Wildfire and Water Quality: Processes, Impacts and Challenges
(Proceedings of a conference held in Banff, 11–14 June 2012) (IAHS Publ. 354, 2012).

Effects of flow regime on stream turbidity and suspended solids after wildfire, Colorado Front Range

SHEILA F. MURPHY[1], R. BLAINE McCLESKEY[1] & JEFFREY H. WRITER[1,2]

1 *US Geological Survey, 3215 Marine Street, Boulder, Colorado 80303, USA*
sfmurphy@usgs.gov

2 *University of Colorado, Department of Civil, Environmental, and Architectural Engineering, 428 UCB, Boulder, Colorado 80309, USA*

Abstract Wildfires occur frequently in the Colorado Front Range and can alter the hydrological response of watersheds, yet little information exists on the impact of flow regime and storm events on post-wildfire water quality. The flow regime in the region is characterized by base-flow conditions during much of the year and increased runoff during spring snowmelt and summer convective storms. The impact of snowmelt and storm events on stream discharge and water quality was evaluated for about a year after a wildfire near Boulder, Colorado, USA. During spring snowmelt and low-intensity storms, differences in discharge and turbidity at sites upstream and downstream from the burned areas were minimal. However, high-intensity convective storms resulted in dramatic increases in discharge and turbidity at sites downstream from the burned area. This study highlights the importance of using high-frequency sampling to assess accurately wildfire impacts on water quality downstream.

Key words wildfire; water quality; turbidity; Colorado Front Range; Fourmile Canyon fire; flow regime; convective storms