



## **Rill Erosion in Post Wildfire Forests after Salvage Logging**

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Despite the dominance of concentrated flow or rill erosion in the erosion processes especially in steep forest environments that have been affected by wildfire or management activities few studies have quantified these effects on rill erosion. This study quantified the effects of wildfire and post-fire timber salvage operations on rill runoff quantity, runoff velocity, and rill erosion. Simulated rill experiments were conducted at various sites in the Western US after wildfire and timber salvage operations. The onsite conditions consists of burned only, salvage logged, skid or snig trail, or skid trails with extra logging debris added. For each rill experiment, concentrated flow was applied at the top of the plot through an energy dissipater at five inflow rates for 12 min each. Runoff was sampled every 2 min and runoff volume and sediment concentration were determined for each sample. The runoff velocity was measured using a dyed calcium chloride solution and two conductivity probes placed a known distance apart. Runoff volume, runoff velocities, and sediment concentrations increased with increasing levels of disturbance. The burned only plots had lower runoff rates and sediment concentrations than any of the other disturbances. The salvage logged plots had greater responses than the burn only plots and the mitigation treatment had a marginal effect on runoff ratios, runoff velocities and sediment concentrations. These results suggest that additional disturbance after a wildfire can increase the erosional response and that proper erosion control mitigation may be an important consideration for post fire management to reduce onsite erosion.