

Business Area 5 – Engineering

Fiscal 2007/08 Funding Policy for Road & Structure Maintenance, Road Deactivation, and Road Closure

1.0 Summary

- 1.1 This policy for **fiscal 2007/08** provides direction to district managers for priority ranking and ministry funding of maintenance, deactivation, and closure of non-industrial use Forest Service Roads (FSRs) that are not associated with timber reallocation.
- 1.2 The only change from last years funding policy is reference to the *Timber Reallocation Road Funding Policy*. The *Forestry Revitalization Act* (Bill 28—2003) establishes the legal framework for timber reallocation. For fiscal 2007/08, the direction for priority ranking and use of timber reallocation road funding is provided in a separate document available at <http://gww.for.gov.bc.ca/hth/engineering/reallocation.htm>.

2.0 Introduction

- 2.1 The Ministry of Forests and Range (MFR) will continue to maintain its FSR network in accordance with this policy. This means that district managers have a continued obligation to (1) provide incremental surface maintenance to communities and designated Forest Recreation Sites and Trails and Recreational Areas and (2) carry out a wilderness road level of maintenance on the remaining non-industrial use FSR network. District managers also have an obligation to carry out incremental surface maintenance on roads in accordance with the Forest Service Roads Serving Residents funding program sponsored by the Ministry of Transportation (MoT).
- 2.2 Although district managers are expected to minimize the expansion of the non-industrial FSR network, it is anticipated that this FSR network will gradually grow due to (1) areas affected by timber reallocation, beetle and wildfire, and (2) the necessity to keep the road network accessible until such time as it is required again for industrial operations and the responsibility for maintenance can be delegated to an industrial user. Notwithstanding this, in accordance with the MFR Service Plan, where appropriate the ministry will continue to transfer responsibility for FSRs with industrial use to the forest industry. Additionally, the ministry will continue to take gradual steps to transfer the responsibility to maintain non-industrial use FSRs that provide access to year-round communities to either MoT or to road user groups.
- 2.3 Each district manager will allocate ministry vote funding for road and structure maintenance, deactivation, closure, and emergency NSR works on eligible roads in accordance with the funding considerations in Section 3.0 and the priority ranking procedure in Section 4.0. The key objectives of this policy are to:
 - (a) provide a planning mechanism that assists the ministry in identifying priorities for road maintenance, deactivation, and closure, within each Forest District in accordance with current legislative requirements and ministry Service Plan;
 - (b) ensure consistent and efficient allocation of ministry funding; and
 - (c) reduce the ministry's liability by prioritizing and allocating the funding for eligible activities based on the results of a documented maintenance inspection and engineering risk analysis of roads and structures and consideration of access needs (i.e., access to year-round communities, or access to high value Forest Recreation Sites and Trails or Important Recreational Areas as determined by the District Recreation Officer of the Ministry of Tourism, Sport and the Arts).

Eligible road types

2.4 Definitions for terms such as industrial use, non-industrial use, Community Use FSR, Recreation Use FSR, General Use FSR, and closed FSR used in this policy are provided in Section 5.0. The following roads are eligible for funding in **fiscal 2007/08** (see also **Table 1**):

- (a) non-industrial use FSRs (e.g., Community Use FSRs, Recreation Use FSRs, General Use FSRs, closed FSRs);
- (b) industrial use FSRs under Road Use Permit that provide access to year-round communities or to high value Forest Recreation Sites and Trails or important Recreational Areas **if** the permit holders choose not to carry out access-related surface and structural maintenance **during periods of inactive log haul or other industrial use**;
- (c) Some NSRs subject to funding conditions provided in paragraphs 2.4(f) and 3.9 to 3.12.

Eligible activities for fiscal 2007/08

2.5 Eligible activities are linked to eligible road types as shown in **Table 1**. These activities include:

Road and Structure Maintenance

- (a) **General Use and closed FSRs -- Wilderness road level of maintenance (i.e., minimum level of maintenance):** The primary purpose of a wilderness road level of maintenance is to protect forest resources (see **Table 2**). This level of maintenance does not guarantee motor vehicle access. It excludes access-related surface maintenance, structural maintenance on the road to protect the structural integrity of the road prism and clearing width, and structural maintenance on bridges, major culverts and other engineered structures as needed to correct structural deficiencies, unless such maintenance is necessary to address an immediate threat to people, or to mitigate a Very High and High risk to forest resources, property, utilities, transportation corridors, and other social and economic values. **A wilderness road level of maintenance** must ensure that, for the road and included structures:
 - (i) the structural integrity of the road prism and clearing width are protected, **to the extent necessary to ensure there is no material adverse effect on a forest resource**;
 - (ii) the drainage systems of the road are functional, **to the extent necessary to ensure there is no material adverse effect on a forest resource** (for example, this may include ditch and culvert cleaning, or self-maintaining water control elements such as cross-ditches, backup cross-ditches at culvert locations, and culvert removal consistent with common deactivation techniques, among other techniques);
 - (iii) the transport of sediment from the road prism and its effects on other forest resources are minimized
 - (iv) the safe passage for fish is provided at fish stream crossings built after June 15, 1995;
 - (v) road maintenance activities in a community watershed do not cause the quality of water to fail to meet the known water quality objectives established by the Minister of Water, Land and Air Protection.
- (b) **Recreation Use FSRs that provide access to high value Forest Recreation Sites and Trails or to important Recreational Areas -- Recreation access level of maintenance (i.e., intermediate level of maintenance):** For fiscal 2007/08, a recreation access level of maintenance is eligible for funding on roads that provide access to high value Forest Recreation Sites and Trails or important Recreational Areas. This level of maintenance includes a wilderness road level of maintenance **AND** access-related surface and structural maintenance as necessary to provide a reliable road network to identified Forest Recreation Sites and Trails, and Recreational Areas. For fiscal 2007/08, surface maintenance is carried out to accommodate either 4-wheel drive high clearance vehicles (primitive road surface conditions), or 2-wheel drive high clearance vehicles (better than primitive road surface conditions) as shown in **Table 2**.
- (c) **Community Use FSRs -- Community access level of maintenance (i.e., highest level of maintenance):** This highest level of maintenance includes a wilderness road level of maintenance **AND** access-related surface and structural maintenance as necessary to provide a reliable road network to year-round communities. Activities for surface maintenance should normally be carried out to accommodate 2-wheel drive vehicles (see **Table 2**).

Closure of FSRs

- (d) Forest Service roads and bridges must be closed if the conditions of the road, bridges or other structures pose a threat to road user safety. Criteria for FSR bridge closures are provided in the letter by Ron Davis, PEng, Chief Engineer, dated October 4, 2004 (copy attached).

Road Deactivation

- (e) Road deactivation works on non-industrial use FSRs must be carried out in accordance with the Forest Planning and Practices Regulation.

Emergency projects on NSRs

- (f) It may be necessary to carry out emergency projects on NSRs to address either a **known** immediate threat to people or a **known** Very High and High risk to forest resources, property, utilities, transportation corridors, and other social and economic values. For these types of projects, seek advice and recommendations from a PEng or PGeo.

3.0 Funding Considerations

Industrial use FSRs

- 3.1 Consistent with current legislative requirements and Service Plan, there are two primary types of FSRs: *industrial use FSRs* and *non-industrial use FSRs*. As discussed in more detail in Section 5.0, non-industrial use FSRs include *Community Use FSRs, Recreation Use FSRs, General Use FSRs and closed FSRs*.
- (a) Industrial use FSRs under Road Use Permit are eligible for funding only when industrial use is curtailed (i.e., the FSR is not used for industrial purposes over a specific time period) and these roads provide access either to year-round communities, residences, high value Forest Recreation Sites and Trails or important Recreational Areas. In this special situation:
 - (i) the permit holder will fund a wilderness road level of maintenance; and
 - (ii) if necessary, the ministry will seek other sources of incremental funding (i.e., outside of base funds) to pay for access-related surface and structural maintenance during the period that industrial use will be curtailed. If other funding sources are not available, the ministry may allocate ministry vote funding for access-related surface and structural maintenance.

General Use FSRs and closed FSRs

- 3.2 These roads should only receive a wilderness road level of maintenance in accordance with the eligible activities listed in column 5 of **Table 1**. The district manager may allow motor vehicle use of these roads to continue provided the following four conditions are satisfied:
- (a) road access can be accommodated at no additional cost to the ministry's expenditures to provide a wilderness road level of maintenance;
 - (b) motor vehicle use of the road will not adversely affect forest resources, property and other non-forest resource values;
 - (c) motor vehicle use of the road will not adversely damage the road infrastructure (e.g., it may be necessary to close the road to prevent damage to the integrity of the road running surface during spring break-up) or compromise the structural integrity of the road prism or road drainage system; and
 - (d) public health or safety, is not at unacceptable or intolerable risk.
- 3.3 If road users want supplementary access-related surface maintenance and structural maintenance on General Use FSRs, they must enter into an FSR Maintenance Agreement (FS 1205) and pay for the incremental costs of such maintenance themselves.
- 3.4 General Use FSRs that serve residences shall be maintained to a wilderness road level of maintenance unless any MoT maintenance funding for roads serving residences is applied to increase the level of maintenance. Commensurate with road use, and where such MoT funding becomes available, the roads should be maintained to either a recreation access level of maintenance or a community access level of maintenance as appropriate.

Recreation Use FSRs that provide access to high value Forest Recreation Sites and Trails or important Recreational Areas

- 3.5 The 2007/08 fiscal year is a transition year where the ministry will improve access to both high value Forest Recreation Sites and Trails and important Recreational Areas by providing a "recreation access level of maintenance" (2-wheel drive or 4-wheel drive). The increased level of funding for this expanded mandate approved by Treasury Board becomes part of the MFR base budget for the Engineering BA 5.

Community Use FSRs

- 3.6 On a road specific basis, there may be cost sharing arrangements for access-related surface maintenance and structural maintenance on Community Use FSRs between the MFR, MoT, and / or other agencies. Until such time as alternative funding sources are found, or roads are transferred, MFR will provide a community access

level of maintenance on Community Use FSRs using engineering base funds and MoT funds (if any) for this purpose.

Replacement of structures and structural repairs to structures

- 3.7 If **replacement** of bridges and other engineered structures is required to prevent road closure or unacceptable restrictions on traffic loads, document the need for this in the form of an issue paper from the district manager to the Regional Executive Director for specific project funding. **Structural repairs** to bridges and other engineered structures to restore or maintain general access on General Use FSRs (excluding Recreation Use FSRs) need the same funding approval.

Road deactivation on non-industrial use FSRs

- 3.8 The ministry will consider funding **road deactivation projects** on non-industrial use FSRs where a planning process identifies these roads as being candidates for road deactivation, or where these roads **must be closed** to protect public safety, and the cost of deactivating these roads is less than the cost of carrying out maintenance to a wilderness road level of maintenance over the period of expected closure.

Planned projects on some NSRs (budgeted)

- 3.9 On a project specific basis on some NSRs, if problems arise but where immediate action is not warranted, plan to address the mitigation of risk to people or to forest resources, property, utilities, transportation corridors, and other social and economic values as appropriate (and on a priority basis) through the normal budgeting process.
- 3.10 Deactivation of an NSR requires approval of the Regional Executive Director, and funding for this work should come from other sources and not from the Business Area 5 engineering budget.
- 3.11 In some situations, NSRs may pose a threat **to residents or infrastructure** (e.g., transportation corridors) from landslide or flood hazards. In this situation, make enquiries to determine if projects involving the analysis, evaluation, and mitigation of risks are eligible for funding under the Natural Hazards Mitigation Fund (NHMF) administered by the Provincial Emergency Program. If a project is eligible for funding, make an application to the NHMF with the assistance of the Regional Engineering Officer. If the project is not eligible, the issue should be identified in a Briefing Note to the Regional Executive Director.

Emergency projects that arise on NSRs (not originally budgeted)

- 3.12 Expenditures for road maintenance in this situation cannot be foreseen or budgeted. On a project specific basis, take whatever steps are necessary to mitigate unacceptable risk to people or to forest resources, property, utilities, transportation corridors, and other social and economic values using vote funding if possible, and then attempt to recover the funds by way of a written request from the district manager to the Regional Executive Director. If the scope of the project is beyond the budget of the district, then the road should be closed if there is a risk to public safety, and the issue should be identified in a Briefing Note to the Regional Executive Director. On a project specific basis in this situation, it is possible that expenditures from the Business Area 5 engineering budget may be recovered through an application to the NHMF (consult with the Regional Engineering Officer).

4.0 Priority Ranking and Allocation Procedure

- 4.1 District managers must budget and allocate ministry vote funding for eligible activities in accordance with the established priorities shown in Table 1. The ranking procedure consists of several steps:
- (a) Prepare a list of candidate road and structure projects that will require ministry funding, and priority rank the projects according to Table 1 based on levels of risk to specific elements, and consideration of vehicle access needs. The list should be based on the results of a **documented maintenance inspection¹ and engineering risk analysis²** of roads and structures. For the purpose of this budgeting exercise, a qualitative analysis of

¹ Hazards should be identified and recorded during maintenance inspections of roads and structures. For example, hazards within the road corridor or on slopes adjacent to the road corridor may include: cut and fill slope failures; shoulder slumps; washouts; blocked ditches and culverts; soil erosion and sediment transport; ineffective road drainage system; filled-in cross-ditches; events related to weather; damaged guard rails or curbs on bridges; deterioration of structural elements; landslides; debris floods; floods (freshet and heavy rain); and hazardous spills.

² The following references provide helpful information on risk management processes and risk analyses:

Basic information on qualitative risk analyses:

- (i) BC Ministry of Forests. *Managing Risk Within a Statutory Framework*
http://www.for.gov.bc.ca/hen/publications/managing_risk/managing_risk_intro.html

risk is suitable. This list may be prepared by reviewing available road and structure maintenance inspection reports on file and other relevant information, and considering the historical record of annual road and structure maintenance required on individual roads. Where this information does not exist or is lacking, field inspections should be carried out if possible to collect the information necessary to carry out the budgeting exercise.

- (b) The District Recreation Officer of the Ministry of Tourism, Sport and the Arts is responsible for identifying and preparing a list of “high value” Forest Recreation Sites and Trails and “important” Recreational Areas within the district, and should work with district engineering staff to prepare and prioritize a list of Recreation Use FSRs.
- (c) Once the list of high value Forest Recreation Sites and Trails and important Recreational Areas has been determined, district engineering staff with input from the District Recreation Officer should determine:
 - the type of road access to the sites (e.g., FSR, Road Permit road, Non Status Road);
 - whether additional maintenance is required to provide access to the site;
 - the maintenance standard i.e. two wheel drive (high clearance) or four wheel drive (high clearance); and
 - the estimated costs.
- (d) The list of roads and structures must be updated annually for budget purposes. For budgeting purposes, the list of candidate roads and structures should be grouped into 5 primary categories consistent with the method of reporting in the fiscal 2007/08 Service Plan spreadsheet:
 - (i) Community Use FSRs requiring a community access level of maintenance;
 - (ii) Recreation Use FSRs requiring a recreation access level of maintenance;
 - (iii) General Use FSRs requiring only a wilderness road level of maintenance;
 - (iv) General Use FSRs requiring deactivation;
 - (v) General Use FSRs requiring closure;
 - (vi) Planned projects on some NSRs.

NOTE: While not budgeted for, expenditures for emergency projects on NSRs must also be tracked and reported.

- (e) When compiled the priority ranked district list is to be submitted to the Regional Engineering Officer (REO) for compilation. The REO will develop a regional roll-up for review by the Provincial Business Area 5 Team. The BA 5 Team review includes ensuring government objectives and or specific directions are met. Based on pre-determined criteria, processes and expected MoT and MFR funding, the BA Team will make regional funding allocation recommendations by account to the Executive prior to regional allocations being made. The region will determine district allocations in accordance with the ministry budget allocation letter.
- (f) When the district receives its BA 5 funding allocation, it is expected that it will carry out, within available funding, eligible activities / projects from the ranked list.
- (g) Close those roads and structures that cannot be funded and pose a substantial safety risk to non-industrial users.
- (h) Advise the Regional Executive Director of the potential consequences of not funding a project (e.g., possible road closure; potential impacts on people, infrastructure, and forest resources; and deterioration of the structural integrity of the road itself).

5.0 Definitions of Terms

- 5.1 **Industrial use FSRs:** These roads are used primarily by an industrial user under Road Use Permit. During periods of non-industrial use, the permit holder is responsible to provide for at least a wilderness road level of maintenance but is not obligated to carry out access-related surface and structural maintenance. During times of

(ii) BC Ministry of Forests. Forest Road Engineering Guidebook (June 2002)
<http://www.for.gov.bc.ca/tasb/legsregs/fpc/FPCGUIDE/Guidetoc.htm>.

Detailed technical references on qualitative and quantitative risk analyses:

- (i) Wise, M.P., G.D. Moore, and D.F. VanDine (editors). 2004. Landslide risk case studies in forest development planning and operations. B.C. Min. For., Res. Br., Victoria, B.S. Land Manage. Handb. No. 56. <http://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh56.htm>
- (ii) References listed on the Division of Engineers and Geoscientists in the Forest Sector website: <http://www.degifs.com>

- inactive industrial operations, the ministry may consider the funding of access related road surface and structure maintenance in accordance with paragraph 3.1 (a).
- 5.2 **Non-industrial Community Use FSRs (formerly referred to as Public Use FSRs):** These roads are used primarily by non-industrial users and provide access to communities. These roads must be provided with a community access level of maintenance (see Table 2).
- 5.3 **Non-industrial Recreation Use FSRs:** These roads are used primarily by non-industrial users and provide access to “high value” **Forest Recreation Sites and Trails**, or to “important” **Recreational Areas** such as provincial parks and recreation features, as officially designated by a District Recreation Officer of the Ministry of Tourism, Sport and the Arts . These roads must be provided with a recreation access level of maintenance in accordance with the priorities in Table 2.
- 5.4 **Non-industrial General Use FSRs:** These roads are used primarily by non-industrial users and do not provide access to communities, or to “high value” Forest Recreation Sites and Trails or “important” Recreational Areas.
- (a) These roads may provide access, on a part time or full time basis, to private land, year-round residence(s), isolated residences or cabins, commercial operation(s), including designated or undesignated parks and recreation sites (including backcountry hunting and fishing areas) **that have not been identified** by a District Recreation Officer to be “high value” Forest Recreation Sites and Trails or “important” Recreational Areas.
- (b) At a minimum, a wilderness road level of maintenance must be provided on these roads (see Table 2).
- (c) If access-related road surface and structure maintenance is not provided, it should be expected that some vehicle use might be limited due to gradual deterioration in the condition of the road surface and clearing width over time. In some situations, public access may eventually be lost. For example, motor vehicle access may be prevented where: (1) material from failed cut slopes comes to rest on the road surface, (2) failures of the road subgrade or road prism reduce or eliminate the road running width, and (3) heavy brush invades the clearing width. In other cases, it is possible that installation of deep cross-ditches or partial or full road fill pullback necessary to achieve the requirements of a wilderness road level of maintenance may also preclude motor vehicle access.
- 5.5 **Non-industrial closed FSRs:** These roads are barricaded to preclude motor vehicle access during times of unacceptable risks to user safety, or in accordance with higher level plans, until either appropriate repairs are made in accordance with the service plan, or until the road is permanently deactivated. Note that such roads may already be closed for other reasons, for example, threat of damage to the integrity of the road running surface during spring break-up. If access to private property is required, contact Resource Tenures and Engineering Branch, Real Estate Section prior to closing the road for advice on ministry liability due to the closure; based on that advice, consider whether it might be more prudent to fix the problem and keep the road open.
- 5.6 **Project:** A project is carried out within a defined work area such as a point location on a road, or within a defined section of road or entire length of road. The project work, when completed, requires mobilization and demobilization of the equipment used to carry it out.
- 5.7 **Year-round communities:** For the purpose of this policy, these are one or more of (a) populated First Nations reserves; or (b) population centres that (1) have a Canada Post post office, (2) have a school or are served by school buses provided by the school district, or (3) are designated by the Regional Executive Director.
- 5.8 **Recreation site** means a recreation site, and **Recreation trail** means a recreation trail, established under section 56 of FRPA or section 6 of the *Forest Practices Code of British Columbia Act* or designated under the *Forest Act*.
- 5.9 **Recreation feature** means a biological, physical, cultural or historic feature that has recreational significance or value.

Table 1: Priority Ranking for Projects

(1) Priority Ranking*	(2) Elements at Risk	(3) Risk Rating to Elements or Vehicle Access Criteria	(4) Roads Eligible for Funding	(5) Eligible Activities
High 1st priority	People	Probability of death to an individual or group is unacceptable (always consult with a PEng or PGeo if public health or safety is at risk)	<ul style="list-style-type: none"> • Non-industrial use FSRs: <ul style="list-style-type: none"> ○ Community Use ○ Recreation Use ○ General Use ○ Closed • Critical site specific problems on some NSRs – see funding conditions in paragraph 3.12 	<ul style="list-style-type: none"> • Wilderness road level of maintenance • Deactivation of non-industrial use FSRs • Road closure • Emergency projects that arise on some NSRs (on a project specific basis – not officially budgeted)
	Property, utilities and transportation corridors Water quality, fish and fish habitat, and other forest resources as included under FRPA	Very High and High risk of damage or loss to the element(s)		
High 2nd priority	Vehicle access must be maintained or restored Safety of road users must be addressed	Must accommodate safe public access to year-round communities	<ul style="list-style-type: none"> • Non-industrial Community Use FSRs • During periods of inactive log haul, industrial use FSRs under Road Use Permit that provide access to year-round communities. 	<ul style="list-style-type: none"> • Community access level of maintenance • <u>Occasionally and on a project specific basis</u>, replacement of bridges and major culverts and other engineered structures, subject to approval by the Regional Executive Director
		Must accommodate safe public access to “high value” Forest Recreation Sites and Trails	<ul style="list-style-type: none"> • Non-industrial Recreation Use FSRs that provide access to “high value” Forest Recreation Sites and Trails. • During periods of inactive log haul, industrial use FSRs under Road Use Permit that provide access to “high value” Forest Recreation Sites and Trails. 	<ul style="list-style-type: none"> • Recreation access level of maintenance • <u>Occasionally and on a project specific basis</u>, replacement of bridges and major culverts and other engineered structures, subject to approval by the Regional Executive Director
Mod	Property, utilities and transportation corridors Water quality, fish and fish habitat, and other forest resources as included under FRPA	Moderate risk of damage or loss to element(s)	<ul style="list-style-type: none"> • Non-industrial use FSRs: <ul style="list-style-type: none"> ○ Community Use ○ Recreation Use ○ General Use ○ Closed • Known site specific problems on some NSRs – see funding conditions in paragraphs 3.09 to 3.11) 	<ul style="list-style-type: none"> • Wilderness road level of maintenance • Deactivation of non-industrial use FSRs • Road closure • Planned budgeted projects on some NSRs (on a project specific basis)
	Vehicle access must be maintained or restored Safety of road users must be addressed	Must accommodate safe public access to “important” Recreational Areas	<ul style="list-style-type: none"> • Non-industrial Recreation Use FSRs that provide access to “important” Recreational Areas. • During periods of inactive log haul, industrial use FSRs under Road Use Permit that provide access to “important” Recreational Areas. 	<ul style="list-style-type: none"> • Recreation access level of maintenance • <u>Occasionally and on a project specific basis</u>, replacement of bridges and major culverts and other engineered structures, subject to approval by the Regional Executive Director

NOTE: * Only if high and moderate priorities have been addressed, allocate any available surplus maintenance funds to lower priority roads (e.g., roads with LOW risk ratings), or to selected roads that may require pro-active maintenance to protect or prolong the life of the road infrastructure.

Table 2: Wilderness Road, Recreation Access, and Community Access Levels of Maintenance

General Use FSRs	Recreation Use FSRs		Community Use FSRs
Wilderness Road Level of Maintenance (Also applies to closed FSRs)	Recreation Access Level of Maintenance		Community Access Level of Maintenance
<p>Vehicle access objective: <u>None</u>. Focus is on protection of the environment. Access is not guaranteed and may be lost over time.</p>	<p>Vehicle access objective: 4-Wheel Drive High Clearance</p>	<p>Vehicle access objective: 2-Wheel Drive High Clearance (e.g., ¾ ton pickup)</p>	<p>Vehicle access objective: 2-Wheel Drive Vehicle (Cross-ditches and water bars should not be used)</p>
<p>Provide Nominal Surface Maintenance <u>Water management / soil erosion and sediment control:</u></p> <ul style="list-style-type: none"> cleaning and grading ditches, and cleaning and repair of culvert inlets, outlets, ditch blocks, catch basins, and flumes to provide for flow of water replacing cross-drain culverts or flumes, or installing additional cross-drain culverts and ditch blocks, among other measures water control elements may employ a range of water management techniques, including: <ul style="list-style-type: none"> installation of cross-ditches and waterbars backup or removal of cross-drain culverts or stream culverts installation of trench drains, blanket drains, french drains, fords and armoured swales windrow removal removal of bridge superstructures and substructures, among other measures carrying out erosion control measures such as grass seeding, vegetation planting, soil bioengineering, and installation of erosion control blankets; and sediment control measures such as silt fence, catch basins, and check dams, among other measures. <p><u>Nominal repairs of road surface and structures for motor vehicle or equipment access</u></p> <ul style="list-style-type: none"> carrying out nominal repairs to the road surface (e.g., removal of debris) to allow continuation of motor vehicle access (if desirable) where this can be achieved concurrently with and at no additional cost to providing activities for a wilderness road level of maintenance carrying out nominal repairs to a major culvert or bridge deck and/or the bridge superstructure (e.g., bracing, girders, and stringers) if: <ul style="list-style-type: none"> safe equipment access across the structure is required to carry out a wilderness road level of maintenance further up the road, or if the stream crossing structures are in need of a wilderness road level of maintenance themselves carrying out structural repairs to restore safe fish passage at a fish-stream crossing built after June 15, 1995, including repairs to a stream culvert or structural maintenance of a bridge substructure to ensure that safe passage for fish is provided. For example, activities may include repair of culvert components, structural repair of bridge abutments, repair of scour protection, or complete removal of these structures to (1) prevent their failure into streams or (2) re-establish the stream crossings to provide safe fish passage. <p>Structural Maintenance on the Road <u>Road prism stabilization – consistent with Vehicle Access Objective</u></p> <ul style="list-style-type: none"> As needed, making repairs to the road prism to ensure that the transport of sediment from the road prism and its effects on other forest resources (particularly on water quality in community watersheds) are minimized As per paragraph 2.4(a) where road prism stability is an issue, repairing cut and fill slopes, or carrying out road fill pullback or cut slope buttressing consistent with typical road deactivation techniques, or apply other cost effective landslide risk mitigation measures. 	<p>Provide a wilderness road level of maintenance</p> <p>Provide access-related surface maintenance activities as appropriate to provide an effective running surface commensurate with road use to meet the vehicle access objective, including minor repairs such as:</p> <ul style="list-style-type: none"> minimal crowning and grading of the road surface minimal vegetation control (brushing) as necessary to maintain vehicle access filling minor scours or washouts to restore or meet the required vehicle access objective repairing or replacing signage, bridge curbs, rails, delineators, fender logs, and running planks repairing cattle guards patching of concrete bridge decks <p>Provide structural maintenance on bridges, major culverts and other engineered structures as needed to correct structural deficiencies and consistent with Vehicle Access Objective:</p> <ul style="list-style-type: none"> Repair or replace damaged bridge structural members (abutments, piers, ties, stringers, needle beams, structural curb beams), retaining structures Repair stream channel and scour protection Repair major culvert headwalls and spillways Repair or replace cattleguards <p>NOTE: The maintenance of existing cross-ditches and water bars across the road running surface, or new cross-ditch and water bar installations, is permissible provided the vehicle access objective can be achieved</p>	<p>Provide a wilderness road level of maintenance</p> <p>Provide access-related surface maintenance activities as appropriate to provide an effective running surface commensurate with road use to meet the vehicle access objective, including minor repairs such as:</p> <ul style="list-style-type: none"> crowning and grading the road surface vegetation control (brushing) to allow for safe sight distance and unobstructed ditches spot gravelling, or gravelling short sections, to repair, smooth and strengthen the running surface filling minor scours or washouts to restore or meet the required vehicle access objective snow removal and sanding is only done if MoT funding is available bridge deck cleaning (washing, sweeping) repairing or replacing signage, bridge curbs, rails, delineators, fender logs, and running planks repairing cattle guards patching of concrete bridge decks <p>Provide structural maintenance on bridges, major culverts and other engineered structures as listed under 4-wheel drive and consistent with Vehicle Access Objective</p> <p>NOTES: The maintenance of existing cross-ditches and water bars across the road running surface, or new cross-ditch and water bar installations, is permissible except if the road has high traffic volumes and provides access to High value Forest Service recreation sites. It is expected that roads with high traffic volumes to high value Forest Recreation Sites and Trails and important Recreational Areas may require grading or brushing more often.</p>	<p>Provide a wilderness road level of maintenance</p> <p>Provide access-related surface maintenance activities as appropriate to provide an effective running surface to meet the vehicle access objective, including minor repairs such as:</p> <ul style="list-style-type: none"> crowning and grading the road surface (except when part of structural maintenance on the road) vegetation control (brushing) to allow for safe sight distance and unobstructed ditches spot gravelling, or gravelling short sections to repair, smooth and strengthen the running surface filling minor scours or washouts snow removal and sanding bridge deck cleaning (washing, sweeping) repairing or replacing signage, bridge curbs, rails, delineators, fender logs, and running planks repairing cattle guards patching of concrete bridge decks <p>Provide structural maintenance on the road to protect the structural integrity of the road prism and clearing width and consistent with Vehicle Access Objective</p> <ul style="list-style-type: none"> Repair long sections of road subgrade Replace the running surface <p>Provide structural maintenance on bridges, major culverts and other engineered structures as listed under 4-wheel drive</p>

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October 4, 2004

To: All Regional Executive Directors
All District Managers
All Timber Sales Managers

From: Ron Davis
Chief Engineer
Resource Tenures & Engineering Branch

Re: Forest Service Bridge Closures

There are recent examples of bridge closure methods that do not provide appropriate levels of user safety or of risk management for the ministry. Although this issue will be further addressed in the engineering standard operating procedures being updated later this year, the potential consequences of inadequate responses to known extreme bridge deterioration prompts this interim advice.

When the regional bridge engineer cannot apply any safe load limit to a dilapidated structure, take immediate action to close the bridge by either:

1. Removing the bridge superstructure and erecting a barrier to access to the bridge site, or
2. Erecting a barricade such that access is prohibited, together with a sign stating that the bridge is closed.

It is not sufficient to post the bridge for zero load, or similar. If there are unique situations where it is not possible in the short term to erect a barricade or remove the span, seek legal advice through this office to address mitigation. Note that normal signing would apply to situations where the load rating has been reduced to a level that anticipates continued vehicle use.

Ron Davis
Chief Engineer
Resource Tenures & Engineering Branch