
Management by Closure to Use, BMP 11.09

Objectives

- 1) To exclude activities that could result in damage to facilities or degrade the soil and water.
- 2) To prevent road-fill failure if culvert capacity is exceeded.
- 3) To ensure public safety by securing areas likely to be hazardous because of road failures and debris flows.

Site Description

This site just east of the town of Superior, Montana, located approximately 3 miles from the junction of Johnson Creek Road 540 and the frontage road. The area is on Superior Ranger District, of the Lolo NF, in Section 30 and the northwest corner of Section 29, which are in Township 17N, Range 25W. LSI classifications are 64MB, 64MC, 30MB and 13UB.

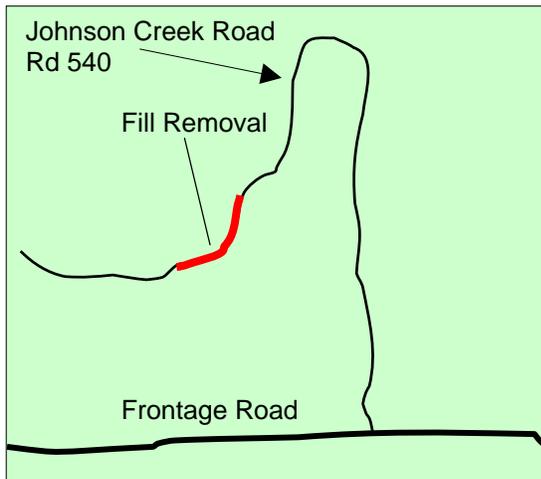


Figure 1

Narrative

During the summer of 2000, moderate to high intensity fires raged through the Johnson Creek Drainage resulting in the loss of vegetation and soil stability. Many portions of the drainage succumbed to reduced rates of infiltration and interception, and increased erosion and runoff potential. In September 2000, 0.6 inches of rain fell within a few hours creating extensive gullies and rilling throughout the Johnson Creek and Flat Creek drainages.

To prevent further degradation of soil and water, a temporary closure was imposed for roughly five miles of Road 540. For this closure, four existing culverts were removed and temporary rehabilitation measures applied. The temporary measures remained in place until the summer 2001, when the road was rehabilitated, and larger culverts were installed.

Observations and Measurements

After the September rain event in the Johnson Creek drainage, overland flow concentration and soil erosion quickly accelerated on the historic jammer road systems located above and below Road 540 (Map 1). Runoff concentration caused gullies to form and with increased sediment became mudflows (photos 1-3). Water velocity increased and accumulated sediment as it scoured down the drainages.

The four main fills of Road 540 were removed due to the cumulative effects of rill and gully erosion (photos 1-3).



Photo 1



Photo 3



Photo 2



Photo 4

The existing fill and culverts were effectively removed from four intermittent draws in October 2000. The excavated fill was stockpiled on each side of the draw crossing (photo 4) creating an adequate expansion of the draw for the increased runoff potential created by the fire.

Next, large rocks were placed in the bottom of each draw to decrease flow velocity and reduce erosion (photo 5).



Photo 5

Finally, on each side of the draw removal, two rows of 20-foot straw wattles were installed to decrease soil erosion into the draw (photos 6-7). The area was then seeded and mulched with weed-free straw. A small area was left open at the upper end of each fill removal area to allow for ATV and horse passage.



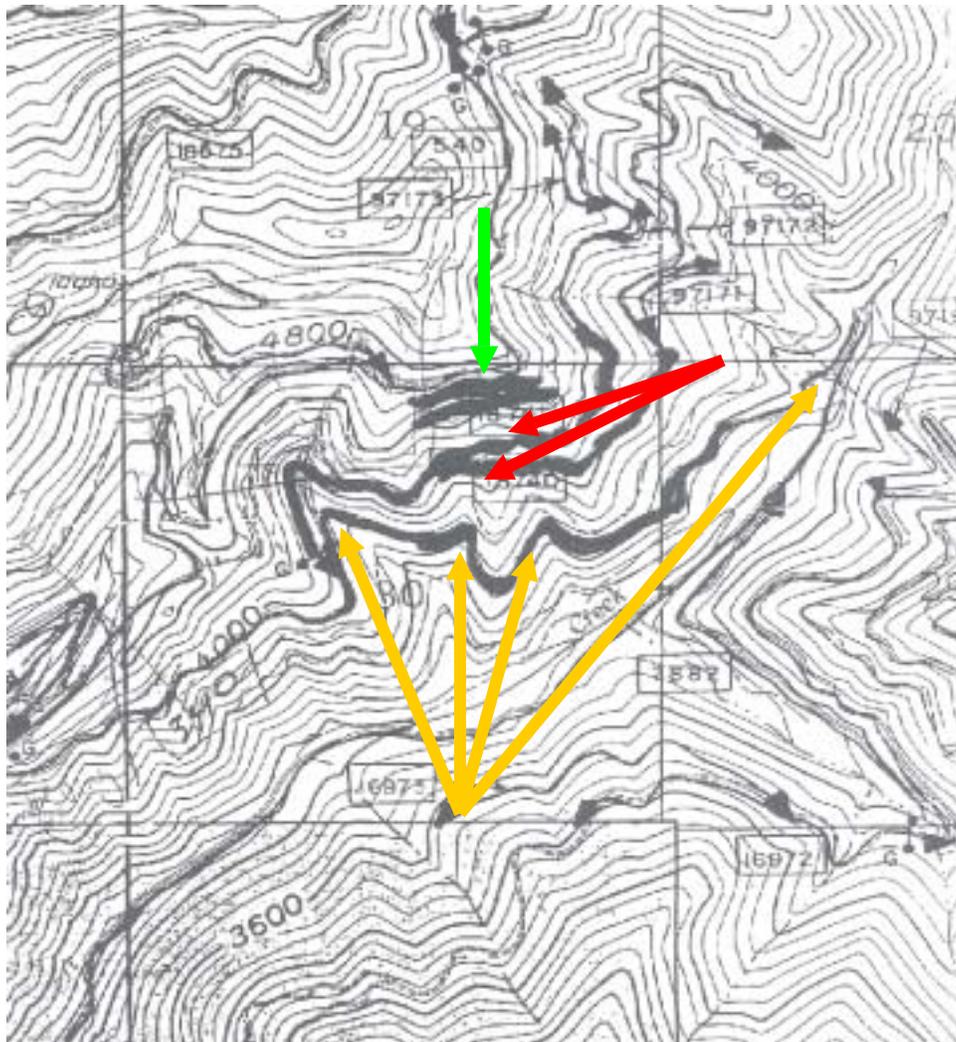
Photo 6



Photo 7

Effectiveness

The Burned Area Emergency Rehabilitation effectiveness monitoring during the 2001 field season examined the affected sites and determined that the temporary closure and rehabilitation efforts have minimized erosion and protected water quality downstream. Overall this treatment has successfully met the desired BMP objectives.



Map 1

-  Jammer roads below upper section of Road 540, photos 1.
-  Roads 18741. Gully erosion and sediment deposits, photos 3.
-  Four main draws where fills were pulled. Rehab, photos 4 - 7. Gully erosion, photos 2.