2011.

Figure 53. Vollmer Road runs along a section line north and south up a steep hill in highly erosive Palouse soils. The road design exacerbates erosion into Tammany Creek, located at the bottom of the hill.

Figure 54. Storm water runoff transports enormous amounts of very fine-grained sediment directly to Tammany Creek.

Figure 55. Some sections of the road must be frequently repaired due to the high erosion. The project includes installation of numerous rock check dams, rip-rap, culverts, and settling ponds.

Figure 56. Farm fields adjacent to Vollmer Road have already been converted from conventional deep tilling techniques to no-till and direct-seeding techniques, greatly reducing field erosion.

3.14 Bruneau–Grand View Ground Water Quality Management Plan

Subgrant: S307 **Latitude and Longitude:** 42.882000, -115.800700

Description:
This very successful project enrolled 127 fields covering 8,337 acres in a soil sampling program. Over 5,000 soil samples were collected and nutrient management plans were delivered to farmers. Manure storage plans are being developed for some farms. Although $4.00 per acre was paid to participating farmers, the real incentive to participate is access to soil sampling data that was collected for every farm field. Farmers use this information to determine how much fertilizer should be applied to each acre of land.

Projected completion date:
12/31/2013

Features evaluated:
Over the past growing season, this project led to reduced nitrogen application by 106,892 pounds on 1,422 acres (75 pounds per acre on average), no application of nitrogen at all on 2,107 acres, and very low application (less than 17 pounds per acre) on 1,813 acres (Figures 57–60).

Project status:
This project is on schedule.

Figure 57. This landowner has 1,899 acres planted in corn, alfalfa, grain, and mint that are doing very well with the reduced application rates prescribed under this project.

Figure 58. Another component of this project involves helping farmers find safe areas away from surface water to stockpile cattle manure, which will be used as fertilizer next year at an application rate of 15–45 tons per acre.

Figure 59. Mint was recently harvested from this field, which has just been replanted with winter wheat. Because of this project, the farmer knows that he will need to apply very little nitrogen for a good, high-yield crop.

Figure 60. Education and knowledge is a key component of this project. Farmers are learning that with soil sampling data they can apply less fertilizer, thus saving lots of money and decreasing nitrogen in ground water as an added bonus.

3.15 Pend Oreille Lake *A*Syst

Subgrant: S311 **Latitude and Longitude:** 48.271768, -116.536789

Description:
The Pend Oreille Lake*A*Syst program promotes both education and on-the-ground projects. Through education, informed local residents and lake users learn how their activities affect the lake. On-the-ground pollution control measures protect water quality directly and demonstrate to shoreline landowners what actions they may implement to further this protection.

Projected completion date:
12/31/2013

Features evaluated:
The evaluation covered shoreline stabilization BMPs installed at the Idaho Department of Fish and Game's Water Life Discovery Center and at the Dover Bay Native Plant Demonstration Project, both located on Lake Pend Oreille (Figures 61–64).

Project status:
All work is on schedule.

Figure 61. The shoreline at the Water Life Discovery Center has been resloped and rock toe armor has been added to protect against wave action. Riparian vegetation has been added.

Figure 62. In addition to the shoreline stabilization measures, a public access ramp to the boat dock has been installed.

Figure 63. Lake Pend Oreille is the largest lake in Idaho, with 85,960 surface acres and a shoreline of 111 miles. The Bonner County Sheriff's Department keeps rescue and patrol boats at the Water Life Discovery Center dock.

Figure 64. At the Dover Bay subproject, high school students planted riparian plants.

3.16 Lower Payette River TMDL Implementation, Phase 3

Subgrant: S327 **Latitude and Longitude:** 43.895200, -116.621800

Description:
The goal of this project is to work with local landowners and irrigation districts to install BMPs—including pipelines, gated pipe, lift pumps, and other irrigation devices—that will reduce sediment, phosphorous, and nitrogen discharge to the Lower Payette River. An advance was issued in 2010, in anticipation of purchasing 240 feet of conveyance pipe, 2,926 feet of gated pipe, 2,926 feet of fencing, 2,610 feet of conveyance ditch, and one lift pump for a subproject. However, the landowner was unable to meet the 40% match requirement. As a result, the project manager found four similar but smaller projects that have been approved by DEQ.

Projected completion date:
12/31/2013

Features evaluated:
The four smaller projects evaluated include 1) laser leveling a field for even water distribution, 2) converting cropland from gated pipe irrigation to pivot irrigation, 3) installing sprinklers and hand line on 1.5 acres in the corner of a circular pivot-irrigated field, and 4) installing 244 feet of gated pipe along one border of a field (Figures 65–68).

Project status:
The four small projects have been or are about to be completed and their current status is described below.

Figure 65. This 16.5-acre field was leveled using a precise laser technique that allows the field to be flood irrigated with less water, resulting in minimal discharge of irrigation water to the Payette River. Laser leveled land can decrease water use by 25–30%, with increased crop yield, weed reduction, and fertilizer distribution.

Figure 66. This 120-acre field is currently being irrigated by gated pipe and flood irrigation. Once the crop is harvested this fall, a center pivot irrigation system will be installed, which will result in less irrigation runoff to the Payette River and a better crop yield for the farmer.

Figure 67. Sprinklers and hand line was installed in the farm field in the foreground, eliminating wasteful flood irrigation that was discharging pollutant laden irrigation water to the Payette River.

Figure 68. Conveyance pipe carries irrigation water 244 feet to gated pipe.

3.17 Salmon Falls Creek Agricultural Implementation

Subgrant: S328 **Latitude and Longitude:** 42.136687, -115.008316

Description:
This project resulted in the annual exclusion of approximately 600 head of cattle from 13.4 acres of land adjacent to House Creek, a tributary to Salmon Falls Creek and the Snake River.

Projected completion date:
6/13/2011

Features evaluated:
Rock gaps and exclusionary fencing were visited during the evaluation. Completed BMPs appear to be functioning as designed (Figures 69–72).

Project status:
The work was completed on schedule except for the water gap rocking, which was held up due to unusually high and late spring runoff. The rocking was stockpiled on-site and was installed in October 2011.

Figure 69. Jack-pole fencing works well in areas of heavy winter snow and associated spring flooding and standing water, as is the case at House Creek. The snow-capped Independence Range of northern Nevada looms in the background.

Figure 70. The valley along House Creek is prime ranching country. Jack-pole fencing protects 320 acres of grassland adjacent to the creek from 600 head of cattle annually.

Figure 71. Now that the cattle have been fenced off, the entire span of House Creek will soon look this good.

Figure 72. This is one of five watering gaps installed along House Creek. The bottom and shore along the watering gap still need a rock lining to reduce the impact of cattle.

3.18 Twentymile Creek Road Improvement

Subgrant: S382 **Latitude and Longitude:** 48.856370, -116.334360

Description:
This road improvement project dovetails with a previous project, where a fish passage barrier was removed lower in the watershed. Both projects work toward improving watershed health in Twentymile Creek.

Projected completion date:
3/25/2011

Features evaluated:
We viewed about 2.5 miles of road improvements for this project and the earlier work completed in 2005 (subgrant S146) (Figures 73–76).

Project status:
This project was completed ahead of schedule.

Figure 73. Before the project: this roadbed had numerous large protruding rocks that prohibited proper grading, which caused water to run on the surface.

Figure 74. After: the road is now crowned to improve drainage and can be maintained by grading.

Figure 75. Road failure before this project created unsafe driving conditions and was a major sediment source to Twentymile Creek just below the road in this photograph.

Figure 76. The crew installed new culverts to improve drainage and reduce erosion. Adding more drains distributes runoff over a larger area, greatly reducing sediment deposition to Twentymile Creek.

3.19 Coulee Wetland

Subgrant: S385 **Latitude and Longitude:** 42.645939, -114.705484

Description:
The project consists of a series of four in-line elongated settling ponds that flank the lower end of a large irrigated farm field. The ponds, nearing completion at the time of our visit, will cover approximately 11 acres total and will treat about 11 cubic feet per second of irrigation return flow currently discharging untreated into the Snake River.

Projected completion date:
12/31/2014

Features evaluated:
Construction of the settling pond cells began several days before we conducted the evaluation, as shown in the accompanying photographs (Figures 77–80).

Project status:
Work on this project is on schedule.

Figure 77. This trackhoe is ideal for quickly excavating the series of four settling ponds on this project.

Figure 78. The first pond was already largely complete, but its dike is being raised to create more capacity.

Figure 79. Wetland plants will naturally take over within a year or two. The adjacent road will allow access for heavy equipment used to routinely clean out the settling ponds.

Figure 80. This is a small portion of the hundreds of acres of cropland from which irrigation return flow is being generated.

3.20 Little Salmon River Watershed Riparian Restoration

Subgrant: S389 **Latitude and Longitude:** 45.076111, -116.301111

Description:
BMPs for this project include fencing to exclude cattle from Fourmile Creek, riparian plantings, willow weavings, and an off-creek livestock watering and shelter area. On Round Valley Creek and Little Salmon Creek, 3–4 miles of fencing and similar plantings will be installed.

Projected completion date:
12/31/2014

Features evaluated:
We looked at vegetative woody plantings and fencing along the Little Salmon River and similar work along two sections of Fourmile Creek, which is tributary to the Little Salmon River. Project Manager Mary Dudley and about 200 volunteers have done an excellent job installing fence and planting a variety of woody plants, including dogwood, willow, cottonwood, and alder. The plant survival rate is currently close to 100% (Figures 81–84).

Project status:
To date, only a $6,144.50 reimbursement has been requested of the $41,405 subgrant. This project is ahead of schedule.

Figure 81. Project Manager Mary Dudley stands next to plantings. The combination of dogwood, alder, cottonwood, and willow was planted in depressions to take advantage of natural and applied watering. In the background is exclusionary fencing installed along the Little Salmon River and its tributaries.

Figure 82. This bank is just beginning to recover now that cattle are restricted and vegetation has been planted. The irregular surface of the streambank will fill in with sediment during high-flow events.

Figure 83. This unstable vertical bank is the result of uncontrolled cattle grazing. Prior to this project, much of the shoreline along the Little Salmon River looked like this.

Figure 84. After one season of excluding cattle and installing willow weavings, the improvement is noticeable.

3.21 Upper Bear River Streambank Stabilization

Subgrant: S392 **Latitude and Longitude:** 42.211482, -111.072121

Description:
Upper Bear River has been subject to destabilization and erosion due to uncontrolled cattle grazing for many decades. Over the past 10 years, the Bear Lake Regional Commission has worked with local farmers and ranchers to reverse the damage. Work from August until November of 2010 included resloping and stabilizing 1,000 feet of streambank (shown below). BMP installation included rock barbs and willow bundles. However, spring 2011 runoff was exceptionally high, destroying many of the newly planted and immature willow plantings. Some of the remaining balance of $9,276.33 in this subgrant will be used to replant.

Projected completion date:
12/31/2014

Features evaluated:
The evaluation covered a 1,000-foot span along Bear River listed in the work plan for reclamation. Although the newly planted vegetation was largely destroyed by the exceptionally high spring runoff on Bear River, all of the hardscape—including the resloped and rip-rap-armored streambank and the well-keyed-in rock barbs—held up and are functioning as intended (Figures 85–88).

Project status:
This project could be completed ahead of schedule.

Figure 85. This 1,000-foot section of Bear River had a near vertical bank that was contributing thousands of tons of sediment per year to the river and ultimately to Bear Lake. The resloped and rip-rap-armored bank is now stable and contributes very little sediment.

Figure 86. In addition to the resloped bank, rock barbs were keyed into the bank. These structures force high-velocity water toward the center of the channel and away from the bank.

Figure 87. A rock barb installed immediately above this bridge abutment appears to be preventing the abutment, and ultimately the bridge above it, from being undermined.

Figure 88. Had the bank continued to erode, the bridge would have been destroyed, resulting in an expensive repair and the deposition of a large volume of sediment into Bear River.

3.22 Blackfoot River Water Quality Improvement

Subgrant: S393 **Latitude and Longitude:** 43.064240, -111.885355

Description:
This project excludes 500–600 head of cattle annually from 520 acres of ranchland and implements a prescribed grazing plan over 770 acres.

Projected completion date:
12/31/2014

Features evaluated:
During our evaluation, we visited two watering troughs, a portion of the pipeline, the generator and pump, and a 17,000-gallon holding tank. We did not visit the fence because there is no easy vehicle access to it (Figures 89–92).

Project status:
To date, $46,552.93 has been issued for installation of 14,742 feet of exclusionary fencing and 3,290 feet of pipeline running from the Blackfoot River to a holding tank and beyond to two watering troughs. This project is on schedule.

Figure 89. This new water trough is high tech: the concrete floor is heavily scored to help cattle get traction as they approach with muddy feet. The steel guardrail keeps cattle from entering the trough. A float valve shuts off the water flow at a defined level.

Figure 90. Water will be pumped from the nearby Blackfoot River to this 17,000-gallon holding tank on an as-needed basis. From here, water is gravity-fed to two watering troughs spaced out along the 3,000-foot pipeline.

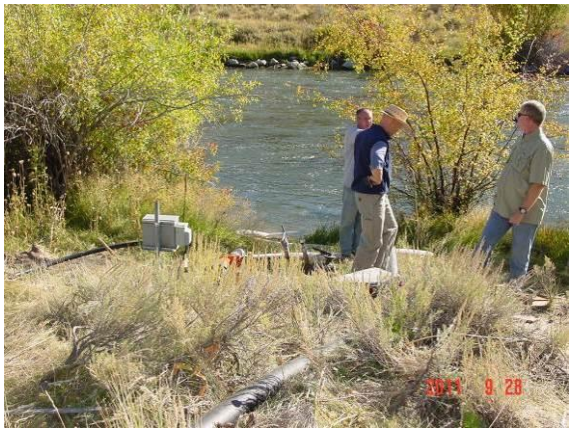

Figure 91. The water pump is downhill from the generator and adjacent to the Blackfoot River.

Figure 92. This livestock trailer will transport the generator and pump back to the shop during winter months.

3.23 South Fork Clearwater River Watershed Vegetation

Subgrant: S394 **Latitude and Longitude:** 46.027428, -116.079397

Description:
The work plan calls for riparian planting of stream buffers, wetlands, and vegetative filter strips. Planting will occur in the spring and fall. Deliverables also include 120,000 square feet of riparian buffer to be sprayed with a mixture of hydro mulch and native grass seed. Grass filter strips will be planted with native trees and shrubs. DEQ has approved using funds from this subgrant to replant some destroyed woody plants downriver at already closed subgrant S180 since the two projects are closely related.

Projected completion date:
12/31/2014

Features evaluated:
Although fieldwork for this project has not yet begun, we evaluated the site to see where stream stabilization BMPs will soon be installed. High runoff and associated stream gravel from a tributary to the South Fork Clearwater River has caused the river channel to shift, resulting in extreme shoreline erosion. A combination of rock barbs and well-engineered resloping of the streambank should stabilize the situation and prevent further mass erosion (Figures 93–96).

Project status:
This 2010 project will begin in the near future.

Figure 93. A tributary recently discharged huge volumes of gravel into the river, causing the river channel to shift to the east and erode this bank.

Figure 94. This building will either be moved or destroyed, and the streambank will be resloped and stabilized. Rock barbs will be keyed into the bank to help deflect fast-moving runoff away from the shoreline.

Figure 95. Temporary electric fencing is keeping livestock away from the unstable bank.

Figure 96. These friendly residents would appreciate it if we could halt further erosion of their prime pasture and send less sediment into the South Fork Clearwater River.

3.24 Upper Hangman Creek Watershed Road and Culvert

Subgrant: S395 **Latitude and Longitude:** 47.116428, -116.726112

Description:
Road rocking now stabilizes the road, and a large, fish-friendly 60-inch arch culvert replaced an old, undersized, and damaged culvert, ensuring road stability.

Projected completion date:
12/31/2014

Features evaluated:
During our evaluation, we looked at the 1,300-foot section of road rocking and the new culvert (Figures 97–100).

Project status:
This project was completed ahead of schedule.

Figure 97. This 60-inch culvert replaced an old, undersized, and damaged culvert that was on the verge of failure, which would have resulted in a major discharge of sediment to Hangman Creek.

Figure 98. This tributary to Hangman Creek contains bull trout, so the culvert selected is more fish friendly than a conventional culvert. Note that the culvert is located at a grade below water level to enhance fish passage.

Figure 99. An additional fish-friendly feature is a custom-made steel ladder to keep large rocks in place within the culvert. These large rocks offer safe refuge for fish as they migrate upstream during their spawning season, which coincides with spring runoff high flows.

Figure 100. One small ditch culvert conveys water from a short span of road barrow ditch to a wooded area.

3.25 Potlatch River Watershed Management, Phase 2

Subgrant: S396 **Latitude and Longitude:** 46.850000, -116.400000

Description:
This project involves decommissioning old logging roads, rerocking currently used logging roads, installing cattle exclusionary fencing, installing cattle watering tanks, and planting vegetation along streambanks and abandoned railroad spurs.

Projected completion date:
12/31/2014

Features evaluated:
This evaluation involved visits to many of the BMPs listed above (Figures 101–104).

Project status:
This project is on schedule.

Figure 101. This old logging road crossing is contributing to erosional head cutting on a tributary to the East Fork Potlatch River and will be removed as this stretch of logging road is closed out.

Figure 102. A logging road that will remain open has just received new gravel and ditches over a 4.5-mile stretch. Roadwork of this nature is effective in reducing sedimentation to surface water.

Figure 103. About 20,000 feet of exclusionary split rail fencing has been installed along Corral Creek, another tributary to the Potlatch River. This locally produced fencing, which created local jobs, holds up better than barbwire in heavy snow areas with cattle, elk, and moose traffic.

Figure 104. Prior to this project, uncontrolled grazing resulted in mass erosion and high levels of bacteria in Coral Creek. Ken Stinson took this photograph last summer.

3.26 Mica Creek Sediment and Nutrient Reduction

Subgrant: S397 **Latitude and Longitude:** 47.598871, -116.883674

Description:
Decades ago, the Idaho Transportation Department built a highway along Mica Creek and pushed the creek to one side of the valley, steepening the gradient and destabilizing the stream channel, which led to down cutting. Meanwhile, local ranchers and farmers allowed unfettered cattle access to the creek and hay cultivation up to the creek banks, resulting in further destabilization of the creek. Landowner and rancher Larry Mundt, who recently received an award for his efforts, has taken the initiative to begin reversing the damage by working through the §319 program and with other stakeholders to clean up and stabilize Mica Creek.

Projected completion date:
12/31/2014

Features evaluated:
We saw exclusionary fencing, streambank rehabilitation, and willow plantings. Approximately 300 feet of fencing still needed to be installed during the 2011 season (Figures 105–108).

Project status:
The expected completion date is still a reasonable target.

Figure 105. Decades ago, Highway 95 construction pushed the channel to one side of the valley, thereby shortening and increasing the stream gradient. This action resulted in a steeper gradient, channel down cutting, and bank instability. Uncontrolled cattle grazing further aggravated the problems.

Figure 106. After just one season of cattle exclusion, the grass is already coming back. However, the problem will not be fully corrected until fragile vegetation becomes more established since spring runoff can be quite destructive to fragile vegetation.

Figure 107. Spring runoff from this field enters Mica Creek at a low point, where an old meander scar naturally exists. The point of entry has been fortified with rip-rap to prevent head cutting into the bank. A beneficial sand bar is now naturally forming along Mica Creek immediately upstream from the rip-rap.

Figure 108. A soft touch was required here, where established trees were about to become destabilized as the bank was gradually receding. Rip-rap, combined with a rock barb (bottom right), should protect the trees and the grassy sand bar.

3.27 Marsh Creek-Middle Portneuf Watershed Phase 3

Subgrant: S399 **Latitude and Longitude:** 42.822122, -112.404512

Description:
There are currently four subprojects within this overall project, with additional subprojects likely in the near future. All of the subprojects deal with AFO improvements or relocations that protect and improve water quality on Marsh Creek.

Projected completion date:
12/31/2014

Features evaluated:
The evaluation covered stormwater runoff diversions and exclusionary fencing (Figures 109–112).

Project status:
This project is on schedule.

Figure 109. This AFO will routinely handle 400 head of cattle. The addition of berms will soon keep stormwater runoff from passing through it to Marsh Creek.

Figure 110. A culvert conveys contaminated stormwater under the railroad and highway right-of-way to Marsh Creek, which meanders through the valley.

Figure 111. Decades of uncontrolled cattle grazing have had a negative impact on Marsh Creek. Exclusionary fencing will soon protect 2,600 feet of Marsh Creek as this BMP annually excludes 300 to 500 head of cattle. Watering troughs will encourage cattle to remain in the pastures where their feed is, rather than congregate along the creek.

Figure 112. The steel fence panels (upper right) exclude cattle from this tributary to Marsh Creek. Many small projects like this one add up to substantial reductions of nutrients, bacteria, and sediment deposition in Marsh Creek. After part of one growing season, this formerly denuded section of the creek is already beginning to stabilize.

3.28 Teton Creek Restoration Phase 2

Subgrant: S400 **Latitude and Longitude:** 43.726389, -111.083333

Description:
This multiphase project continues to stabilize areas of Teton Creek that were damaged by illegal construction that led to the conviction and imprisonment of a developer. Work includes restoration of channel sinuosity and prevention of down cutting and erosion of streambanks. A series of V-weirs are reversing down cutting and helping maintain a low-flow channel with pools. Streambanks have been vegetated with willows, cottonwoods, and native grasses. Together, these BMPs are benefiting fish passage and improving fish habitat.

Projected completion date:
3/7/2011

Features evaluated:
During this evaluation, we looked at a portion of the 2,200 feet of streambank restoration work, including buried rock toe protection, anchored rootwads, and a variety of woody and grass plantings (Figures 113–116).

Project status:
This 2010 project is already complete, far ahead of schedule.

Figure 113. The channel flanks along Teton Creek had to be armored with large basalt boulders to correct down cutting caused by illegal removal of gravel by a developer some years ago.

Figure 114. Weeks prior to this photograph, about 900 cubic feet per second of spring runoff flowed down this channel. At the date of this photograph, all of the streamflow was diverted for irrigation.

Figure 115. Temporary irrigation waters the vegetation planted along the floodplain–channel interface, which is doing well.

Figure 116. In this particular section, angular basalt boulders are excellent for buried rock toe protection because they are heavier and less apt to be rolled downstream during flood events than the granitic round river rocks that are native here.

3.29 Daniels Reservoir Sediment Reduction

Subgrant: S402 **Latitude and Longitude:** 42.361081, -112.417946

Description:
Numerous gully plugs (settling basins) and terraces are being installed in cultivated fields to capture soils from disturbed dry crop fields. Twelve watering troughs and 8 miles of buried water supply pipelines have recently been installed to bring water to cattle.

Projected completion date:
12/31/2014

Features evaluated:
BMPs evaluated include water inlet boxes, pipeline, watering troughs, and gully plugs (Figures 117–120).

Project status:
This project is on schedule.

Figure 117. For generations, Indian Creek has been heavily grazed without exclusion of cattle for watering. With the installation of two collection boxes, like this one, water is piped to watering troughs out in pastures.

Figure 118. The collection box filters debris and transfers water to 8 miles of buried pipeline that feeds 12 watering troughs spread over 2,500 acres of grazing land.

Figure 119. The beginning of a buried pipeline that conveys water to watering troughs.

Figure 120. Watering troughs are made from used heavy-equipment tires that have been sliced in half and mounted in concrete. The small ramp in back allows birds to escape.

3.30 Bear Valley–Casner Creek Restoration

Subgrant: S404 **Latitude and Longitude:** 44.288800, -115.482702

Description:
A 2,050-foot section of Bear Valley–Casner Creek was dredged during the 1950s to mine niobium and tantalum for a federal defense program, and the stream was channelized, creating unstable down cutting conditions. The goal of this project is to reverse the down cutting by removing a man-made berm and installing coconut fiber bio logs across the stream channel. Another component of the project is monitoring the effects of the BMPs through creation of channel cross-sections, longitudinal profiles, pebble counts, vegetation transects, and photo points.

Projected completion date:
12/31/2013

Features evaluated:
The evaluation confirmed that the berm removal and bio logs installation was completed and appears to be succeeding in reversing the down cutting. There are early signs that the original sinuosity of the stream channel is beginning to return, and the streambanks are beginning to stabilize (Figures 121–124).

Project status:
Work is on schedule.

Figure 121. This kiosk explains the history of dredge mining during the 1950s. Rare earth minerals were used for components of rocket and jet engines during the Cold War era.

Figure 122. This recently installed fish-friendly culvert was not paid for with §319 funding but is essential to the success of the project. The old culvert would not allow fish to pass.

Figure 123. Previously, a berm extended along the left of the excavated and channelized stream. The channelization and heavy grazing resulted in channel down cutting and caving streambanks. The berm was removed, the sod was replaced, and cattle are now excluded.

Figure 124. Ten drop structures were installed at 200-foot intervals. These pliable coconut fiber bio logs are causing gravel to build up above each structure and preventing further down cutting of the stream channel.

3.31 Payette Ditch Discharge Treatment

Subgrant: S405 **Latitude and Longitude:** 44.144750, -116.566180

Description:
The Payette Ditch is an irrigation conveyance that originates at the Payette River diversion and flows approximately 20 miles prior to discharging into the Weiser River. Irrigation water that makes its way back to the river could affect water quality if untreated.

Projected completion date:
12/31/2014

Features evaluated:
Our evaluation covered wetlands constructed over 6.5 acres of land at the end of the Payette Ditch, adjacent to the Payette River. The new wetland appears to be filtering pollutants as intended. Additional plantings will go in the wetland next spring (Figures 125–128).

Project status:
This project will be completed on schedule as the only work left to accomplish is planting of willows during next spring's favorable wet weather.

Figure 125. The top settling pond receives 3.5–4 cubic feet per second of sediment-, phosphorous-, and nitrogen-laden irrigation return flow during normal summer operations.

Figure 126. Partially treated irrigation return flow exits the first pond and enters the 6-acre finishing wetland, where more pollutants are removed.

Figure 127. After several months, the finishing pond is beginning to establish vegetation on its own. Next spring, the Weiser River Soil Conservation District intends to plant willows along the shoreline.

Figure 128. Treated discharge water has greatly reduced levels of pollutants. The project's monitoring program will be able to produce exact levels of reduction in the near future.

3.32 American Red River, Phase 2

Subgrant: S406 **Latitude and Longitude:** 45.882778, -115.686111

Description:
The American River and its tributaries have been impacted by historic mining, logging, and cattle grazing. This project is the third of several §319 projects that exclude cattle from the streams and stabilize already impacted streambanks. Unemployment is high in the Elk City area, so this project uses local labor to harvest trees for the fencing and install the BMPs**.**

Projected completion date:
12/31/2014

Features evaluated:
This is the first full season for this 2010 project. All 13,200 feet of jack-pole fencing has been built from locally harvested trees. Our evaluation covered a representative portion of the fencing (Figures 129–130).

Project status:
The expected completion date is still a reasonable target.

Figure 129. Big Elk Creek is now protected from grazing cattle by thousands of feet of jack-pole fencing.

Figure 130. This is a representative example of jack-pole fencing on the southern (downstream) end of Big Elk Creek. The creek runs just to the left of this photograph.

References

DEQ (Idaho Department of Environmental Quality). 1999. *Idaho Nonpoint Source Management Plan*. Boise, ID: DEQ.