Track #3 – Abstract for a Paper to be Submitted to the *International Journal of Forest Engineering*. Presented at the 41st Annual Council on Forest Engineering Meeting, Williamsburg, Virginia, July 15-18, 2018. *Revolutionary Traditions, Innovative Industries*.

Forestry Best Management Practices and Modelled Erosion on Planned and Logger-Selected Bladed Skid Trails in the Ridge and Valley Region, Virginia, USA

Robert Howell[1], W.M. Aust[2], and M.C. Bolding[3]

[1]Undergraduate Research Student, hrobe93@vt.edu
[2]Professor of Forest Operations, waust@vt.edu
[3]Associate Professor of Forest Operations/Engineering, bolding@vt.edu
Department of Forest Resources and Environmental Conservation
Virginia Tech
Blacksburg, Virginia 24061

Abstract

Forestry Best Management Practices (BMPs) are techniques and approaches recommended by state forestry agencies to protect water quality from forestry operations. Poorly designed roads and skid trails with inadequate BMPs can potentially generate disproportionately large quantities of sediment, which is the primary pollutant from forest operations. Bladed skid trails, which are constructed on steep terrain to allow skidder access, have greater potential to produce sediment than overland skid trails. BMP recommendations advise pre-harvest planning and layout of bladed skid trails in order to minimize erosion, yet equipment operators commonly construct bladed skid trails with minimal planning. We examined pre-harvest planned and logger-selected skid trails to characterize differences in BMP implementation and potential erosion between the two skid trail layout/construction strategies. Twenty-five and 27 sample locations on logger-selected and pre-harvest planned bladed skid trails were installed on two recent timber harvests on steep terrain in the Ridge and Valley region in Montgomery County, Virginia, USA. Both planned and logger-selected trails were on similar terrain and were conducted by the same logging crew. Assessments included skid trail slope, soil cover, water control structure implementation and spacing, trail network geometries, and predicted soil erosion. Analyses revealed that slopes, trail areas, and erosion rates were significantly lower on pre-harvest planned bladed skid trails. Overall, bladed skid trails with pre-harvest planning resulted in more effective water control BMPs and reduced potential for soil erosion than logger-selected trails. Results emphasize that pre-harvest planning of bladed skid trails is an appropriate BMP for steep terrain.