22. Maintenance of Roads (PRACTICE: 2-22)

a. Objective: To maintain roads in a manner which provides for water quality protection by minimizing rutting, drainage failures, side-casting material, and blockage of drainage facilities, while considering maintenance equipment operator and road user safety, other affected resources, and funding availability.

b. Explanation: Every road requires some level of maintenance, due to deterioration from use and weather. The rate of deterioration varies greatly, depending on numerous factors: volume and type of vehicle traffic, amount, type and duration of precipitation, soil characteristics, road grade, number and type of drainage features, topography, adjacent vegetation, and frequency of maintenance operations. There is no such thing as a "self maintaining road" as even the most properly designed and constructed road needs the occasionally maintenance, however minor. Roads that appear to be "self maintaining" most likely possess drainage features that are properly located and installed to address expected use and weather, or are located in areas where impacts are negligible. Roads that appear to be "maintenance nightmares" most likely are located in areas susceptible to erosion regardless of use, and regular heavy maintenance may be necessary to keep them available for use. Road management objectives include the objective and operational maintenance level of each road.

The decision to keep or decommission a road requiring heavy maintenance is influenced by meeting land management objectives and project specific travel analysis. An annual road maintenance plan is prepared each year, based in part from: road condition surveys; historical maintenance needs; response to natural events (plugged culvert or downed trees); in conjunction with specialists and program managers. The plan is discussed with and submitted for Line Officer approval. The plan reflects forest priorities for roads to receive maintenance within expected funding availability. Approved road maintenance plans provide the general guidance for the annual activities, while at the same time acknowledging that unforeseen events may require deviation from the approved plan, such as landslides, fire, washout, etc.

goals of road maintenance are to keep drainage features working properly, allow for safe and efficient use, protectwater quality and other forest resources, and protect the road investment. Higher levels of maintenance are implemented when use activity and forest management goals dictate them, such as stabilizing surfaces for resource extraction, or maintaining a smooth surface for high levels of passenger vehicle use.

c. Implementation: Road maintenance funds are not sufficient to allow for annual maintenance on every road every year. Typical maintenance may include clearing debris, grading roadway surface and dips, cleaning lead-off ditches and culverts, hazard tree removal, brush clearing for safe sight distance, replacement of failed traffic controls, placement of spot rock, and filling potholes. These tasks are reflective of road management objectives and the assigned operational maintenance level. Forest scale travel analysis may provide opportunities to modify the assigned operational maintenance level while still meeting land management objectives, providing for safe use, and minimizing resource impacts.

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Comment [DB1]: To maintain roads in a manner which provides for water quality protection by emphasizing erosion prevention, road prism stability, and anti stream diversion, while considering road user and maintenance equipment operator safety and other affected resources.

Funding availability is a poor excuse for not providing adequate water quality protections. Funding accurate site specific assessment and analysis of soil characteristics, slope stability and angle, surface and near surface hydrology, and road surface treatments leads to better design and effective measures which lowers road maintenance needs and costs.

Funding availability should not dictate the degree of implementing appropriate mitigation measures, rather, the analysis of effective mitigation measures should dictate funding requirements. Time has proven it is better to do fewer things well than to do many things halfway.

Comment [DB2]: Proper maintenance is the most important factor after construction to minimize road deterioration and potential water quality impacts.

Comment [DB3]: Such as, …. geology, road geometry, road base and surface composition material and natural rate topographic stability.

Through time all roads will deteriorate, subject to natural forces, if not pro ... [1]

Comment [DB4]: Delete or modify sentence. The subject of road decommissioning is relevant to specific land management objectives and access and travel management plans. Those decisions should guide road analys ... [2]

Comment [DB5]: The plan reflects forest road maintenance needs and budget priorities.

Deleted: Minimum

Comment [DB6]: Level of maintenance requirement is relative to the degree properly functioning drainage design, surface hardness and vehicle use.

Maintenance activities always incl ... [3]

Comment [DB7]: Grading and ditch cleaning should be keep to a minimum.

Comment [KS8]: Because road maintenance itself is a cause of sedimentation, travel analysis should include identification of roads with a high risk of sedimentation from maintenance activities, with the objective of red ... [4]

Road maintenance plans are implemented through contract, cooperators, force account, and active timber sale or other authorized activities. Contract, timber sale, and other authorized/permitted operations are bound by specifications and drawings. The COR is responsible for assuring compliance by contractors; ER, TSA, or FSR assures compliance by cooperator, purchaser or permitted operator. Project manager and crew supervisor assures compliance for force account work. Optimally, the forest hydrologist works with the Forest quality assurance personnel to determine if approved maintenance tasks are completed with minimal resource impacts. Adjustments to future maintenance plans and methods are considered when previous methods fail to prevent significant impacts.

Regardless of whether road maintenance is accomplished with force account crew, contractor, permittee, or cooperator, the road maintenance plan requires Best Management Practices. They are incorporated as specifications, contract or saleclauses, operating plan requirements, permit clauses, and are often shown in the drawings. Where monetary compensation is exchanged for maintenance work, failure to adhere to BMP's can result in withheld payment. Other leverage could be a revoked permit. Adherence to BMP's could be included in road maintenance personnel performance standards.

Reference: Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects , FP-03 Edition
Timber Sale – Road Maintenance T-800 Specifications
FSM 7730 – Road Operation and Maintenance
FSH 7709.59, Chapter 60 – Road Maintenance
Manual on Uniform Traffic Control Devices – 2009 Edition

Comment [DB9]: Can't find on net. Only chapter 10.

Page 1: [1] Comment [DB3] **David Burns** **6/16/2010 3:21:00 PM**

Such as, ….
geology, road geometry, road base and surface composition material and natural rate topographic stability.

Through time all roads will deteriorate, subject to natural forces, if not properly maintained. The degree of water quality impairment and other resource impacts vary due to road characteristics, it's hillslope position and structure and materials traversed, and climatic factors; as well as, the frequency of maintenance and techniques used.

Roads that present less deteriorate tend to have drainage and stability characteristics that align natural hillslope function and terrain, thus require less maintenance.

Roads that require a high degree of maintenance are those that traverse naturally unstable terrain, were designed with improper drainage measures, and have been subject to or continue to have poor maintenance techniques. The maintenance operator is the first line of offense for water quality protection.

Page 1: [2] Comment [DB4] **David Burns** **6/16/2010 3:42:00 PM**

Delete or modify sentence. The subject of road decommissioning is relevant to specific land management objectives and access and travel management plans. Those decisions should guide road analysis and ultimately maintenance needs.

Page 1: [3] Comment [DB6] **David Burns** **2/20/1980 18:18:00 PM**

Level of maintenance requirement is relative to the degree properly functioning drainage design, surface hardness and vehicle use.

Maintenance activities always increase short term surface erosion. The cummulative impact can be substantial to water quality impairment. Every time a grader drops it's blade or backhoe clears a pipe inlet earth material is softened and disrupted causing free soil particles to move in the "first flush."

The goal is to have roads designed to require little as possible maintenance.

Page 1: [4] Comment [KS8] **Karen Schambach** **7/6/2010 11:09:00 AM**

Because road maintenance itself is a cause of sedimentation, travel analysis should include identification of roads with a high risk of sedimentation from maintenance activities, with the objective of reducing the number of miles of such roads.