

Roads Effectiveness Best Management Practices TWIG

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To: CMER

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Subject: Review and Comment on Problem Statement, and critical research questions (CMER Lean process Step 3.2)

TWIG:

Statement of the Problem¹

Scientific knowledge of road BMP or prescription effectiveness is insufficient to make sound recommendations. This leads to the potential for:

- 1) Landowners wasting money on ineffective treatments.
- 2) Rule and BMP implementations being inadequate to achieve functional objectives and performance targets (Schedule L-1).
- 3) Overconfidence about the degree of protection landowners can attain (with implications for road construction and maintenance standards).
- 4) Treatments creating additional environmental risks (e.g., landslides and gullies).

Project Purpose

The forest practices road rules are designed to protect water quality and riparian/aquatic habitats through road prescriptions (WAC 222-24) and best management practices (BMPs – Forest Practices Board Manual, Section 3, 2013)². Implementation of these prescriptions and BMPs is intended to minimize: 1) sediment production and delivery from the road prism; 2) hydrologic connection between roads and the stream network; and 3) the risk of road-related landslides caused by inadequately built and maintained roads and culverts.

Although an extensive body of research of the performance of individual BMPs already exists, some individual BMPs are not well studied and substantial gaps exist in our understanding of the collective performance of road BMPs at the site scale in reducing sediment production, sediment delivery, and hydrologic connectivity.

¹ It should be noted that the statement of the problem, project purpose, and the critical research questions may be refined during the development of the study design process.

² Although Washington forest practices have imposed differential meanings to “best management practices” and “prescriptions,” these and “treatments” are used as synonymous terms in this document.

As landowners work to complete implementation of their RMAPs and to meet road sediment performance targets, it is important to provide them and other stakeholders with a more confident technical foundation for determining which BMPs are most effective and cost effective at minimizing the discharge of sediment to the stream network and the practical and operational limitations of what can be achieved in certain sensitive environmental settings.

In summary, our understanding of BMP effectiveness is too incomplete to make sound recommendations. Therefore, we may not be achieving resource objectives in the most cost effective manner with the best risk tradeoffs (e.g., siltation BMPs causing landslides).

Critical Questions

CMER Workplan Critical Question

- *Are road prescriptions effective at meeting ~~site-scale~~ performance targets for sediment and water? (Exclusive of mass wasting prescriptions, which are covered in the Unstable Slopes Rule Group.)*

Study Design Critical Questions

- How effective are road sediment BMPs, individually and in combination, at limiting production and delivery of coarse and suspended sediments from forest roads to streams?
- What is the comparative effectiveness of BMPs in reducing the production, routing, and delivery of sediment to streams? And what ~~is~~ are the comparative installation cost effectiveness, and maintenance cost effectiveness and frequency, of these BMPs?
- Are combinations of individual BMPs for the roads and ditches additive, multiplicative, synergistic, or antagonistic?
- For individual or combinations of BMPs, at what stream length below the stream crossing does visible turbidity disappear?
- To what extent do road BMPs affect hydrologic impacts from the site-scale road segment?
- How quickly after installation or removal of BMPs does the post-construction disturbance that temporarily increases production and delivery abate?

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Background (Information only – not for review)

The CMER Work Plan has identified this project as a Lean pilot. As stated in the work plan, the objectives of monitoring forest roads at the prescription scale are to: (1) evaluate the effectiveness of road maintenance categories in meeting road performance targets; and (2) identify sensitive situations where prescriptions are not effective. This project would address surface erosion sediment reductions from site-specific measures. An extensive body of research already exists and was used to develop

WARSEM; and data collected during the CMER Road Sub-Basin-Scale Effectiveness Monitoring Project can be evaluated to determine which measures are proving most effective at reducing sediment production, sediment delivery, and hydrologic connectivity. (p. 143)

This project would address surface erosion sediment reductions from site-specific measures. We anticipate that the results of these studies will inform the forest practices adaptive management process about the effectiveness of RMAP rules in achieving the FP HCP goals. Should RMAPs prove to be ineffective, T/F/W Policy and the Forest Practices Board may have to revisit the rules and board manual to refine the requirements and application.