



Rocky Mountain Research Station



National Soil Disturbance Monitoring Protocol September 2008

Historical Context

In 2005, the Region 1 Regional Forester (Gail Kimbell) requested international assistance to form a Soils Working Group (consisting of Soil Scientists, Silviculturists, Logging Engineers, Hydrological Engineers, and Timber Sale Administrators, Information Specialists, Geographers) to help determine how soil monitoring efforts could be more consistent across the Region and could produce data that would withstand lawsuits. The Soils Working Group evaluated current methods, practices, definitions, and lawsuits. With direction from the Region, the Working Group developed the outline for a monitoring protocol that could be used consistently by a wide range of personnel, was scientifically valid, statistically rigorous, easy to convey to the public, cost-effective, and flexible for managers.

At the same time that the a soil monitoring protocol was being developed from field data in Region 1, we were funded by the Washington Office to establish a standardized monitoring protocol that could be used nationwide. The National Soil Disturbance Monitoring Protocol (SDMP) was developed to meet monitoring needs.

Review Process

To date, the SDMP has been field tested in Regions 1, 2, 4, 5, 6, 8, and 9. This protocol has been reviewed by University, Industry, B.C. Ministry of Forests, and Saskatchewan Ministry of Forests. Our current drafts of the technical guide reflect review comments we've received. Additionally, this protocol has been reviewed as part of the National Protocol Governance Strategy and once approved by the Washington Office will be placed on the National Protocol web page.

Other Features

- The SDMP is a tool used to gather soil disturbance information from management activities in a way that can be consistently communicated with the public and decision makers.
- The Soil Disturbance Monitoring Protocol will become a national standard protocol and will be published by spring 2009.
- This method can be used as a *rapid assessment* and can be completed at varying intensities.
- A letter from the Washington Office is being developed that would remove reference to a 15% change in productivity from the FSH and will facilitate each FS administrative region in revision of their soil quality standards and guidelines.
- The Soils Working Group proposed and received signatures on the SoilNet Charter. This charter facilitates NFS in requesting regional and national research efforts be directed at specific issues and helps identify R&D priorities.
- A picture guide to the disturbance classes has been developed. Region 6, San Dimas Technology Center, and RMRS have coordinated taking pictures of each disturbance class in each FS Region. This picture guide will be published in Fall 2008.
- Region 6 and San Dimas Technology Center are coordinating a standardized curriculum for teaching this protocol to anyone interested. Standardization of the teaching materials will facilitate a consistent definition of soil disturbance classes. Once the training materials are developed, training will be in through AgLearn and in the field.
- RMRS, Region 1, and Region 8 are completing a database for the soil monitoring data. Talks have already begun with NRIS to transfer the database so it can be used nationally.
- PNW and Region 6 are completing a risk rating system that can be used to model those sites that may be susceptible to increased risk of soil damage from harvest or site preparation activities.

Framework and components of a common approach to forest disturbance management

- 1. Common goals and objectives for forest soil conservation.** A critical foundation for managing natural resources is a clear set of goals and objectives. Clearly communicated resource management goals set the stage for successful resource management.
- 2. A common way to organize sites according to soil (site) sensitivity to disturbance.** A common method for organizing sites is necessary because soil and hydrologic response to disturbance varies. Consensus has been reached on a first attempt to develop hazard ratings.
 - a. Sites are to be organized by hazard rating or resiliency**
 - b. Soil texture is the driver of susceptibility**
 - c. Soil moisture conditions are a recognized driver but is considered in best management practices**
- 3. Recognizable visual disturbance types related to long-term effects on soil conservation.** Disturbance at the time of operations is used as a proxy that we can manage because of the time lag between disturbance and growth or hydrologic response.
- 4. Limits on total areal soil disturbance that permit sensitive harvest but reduce the potential for long-term effects.** A certain amount of disturbance occurs as a result of access and management of forest resources. However, improperly located, executed, or excessive disturbance leads to on- and off-site impacts that affect soil productivity and hydrology.
- 5. Survey methods for monitoring progress relative to standard limits.** Survey protocols are essential for benchmark conditions and measuring progress relative to standard limits. Statistical rigor is critical.
- 6. Adaptive management processes to permit continuous improvement of soil disturbance management.** An adaptive management process will permit continuous improvement of the above components, practices, and standards over time.

From: Curran, M.P., Duckert, D.R., Maynard, D.G., Page-Dumroese, D.S., Heninger, R., Howes, S. 2009. Framework and components for a common approach to forest soil disturbance science and management. *Forestry Chronicle*. – in preparation.