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**Effectiveness Assessment of Best Management Practices for Forestry in the
Inland Pacific Northwest**

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Abstract:

Many states adopted forest management guidelines intended to reduce adverse effects of forestry on watersheds following passage of the Clean Water Act in 1977. However, there was little research assessing the effectiveness of contemporary best management practices at that time. In 1990, the Mica Creek Experimental Watershed in northern Idaho was instrumented and a comprehensive monitoring program established to fill this critical knowledge gap. The experiment employed paired and nested watersheds at multiple scales in a before-after, control-impact (BACI) study design. The 17-year experimental period consisted of three distinct phases: pre-treatment calibration, post road construction, and post harvest (clear cut and partial cut) periods. Specific results of the study indicate that stream flows increased significantly in the harvested areas following timber harvest, largely as a result of increased snow accumulation. Peakflows were predicted to be much more sensitive to climate conditions than landcover conditions at the site. Stream temperatures increased by several degrees in harvested headwater reaches, but decreased very slightly below harvested areas. Post-harvest riparian shade was highly variable, but recovery to pre-harvest conditions was observed in some headwater reaches as a result of low-growing herbaceous vegetation. Suspended sediment loads increased following harvest, but returned to background levels within a year. Nitrate concentrations in stream water were very low, but increased by roughly an order of magnitude following harvest and burning. There were generally no changes in the macroinvertebrate community structure resulting from timber harvest, but the overall abundance of organisms was found to increase. There were no apparent changes to fish population counts, although the presence of fish was found to expand upwards in the stream network following harvest, possibly as a result of increased flows and/or food abundance. Monitoring is continuing as the area transitions to a working forest landscape.

Impact Statement:

Project impacts include over six peer-refereed papers, incorporation of results into forest policies in several states, partnerships with federal agencies and private corporations, several major complementary research projects leveraged on the work and valuable information to guide forest management decisions in the future.

Category: Watershed Assessment and Restoration
Type of Presentation: Oral Presentation