



NONPOINT SOURCE SUCCESS STORY

Idaho

Stakeholders Collaborate to Reduce Sediment and Restore Aquatic Habitat in Rapid Creek

Waterbody Improved

Livestock grazing contributed excess sediment to Rapid Creek in southeastern Idaho. Biological assessments showed that Lower Rapid Creek failed to support cold-water aquatic life. As a result, Rapid Creek was added to Idaho's 1994 Clean Water Act (CWA) section 303(d) list for sediment impairment. Landowners and state and local partners implemented agricultural best management practices (BMPs), and sediment levels declined. Data collected in early 2012 showed improved biological scores, prompting the Idaho Department of Environmental Quality (IDEQ) to remove Lower Rapid Creek from the state's 2012 list of impaired waters.

Problem

Rapid Creek is in southeastern Idaho (Figure 1), where rangeland is the predominant land use. Livestock grazing, streambank erosion, sheet and rill erosion, and erosion from roads contributed excess sediment that negatively affected water quality.

The U.S. Environmental Protection Agency (EPA) added Lower Rapid Creek to the CWA section 303(d) list in 1994 based on IDEQ's section 305(b) water quality assessment report.

In 1995 IDEQ completed a Beneficial Use Reconnaissance Program (BURP) wadeable streams rapid bioassessment on Lower Rapid Creek to confirm the impairment. The BURP assesses the health of streams using multimetric indices (biological, physical and chemical) on a 0.0 (lowest) to 3.0 (highest) scale. The site received a stream macroinvertebrate index (SMI) score of 0.0, a stream fish index (SFI) score of 2.0 and a stream habitat index (SHI) score of 3.0. Because the SMI score was 0.0, which is below the minimum threshold levels, the site automatically failed and was considered not to be supporting its beneficial uses. As a result, Lower Rapid Creek remained on the CWA section 303(d) list for sediment impairment. (Note: The waterbody was originally listed as Water Quality Limited Segment #2334; in 2002 the segment was adjusted and became assessment unit ID17040208SK023 _ 03.)

In 1999 IDEQ developed a sediment total maximum daily load (TMDL) for the Portneuf River Subbasin, which includes Rapid Creek; EPA approved the TMDL in 2001.

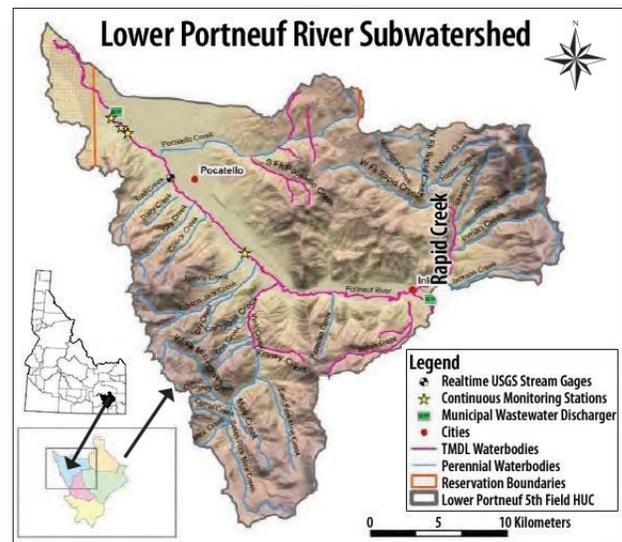


Figure 1. Rapid Creek is in southeastern Idaho's Lower Portneuf River subwatershed.

Project Highlights

From 1989 to 1999, the Portneuf Soil and Water Conservation District (SWCD) implemented a State Agricultural Water Quality Program (SAWQP) grant-funded project for the 16,195-acre Upper Rapid Creek watershed. With help from SAWQP, landowners implemented BMPs on approximately 3,839 critical upland acres to reduce soil erosion.

From 2001 to 2007, the Portneuf SWCD led the Upper Rapid Creek 319 project, helping landowners implement BMPs on 2.8 miles of impaired stream segments. This project built upon the 1989–1999



Figure 2. A site in the Upper Rapid Creek watershed, before (left, 2001) and after (right, 2007) BMPs were installed to protect the stream corridor and reduce erosion.

SAWQP project. During the initial inventory process, the SWCD designated 4,800 acres of the watershed as critical. Landowners implemented agricultural BMPs on 1,085 of these critical acres using CWA section 319 funding; on 1,251 acres using Conservation Reserve Program (CRP) funding; and on 506 acres using Environmental Quality Incentives Program (EQIP) funding. Watershed partners also used a Conservation Innovation Grant (CIG) to assist in completing a section 319 project. Using the four integrated funding sources, landowners treated 59 percent of the critical acres with BMPs such as off-stream alternative water sources, critical area plantings, stream crossings, livestock use exclusion, installation of water and sediment basins, and channel vegetation (Figure 2).

Results

Water quality has improved. The Idaho Association of Soil Conservation Districts (IASCD) conducted monitoring on the West Fork and the North Fork of Rapid Creek in 2006–2007. On each stream, sites were selected above and below the CWA section 319 project area to allow for upstream-downstream comparisons of water quality before and after BMP implementation. These data showed that the suspended solids load declined by an estimated 26 pounds per day (8 percent) and that *Escherichia coli* and nitrogen concentrations also declined.

IDEQ collected water samples at the mouth of Rapid Creek under high-flow conditions in 2007. These averaged 23.6 milligrams per liter (mg/L) total suspended solids (TSS), meeting the 80 mg/L high-flow sediment (in TSS) TMDL target. IDEQ conducted BURP bioassessments on Lower Rapid Creek in 2001, 2004 and 2012 (Table 1). After 2001 the creek met the minimum average BURP score of 2.0, which indicates full support of cold-water aquatic life; however, the

Table 1. BURP data for Lower Rapid Creek, 1995–2012

Year	BURP Monitoring Site ID	Stream Macroinvertebrate Index (SMI) Score	Stream Fish Index (SFI) Score	Stream Habitat Index (SHI) Score	Average Score ^a
2012	2012SPOCA011	3	3	2	2.67
2004	2004SPOCF001	-	3	1	2.00
2001	2001SPOCA022	3	-	3	3.00
2001	2001SPOCA020	3	-	2	2.50
1995	1995SPOCA014	0	2	3	0.00

^a An average score below 2.00, as noted in bold, is considered not supportive of cold-water aquatic life.

2012 bioassessment was the first to examine all three multimetric indices (i.e., SMI, SFI and SHI) since 1995. In 2012 the site received an overall average score of 2.67, which is considered fully supporting. In addition, IDEQ's 2012 percent fines data showed that 7.83 percent of the substrate consisted of material less than or equal to 2.5 millimeters in size, significantly less than the 30 percent threshold identified as indicative of impairment by IDEQ's *Guide to Selection of Sediment Targets for Use in Idaho TMDLs*. Because data indicate good water quality, IDEQ removed the 5.62-mile-long Lower Rapid Creek assessment unit (ID17040208SK023_03) from the state's 2012 list of impaired waters (for sediment impairment).

Partners and Funding

The Portneuf SWCD administered the CWA section 319 project. Many stakeholders provided support and technical assistance, including the IASCD, IDEQ, Idaho Soil and Water Conservation Commission, Idaho State Department of Agriculture, U.S. Department of Agriculture's Natural Resources Conservation Service, and private landowners.

Funding for the 2001–2007 CWA section 319 project included \$132,919 to support BMP implementation, \$10,000 for grant administration and supplies, \$107,834 in landowner matching funds and \$55,000 in IDEQ technical support matching funds. A CIG grant provided additional matching funds for the 319 grant. A SAWQP grant provided \$306,404 in state funds for BMP implementation between 1989 and 1999. Additional funding sources supported restoration efforts between 1985 and 2002 in both the Upper Rapid Creek watershed (\$756,462 in CRP funds, with \$45,570 landowner match; and \$1,826 in EQIP funds, with \$1,273 landowner match) and the Lower Rapid Creek watershed (\$363,042 in CRP funds, with \$21,870 landowner match).



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