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An Evaluation of a Procedure for Predicting
Sediment Yield Increases from
Silvicultural Activities

by

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Sediment yield increases following timber harvest and road construction were predicted for four Pacific Northwest experimental watersheds. Sediment yields were predicted using a handbook developed by the U.S. Forest Service entitled, "An Approach to Water Resources Evaluation of Non-Point Silvicultural Sources" (WRENS). Predicted sediment yield increases varied from 40 to 180 percent of measured increases.

Several conceptual problems and difficulties in the application of the procedure responsible for observed differences between predicted and measured sediment yield increases were identified. Major problems included (1) sediment budgeting inaccuracies, and (2) no consideration of delays in the export of predicted sediment inputs to stream channels due to in-channel sediment storage.

The accuracy and applicability of the WRENS procedure for estimating actual sediment yield changes in forest management planning is limited by (1) the unknown and complex nature of several erosion and sediment transport processes, and (2) temporal variability and the probabilistic nature of rainstorms of extreme magnitude and their effect on erosion and sediment transport processes.