



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Idaho

Removing Roads and Restoring Streams Improves Steamboat Creek

Waterbody Improved

Eroding forest roads contributed excessive sediment to northern Idaho's Steamboat Creek, damaging aquatic habitat and impairing cold-water aquatic life such as the native westslope cutthroat trout. As a result, Steamboat Creek was added to the state's 1994 Clean Water Act (CWA) section 303(d) list for sediment impairment. Beginning in 1992, the U.S. Forest Service–Idaho Panhandle National Forests (USFS) removed or repaired failing roads, restored riparian areas and implemented in-stream habitat improvement projects. Sediment loads in Steamboat Creek have declined, and monitoring results show that sediment no longer impairs cold-water aquatic life. Therefore, the Idaho Department of Environmental Quality (DEQ) has proposed to remove a seven-mile-long segment of Steamboat Creek from the state's list of impaired waters in 2012 for sediment.

Problem

Steamboat Creek is in the North Fork Coeur d'Alene River Subbasin, which drains the west flank of Idaho's Bitterroot Mountain Range in the northern Rocky Mountains (Figure 1). Idaho Panhandle National Forests manages nearly all of the Steamboat Creek watershed.

Intensive timber harvest and road building occurred through much of the North Fork Coeur d'Alene River Subbasin from 1890 until the early 2000s. A dense network of roads was constructed, including some roads spaced 300 feet apart across hillsides to accommodate "jammer logging," a system in which logs are pulled with cables from the cutting area to a collection point. Access roads were often built directly adjacent to streams, which led to heavy sediment loading into the waterbodies from forest roads. Even after active logging ceased, runoff and floodwaters continued to erode and wash out roads, particularly those near or adjacent to streams.

Water quality investigations in the early 1990s suggested that sediment inputs were impairing cold-water aquatic life in Steamboat Creek. As a result, Steamboat Creek (seven stream miles) was added to the 1994 CWA section 303(d) list for sediment. To confirm impairment, in 1996 DEQ conducted biological monitoring under the Beneficial Use Reconnaissance Program (BURP). The data showed a low diversity of macroinvertebrates at a site near the mouth of the creek, confirming that the stream did not fully support cold-water aquatic life and should remain listed as impaired

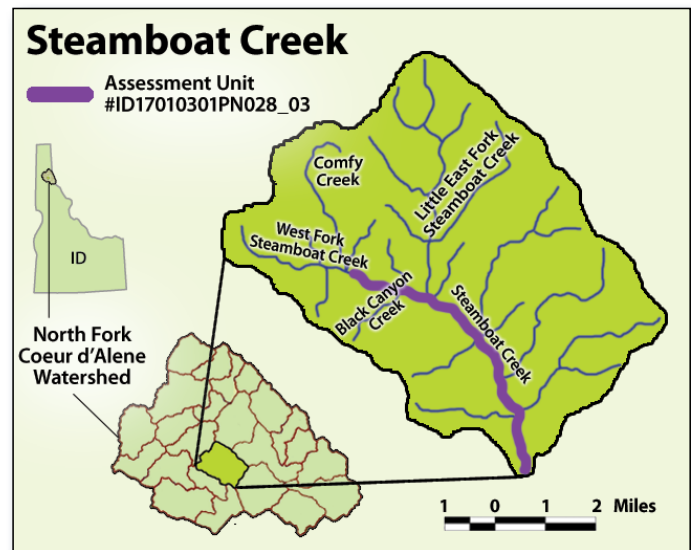


Figure 1. Idaho's Steamboat Creek assessment unit (seven stream miles) includes the main stem of Steamboat Creek and a portion of West Fork Steamboat Creek upstream to the confluence with Comfy Creek.

by sediment. In 2001 DEQ completed sediment total maximum daily loads (TMDLs) for the North Fork Coeur d'Alene River Subbasin, which identified erosion from forest roads as the subbasin's largest sediment source. The TMDL established a sediment load target of 1.5 times the natural background sediment load in the Steamboat Creek watershed, which meant that sediment loads needed to be reduced by approximately 53 percent to support cold-water aquatic life.

Project Highlights

In 1988 the USFS launched the Steamboat Creek watershed restoration project beginning with an intensive inventory of all roads and potential sediment sources. In 1992, the USFS removed 74 channel crossings and treated 41 miles of roads in the headwaters and 3.7 miles of roads in riparian areas within the East Fork Steamboat Creek watershed. USFS restored the streambanks and riparian areas, placed 500 logs in the channel and used 300 cubic yards of boulders to construct pool-forming structures. The structures: (1) helped to stabilize the stream by providing additional grade control and (2) created cold-water aquatic life habitat by providing cover (hiding places) and increased channel complexity (different types of habitat in the same area). USFS planted approximately 3,850 shrubs and trees in riparian areas. Between 1992 and 2007, USFS removed additional eroding forest roads in East Fork Steamboat Creek, for a total of 68 miles (Figure 2). Beginning in the early 1990s and continuing until 2010, USFS also completed extensive road removal and restoration work in the West Fork Steamboat Creek watershed and along the main stem Steamboat Creek.

Results

In 2008 DEQ and USFS initiated a state-mandated TMDL five-year review of Steamboat Creek and other watersheds within the North Fork Coeur d'Alene River Subbasin. Initially, the partners performed modeling and geographic information system analyses to evaluate which watersheds with extensive restoration work likely had made significant progress toward meeting the sediment TMDL goals. The model indicated that sediment loads in Steamboat Creek had declined by an estimated 43 percent between 1986 and 2007 (close to the TMDL goal of 53 percent reduction), which prompted further study.

In the second phase of the TMDL review, DEQ and USFS verified modeling results in eight watersheds (including Steamboat Creek watershed) using DEQ's BURP assessment and USFS' PACFISH/INFISH Biological Opinion (PIBO) Effectiveness Monitoring Program protocols. BURP data collected in East Fork Steamboat Creek in 2009 showed that the creek had an average BURP index score of 3.0, well above the minimum average BURP index score of 2.0 that is required to indicate support of cold-water aquatic life. Macroinvertebrate sampling showed an increase in diversity and included species associated with cold, clear mountain streams. The fish survey detected sculpin, westslope cutthroat trout

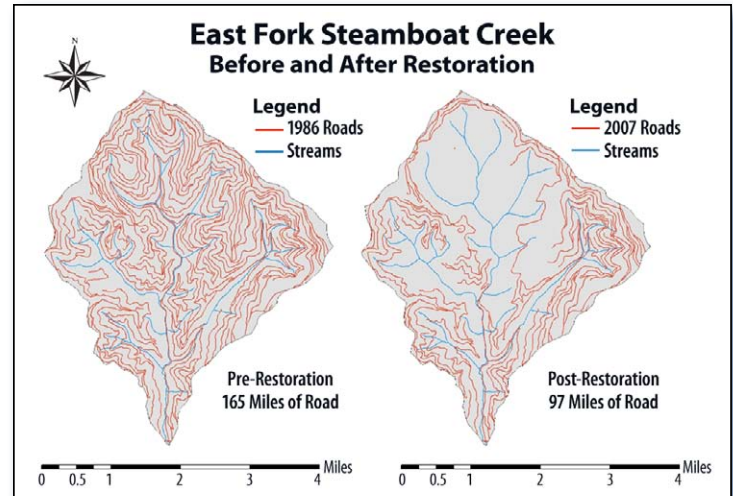


Figure 2. Road density declined following road removal in the East Fork Steamboat Creek watershed.

and longnose dace—all native species associated with good water quality. These data in the headwaters, combined with 2003 and 2007 DEQ BURP data on the main stem Steamboat Creek demonstrate improvements in water quality and aquatic life. These data were further confirmed by the PIBO data collected on physical habitat, temperature and macroinvertebrates, which indicate that the Steamboat Creek assessment unit fully supports cold-water aquatic life with respect to sediment. On the basis of these data, DEQ has proposed to remove Steamboat Creek from the state's list of impaired waters in 2012 for sediment. Steamboat Creek remains listed as impaired for temperature.

Partners and Funding

USFS spent nearly \$1 million collected from timber sale receipts (a funding source established by the Knudtsen-Vandenberg Act) and USFS-appropriated funds on restoration projects in the Steamboat Creek watershed. Numerous partners collaborated with USFS on planning and implementation, including the Army Corps of Engineers, Idaho Department of Water Resources, Idaho Department of Fish and Game, DEQ, North Idaho Fly Casters and the Kootenai Environmental Alliance. Partners in the TMDL five-year review included the USFS Idaho Panhandle National Forests Coeur d'Alene River Ranger District, the USFS PIBO Effectiveness Monitoring Program, DEQ's Coeur d'Alene Regional Office, the U.S. Environmental Protection Agency and the North Fork Coeur d'Alene River Watershed Advisory Group.



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