Prince Albert
Forest Management Agreement Area

STANDARDS AND GUIDELINES

April 2011

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Key Definitions Used in Development of FMA Standards & Guidelines

Topic/Subject
FMA standards and guidelines have been organized from an operational perspective into key topic areas (such as roads and harvesting practices). Each topic area is further broken down into various subject areas (such as slash management), each of which will be related to various objectives from higher-level plans. Each subject area will then have a number of required standards associated with it (such as spreading of slash).

Objective
An objective states a desirable forest practice or future condition of a forest resource or forest use, which is attainable through actions of the licensee. The intent of the objective should be specific and its link to forest management plan objectives and targets must be described. The objective sets the context and rationale for developing standards and operating guidelines. Where useful, a discussion of intent, pertinent knowledge, definitions, and applicable laws and policies should be included.

Objectives will change from time to time in response to new public values and licensee needs as expressed in planning processes and also in response to what is learned from new knowledge, much of which will come from monitoring the results of management practices.

Standards
A standard is a specific measurable activity, result or unit of measure. Good standards are measurable, scientifically sound, operationally feasible, linked to management objectives, and integrated with other standards. The Ministry of Environment (the ministry) will enforce a licensee's adherence to the standards and can modify standards when the monitoring of results or new knowledge indicates a change is required.

Guidelines
Guidelines are recommended practices and are options for achieving standards and objectives given expected conditions. A licensee may deviate from the guideline when unforeseen or site-specific circumstances require an alternate approach. Although the ministry will not enforce guidelines, their effectiveness or use of alternate practices will be considered in audits.

Procedures
A procedure is the sequence of actions used to ensure consistent assessment of standards across the province and concentrates on methods rather than results. The ministry may make it a requirement to follow a specific procedure.

FMA Standard Review and Amendment Process

1. Approvals by Area Foresters

Some standards note that the Area Forester on a case-by-case basis may approve an exception. In these cases the licensee shall send their request in writing directly to the Area Forester for approval. The Provincial Operations Forester must be copied on all correspondence in these regards, to ensure that consistent area decisions are made, and to maintain a list of issues for annual review of the standards.

Note that the intent of exceptions is made to provide warranted flexibility to certain standards due to extraordinary site conditions or circumstances. The standards are developed as a rule to suit most circumstances, and as such, the amount of approved exceptions should be minimal.

2. Approvals by Executive Director of The Ministry of Environment, Forest Service

a. Critical amendments during an Operating Year

Where a standard does not specifically state that exceptions may be approved by the Area Forester on a case-by-case basis, and the licensee feels it cannot wait until the end of the operating year to review the standard, the following process must be followed:

i. The licensee will make a written request for the amendment to the Executive Director and copy the Provincial Operations Forester. The Provincial Operations Forester will consider the merits of the amendment across all Forest Management Agreement (FMA) areas and will discuss the matter with the Area Forester(s).

ii. If a decision to pursue amendment of the standard is reached, the Provincial Operations Forester will electronically mail the Senior Forest Standards Analyst responsible for development of standards and guidelines with the request. The request will be evaluated by the Senior Forest Standards Analyst and if feasible, will be recommended for amendment by the Forest Service (FS) Executive Director.

iii. If the FS Executive Director denies the request for amendment, a letter will be sent to the licensee explaining the reasons, and will be copied to applicable Forest Service staff.

If the FS Executive Director approves the request for amendment, a revised copy of the standard will be sent to all applicable licensees and Forest Service staff.

b. Annual Review of FMA Standards

Forest Service staff and FMA Holders shall meet annually in January to review the FMA standards and amend them where deemed necessary by the FS Branch. The Senior Forest Standards Analyst shall coordinate any amendments of the standards accordingly, and the FS Executive Director shall send a revised copy of the standards to all licensees and applicable FS Branch staff annually by April.

Implementation Schedule for FMA Standards & Guidelines

Standard and Guideline Subject Area	Implementation Date
Pre-Harvest Site Prescription	Weyerhaeuser PA FMA – July 1, 2002 Where Site Assessment work has taken place prior to July 2002, a list of all blocks assessed must be submitted to Area (Regional) Foresters in an Operating Plan. 2003/04 Operating Year all other FMA's
Road & Block Layout	July 1, 2002
Visual Resource Management	February 23, 2004
Roads	July 1, 2002 - Except for signage, which will be implemented July 1, 2003
Slash Management	July 1, 2002
Silviculture and Harvest Systems	Silviculture Systems - October 1, 2002 Harvest Systems – July 1, 2002
Conifer Seed Supply	April 1, 2004
Environmental Protection	July 1, 2002
Soil Protection	October 3, 2003

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CATEGORY: PLANNING

SUBJECT: PRE-HARVEST SITE PRESCRIPTION

OBJECTIVES:

The Pre-Harvest Site Prescription (PHSP) or equivalent type of prescription integrates the ecology of the forest stand with both the harvest and the silviculture management objectives. The Pre-Harvest Site Prescription serves to ensure that:

1. The inherent productivity of a harvested forest site is maintained.
2. A forest stand is regenerated on the post-harvest site.
3. All forest resources are considered.
4. The overall objectives of the Twenty-Year Forest Management Plan and the assumptions of the timber supply analysis are met.

LINKAGES TO TWENTY-YEAR PLAN OBJECTIVES:

Weyerhaeuser Prince Albert (Twenty-year Forest Management Plan and Environmental Impact Assessment Statement for the Prince Albert Forest Management Forest Management Area, p. 4-4):

- Meet customer mill needs (product mix, piece size, wood quality) in short and long terms.
- Maintain ecosystem diversity at all levels – landscape, stand, species and genetic.
- Maintain productivity of forest soils except on areas needed for permanent roads or other permanent infrastructure.
- Protect rare and endangered species and special places (unique landforms, critical wildlife habitat).
- Anticipate and respond to concerns about potential and actual impacts of forest management activities on other forest uses, users and managers.

STANDARDS:

1. All harvest blocks must have a PHSP conducted prior to harvest. If a licensee is unable to conduct PHSPs in certain harvest blocks prior to harvest, they must provide a list of all such harvest blocks for approval in the Operating Plan, with appropriate justification for each harvest block.

2. The Forest Service may designate certain areas[1] to have PHSP's submitted within operating plans.

1 Weyerhaeuser PA only – Pre-harvest Site Prescriptions must be submitted with five year operating plans for each harvest block located within the area identified in Weyerhaeuser Prince Albert FMA 20 year Forest Management Plan approval condition, section 3.3 (a).

3. Completed PHSP and any amendments made after harvest, will be made available to the Area Forester upon request.

4. PHSP's shall include, at a minimum the following information:
    a. Rutting and compaction hazard for the harvest block.
    b. Season of harvest including frozen or non-frozen ground conditions.
    c. Silvicultural system (including spruce understory protection)
    d. Recommended harvesting system and equipment.
    e. Slash management technique.
    f. Site preparation objectives and technique (e.g. – objective - may be an elevated microsite for a spruce site with moist soils and high grass competition potential, technique – excavator hoe mound).
    g. Species association/composition target at Free to Grow and rotation.
    h. Methods to address recreational, cultural/traditional, and stakeholder concerns.
    i. Methods to address wildlife concerns within and directly adjacent to harvest block including rare and endangered flora and fauna.
    j. Plans to address identified forest health related issues (e.g. blowdown, fire, insect and disease related issues)
    k. Residual tree retention objective (i.e. islands, clumps or individual trees).
    l. Eco-site and eco-site phase(s) located in the harvest block.
    m. Noted differences between species association and forest inventory cover types must be documented in the PHSP (to be used for comparison with regeneration assessment results).

GUIDELINES:

1. Pre-fieldwork information to be gathered and assessed includes aerial photography and large-scale forest inventory maps. Field data cards and a large-scale forest inventory map of the harvest unit comprise the field package. A walkthrough, consisting of a transect through the harvest unit, should be completed. Other target areas to be visited in the field include riparian areas, suspected areas of high wildlife value and significant geomorphological features such as eskers or gullies. The location of each plot should be identified on the harvest unit map, and have a GPS location, where possible. At each plot location, the information required on the field cards should be recorded, except in the case of winter harvesting operations. Additional information and general comments should be written directly on the harvest unit map or field cards.

2. Site Assessments[2] (SA) should be conducted, and the data collected for development of the PHSP should include:

2 The following field guide must be followed in determining Standards 4 and should be used for Guidelines 2 b – e: Beckingham, J.D; Nielsen., D.G.; Futoransky, V.A. 1996. Field guide to ecosites of the mid-boreal ecoregions of Saskatchewan. Nat. Res. Can., Can. For. Serv., Northwest Reg., North. For. Cent.,

a. General block topography[3], including slope for Riparian Management Areas.
b. Nutrient regime.
c. Moisture regime.
d. Drainage characteristics.
e. Soil analysis with the following details:
    i. Organic soil depth
    ii. Humus form
    iii. Mineral Soil Texture
    iv. Depth to mottles or gleying
    v. Restrictive Layer
    vi. Depth to water table if #60 cm.
f. Estimate of distribution and density of advanced spruce regeneration
g. Riparian management area category as defined in Riparian Area Management Standards and Guidelines (applicable currently only to Weyerhaeuser Prince Albert).
h. Identification of recreational/cultural/traditional uses, and other stakeholder concerns located within or directly adjacent to the harvest block.
i. Visual impact assessment, as described in the FMA Visual Resource Management standards and guidelines (to be submitted for approval in July 2003).
j. Species at risk requiring special management consideration.
k. Other wildlife considerations (e.g. raptor and colonial bird nests, salt licks, ungulate calving grounds, etc.) within or directly adjacent to the harvest block.
l. Tree retention opportunities (which include green trees and snags).
m. Forest health related issues

3. At least one survey plot should be located in each harvest block greater than 10 hectares in size. As well, at least one survey plot should be located in each (merchantable species association type (i.e. H, HS, SH and S) greater than 10 hectares within a harvest block. All survey plots should be located on the SA map. In harvest blocks containing Riparian Management Areas, one survey plot should be located within each RMA.

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Edmonton, Alberta. Spec. Rep. 6
3 Described as per the licensee's Forest Vegetation Inventory Manual or the Saskatchewan Forest Vegetation Inventory (Table 7)

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CATEGORY: PLANNING

SUBJECT: ROAD AND HARVEST BLOCK LAYOUT

OBJECTIVES:

When carrying out harvesting and road construction activities:

1. To identify for protection, environmentally sensitive features of forest resources, such as salt licks, steep slopes, and buffers and

2. To ensure compliance with approved operating plans, including identification for the logging contractor of harvest boundaries, non-harvest areas and stream crossings.

LINKAGES TO TWENTY-YEAR PLAN OBJECTIVES:

Weyerhaeuser Prince Albert (p. 17 of the Twenty-Year Forest Management Plan and Environmental Impact Assessment Summary Document):

- Meet customer mill needs (product mix, piece size, wood quality) in short and long terms.
- Manage activities to protect and maintain water quality in FMA area lakes and rivers
- Maintain productivity of forest soils.
- Protect rare and endangered species and special places.

STANDARDS:

1. Marking Colour Scheme:

Each Licensee shall use consistent marking colours[1] distinguishing harvest block boundaries, roads and any other delineation to be identified in a harvesting operation. The licensee will in advance of marking advise the Forest Service of its colouring scheme in operating plans.

2. Harvest Block Boundaries:

a. Prior to harvesting the block boundary, that portion of the block boundary being harvested must be ribboned. Exceptions to the aforementioned include:

i. Existing roads and trails as identified on plan map

1 The colour red (either red markings or red flagging) has been reserved for use by the Crown (Forest Resources Management Regulations).

ii. Where the stand or polygon boundary, adjacent to the harvest block has a height of 12.0 meters or less in the field.

b. Boundaries adjacent to private land, Indian reserves, parks, RANS and other FMA exclusions are always to be marked, unless clearly delineated by a road or trail, or cleared land. Legal descriptions associated with the land surveys or as found in legislation are to be used when marking these boundaries.

c. Block boundaries that require marking, must be clearly visible and adequate marking must remain post-harvest to easily distinguish the boundary

d. Block boundaries becomes the legal boundary of the harvest block

2.1. Mapping Requirements and Allowance for Deviations for harvest block boundaries:

a. All block boundaries must be presented in an Operating Plan for approval.

b. Harvest block boundaries may deviate from their planned boundaries, according to the following allowances:

i. Harvest block boundary locations may vary up to a maximum of 100 metres from the approved Operating Plan maps, providing the harvest block area allowance does not exceed 10 % of the approved area, or a maximum of five hectares (whichever is less). This does not apply to boundaries identified in 2 (a & b)

3. Road Locations:

a. Prior to construction, the Licensee will ribbon either the centerline or one sideline of a section of all planned inter-block roads, as identified in an operating plan.

b. Crossing locations of permanent streams and rivers must be clearly marked in advance of the crossing for all roads.

3.1. Mapping Requirements and Allowance for Deviations for inter-block and in-block roads:

a. Inter-block roads and in-block road locations must be presented in an Operating Plan for approval.

b. Inter-block road locations may deviate up to 100 metres from the centerline of the approved Operating Plan map, without approval. This standard does not apply to stream crossings approved either by The Ministry of Environment or the Department of Fisheries and Oceans Canada.

c. Deviation from planned in-block road locations does not require approval.

GUIDELINES:

1. Separate identification should be used to indicate:
    a. The beginning and end of roads (which can be achieved through hanging multiple ribbons or using tree-marking paint).

    b. Sensitive features or retention patches of merchantable timber greater than 2 hectares within a harvest block perimeter.

2. Marking should be clearly visible from one tie point to another and should be placed sufficiently high to be clearly visible.

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CATEGORY: **PLANNING**

SUBJECT: **VISUAL RESOURCE MANAGEMENT**

OBJECTIVES:

To incorporate visual quality objectives into the management of forest resources.

LINKAGES TO 20-YEAR PLAN OBJECTIVES:

Weyerhaeuser Prince Albert 20-Year Plan (Section 4.3 Plan Strategies, pg 4-38):

- Harvest in areas adjacent to resort lakes, recreational rivers, and major highways on the basis of visually sensitive harvesting plans

STANDARDS:

1. a. When submitting an operating plan for approval, the licensee will identify visually sensitive areas (VSA) on an FMA map, in consultation with Area Foresters.

   b. New licensees will submit the initial map for approval in the Operations Plan. If any changes to this map occur, a new map must be submitted for approval with the next operating plan.

2. When submitting an operating plan for approval that contains a VSA, visual quality objectives (VQO) must be developed and categorized for each VSA.

3. For visual sensitive lakes:

Harvest Timing
No harvesting or road construction will occur within 250 metres of visually sensitive lakes (as identified in the Visual Resource Management Standard) between April 1 and September 8.

Planning of Visually Sensitive Lakes
A riparian management plan is required before harvest blocks can be approved for any identified visually sensitive lake. This 20-year plan will include the following:

1. A map showing the proposed harvest schedule for all blocks adjacent to the shoreline of the lake for the next twenty years. Blocks will be indicated on the map by year of harvest for the first five years. Harvest planned for years 6 to 20 will be identified on the map by five-year periods (6-10, 11-15, 16-20).

2. A minimum of twenty percent of the lakeshore will be maintained in mature, old or very old forest (Table 1) for the entire 20-year period. On lakes smaller than 1000 ha, plans will be assessed on a case-by-case basis and may be approved with less than 20% mature, old and very old forest provided the distribution of ages is acceptable.

Table 1: Seral stages by cover species group

Cover Species Group	**Seral Stage**				
	Young	***Immature***	***Mature***	***Old***	***Very Old***
H and HS (Hardwoods)	0 - 20	21 - 70	71 - 90	91 - 120	> 120
S and SH (Softwoods)	0 - 20	21 - 80	81 - 100	101 - 120	> 120

3. The percent forest by seral stages will be reported in the following format:

Table 2: Percent forest by seral stage

	Young (ha)	Immature (ha)	Mature (ha)	Old (ha)	Very Old (ha)	Total (ha)	% Mature+Old +Very Old
Present							
Year 5							
Year 10							
Year 15							
Year 20							

a. The analysis area for the 20 % mature/old/older leave will be 90 metres from the riparian edge adjacent to the water.
b. The area of mature/old/older forest can be reduced but must be no less than 20 % of the total area for any part of the 20-year period.
c. The 20 % will be based on total productive forest cover currently present.
d. Unharvested forest will be projected forward for the 20 years to ensure it will be appropriately aged in all 5-year periods.

4. Variable width buffers will never be less than 10 metres.

5. Existing riparian plans for Cowan and Delaronde Lakes associated with the 2004/5 annual operating plan are grandfathered.

GUIDELINES:

The licensee should:

1. Use public consultation processes to identify and map landscape features considered to have high scenic value.

2. Where significant topographic relief exists, use visual impact assessments to

3. Use strategic placement of variable retention to help meet VQO's. Consider maintaining existing forest structural diversity within harvest blocks adjacent to major road corridors and waterways to provide scenic diversity.

4. Consider using two or three-pass harvest planning to minimize the visual impact of harvesting within VSA's, where necessary.

5. Taking into account all resource values (economic, biophysical, ecological and social), the licensee will design and implement its forest management activities to minimize interference with the quality of the VSA in areas with high or moderate aesthetic VQO.

Visual Sensitive Lake

1. Mature, old and very old forest should be representative of species distribution around the lake.

2. Mature, old and very old forest should be well distributed around the lake.

3. There should be a mixture of young and immature forest to ensure diversity of ages around the lake.

4. Design green tree retention within the cutblock to enhance screening and reduce the impact of harvesting on the visual landscape

5. Planning for visually sensitive riparian areas should take into consideration the recreational and scenic value of these features.

6. Variable width buffers may be employed to utilize natural screening along the lakeshore.

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CATEGORY: ROADS AND HARVESTING PRACTICES

SUBJECT: ROADS

OBJECTIVES:
To provide standards and specifications for all aspects of forest management activities that pertain to roads, including road construction & maintenance, closure and reclamation.

LINKAGES TO TWENTY-YEAR PLAN OBJECTIVES

Weyerhaeuser Prince Albert (Twenty-year Forest Management Plan and Environmental Impact Assessment Statement for the Prince Albert Forest Management Forest Management Area, p. 4-4):

- Meet customer mill needs (product mix, piece size, wood quality) in short and long terms
- Plan a safe and efficient road system
- Meet contractual and legal obligations

PERMITS & APPROVALS REQUIRED:
The following table lists the type of approvals necessary for various work occurring in the forest. Note that these may change periodically, therefore it is important that the licensee be familiar with all relevant legislation and permit approvals.

Table 1. OPERATIONAL PERMITS & APPROVALS

Approval Type	Required
Operating Plan Approval.	For construction, maintenance, reclamation, or closure of roads included in an Operating Plan.
Highways Approach Permit (from Ministry of Highways and Infrastructure).	When building roads that enter any numbered Provincial highway.
Pesticide Service License and Pesticide Applicator License (from Ministry of Agriculture, issued through the Pest Control Products Regulations).	To use or apply pesticides on vegetation growing in a road right-of-way. An individual who applies the pesticide must have a Pesticide Applicator License, and which would be under the *industrial* category.
Permit to Apply a Pesticide in or near Surface Water" pursuant to section 35(1) of *The Environmental Management Protection Act*.	Required when applying pesticides in or near water. The name of the application to fill out to get the permit is called the Chemical Control of Aquatic Nuisances in and/or Near Surface Water, obtained from The Ministry of Environment, issued through *The Environmental Management Protection Act*.
Nuisance Wildlife Control Permit (from Ministry of Environment, issued through *The Wildlife Act*).	Required when removing nuisance wildlife. This will include when beaver dams or houses are to be removed.
Navigable Waters Protection Act approval (from Transport Canada - Coast Guard).	For roads that require construction (or removal) of structures over navigable waters.

Approval Type	Required
"Term Right to Use Water" permit pursuant to The Saskatchewan Watershed Authority Act	For all diversion points (pump sites) for the use of surface water.
Aquatic Habitat Protection Permit under Saskatchewan Environmental Management Protection Act.	When installing and removing all lake, river, stream and creek crossings including winter crossings that use culverts, log or ice bridges, snow fills, skid bridges and alterations of waterways.
Letter of Advice or Section 35.2 Authorization Letter required from DFO. If licensee is following DFO Operational Statements, these approvals and permits may not be required.	For water crossings.
Borrow Pit Approvals • Approval for removal of sand and gravel is required from The Ministry of Environment.	Volume and locations of borrow pits to be identified annually in operating plan summaries.
• Borrow pits, outside of the right of way, used for dirt fill only, require approval from the ministry. • If sand / gravel taken is less than 350 m3 or where the area disturbed is less than 0.5ha, shall be approved in the annual operating plan.	A forest product permit is required to remove trees over proposed borrow pits for a licensee other than a FMA holder. Reclamation must meet the ministry Reclamation Guidelines for Sand and Gravel (Appendix I)
• Borrow pits outside of the right of away, if sand / gravel taken, is greater than 350 m^3or where the area disturbed is greater than 0.5 ha a Sand and Gravel Quarry Surface Lease from Lands Branch is required. • This approval process may vary from area to area.	
Heritage Screening – Heritage Branch, Ministry of Tourism, Parks, Culture and Youth (through *The Heritage Property Act*).	Heritage Branch Screening is required prior to building roads. This screening may result in a determination that a Heritage Resources Impact Assessment (HRIA) is required from a qualified archaeologist.
Underground Hazards.	When crossing any underground infrastructure such as pipelines (Sask Energy and private), power lines (Sask Power), utility (will vary) and telephone lines (SaskTel), appropriate permissions or authorizations must be obtained.
Sand & Gravel Quarry Surface Lease (Ministry of Environment – through the Conservation Officer at the nearest field office, then it is referred to the local Lands Manager). An officer at the field office, in consultation with the area forester, can issue a forest products permit.	When obtaining gravel from pits other than Rural Municipalities or Ministry of Highways and Infrastructure gravel pits. A FMA licensee will have potential pits identified in the operating plan and will have authority to remove trees over the pit through an approved operating plan or amendment. A forest products permit is required to remove trees over pits for a licensee other than an FMA holder.

PART I: CONSTRUCTION AND MAINTENANCE

OBJECTIVES:
To ensure that all approved roads are constructed in a manner that minimizes the impact on the environment but allows for the safe and efficient transport of forest products.

A. SPECIFICATIONS FOR CONSTRUCTION

STANDARDS:

1. The specifications in Table 1 must be adhered to when undertaking road planning and construction activities within the FMA.

2. Any merchantable timber used for brush mat construction in roads or in harvest areas shall be reported on to the Area Forester, and include location of brush mat and volume estimate or true scale, for the payment of dues and fees. This information must also be included with the monthly volume and scale returns to the Forest Service. This will be submitted 20 days after the month in which the volume is being measured. Individual stratum will be used for payment.

Table 1. FMA Road Construction Standards

	Road Class		
	1	**2**	**3**
Licensee Name Examples	Weyerhaeuser - Major Improved Bush Road Mistik/L&M - Forest Resource Road	Weyerhaeuser - Minor Improved Bush Road Mistik/L&M - Improved Bush Road	Weyerhaeuser - Bush Road & Bush Winter Road [4] Mistik/L&M - Bush Road
Access	All Weather Primary access roads to multiple operating areas containing long-term timber supplies	Winter or Summer Typically accessing one or more operating areas	Winter or Summer Typically accessing one or more harvest blocks in an operating area
Life Expectancy	Permanent	5 -20 years	1-15 years
Maximum Right-of-Way Width [1]	40 m	30 m	20 – 30 m [2]
Road Driving Surface Width (Grade)	8.0m – 10.0 m	7.0 – 8.0 m	≤ 7.0 m
Travel Surface	Gravel	Gravel Winter Road – Existing Soil Option - Gravel/Clay/Sand capping [3]	Existing Soil Option - Gravel/Clay/Sand capping [3]
Minimum Road Side Slope	2:1	2:1	Licencee to provide adequate erosion control methods.
Minimum Ditch Back Slope	2:1	2:1	2:1
Maximum Vegetation Control Width	40m	30m	20-30 m

1 To achieve cut and fill requirements necessary to meet the specified road and ditch slopes, right-of-way widths may be widened at the licensee's discretion. Right-of-way widths may be widened to address site-specific environmental and safety concerns on a case-by-case basis, as approved by the Area Forester. Application of this standard for the Weyerhaeuser Pasquia Porcupine FMA is approved on an interim basis subject to compliance with the Environmental Assessment Approval.

2 20 m for well drained soil types (i.e. sand) and winter roads, 20-30m as required for poor and moderately drained soils.

3 If sand, clay or gravel capping is used, reclamation is required as described in Reclamation standard Part III, 1(ii), regardless of season

4 As per Weyerhaeuser EIA

3. Landings
    a. In areas of tall timber, greater than 20 metres:
        i. Landings may be constructed during road construction of Class 2 or 3 roads.
        ii. Landings will be no greater than 0.2 hectares outside of the original right of way width, and shall be spaced at minimum 400 metres apart.
    b. Class 3 winter roads, with a 20 meter right of way will have landings 0.3 hectares in size, and are located outside of original right of way width and will be spaced at a minimum 400 meters apart.
    c. No portion of the landing constructed outside of the approved right of way may be stumped unless approved by the Area Forester.
    d. No landing will be constructed within 100 metres of a waterbody crossing unless authorized by the Area Forester.

4. Borrow Pits
    a. The FMA licensee will have borrow pits identified in the operating plan and will have authority to remove trees over the pit through an approved operating plan. Volume and locations of borrow pits to be identified annually in operating plan summaries.
    b. Additional locations may be added as required, by notifying the inspecting officer.
    c. Reclamation must be conducted as per the Reclamation Guidelines for Sand and Gravel Operations (Appendix 1)
    d. Harvesting of trees on borrow pit sites must be approved in the operating plan or submitted as an amendment for approval prior to the harvesting occurring.
    e. A Forest product permit is required to remove trees over proposed borrow pits for a licensee other than a FMA holder.

5. Borrow Pits inside a road right of way:
    a. Must be contoured to road construction standard. No additional reporting requirements

6. Borrow Pits outside a road right of way:
    a. Less than 350m3 and where the disturbance is less than 0.5ha
        i. Shall be approved in the annual operating plan. Locations when known shall be included in the annual operating plan submission. Additional locations may be added as required, by notifying the inspecting officer. Amounts removed need not be reported.
        ii. Reclamation must be conducted as per the Reclamation Guidelines for Sand and Gravel Operations (Appendix 1).

7. Borrow Pits outside of the right of way, having sand/gravel taken and exceeding 350m3 or having a disturbance greater than 0.5ha:
    a. Require a Sand and Gravel Quarry Surface Lease, prior to extraction of material.

b. Annual extraction volumes must be reported in a table format to the Land Registry prior to March 31 of each calendar year.
c. Reclamation must be conducted as per the Reclamation for Sand and Gravel Operations (Appendix 1), and stated in the lease.

8. Borrow pits, outside of the right of way, used for dirt fill only, require approval from the ministry. Reclamation must be conducted as per the Reclamation for Sand and Gravel Operations (Appendix 1).

GUIDELINES:

In constructing roads, the practices recommended in the Saskatchewan Environment / DFO Fish Habitat and Protection Guidelines on Road Construction and Stream Crossings should be followed, including:

1. Planning Roads:

a. Where practical, roads will be located to:
i. Avoid unstable areas and water-source areas (springs and seepages).
ii. Follow natural benches and other topographic features to minimize cuts and fills.
iii. Minimize the number of stream crossings.
iv. Use existing trails, where possible.
v. Avoid environmentally significant or sensitive areas.
vi. Avoid areas with known species at risk.

2. Advance Construction

Where possible, roads should be constructed one year in advance of their intended use, in order to allow for settling of roadbeds and options for the layout and scheduling of harvest blocks.

3. Right-of-Way Clearing

During clearing of timber and vegetation for road right-of-way, leave adequate root mat in place to prevent site damage. Where road is to be reclaimed at a later date, the layer of slash and organic soil materials should be piled for future rollback.

4. Drainage and Erosion Control

a. Cross-drainage devices should be installed to:
i. Reduce water movement in ditches.
ii. To help prevent sedimentation into streams, divert water from the ditch into the surrounding forest.
iii. Provide cross-movement spillways or down-spouts where the drainage occurs on unstable or bare soil.

b. A variety of erosion control methods may be used, including geotextiles, mulches, spreading slash, straw bales and re-vegetating. The height of any erosion control devices should not exceed the top edge of the ditch.

c. C.A grass seed mix, approved by The Ministry of Environment and made up of native species, should be used for erosion control where needed along ditches and stream crossings.

B. STREAM CROSSINGS

OBJECTIVE:

To ensure stream crossings are built in a responsible manner, which will minimize impacts to aquatic ecosystems and water quality.

STANDARDS:

1. No licensee shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water[1.]

2. No licensee shall, without a valid and subsisting permit authorizing the activity[2]:
    a. Alter or cause to be altered the configuration of the bed, bank or boundary of any river, stream, lake, creek, marsh or other watercourse or water body; or
    b. Remove, displace or add any sand, gravel or other material from, in or to the bed, bank or boundary of any river, stream, lake, creek, marsh or other watercourse or water body; or
    c. Remove vegetation from the bed, bank or boundary of any river, stream, lake, creek, marsh or other watercourse or water body.

GUIDELINES:

1. In constructing stream crossings, the practices recommended in the DFO Operational Statements[3] or the SE / DFO Fish Habitat and Protection Guidelines on Road Construction and Stream Crossings should be followed, including:
    a. The number of road crossings and skid crossings should be minimized.
    b. Crossings should not be constructed during peak stream flows and
    c. Where feasible, crossings should be located:
        i. High in the watershed of rivers and streams.
        ii. Away from lake inlets and outlets.
        iii. Upstream from barriers to fish passage, such as waterfalls

1 Federal Fisheries Act, Chapter f-14
2 *The Environmental Management and Protection Act*, Saskatchewan. Further details and conditions can be found in both this Act and the associated Water Regulations.
3 Saskatchewan Operational Statement, Version 1.0 valid to March 31, 2006 or most current version.

and steep gradients.

iv. Away from important fish habitat, such as riffle areas, rapids and areas with gravel bottoms.
v. Where the approach to the structure is on a flat or shallow slope.
vi. Perpendicular to the stream.
vii. At the location where the stream is narrowest.
viii. Where they will accommodate peak stream flows.

2. Types of structures used to cross-streams can include bridges, culverts, ice crossings, and temporary equipment crossings, such as log fills. Temporary crossing structures should be removed by the end of the operating year in which they were constructed, or as specified in the Aquatic Habitat Protection Permit.

C. SIGNAGE

OBJECTIVE:
To ensure appropriate safety mechanisms are in place for worker and public safety.

STANDARDS:

1. On open class 1 and class 2 licensee roads, warning signs will be erected respecting road safety.

2. At the beginning of each class 1 & active class 2 road network install a sign, which identifies road name**,** warns users that the road is a logging road and is not maintained.

GUIDELINES:

1. On class 1 and 2 licensee roads, install kilometre markers, a minimum of every 10 kilometres, or as required.

2. On licensee roads install haul route arrows placed to indicate direction of loading area.

PART II CLOSURE OF ROADS

OBJECTIVES:

To close, for the protection of forest resources and public safety, roads constructed by the licensee as soon as possible after their use is complete.

STANDARDS:

1. Road closure locations and types shall be in accordance with approved operating plans, or as directed by an Inspecting Officer. These roads shall be deemed closed in accordance with Section 58 of *The Forest Resources Management Act*.

2. Reclaimed in-blocks roads that have more than 1 km of ATV trail, which are accessed from a class 1 or 2 road, must be closed with an acceptable road closure type. Locations will be marked with closure type and reported in next years operating plan.

3. Acceptable Road Closure Types, unless approved otherwise by the Area Forester on a case by case basis in an operating plan to prevent vehicle traffic must be installed on roads abandoned for more than one year in the following manner:
   a. A padlocked gate with an earthen (soil) berm or other effective mechanism of natural material, to prevent vehicle traffic located across the remainder of the road right-of-way on either side of the gate; or,
   b. An earthen (soil) berm a minimum of two metres in height, (measured above the existing ditch and road grade level) located across the entire road right-of-way.

   Where an earthen berm restricts the flow of water, approval for an alternate closure may be obtained from the inspecting officer.

4. Licensees may open previously closed roads during forest management activities approved in an operating plan. These closures must be reinstalled to the road closure standards immediately after the activities are completed.

5. Closed roads requiring ATV access to the harvest block may have a trail extending from behind the berm for that purpose. Access to the ATV trail behind the berm must be constructed in a manner that does not alter the berm. The ATV trail and access to the trail must be constructed and maintained in a manner that allows for ATV travel only.

GUIDELINES:

1. In all circumstances the preferred closure is earthen berms.

2. The closure should be placed as close as possible to the open road which the closed road intersects. The placement of closures should also consider safety

3. All gates should have reflective marking on either side.

4. Roads abandoned for less than one year or greater than two months will have the following:
   a. A padlocked gate, with an earthen (soil) berm, or other effective types of closure methods, located across the remainder of the road right-of-way on either side of the gate (i.e. excluding the road driving surface); or,
   b. Available logging slash and road building debris from landings, or other effective types of closure methods, will be spread evenly across the entire road right of way in a manner that prevents vehicle traffic.

PART III RECLAMATION

OBJECTIVES:

To return road surfaces, landings, stream and non-stream crossings to their original or near-original landform, drainage and productivity.

STANDARDS:

1. Roads
    a. All roads that require reclaiming will be done to the following standards.
        i. Winter Season (when all three activities occur - hauling, construction or upgrading)
        Unless approved otherwise by the Area Forester on a case-by-case basis, all available surface slash, stumps, rocks and organic soils from windrows or piles created during the road construction process must be rolled back evenly across the entire road surface and right of way.

        ii. Non-Winter Season (includes one or more activity occurring during this season; hauling, upgrade or construction periods)
        The road surface shall be decompacted with spacing intervals less than 1.2 metres to an average minimum depth of thirty (30) centimetres, except soil types, which comprise more than 50% sand[1]. All available surface slash, stumps, rocks and organic soils from windrows or piles created during the road construction process must be rolled back evenly across the entire road surface and right of way.

    b. In block roads shall be reclaimed within two years of harvest.

    c. In blocks planned for tree planting, a trail down to the road surface may be left open to accommodate access by an ATV only. This trail shall not extend to within 200 meters of the harvest block boundary.

    d. All reclaimed roads must be reforested to meet provincial regeneration standards associated with the site.

    e. Reclamation of inter block roads shall be identified in the operation plan.

2. Landings
    All stumped landings shall be reclaimed within two years after harvesting and reforested to meet provincial regeneration standards associated with the site.

3. Stream Crossings
    When undertaking reclamation of any stream crossings, the following standards must be followed:

1 Field Guide to the Eco-sites of the Mid-Boreal Upland Eco-region of Saskatchewan (p. 5-12).

a. No licensee shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water[2].

b. No licensee shall, without a valid and subsisting permit authorizing the activity[3]:

i. Alter or cause to be altered the configuration of the bed, bank or boundary.

ii. Remove, displace or add any sand, gravel or other material from, in or to the bed, bank or boundary of any river, stream, lake, creek, marsh or other watercourse or body of water.

iii. Remove aquatic vegetation from the bed, bank or boundary of any river, stream, lake, creek, marsh or other watercourse or body of water.

4. Non-Stream Drainage Crossings
Reclamation of non-stream drainage crossings must not obstruct surface water flow or interflow.

5. Site Restoration
Ministry of Environment[4] to approve seed mixture being used.

GUIDELINES:

1. All stream crossings should be removed in accordance with the specifications in the – DFO Operational Statements[5] Road Construction and Stream Crossings and or the Saskatchewan Environment / DFO Fish Habitat and Protection Guidelines on Road Construction and Stream Crossings.

2. Decompaction may be accomplished through the use of a whale-tail attachment on a backhoe or instead of a ripper tooth on a crawler tractor.

3. Contouring is used when reclaiming gravel pits, burrow pits, road cuts and water crossing areas. The goal is to re-contour altered landforms to a stable slope, which is normally a 3:1 slope. Upon completion of contouring, rollback (as described above) should be completed. Reference may be made to the document "Guidelines for Environmental Protection During Development and Restoration of Sand and Gravel Pits, 1983".

4. On sites with sandy soils or areas which were harvested during frozen soil conditions, adequate road reclamation and reforestation may be achieved by undertaking scarification of the road surface - dragging anchor chains and distributing logging

2 Federal Fisheries Act, Chapter f-14
3 The Environmental Management and Protection Act, Saskatchewan
4 The ministry Designated Authority is the Area Forester or Executive Director
5 Saskatchewan Operational Statement, Version 1.0 valid to March 31, 2006 or most current version.

debris across the road surface.

5. Standard practice will be to establish an acceptable tree species throughout the reclaimed right of-way in order to assist in prompt establishment of tree species within a harvest unit. Areas that were not previously treed, such as stream crossings, should be seeded to native vegetation. All organizations doing restoration in the forest should use the guide by Kosowan and Smith, “Native Species Recommended for Site Restoration within the Mid-Boreal Upland, Mid-Boreal Lowland.”

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Prince Albert Forest Management Agreement Area
STANDARDS AND GUIDELINES

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CATEGORY: ROADS AND HARVESTING PRACTICES

SUBJECT: SLASH MANAGEMENT

OBJECTIVES:

1. To assist in maintaining the productivity of forest sites.

2. To manage slash derived from road and harvesting operations in a manner which:
    a. Minimizes impacts on wildlife habitat and travel.
    b. Assists in meeting reforestation objectives.
    c. Takes into account soil protection.
    d. Considers aesthetics.
    e. Reduces the potential for escape fires or fire spread.

LINKAGES TO TWENTY-YEAR PLAN OBJECTIVES:

Weyerhaeuser Prince Albert (p. 17 of the Twenty-Year Forest Management Plan and Environmental Impact Assessment Summary Document):

- Meet customer mill needs (product mix, piece size, wood quality) in short and long terms.
- Maintain and/or enhance the timber productivity of forests.
- Maintain productivity of forest soils.

STANDARDS:

1. Slash must be either spread, burned, or a combination of these methods, based on site-specific objectives.

Spreading of Slash:

1. Harvest Block: After harvest completion, slash will be spread evenly throughout the harvest block within two years of harvest, unless otherwise approved by the Area Forester.

2. Inter-block Road Right-of-Ways (R.O.W.): Slash and road-building debris shall be spread evenly throughout the R.O.W, (except for the road surface and ditch, within two years after the road is constructed.

Burning of Slash:

1. Burning of slash piles must be completed within two years after harvest completion.

2. All slash pile ignition shall take place between November 1 and February 28 each year, and:

a. All piles must be extinguished by March 31.
b. Only the burning of woody debris as a result of forestry operations will be permitted.
c. Documentation indicating the dates of ignition and extinguishment for piles shall be available for inspection by Ministry of Environment officers upon request.
d. Maps (at the operating area level of detail), showing the location of all harvest blocks and road right-of-ways on which slash piles were burned during the past operating year, shall be submitted to the local Forest Protection Officer on an annual basis in the licensee's fire protection and suppression plan.
e. Burning of slash shall not damage or destroy adjacent forest products.

3. Slash, or any other material, shall not be burnt within 30 metres of a sawdust pile[1].

GUIDELINES:

1. Priority should be placed on the spreading versus burning of slash. Table 1 provides appropriate slash management options for various stand types or situations. When determining how to manage slash within the harvest block, consider the type of reforestation method to be used (i.e. natural or artificial regeneration), site sensitivity to nutrient loss, and slash loading impacts on regeneration, wildlife habitat and travel, and potential for escaped fires or fire spread.

Spreading of Slash

The following guidelines are recommended to ensure that slash is spread evenly across the harvest block/road right-of-way:

1. Harvest Block: After harvest completion, slash should be spread evenly throughout the harvest block within the harvest season.

2. De-limb at roadside and re-distribute slash; and/or,

3. De-limb in the harvest block at the stump and re-distribute slash.

Burning of Slash

The following guidelines are recommended for the burning of slash from forestry operations:

1. Burn piles as soon as feasible so that land is put back into production. Piles may be left until the year following piling to allow adequate drying for clean burning.

2. All piles should be burned on mineral soil or on areas having an average maximum depth of less than 15 centimetres of duff.

1 The Prairie and Forest Fires Act, Saskatchewan -1982

3. All reasonable efforts must be made to avoid placing mineral soil within a slash pile.

4. Where stakeholder commitments regarding burning have been made (including commitments for firewood gathering), notify the appropriate stakeholders.

5. Post signs at the burning site if it is visible to public or where the safety of others may be jeopardized.

6. Ensure there is a safe escape route planned before lighting a pile, and vehicles are parked a safe distance from burning piles.

7. Ensure shovels, fire extinguishers, and emergency communications are available.

8. Piles to be burned should be a minimum of 20 metres from standing timber.

9. All reasonable efforts should be made to minimize impacts of smoke near communities, residences, and active roads.

10. The size of piles should be adequate to protect soils, adjacent forest products, allow passage of wildlife and consider aesthetics.

11. Slash should be piled in a manner, which allows for clean, efficient burning of all materials. Any residue or unburnt materials remaining post-burn should be spread evenly into the harvest block.

Table 1. Slash Management Options for Various Site Conditions

Stand Type	**Slash Disposal / Re-distribution Method**
Jack Pine Stands	Consider re-distributing slash back into the cutblock (where delimbing is done at roadside) or leaving slash in the cutblock (where delimbing is done "at the stump") on sites where natural regeneration is prescribed in the Site Prescription. Note: Where harvesting has been conducted during the winter, delimbing at the stump or re-distribution of the slash may not be necessary for natural regeneration if an adequate supply and distribution of cones has been left on site.
Hardwood Stands	Where roadside delimbing/topping occurs, the slash can be spread evenly throughout the harvest block (provided future and advanced regeneration is not impeded) and/or be piled and burnt. Hardwood sites that have been de-limbed/topped at the stump will be assessed to determine if further re-distribution of top piles is required to ensure that stocking standards are achieved.

Stand Type	Slash Disposal / Re-distribution Method
Mixed-wood Stands	Where artificial regeneration is prescribed, consider: Piling and burning slash. – Re-distributing slash onto roads, landings, and/or across the cut-block. A combination of these methods.
Low Nutrient Sites	Low nutrient sites, such as shallow soils over bedrock or coarse soils, will be assessed to determine if further re-distribution of slash throughout the cutover is required to return nutrients to the site.
Limbing/ Topping at Roadside	In areas where limbing and topping is done at roadside or in a landing, re-distribute or pile and burn slash accumulations that limit regeneration.

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Prince Albert Forest Management Agreement Area
STANDARDS AND GUIDELINES
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CATEGORY: **ROADS AND HARVESTING PRACTICES**

SUBJECT: **SILVICULTURE AND HARVEST SYSTEMS**

OBJECTIVES

To design a program of silvicultural treatments, including harvesting and renewal activities, which map out a managed life cycle of a forest stand or stand groupings in order to achieve a future structural objective based on goals stated in approved higher level plans and at the same time ensuring a safe worksite.

LINKAGES TO TWENTY-YEAR PLAN GREEN TREE RETENTION OBJECTIVES:

Weyerhaeuser Prince Albert (p. 17 of the Twenty-Year Forest Management Plan and Environmental Impact Assessment Summary Document):

- Maintain and/or enhance the timber productivity of forests.
- Promptly and effectively renew harvested areas.
- Maintain ecosystem diversity at all levels – landscape, stand, species and genetic.
- Management activities to protect and maintain water quality in FMA area lakes and rivers
- Maintain productivity of forest soils except on areas needed for permanent roads or other permanent infrastructure.
- Protect rare and endangered species and special places (unique landforms, critical wildlife habitat).

Weyerhaeuser Prince Albert (p.4-11, 4-17 and 4-105) of the Twenty-Year Forest Management Plan Volume 1 Document):

- Table 4.2.2 Types of Ecosystem-based Targets

Forest Management Targets	**Management Unit (Scale)**
Retention of in-stand structure	Stand level

- During harvest operations 1% to 5% of the volume will be operationally left on site within the harvest patches (retained as in-stand structure)
- Depending on the forest type, a range of 1% to 5% of live trees will be left standing in harvested areas as single trees and clumps of trees.
- On average, 3% of the live trees will be left as in-stand structure.
- Stand Level Diversity -An average of 3% (ranging from 1% to5%) of the harvestable volume will be left standing in cutovers as live trees.

LINKAGES TO TWENTY-YEAR PLAN SPRUCE UNDERSTORY STANDARD OBJECTIVES:

Weyerhaeuser Prince Albert (Twenty-year Forest Management Plan for the Prince Albert Forest Management Area, p. 4-4)

- Meet customer mill needs (product mix, piece size, wood quality) in short and long terms
- Maintain and/or enhance the timber productivity of forests
- Promptly and effectively renew harvested areas
- Maintain ecosystem diversity at all levels – landscape, stand, species, and genetic

Weyerhaeuser Twenty Year Forest Management Plan Approval, p. 13

- 3.8.2 Harvesting (b) To the extent practical damage of advanced regeneration of all species should be minimized during all forest operations except as required for silviculture.
- 3.8.2 Harvesting (c) Within 18 months of the effective date, the Company shall in consultation with SERM Forest Ecosystems Branch develop and implement a harvesting operating procedure relating to spruce understory protection satisfactory to the Director.

STANDARDS:

Silvicultural Systems

1. Silvicultural systems will be implemented in a manner that conforms to the objectives for future conditions of the forest established in the 20 Year Forest Management Plan and as prescribed in a Pre-Harvest Site Prescription.

Green Tree Retention

1. Green tree retention treatments are applied to all hardwood, softwood and mixed-wood harvest blocks. Retention trees shall be retained across the harvest block. Exceptions to this standard are for blocks designed as fuel breaks and road right-of-ways.

2. A landscape average of 3% of merchantable volume is to be left in the form of live standing individual trees, clumps of trees, and islands of trees. The percent of green tree retention to be left in a harvest block will be indicated in the PHSP.

3. Volumes must be retained as in-stand structure and follow the standards below:
    i. PHSP's submitted with the operating plan, may contain standard wording describing how residual tree retention will typically be left at a stand level.
    ii. If PHSP's objectives for green tree retention are changed, amendments must be made and submitted to SE upon request.
    iii. This standard also applies to fire salvage operations. Where green tree retention targets cannot be met in fire salvage operations, the remainder of retained volume shall be comprised of burnt trees.
4. The proportion of volume retained shall be between 80% –90% for islands and

5. Green tree retention trees and other retention trees shall be left in a manner that ensures a safe work site consistent with *The Occupational Health and Safety Act*.

Dwarf Mistletoe Management

1. Maps clearly indicating where the portions of the infected areas will be submitted to the Area Forester.

Harvest Systems

1. All blocks must be harvested in a single entry, whereby all merchantable trees will be utilized, with the exception of the approved merchantable tree retention targets.
2. Blocks not completed by the end of the operating year shall be left with a clean standing boundary.
3. A summary list of incomplete harvest blocks is to be provided to the Area Forester by May 31st. The list will include the original harvest start date (month) for that block, reasons for not completing harvesting and the proposed completion date (month) of harvest. Incomplete blocks not scheduled for harvesting in the following year that does not meet the FMA standards measured at a block level must be identified.
4. All merchantable trees harvested shall be utilized as per the licensee's Twenty Year Forest Management Plan, unless approved otherwise in an operating plan.
5. Notification in writing to the Area Forester will be made at the commencement and completion of block and for road right of way harvesting and construction of roads.

Spruce Understory Protection Standard

1. Understory protection will be implemented in a manner that conforms to the objectives in the 20 Year Forest Management Plan, approved Environmental Impact Statement and as prescribed in a Pre-Harvest Site Prescription.
2. In the absence of operating procedures relating to spruce understory as required in Twenty Year Management Plan approval condition 3.8.2(C), the licensee shall minimize the damage to the spruce understory as directed by the Forest Service inspecting officer.

GUIDELINES:

Silvicultural Systems

1. Determine the desired landscape pattern, the future stand composition and structural objectives mandated by the goals identified in the higher level plans. Note: The Forest Management Guide for Natural Disturbance Pattern

_____ (OMNR, 2001), provides an excellent overview and description of 'operationalizing' the 'natural disturbance' planning model.

2. Silvicultural systems to be used should be based on silvics of the tree species to be harvested. Location of residual trees should utilize natural variations in topography, the use of non-productive forest stands, and non-merchantable trees in conjunction with the merchantable tree retention targets. Preference should be given to low-lying wet ground, hardwood clumps containing spruce, sensitive areas, and the lee (normally eastern) shores of larger lakes and rivers.
3. Residual trees left for wildlife ideally should be large-diameter, wind firm and high quality for cavity trees or those with potential to form cavities. These trees will provide some semblance of the structure that would be left after a fire and provide a source of future dead and down woody debris.
4. Residual patches should include trees that are characteristic of good health, vigour and form.
5. On individual blocks where the retention will deviate from the normal harvesting practice, an amendment must be made to the PHSP and the inspecting officer advised of the change. Examples of this may include: a block containing a large number of steep slopes may have an increased amount of retention or mistletoe blocks will not have any pine retention. See Planning Standard, Pre-Harvest Site Prescription, 2 (k) Residual tree retention objective.

Harvest Systems

1. Notification to the Area Forester should occur at least 5 days in advance of operations in a memo, faxed or emailed.

2. Alternatively a weekly notification method may be used.

Safety in Blocks to be Hand Planted

1. Snags should be cut at a height not greater than 5m.
2. Single green trees should be retained with the highest number of trees allowed in a group (4) and overall block retention should be at the lower range (10% of retention within the block).
3. All hazard trees should be removed at completion of the block harvest.
4. A reasonable amount of time should elapse after harvesting (e.g. 30 days) to allow for unsafe trees to fall before post harvest activities are conducted.
5. A hazardous tree assessment should be conducted prior to post harvest activities occurring.
6. Post harvest activities should not be conducted when weather conditions may put workers at risk (e.g. high winds, lightning storms).

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Prince Albert Forest Management Agreement Area
STANDARDS AND GUIDELINES

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CATEGORY: SILVICULTURE PRACTICES

SUBJECT: CONIFER SEED SUPPLY

OBJECTIVES:

To maintain a supply of wild conifer seed[1], in order to ensure that tree seed of the correct origin, species, and quality is available for reforestation needs.

LINKAGES TO TWENTY-YEAR PLAN OBJECTIVES:

Weyerhaeuser Prince Albert (p. 17 of the Twenty-Year Forest Management Plan and Environmental Impact Assessment Summary Document):

- Promptly and effectively renew harvested areas
- Maintain and/or enhance the timber productivity of forests

STANDARDS:

1. Saskatchewan Tree Seed Zones:
   Tree seed zones within Saskatchewan will correspond with eco-region boundaries, as endorsed by the ministry[2]. All seed and stock used in artificial regeneration are to be acquired within their respective eco-region, unless otherwise approved by the Forest Service.

2. The licensee to ensure a sustainable and viable seed supply is maintained.

3. The licensee to maintain a database of seed collected or purchased, including the seed source. Seed origin must be tracked by UTM map sheet location.

GUIDELINES:

1. Collection of Seed from Natural Stands:
   a. Either dominant or co-dominant vigorous trees within natural stands should be targeted for cone collections.[4]

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1 Seed collected from seed orchards is exempted. These standards will be developed provincially.
2. Saskatchewan Environment and Resource Management. 1998. The Ecoregions of Saskatchewan. Canadian Plains Research Centre. University of Regina. 205 p.
4 Ontario Ministry of Natural Resources. 1996. Guidelines for Tree Seed Crop Forecasting and Collecting. 226 p.
5 Alberta Environmental Protection, Alberta Forest Service. 1993. A Forest Tree Seed Manual for Alberta. 101p

b. Avoid isolated trees where self-pollination is very probable.

c. Superior stands are those with a high proportion of phenotypically superior trees. Trees in these stands should have the following characteristics:[5]
   – Superior height.
   – Above average stem diameter.
   – Single stem.
   – Narrow thrifty Crown.
   – Low stem taper.
   – Small limb diameter.
   – Branches attached to the bole at a 90-degree angle.
   – Natural pruning, no evidence of disease, defect, insect, or physical damage

d. Once favourable, mature, superior stands have been identified, they should be mapped and reserved as seed collection areas.[5] These mature stands can be identified from other inspections, such as special cruises, rare and exceptional stand surveys and local knowledge.[5]

e. For additional detailed information on tree seed collection, the following publications may be referred to:

i. B.C. Ministry of Forests. 1989. A Guide to Collecting Cones of British Columbia Conifers, FRDA Report 055; R.D. Eremko, D.G.W. Edwards and D. Wallinger. 114 p.

ii. Ontario Ministry of Natural Resources. 1996. Guidelines for Tree Seed Crop Forecasting and Collecting. 226 p.

iii. Alberta Environmental Protection, Alberta Forest Service. 1993. A Forest Tree Seed Manual for Alberta. 101 p.

2. The following are general guidelines for cone collection of primary species in the province:

White spruce

a. Monitor the development of white spruce cones within the targeted cone collection areas in early July.
b. Arrange for the availability of a helicopter and cone rake or other means of collection for the month of August.
c. Conduct aerial samples of current year cones from trees within the targeted cone collection areas on a weekly basis commencing in mid-July. Cone samples must be assessed by a knowledgeable person to determine potential seed harvest and the incidence/severity of impact of cone insects and diseases.
d. Based on assessment of seed embryo development and cone maturation, commence harvesting of white spruce cones (cone collection can commence early to mid-August).
e. Assign a seedlot name (e.g. use the operating area name and year of collection) for each cone collection area and ensure that all bags are tagged internally and externally with the seedlot name.

f. Burlap bags (70 litre) must be used to allow for air circulation around the cones. An individual bag should not contain more than 40 litres of cones (two-thirds full).
g. Store all bagged white spruce cones in a cool well-ventilated environment. Ensure that all bags get turned daily to minimize the chance of heating.
h. Deliver collected white spruce cones to a reputable seed extraction facility.

Black spruce

a. Monitor the development of black spruce cones within the targeted cone collection areas in early July.
b. Arrange for the availability of a helicopter and cone rake or hand falling and picking crews for the period October to March.
c. Conduct samples of current year cones from trees within the targeted cone collection areas in early September. Cone samples must be assessed by a knowledgeable person to determine potential seed harvest and the incidence/severity of impact of cone insects and diseases.
d. Based on assessment of seed embryo development and cone maturation, commence hand falling of black spruce trees (cone collection can commence generally around early October).
e. Assign a seedlot name (use the operating area name and year of collection) for each cone collection area and ensure that all bags are tagged internally and externally with the seedlot name.
f. Burlap bags (70 litres) must be used to allow for air circulation around the cones. An individual bag must not contain more than 40 litres of cones (two thirds full).
g. Store all bagged black spruce cones in a cool well-ventilated environment. Ensure that all bags get turned as required to minimize the chance of heating.
h. Deliver collected black spruce cones to a reputable seed extraction facility.

Jack pine

a. Establish a cone collection area.
b. Collect jack pine cones from freshly harvested jack pine tree slash.
c. Ensure that collected jack pine cones are large, dark green, brown or greyish brown in color. Small or old (grey) cones should not be picked.
d. Assign a seedlot name (use the operating area name and year of collection) for each cone collection area and ensure that all bags are tagged internally and externally with the seedlot name.
e. An individual bag (70 litres) must not contain more than 40 litres of cones (two thirds full).
f. Deliver collected jack pine cones to a reputable seed extraction facility.

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Prince Albert Forest Management Agreement Area
STANDARDS AND GUIDELINES

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CATEGORY: GENERAL OPERATING PRACTICES

SUBJECT: **RIPARIAN MANAGEMENT AREAS**

OBJECTIVES:

Riparian areas shall be managed with the objectives of:

- Protecting riparian dependant resources and aquatic ecosystems by maintaining, the diversity of ecological structures and functions in the riparian areas; and
- Adopting a landscape perspective to:
    a. Provide habitat connectivity and environmental requirements for riparian communities of plants and animals; and
    b. To minimize impacts on watershed hydrology.
- Committing to continual improvement and the incorporation of new scientific knowledge in the revision of these standards and guidelines.

LINKAGES TO 20-YEAR PLAN OBJECTIVES:

Weyerhaeuser Prince Albert (Twenty-year Forest Management Plan and Environmental Impact Assessment Statement for the Prince Albert Forest Management Forest Management Area,
p. 4-4):

- Manage activities to protect and maintain water quality in FMA area lakes and rivers
- Maintain diversity and quality of riparian habitats

STANDARDS:

Overview

The company shall plan and conduct forest management activities in riparian management areas with the objective of protecting and maintaining the structures and functions within the riparian area. Standards pertaining to visually sensitive lakes, including the harvesting of and the planning of, are found under the Visual Resource Management Standard. Notwithstanding the objective, the company must meet the standards identified below. The following landscape-based categories of "Riparian Management Areas" and applicable standards identify the minimum levels of protection.

For all categories, zone widths are by "slope distance" measured perpendicular to the stream bank, shoreline or wetland edge, as the case may be (see Figure 1). Measurement is from the stem of the over story tree species.

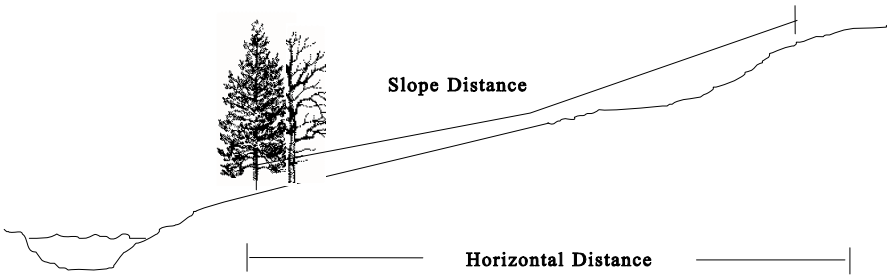

Figure 1. Illustration of "Slope Distance" (not to scale).

A. Riparian Management Area Categories:

1. Category 1 - Large Lakes, Rivers and Streams (Figure 2)

Description:
Applies to lakes ≥ 5 ha in area, rivers and streams, as evident on 1:15,000 forest vegetation inventory maps, aerial photographs, or harvesting operations.

Standards:
a. 10 m no harvest/no equipment zone measured from the beginning of the overstory tree species. This line must be clearly marked as per the road and harvest block layout standards.
b. Limited harvest zone extending 30 metres from the upslope edge of the 10 m no harvest zone.

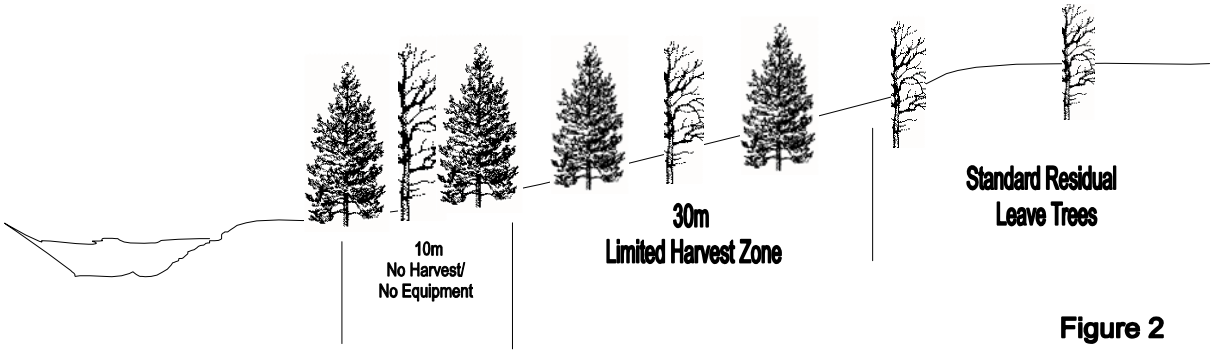

Figure 2

2. Category 2 - High Slope Areas on Small Lakes or Ponds (Figure 3)

Description:
- Between 0.5 and 5 ha waterbody surface area as evident on 1:15,000 forest vegetation inventory maps, aerial photographs, or harvesting operations.
- A high slope is defined as a slope greater than 15 percent within 20 m measured from the beginning of the overstory tree species.

Standards:

a. A limited harvest zone to the top of the slope, or a maximum distance of 40 m measured from the beginning of the overstory tree species.
b. The limited harvest zone includes a 10m no equipment zone measured from the beginning of the overstory tree species. This line must be clearly marked as per the road and harvest block layout standards.

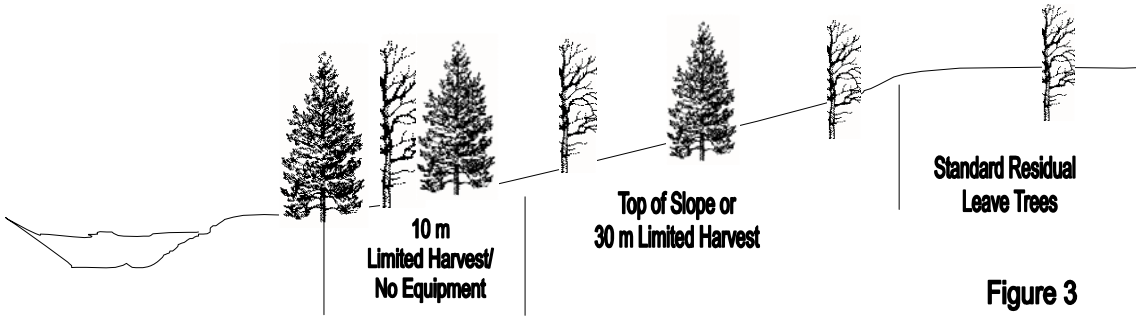

Figure 3

3. <u>Category 3</u> - Low Slope Areas on Small Lakes or Ponds (Figure 4)

Description:

- Between 0.5 and 5 ha waterbody surface area as evident on 1:15,000 forest vegetation inventory maps, aerial photographs or harvesting operations.
- Have a slope less than 15 percent within 20 m measured from the beginning of the overstory tree species.

Standards:

a. 10 m limited harvest / no equipment zone measured from the beginning of the overstory tree species. This line must be clearly marked as per the road and harvest block layout standards.

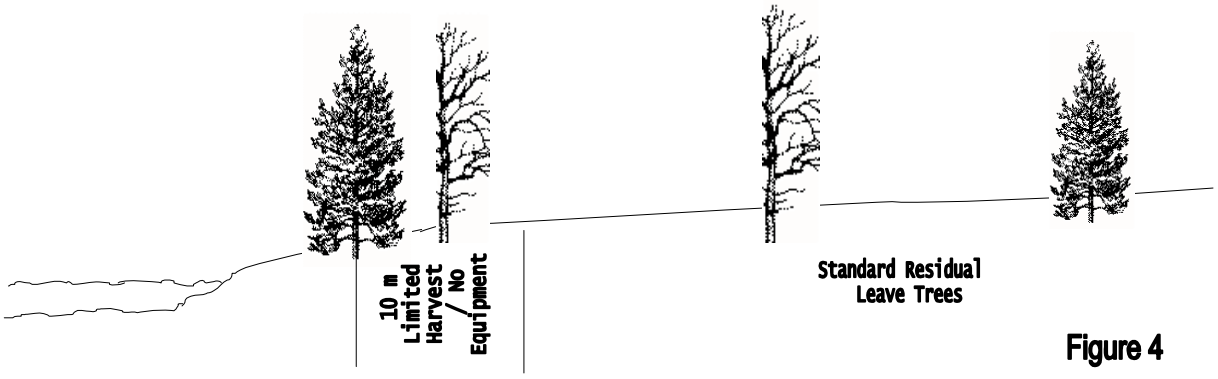

Figure 4

4. <u>Category 4</u> - Intermittent Streams (Figure 5)

Description:
Intermittent streams as evident on 1:15,000 forest vegetation inventory maps, aerial photographs, identified during pre-harvest site assessments, or harvesting operations.

Standards:

a. No impediment to surface or subsurface water flow (interflow).
b. Forest harvesting operations will leave single and clump leave trees adjacent to the stream, and ensure that equipment does not enter the stream channel.
c. Harvesting equipment may cross-intermittent streams on frozen ground, or using appropriate crossing structures. Crossing structures must be removed immediately following harvesting and site preparation activities, and stream banks must be stabilized.

Figure 5

5. <u>Category 5</u> - Ephemeral Streams and Wetlands

Description:
Ephemeral streams, wetlands (bog, fen, marsh, swamp and shallow open waters), and water bodies < 0.5 ha.

Standards:

a. No impediment to surface or subsurface water flow

B. General Standards Applicable to All Categories

1. Forest Healths and Blowdown:

Deviations to riparian management area standards, for the purpose of addressing forest health issues or blowdown salvage harvesting, shall be approved by the Area Forester on a case by case basis. As well, requests for deviation to RMA standards are to be included in the Site Assessment and Site Prescription for harvest blocks, or operating area write-ups for road right-of-ways outside of harvest blocks.

2. Tree Volume Retention

a. For all RMA categories, residual trees shall be representative of pre-harvest stand types and size classes in limited harvest zones.

b. A minimum, average volume retention level of 25% per operating year across the FMA is required within limited harvest zones, with a minimum volume retention requirement of 20% within each individual harvest block.

c. Riparian management area retention levels:
   i. Do not include volumes in the no harvest zone; and
   ii. Shall not be included as part of the retention levels in the non-riparian management portion of the harvest block.

3. Soil Protection

a. To minimize soil disturbance, organic and mineral soils shall be protected so that rutting does not exceed 12 cm in depth and 5 m in length for more than 1% of the limited harvest zone area.

b. Forest operations shall not cause rill and gully erosion, mass wasting, or waterbody sedimentation.

4. Roads and Landings

Roads and landings can be constructed in RMA's where no other viable option exists, and may only be approved by the Area Forester on a case by case basis.

5. Water Quality Protection

a. The Ministry of Environment's "General Surface Water Quality Objectives" for suspended solids and turbidity are adopted and must be met. They are applicable to intermittent streams only during flow periods and are not applicable to ephemeral streams.

b. Total suspended solids are not to be increased by more than 10mg/L over existing background values for waters with levels less than 100mg/L, or not to be increased by more than 10 percent over existing values for waters with levels greater than 100mg/L.

c. Turbidity is not to be increased by more than 25 turbidity units above existing background levels.

6. Renewal

a. Site preparation and planting activities approved in an operating plan for riparian management areas shall be conducted within 2 growing seasons following harvest.

b. Only drag scarification, and discontinuous (patch) forms of site preparation can be used in riparian management areas. Examples of discontinuous site preparation techniques include screefing, mixing, and inverting.

7. Overlapping RMA Categories

a. In areas where riparian systems meet, the standards relating to the RMA category with the higher level of protection takes precedent, and shall be applied in the area of the overlap.

b. In harvest blocks with multiple RMA categories, where the company feels that it is operationally constraining to layout each individual RMA category, the category with the highest level of protection may be used across the entire RMA.

c. In cases where two or more RMA categories overlap within 100 metres of the shoreline of a waterbody or watercourse, the RMA category with the highest level of protection shall take precedence. To establish which RMA category applies, a line is extended from the edge of the waterbody or watercourse towards the block boundary. If the edge of the overstory tree species is encountered within 100 metres, then the riparian category applying to the water body or watercourse is applied. If the overlap occurs more than 100 metres from the shoreline of a waterbody or watercourse, the RMA category adjacent to the overstory tree species applies.

8. Skid Trails and Topographic Constraints

Under special circumstances, development of limited skidder/forwarder trails within the no equipment and no harvest zones may be necessary in order to harvest otherwise inaccessible wood (within the limited harvest zone) and may only be approved by the Area Forester, on a case by case basis.

GUIDELINES FOR OPERATING IN RIPARIAN MANAGEMENT AREAS:

1. Tree Volume Retention

a. Retention left within the limited harvest area should be retained in, clumps and individual trees, bearing in mind operational constraints. In softwood RMAs, larger clumps of softwood retained which are connected to the RMA no harvest zone may be more resistant to windthrow. Refer to Silvicultural Systems Standards and Guidelines for further information on variable retention.

b. Damage to advance regeneration of all merchantable tree species should be minimized wherever it is compatible with silviculture objectives.

c. All reasonable efforts should be made to retain standing dead trees in riparian management areas.

2. Roads and Landings

Requests, where feasible, to construct roads and landings within RMAs should be made in the operating plan submission.

3. Landscape Harvest Block Planning

a. Specific consideration should be given to the orientation, size and shape of the harvest block to minimize the effects of wind damage on riparian management areas.

b. Retention of structure in riparian management areas should be planned in conjunction with retention in the remainder of the harvest block.

c. The number of crossings for intermittent streams should be minimized.

d. Harvesting in Riparian Management Areas should be conducted in conjunction with harvesting the adjacent non-RMA portion of the harvest block.

* * *

Prince Albert Forest Management Agreement Area
FMA STANDARDS AND GUIDELINES
==========

CATEGORY: **GENERAL OPERATING PRACTICES**

SUBJECT: **ENVIRONMENTAL PROTECTION**

OBJECTIVES:

1. To ensure a safe work environment for all employees, contractors and the public.
2. To responsibly manage activities to protect and maintain water quality, air quality and the productivity and quality of forest soils.

LINKAGES TO TWENTY-YEAR PLAN OBJECTIVES:

Weyerhaeuser Prince Albert (p. 17 of the Twenty-Year Forest Management Plan and Environmental Impact Assessment Summary Document):

- A safe working environment for all employees, contractors and the public.
- Manage activities to protect and maintain water quality in FMA area lakes and rivers.
- Maintain diversity and quality of riparian habitats.
- Maintain productivity of forest soils except on areas needed for permanent roads or other permanent infrastructure.
- Meet contractual and legal obligations

PERMITS & APPROVALS REQUIRED:
The following permits shall be obtained by a licensee for the work or conditions indicated in Table 1 below.

Table 1. Permits

Approval Type	Required
Temporary Work Camp Permit (TWCP)	For camps (whether identified in approved Operating Plans or not) in which vehicles, tents or other structures are to be assembled or set up to provide accommodation for personnel or for other purposes in connection with work projects of a non-permanent nature. Temporary work camp approval can be obtained in the submission and approval of the operating plan.
Burning Permit (associated with both T*he Prairie and Forest Fires Act* and *Clean Air Act*)	When burning paper and wood during fire season.
Permission to draw water *(*associated with *The Water Corporation Act* and the *Federal Fisheries Act).* An Aquatic Habitat Protection Permit may also be required to draw water (under *The Environmental Management* and *Protection Act).*	When drawing water from a known source or established drilled well for washing facilities. An Aquatic Habitat Protection Permit is required when working in or near water bodies.
Permission to retain camp structures in place for future use *(*Lease– available through the local Lands Manager*)*	When leaving camp structures in place for future use.

PART I: TEMPORARY WORK CAMPS

STANDARDS:

1. Identify and comply with all applicable legislation relating to the operation of camps related to forest operations, including those described in Appendix II, Camps – Environmental Rules and Regulations (attached).

2. When a temporary work camp is established, an approval to establish the camp is required and will be obtained through submission and approval of the operating plan. Locations when know, shall be included in the annual operating plan submission. Additional locations may be added as required, by notifying the inspecting officer prior to establishing the camp.

3. Camp approval can be revoked upon 10 days written notice to the permit holder.

4. All temporary work camp operations shall, at all times, be in full compliance with the "Guidelines for the Establishment and Operation of Temporary Work Camps".

5. Camp site clean-up and camp area rehabilitation shall be carried out immediately following camp decommissioning and shall be completed not more than 30 days from start of decommissioning.

6. Area Forester or inspecting officers shall be notified of:
   a. Temporary work camp opening, within 10 days from camp establishment;
   b. Temporary work camp closure, not less than 10 days prior to the event; and
   c. Temporary work camp decommissioning, camp clean up, and camp area rehabilitation, within 10 days from completion of decommissioning, clean-up and rehabilitation.

7. Camp clean-up and camp area rehabilitation shall be carried out as specified in an inspection report made by an inspecting officer or other Government employee or representative of the ministry.

8. Failure to perform temporary work camp clean up or camp area rehabilitation in the form or manner specified within the aforementioned inspection report or "Guidelines" or within the time specified therein or in a written notice to the licence holder, shall constitute authorization for the Ministry of Environment to:
   a. Take the necessary clean-up and rehabilitation measures, or have them taken by a person engaged for the purpose of taking these measures; and
   b. Pursuant to Sections 4 and 7 of *The Resource Lands Regulations*, charge the clean-up and rehabilitation measures to the licence holder.

9. **Stripping of the topsoil is to avoided wherever possible.** If necessary, topsoil is to be stripped off the site and piled separately for later site reclamation on any portion of the site that requires levelling or filling of pits.

10. Any sump pits are to be fenced until clean up has been completed.

11. Following camp decommissioning, the site must be re-contoured, topsoil is to be re-spread and slash is to be rolled back and spread on the site. (Site must be planted to a specific tree species where identified as a special condition).

12. Camps or fuel tanks shall not be located within **100 metres** of the high water mark of a lake, pond, stream, or river. Exemptions to this standard are permitted for temporary work camps used for small reconnaissance surveys by boat, with tenure of less than 30 person days.

13. To minimize conflicts with other land users and minimize potential pollution of water bodies, authorization will not be given except under special circumstances and at the discretion of The Ministry of Environment for temporary work camp locations less than:

Feature	Recommended Distance
Centre-line of established tourist canoe routes	800 metres
Recreational leases or settlements	800 metres
Developed public beaches or waterfalls	800 metres
Centre-line of a numbered highway or primary company road	100 metres

Exemptions to this standard are permitted for temporary work camps used for small reconnaissance surveys by boat, with tenure of less than 30 person days.

14. Wastes arising from food preparation, laundry, bath and latrines shall be disposed of in a manner that will not adversely affect ground or surface water and will not create a nuisance, health, or environmental hazard. Methods of disposal will depend upon such variables as type of liquid waste, volume of liquid waste, soil characteristics, water table depth, distance from other dwellings, bodies of water and wells. Contact the local Ministry of Environment officer for procedures.

15. Locate solid waste in covered containers. Food waste should be kept in covered, fly/animal proof (i.e. bear proof garbage can) containers until removed to a designated legal landfill. It should be removed frequently – depending on the size and containment,-so as not to create a health or safety issue. Exemptions to this standard are permitted for temporary work camps used for small reconnaissance surveys by boat, with tenure of less than 30 person days.

16. When camps are being reclaimed, all structures must be removed from the site, including septic systems, and latrines. All wells must be capped or decommissioned. The campsite must be reclaimed according to the conditions in the Temporary Work Camp Permit.

GUIDELINES:

1. Waste paper and wood can be burnt. The burn permit (required when burning during fire season) will stipulate the fire tools that must be kept in the camp or at the location of the burn.

2. Camp locations should be identified in the both the temporary work camp section of the approval and the annual submission of the Fire Protection and Suppression Plan, for those locations known at the time of the plan submission.

PART II: HANDLING AND DISPOSAL OF HAZARDOUS AND NON-HAZARDOUS MATERIALS

DEFINITIONS (Examples):

The following are examples of hazardous, non-hazardous, and acutely hazardous materials. See *the Hazardous Substances and Waste Dangerous Good Regulations (HSWDGR)* for a complete list of various substances based on their danger rating.

Hazardous Materials:	Petroleum products, petroleum containers and filters, pesticides, acids and bases, inorganic substances such as ammonia and fertilizers, metals such as lead.
Non-hazardous Materials	Tires, paint cans (only when completely cleaned of paint), grease tubes (only when completely cleaned of grease), culverts, planting boxes, kitchen waste and other domestic refuse, human waste.
Acutely Hazardous Materials	Reactive or toxic substance such as mercury, paraquat, furadan, chlorine.

STANDARDS:

1. Identify and comply with all applicable legislation relating to the handling and disposal of hazardous and non-hazardous materials on Crown Land, including those described in Appendix III.

2. All operational waste must be removed from the operating site and camp location, annually or upon completion of operations.

3. Do not fuel vehicles or machinery within **100 metres** of the high water mark of a lake, pond, stream, or river. In the case of Ice Bridges and Ice Roads, a pick-up with a slip tank is allowed to refuel pumps and augers used for flooding on the ice surface. This pick-up must have a small spill kit. All other equipment must not be refueled in this zone.

GUIDELINES:

1. Follow the principles of:
   Reduce – before purchasing a product; consider reusing items already held in inventory.
   Reuse – Before returning or disposing of a product, consider reusing the product in other operations.
   Recycle – Consider purchasing products that are recyclable and can be returned to the supplier.

2. See the publication entitled "*Reusing and Recycling in Sask*." distributed by the Sask. Waste Reduction Council, for locations for recycling products, or contact a local Ministry of Environment office.

3. Each fuel storage tank should have two shut-off valves, one of which may be the handle.

Fuel (Gasoline or Diesel) Storage and Handling:

1. Locate all tanks (including slip tanks, mobile, and permanent tanks) away from traffic-congested areas. Fuel should be stored at least six metres from a building and there should be a 30 metre minimum clearance from the fuel dock to sleeping accommodations. Occupational Health and Safety enforces this legislation.
2. Inspect and maintain all storage tanks. There should be no signs of corrosion and tanks must be painted. If required to register tanks, then a written record of weekly inspections on all fuel tanks must be maintained.
3. When fueling, never leave the nozzle unattended.
4. Use drip pans and/or nozzle holders to contain drips or spills. Nozzles should be mounted above the drip catchments.
5. Park mobile tanks outside of high traffic areas (in landings or push-outs away from traffic). High traffic does not include bunching, skidding, or delimbing/processing. High traffic does include loading and hauling.
6. Ensure slip tanks (tidy tanks) are secured into the vehicle, so that in the event of a roll over, a full slip tank will stay secured in the truck.
7. Install collision barricades surrounding the tanks to prevent accidental damage.
8. Fuel Pumps: Hand pumps are acceptable provided there are no leaks. Gravity feed pumps are acceptable.
9. Inspect equipment for worn hoses and fuel, oil, or fluid leaks. Repair equipment where required.
10. Inspect equipment prior to performing approved in-stream work.

Propane:

1. Propane is heavier than air and will drain into depressions. In case of a propane leak, extinguish all sources of ignition. Evacuate low-lying areas.
2. Liquid propane may cause a freeze burn similar to frostbite. Wear appropriate Personal Protective Equipment when handling.
3. Ensure that any appliances or equipment to be connected to propane have been approved for use with propane.
4. Never use a match, lighter, candle, flame or any other source of ignition to check for propane leaks. Use only a soap solution.

Fire Fighting Tools:

1. Have fire extinguisher and tools available on-site in the event of a fire, all year round. The intent is to be able to act on any fire threatening a fuel tank within two minutes of detection (locate a 10 lb. fire extinguisher and a shovel within 500 m of each fuel tank). These may be located on mobile equipment if the extinguisher is detachable from the machine.

PART III: SPILLS

STANDARDS:

1. Identify and comply with all applicable Saskatchewan laws and regulations relating to spills of hazardous materials in the Provincial Forest, including those described in Appendix IV attached.

2. All spills must be cleaned up and the material properly disposed of as outlined in *The Environment Protection Management Act* and all relevant Regulations under this Act.

3. All hazardous spills regardless of their size, will be cleaned up accordingly.

GUIDELINES:

1. If it is SAFE to do so, STOP the spill, CONTAIN it, PROTECT the surrounding environment, and REPORT it if necessary.
2. Use absorbent material (i.e. spill kits, sawdust, dirt, snow) for clean up. Dispose of absorbent materials in an approved facility once they have been used to clean up a spill.
3. Spill Kits: Spill kits are suggested for fuel storage tanks and vehicles transporting fuel tanks. A minimum of one large spill kit (approximate absorbent capacity of 120 litres) is suggested for bush maintenance facilities. Each fuel location away from the bush maintenance facility, vehicles transporting fuel tanks (i.e. slip tanks, mobile tanks) and trucks regularly in the area should have a small spill kit (approximate absorbent capacity of 20 litres).

Prince Albert Forest Management Agreement Area
FMA STANDARDS AND GUIDELINES
==========

CATEGORY: **GENERAL OPERATING PRACTICES**

SUBJECT: **SOIL PROTECTION**

OBJECTIVES:

To minimize impacts of forest soil disturbance caused by forest operations.

LINKAGES TO 20-YEAR PLAN OBJECTIVES:

Weyerhaeuser Prince Albert (Twenty-year Forest Management Plan and Environmental Impact Assessment Statement for the Prince Albert Forest Management Forest Management Area, p. 4-4)

- Meet customer mill needs (product mix, piece size, wood quality) in short and long terms
- Maintain and/or enhance the timber productivity of forests
- Maintain the productivity of forest soils except on areas needed for permanent roads or other permanent infrastructure

STANDARDS:

A. In Block Roads & Landings Disturbance.

1. Standards are applicable to blocks ≥20 hectares in size.
    a. The maximum level of soil disturbance created by all roads and landings (includes road driving surface, ditches, and landings) shall not exceed 5% of the harvest block area[1].

    b. The Area Forester, on a case-by-case basis, may approve exceptions to this standard, provided that reasons for the proposed deviation are presented in an operating plan. The FMA holder shall declare what soil disturbance percentage they will achieve and will be expected to meet that commitment.

B. Harvest Block Soil Disturbance.

1. Rutting into any soil type shall not exceed 15 centimetres in depth and 5 metres in length, and must not occupy more than 1% of the portion of harvest block area surveyed. The minimum survey size is 4 hectares.

2. For continuous forms of site preparation, alteration of mineral soil shall not be deeper

1 Application of this standard for the Weyerhaeuser Pasquia Porcupine FMA is approved on an interim basis, subject to compliance with the Environmental Assessment Approval.

on average than 15 centimetres. For discontinuous (patch) forms of site preparation alteration of mineral soil shall not be deeper on average than 20 centimetres with a maximum depth of 30 centimetres.

GUIDELINES:

1. Minimize roads in harvest blocks using an average skid distance of 200 metres as a planning guide.
2. Target minimum levels of mineral soil exposure required to achieve silvicultural objectives during site preparation.
3. Use discontinuous site preparation methods (or none at all) to minimize excessive soil disturbance wherever this will meet silvicultural objectives.
4. Minimize soil compaction by limiting heavy equipment on soils during wet soil conditions.
5. Use high flotation tires on skidders or use low-ground pressure tracked machines to minimize soil compaction and disturbance.
6. Site preparation should be conducted perpendicular to the dominant slope of the terrain to minimize the potential for soil erosion.
7. Follow the PHSP, especially in regards to the rutting and compaction hazard for the harvest block, as well as the prescribed season of harvest.
8. Forest operations should be scheduled during the appropriate seasons, to minimize the potential of rutting and compaction to forest soils.

***

Glossary

ATV Means any motorized vehicle designed for off-highway travel on or over unprepared surfaces, natural terrain, water, snow, ice, marsh or swamp land, and includes any of the following when designed for that type of travel:
(i) amphibious vehicles;
(ii) ground effect or air-cushion vehicles;
(iii) motorcycles and related two-wheel, three-wheel and four-wheel vehicles;
(iv) snow vehicles;
(v) track vehicles;
(vi) four-wheel drive vehicles;
(vii) low-pressure tire vehicles;
(viii) any toboggan, trailer or other attachment to an all-terrain vehicle;
(ix) any other means of transportation that is driven by power other than muscular power or wind;
but does not include:
(x) motor boats;
(xi) four-wheel drive vehicles classed as type A vehicles in accordance with The Vehicle Equipment Regulations, 1987 pursuant to The Vehicle Administration Act;
"type A vehicle" means a self-propelled vehicle designed for operation on highways and includes a car, truck, van, motorhome, multipurpose passenger vehicle, power unit and bus as defined in CMVSS and type A-1 to type A-3 vehicles, but does not include a vintage vehicle, all-terrain vehicle, motorcycle or special mobile machine;
"type A-1 vehicle" means a type A vehicle that is a car, truck, van, multipurpose passenger vehicle or truck that is 2060 millimetres or less in width;
"type A-2 vehicle" means a type A vehicle that is a bus, power unit, chassis cab or truck that is more than 2060 millimetres width;
"type A-3 vehicle" means a type A vehicle that is registered with the administrator as a school bus and is designed and used primarily for the transportation of school children.

Bank means the rising ground bordering a water body or watercourse that serves to confine the water to the channel or bed.

Bog (See Wetlands)

Clearcut (See Silvicultural Systems)

Clump (See Silvicultural Systems)

Ecotones are the transition zone where two structurally different plant communities meet (the edge) (Dunster & Dunster, 1996)

Ephemeral Streams (see Stream)

Fen (See Wetlands)

Fish When used as a noun, means any species of fish and includes:

1. any aquatic crustaceans, aquatic mollusks;
2. any eggs or sperm from any fish; or
3. any part of parts of fish.

Fish Bearing Stream (See Stream)

Free to Grow is a state or condition assigned to a sampled unit (i.e., a tree, a group of trees, a stand, or a harvested area) as a result of its assessment against a set of regeneration standards that provide a reasonable assurance that the future forest condition defined by the standards will be achieved.

Harvest Block A unique polygon that is defined by the operating year(s) in which timber harvesting is to be undertaken or has occurred. A harvest block does not include inter-block roads.

Harvest Design One pass harvest design – All currently merchantable stands in an operating area are scheduled for harvest over a period of 1-5 years.
Two pass harvest design –All currently merchantable stands in an operating are scheduled for harvest over a period of 6-20 years.
Three pass harvest design – All currently merchantable stands in an operating area are scheduled for harvest over more than a 20 year period.

Harvest Systems The harvesting method in which the trees are processed and brought to roadside. Harvest systems include:

Complete tree –includes roots, stump, top, and branches.
Whole tree - includes stump, top, and branches.
Full tree – includes top and branches.
Tree length – includes tree stem only, stem is limbed and cut to predetermined top sizes at stump-side.
Short wood – includes tree stem only, stem is cut to predetermined lengths and top sizes at stump-side

In-Block Road (See Roads)

Inter-Block Road (See Roads)

Individual Trees (See Silvicultural Systems)

Intermittent Streams (see Stream)

Island (See Silvicultural Systems)

Lake is a general term referring to all bodies of standing water without regard to size. (Fish Habitat Protection Guidelines, Road Construction and Stream Crossing, SERM/DFO, 1995).

Landing is the area directly adjacent to a road used for the decking of timber.

Limited Harvest Zone means the portion of the riparian management area in which a predetermined volume of merchantable trees is retained subsequent to harvest.

Management Unit A management unit is a forest-level landscape unit within a licence area defined by permanent natural biophysical features (watersheds, ecological zones, etc.), socio-cultural features (administrative boundaries, licence area boundaries, federal and provincial park boundaries, etc.) and/or a combination of both and do not vary during the term of the FMP or operating plan. Management units are designated by the licensee through discussions with the other members of the planning team and form the basis for planning and management purposes.

Marsh (See Wetlands)

Merchantable Tree as defined in the licensee's Twenty Year Forest Management Plan. A tree or stand that has attained sufficient size, quality, and/or volume to make it suitable for harvesting.

No Equipment Zone means that portion of the riparian management area in which all equipment and mechanical devices shall not travel or otherwise come into contact with the ground cover; and is subject to the retention requirements identified in the adjacent limited harvest zone.

No Harvest Zone means that portion of the riparian management area in which no disturbance from forest operations is allowed.

Operating Area A defined unit of land within a management unit of a licence area that forms the basis for planning and management purposes for implementation of forest management activities at the operating plan level. Operating areas are delineated by permanent natural biophysical features (i.e. waterbodies, unproductive areas, etc.), socio-cultural features (i.e. administrative boundaries, licence area boundaries, federal and provincial parks, Cold Lake Air Weapons Range, etc.) and/or a combination of both. An operating area is primarily used in operational planning and implementation of the tactical plan. Operating area boundaries generally do not overlap management unit boundaries.

Overstory Tree Species are species that form a continuous canopy forest of any age or size class with a minimum crown closure of 10% density, excluding treed muskeg.
Pre-Commercial Thinning (See Stand Tending)

Reclamation means the restoration, to standards acceptable to the Minister of Environment, of the ecosystem functions and processes of land disturbed by a licensee in the construction and maintenance or roads, processing facilities, camps, staging or timber storage areas or any other development used in connection with the harvesting of forest products (*Forest Resources Management Regulations*). As defined in The Forest Resources Management Regulations.

Reforestation is the natural or artificial restocking of an area with forest trees. Typically refers to planting (Dunster & Dunster, 1996)

Regeneration The renewal of a forest or stand of trees by natural or artificial means or the stand of young trees under 1.3 metres high that results. (Dunster & Dunster, 1996)

Reservation a strip of undisturbed vegetation along a stream or lake left to protect the water body from the effects of road construction and forest operations on adjacent land. Reservation width is measured on each side of the stream from the top of the actual streambed bank or on lakes from the lake ward edge of the terrestrial vegetation.

Riparian Areas are "ecotones" or interfaces between terrestrial and aquatic "ecosystems". Gradients in environmental conditions, ecological processes, and species composition make these areas some of the most structurally and functionally diverse and dynamic portions of forested landscapes.

Riparian Management Areas are distinct spatial boundaries designated to achieve specific management goals for riparian areas and may contain zonation or elements including both aquatic or terrestrial environments associated with or outside the riparian ecotone.

Riparian Reservation is a strip of undisturbed vegetation along a stream or lake left to protect the water body from the effects of road construction on adjacent land. Reservation width is measured on each side of the stream from the top of the actual streambed bank, or on lakes from the lakeward edge of the terrestrial vegetation**.** (Fish Habitat Protection Guidelines, Road Construction and Stream Crossing, SERM/DFO, 1995).

Road Closure (See Roads)

Roads

In-Block Road is a road constructed by a licensee that originates and terminates within the same harvest block, used exclusively for the decking of wood originating from within the block.

Inter-Block Road is a road constructed by a licensee, which connects operating areas and harvest blocks.

Road Building Debris is debris, which is created as a result of road construction. This material will often consist of stumps, pieces of wood and rocks.

Road Closure is the effective blocking of a road by way of a barricade or other obstacle to prevent vehicular traffic.

Rutting is a depression resulting from machine traffic (excluding site preparation implements).

Selection (See Silvicultural Systems)

Shelterwood (see Silvicultural Systems)

Slash is the residue left on the ground as a result of forest and other vegetation being altered by forest operations or other land use activities

Silvicultural Systems
Planned programs of treatments throughout the life of the stand to achieve stand structural objectives based on integrated resource management goals. A silvicultural system includes harvesting, regeneration and stand-tending methods or phases. It covers all activities for the entire length of a rotation or cutting cycle. Silvicultural systems are classified according to the method of harvesting mature stands. (Silvicultural Systems Guidebook, Forest Practices Code of British Columbia, April 1995)

Types of Silvicultural Systems:

Clearcut is a type of silvicultural system, based on a harvesting method in which all merchantable timber in a designated area is harvested in a single entry. Clearcutting results in a new, even-aged stand of trees, which can be naturally or artificially created. Clearcutting can be implemented in blocks, strips, or patches. (adapted from Dunster & Dunster, 1996)

Variable Retention is a type of silvicultural system based on a harvesting method in which most merchantable timber within a designated area is harvested in a single entry. Some of the merchantable timber is retained in islands, clumps, and individual trees scattered throughout the block resulting in a new, even-aged stand of trees, which can be naturally or artificially created.

Island is a contiguous area at least 2 ha in size that is completely enclosed within a disturbance. (Modified - Vegetation Pattern Indicators, Version 6.3. Saskatchewan Environment and Resource Management. 2001).
Clump is a contiguous area of less than 2 ha that includes more than four trees, completely enclosed within a disturbance. Clumps are essentially small islands, and the distinction is a practical and computational convenience. (Modified - Vegetation Pattern Indicators, Version 6.3. Saskatchewan Environment and Resource Management. 2001).
Individual Trees are single trees or groups of four or less trees completely enclosed within a disturbance. (Modified - Vegetation Pattern Indicators, Version 6.3. Saskatchewan Environment and Resource

Management. 2001).

Selection is a classification of silvicultural system based on a harvesting method used to create or maintain uneven-aged stands, usually by the periodic removal of groups of trees or individual trees. It is undertaken to provide periodic harvests while maintaining full residual stand growth rates. The cutting usually involves a mixture of regeneration and improvement cuts. Note that selection cutting is not the same as selective cutting. (Adapted from Dunster & Dunster, 1996)

Shelterwood (includes Spruce Understory Protection) is a classification of silvicultural system based on a harvesting method in which mature trees are removed in a series of cuts to achieve a new even-aged stand under the shelter of remaining trees. Regeneration may be planted, be natural regeneration from seed, or be pre-established through advance regeneration from the pre-harvest stand. (Silvicultural Systems Guidebook, Forest Practices Code of British Columbia, April 1995)

Site Preparation is any action taken in conjunction with a reforestation effort (natural or artificial), to create an environment favourable for survival of acceptable trees. This environment can be created by altering the ground cover, soil, or microsite conditions, using biological, mechanical, or manual clearing, prescribed burns, herbicides, or a combination of methods. (Adapted from Dunster & Dunster, 1996).

Scarification is one form of site preparation, which involves the mechanical disturbance of the forest floor (duff, litter, soils) … to create better seedbed conditions for the germination of seeds derived from standing trees or slash. (Dunster & Dunster, 1996).

Soils The naturally occurring unconsolidated mineral or organic material at least 10 centimetres thick that occurs at the earth's surface and is capable of supporting plant growth.

L, F. and H-These organic horizons define the forest humus form and develop primarily from the accumulation of leaves, twigs, and woody materials. They are normally associated with upland forested soils with imperfect drainage or drier.

L- Often referred to as the litter layer, this organic horizon is characterized by an accumulation of organic matter in which the original structures are easily discernible.

F- Often referred to as the Fibric layer, this organic horizon is characterized by an accumulation of partly decomposed organic matter. Some of the original structures are difficult to recognize. The material may be partly broken down by soil fauna as in moder, or it may be a partly decomposed mat permeated by fungal hyphae as in mor.

H-Often referred to as the Humic layer, this organic horizon is characterized by

an accumulation of decomposed organic matter in which the original structures are indiscernible. This horizon differs from the F by having greater humification due chiefly to the action of organisms. It is frequently intermixed with mineral grains, especially near the junction with a mineral horizon

http://sis.agr.gc.ca/cansis/taxa/cssc3/chpt2.html The Canadian System of Soil Classification, 3rd ed. Agriculture and Agri-Food Canada Publication 1646, 187 pp

Organic soils: Organic soils are particularly susceptible to rutting and puddling. The very low load-bearing strength of these materials means that they have a high soil displacement hazard and a very high soil compaction and puddling hazard.

B.C. Ministry of Forests. 1999. Hazard assessment keys for evaluating to soil degrading processes guidebook. 2nd ed., Version 2.1. For. Prac. Br., Victoria, B.C. Forest Practices Code of British Columbia Guidebook.

Soils are classified as Organic if they have a layer of fibric organic matter (Of) >60cm thick, or a layer of mesic or humic organic material (Om, Oh) .40cm thick. Organic order soils are largely composed of organic materials and include most of the soils commonly known as peat, muck, bog or fen soils. Most organic soils are saturated with water for prolonged periods. The Folsol great groups of organic soils are the exception. Folsols consist of upland organic materials of forest origin and are well to imperfectly drained.

Soil Disturbance is area in which forest floor vegetation and/or tree stumps are removed exposing organic or mineral soil.

Stand Tending refers to activities such as thinning, spacing, removal of mistletoe-infected trees, and weed and brush control, carried out in already establish stands. (Dunster & Dunster 1996)

Stream is a general term referring to bodies of flowing water without regard to the volume of water transported, including intermittent and ephemeral streams. (Fish Habitat Protection Guidelines, Road Construction and Stream Crossing, SERM/DFO, 1995).

Ephemeral Streams are streams, which flow briefly, only in direct response to precipitation in the immediate locality and whose channel is at all times above the water table. (Dunster & Dunster 1996).

Fish Bearing Stream is any stream, including an intermittent stream that is used by migratory or resident fish at any time of the year, or has the potential for such use if stocked. (Fish Habitat Protection Guidelines, Road Construction and Stream Crossing, SERM/DFO, 1995).

Intermittent Streams are streams in contact with the groundwater table that flow only at certain times of the year, such as when the groundwater table is high and/or when the stream receives discharge from springs or from surface water sources. (Dunster & Dunster 1996) Intermittent streams are regular streams that carry flow for at least part of the year besides the spring runoff period. At the time of the site assessment or harvest, these streams may or may not be flowing, however they do have an identifiable stream channel.

Stream Bank the rising ground bordering a stream channel, below the level of rooted terrestrial vegetation and above the normal streambed, which restricts lateral movement of water at normal water levels. (Dunster & Dunster 1996)

Stream Bank (see Stream)

Swamp (See Wetlands)

Top of slope is the first bench that occurs perpendicular to the no equipment zone that is less than 15% for a minimum of 10 metres.

Undamaged Tree is a straight tree remaining on the site post harvest with less than one-third bark scar damage to the bole circumference.

Understory Tree is a tree growing in the understory which is between 1.5 – 10 meters in height.

Variable Retention (See Silvicultural Systems)

Viewshed is a physiographic area composed of land, water, biotic, and cultural elements that may be viewed and mapped from one or more viewpoints and which has inherent scenic qualities and/or aesthetic values as determined by those who view it.

Visual Impact Assessment (VIA) - is an assessment that is carried out to demonstrate that forest operations are consistent with the established visual quality objective(s) for a visually sensitive area. A VIA simulates, in perspective view, the visual effects on the landscape of proposed forest operations, or modification operations (adapted from BC Visual Impact Assessment Guidebook, 2001)

Visually Sensitive Areas (VSA's) - are viewsheds that are visible from communities, public recreation areas and major travel corridors, including roadways and waterways, and any other significant viewpoint identified through the planning process;

Visual Quality Objectives (VQO's) are resource management objectives identified in Integrated Forest Land Use Plans, Forest Management Plans or in Operating Plans that reflect the desired level of protection of visually sensitive areas within the management area. VQO's also refer to the extent to which a defined landscape is to be managed for aesthetic values:

a. High aesthetic priority - Harvest blocks are designed to be minimally visible;
b. Moderate aesthetic priority - Harvest blocks are visible but designed to be subordinate in the viewscape;
c. Low aesthetic priority - Harvest blocks are dominant in the viewscape.

Wetlands areas of land that are inundated by surface water or groundwater, which normally supports a prevalence of vegetative or aquatic life that require saturated or seasonally saturated soil conditions for growth and reproduction. In the Canadian Wetland Classification, the wetland classes are: bog, fen, marsh, swamp and shallow open waters. (Dunster & Dunster 1996)

Bog a wetland ecosystem made up of in-situ accumulations of peat, either moderately or only slightly decomposed, derived primarily of sphagnum moss. Bog water is acidic, usually at or near the surface and unaffected by the nutrient rich groundwater found in the adjacent mineral soils. (Dunster & Dunster 1996)

Fen a landscape of low lying peatland, made up of partly to well decomposed sedge materials, where the water is at or near the surface and fed by relatively fast moving, nutrient rich groundwater that is usually neutral or alkaline and rich in calcium. (Dunster & Dunster 1996)

Marsh an area of low lying land, poorly drained, periodically or permanently inundated with standing or slow moving nutrient rich water and subject to seasonal fluctuations. Marshes usually have a mineral soil base, are dominated by emergent, non-woody vegetation such as rushes, reeds, cattails and sedges and exhibit pronounced zonal or mosaic patterns of pools, channels and clumps of vegetation, surrounded by grassy meadow and bands of trees. (Dunster & Dunster 1996)

Swamp a type of wetland where trees or tall shrubs dominate a landscape characterized by periodic flooding. Swamps have a nearly permanent, subsurface, nutrient-rich water flow through the substrate of mineral sediments and organic materials. (Dunster & Dunster 1996)

Winter Season The time period from December 1 to March 31.

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Appendix I: Reclamation for Sand and Gravel Operations

1.0 Reclamation Objectives

The objective of pit reclamation is to achieve an appropriate and productive after use of the disturbed site. Reclamation practices should ensure a physical stabilization of the soils and achieve a sustainable land use so that the land may be returned to a productive state as soon as possible. Depending on the area involved, this normally consists of some combination of the following: smoothing and contouring slopes, replacing overburden and topsoil, and revegetating.

Reclamation must be recognized as an integral part of extraction, and therefore must be included in pre-excavation planning. As part of this process, a practical after use of the site should be considered as early as possible. Factors to consider include: pit location and characteristics, availability of topsoil and water, the surrounding area, zoning and similar land-use restrictions, and practicality and cost-effectiveness. Reclamation operations should be carried out concurrently with extraction.

2.0 Sand and Gravel Extraction

Choices made with respect to machinery used, for example, can have a great effect on the ease or success of final reclamation. Choices favourable to reclamation are sometimes available which have few or no cost implications.

- Reclamation should be recognized as an integral part of sand and gravel extraction and therefore as one of the factors in the determination of extraction methods.
- The proponent should consider the feasibility of alternate approaches which will minimize the disturbance of land.

3.0 Progressive Reclamation

Progressive reclamation, in which depleted sections of a pit are reclaimed while extraction is ongoing in other sections of the same pit, is encouraged, particularly for large pits.

4.0 Post-Extraction Land Use Determination

In determining post-extraction land use, the following guidelines should be adhered to:

- In general, land should be restored to its pre-extraction uses.
- For new sites or major expansions to existing operations, Integrated Land Use Plans (where established) will be considered in developing the reclamation plan.

5.0 Re-Grading and Reclamation

The aim of re-grading is to shape the land in a manner appropriate to its post-extraction use. Re-grading is to take place with a view to minimizing erosion and hazardous slopes as well as enhancing stability and controlling drainage.

- When the extracted materials in an area have been depleted and prior to expiration of the disposition term, the proponent shall reclaim the area of excavation and all other disturbed areas in a manner satisfactory to the department.
- Reclamation will include trimming of any and all pits to a minimum side slope of 4 to 1, as well as levelling of any and all overburden in such a manner as to facilitate re-vegetation.
- The land will also be cleared of rubbish, surplus materials, temporary structures and equipment, and all parts of the land shall be left in a condition satisfactory to the ministry (as close as possible to the condition it was in prior to the permittee's use).
- Shallow pits shall be backfilled with clean fill. There shall be no material of deleterious nature (i.e. any material that would be classed as a hazardous substances or waste dangerous goods).
- Where the pit is backfilled to existing grade, the fill shall be capped with available topsoil.
- The site shall be graded to match or blend in with existing contours.
- Topsoil stripped from the surface shall be used for final cover where practicable.
- The pits shall not be used for deposition of domestic or industrial wastes.
- Once the site is reclaimed any fences, where they exist, shall be removed to permit re-vegetation.

6.0 Surface Drainage

Surface drainage should be provided for in reclaimed areas.

- At least 80 per cent of the surface area should be free of surface drainage water in a year of normal precipitation.
- Drainage should be such as to minimize the formation of ponds less than one acre (0.4 ha) in surface area.
- Drainage systems must be designed to minimize erosion during spring runoff and major rainfall events.

7.0 Coversoiling

- Under normal circumstances, coversoiling should be completed within a year of completion of re-grading.
- Salvaged material for coversoil placement should be applied to re-graded lands at an even depth.
- Where stripping of surface material for coversoil replacement is not possible or not beneficial to reclamation efforts, alternate soil stabilization and revegetation programs should be conducted.

- If stockpiling of coversoil is required, erosion of stockpiles should be minimized by establishment of a vegetative cover or other appropriate means, where necessary. Natural revegetation may suffice.

8.0 Rehabilitative Earthwork

Rehabilitative earthwork should normally include the covering of bare rock and subsoil. Non-useable or non-commercial material including overburden, screenings, and rocks should be placed in the pit bottom. Recontoured slopes generally should not be steeper than 4:1, where reasonably attainable and consistent with surrounding terrain and planned after use. Previously stripped topsoil should be applied to newly recontoured slopes. Where amounts are inadequate to cover the entire area (to a commonly recommended depth of 5 to 10 cm), side slopes should receive priority treatment.

9.0 Revegetation

Previously stripped and stockpiled topsoil should be applied as evenly as possible to newly recontoured slopes. Revegetation as soon as possible following recontouring of a pit is the best way to stabilize slopes, control weeds, minimize erosion and promote an aesthetic and productive after use. The most essential aspect of revegetation is rapid establishment of a ground cover to pre-development or adjacent site conditions. Grasses are usually the best species for doing this. The use of mulches, soil stabilizers, and fertilizers to establish plant growth and reduce erosion is acceptable. Spreading of slash on recontoured slopes will also speed revegetation.

The following revegetation principles apply throughout Saskatchewan, but site specific circumstances may require different or additional reclamation measures.

- The need to revegetate will depend on the nature of the area. For example, if the rates of natural vegetation are high, or if the area is predominantly rock, active revegetation may not be required.
- Native plant species are to be encouraged so that the eventual plant community will comprise only native species. All seed mixtures or plant materials to be used in reclamation must be approved by a SE.
- Non-native plant species must **NOT** be used for reclamation. The use of non-natives that are short lived, such as annuals, for the quick establishment of cover, where required, may be permitted.
- For best results, seeding of native species should occur in early spring or dormant seeded in late fall.
- Developers must ensure that any plant material used for reclamation is free of noxious weeds as specified under *The Seeds Act* (Canada) and *The Noxious Weeds Act* (Saskatchewan).
- In forested areas, where natural regeneration may be preferred, reseeding or other procedures necessary for site reclamation may not be required unless a site is erosion prone or other specific measures are identified by the ministry. In Forest Management Agreement (FMA) areas where reforestation fees are collected, the

- Where reclamation sites are located within active grazing areas, they should be fenced.
- If site reclamation requirements are not being met by the developer, the ministry may complete reclamation at the developer's expense.
- For information about native plant suppliers, contact:

  Native Plant Society of Saskatchewan
  P.O. Box 21099 Saskatoon SK S7H 5N9
  Telephone: (306) 668-3940 Fax: (306) 258-2244

10.0 Access and Haul Roads

The proponent must restore, in a mutually agreeable manner, access and haul roads to and from the pit, where these are considered unnecessary after sand and gravel extraction is complete.

11.0 Toxic or Polluting Materials

- Toxic or polluting materials shall **not** be dumped onto an area designated for pit development or into an excavated pit, but should be removed to an approved landfill or similar facility.

- Under *The Environmental Management Protection Act* and *The Environmental Spill Control Regulations*, where a spill has occurred, it shall be reported as soon as possible to the ministry:

  Spill Report Line 1-800-667-7525

- Where the information is known or can be readily obtained: the location and time of the spill; the type and quantity of the pollutant spilled; and the details of any actions taken shall be reported.

12.0 Finalization of Reclamation

Reclamation should be finished within six months of completing excavation.

APPENDIX II: CAMPS - ENVIRONMENTAL RULES AND REGULATIONS

The following is a list of relevant sections of provincial legislation that pertain to the operation of forestry camps. This is not a complete list of applicable provincial legislation, nor does it cover any applicable federal or municipal legislation.

1. The Sanitation Regulations*;* proclaimed under *The Public Health Act*:
   a. No person shall deposit any garbage, refuse or waste along the banks of or in any body of water (sec 3).

2. *The Shoreland Pollution Control Regulations, 1976,* proclaimed under *The Public Health Act:*
   a. No sewage shall be discharged:
      i. Into surface or ground water.
      ii. Into the subsoil:
         - Within 25 feet of an occupied dwelling.
         - Within 50 feet of a properly constructed well (sec 9).
      iii. Within 1,500 feet of the high water mark of a lake, river, stream or other body of water upon which is situated an urban municipality, a summer resort or a recreational area, or part thereof (sec 6).
   b. Kitchen sink wastes may be discharged into the subsoil where the distance between the bottom of the seepage pit and the water table is 5 feet (clay soil) or 25 feet (sandy soil) (sec 9).
   c. Septic tanks (of watertight construction) must be located at least 10 feet vertically or 50 feet horizontally from normal surface water levels (sec 11).

3. *The Clean Air Act*, Section 11
   a. No person shall cause or permit the burning of trash, garbage or industrial waste (or any other material) in an open fire or in an incinerator in a manner that causes air pollution. Specifically prohibited is the burning of waste oil, hazardous substances or wastes, motor vehicle tires or animal cadavers (sec 11).

4. The *Litter Control Act*
   a. Solid wastes must be in a container with a lid.
   b. It is an offence to abandon any "waste" on land owned by another person or by the Crown or into water. The definition of waste includes any product prescribed in the regulations.

5. *The Prairie and Forest Fires Act, Section 9.5*.
   a. Upon request, every person carrying on an industrial or commercial operation within a provincial forest shall submit to the director a fire control plan for approval and shall have available and in good condition any fire fighting equipment required by the regulations.

APPENDIX III: HANDLING & DISPOSAL OF HAZARDOUS AND NON-HAZARDOUS MATERIALS ENVIRONMENTAL RULES AND REGULATIONS

The following is a list of relevant sections of Saskatchewan related provincial legislation that pertain to the handling and disposal of hazardous and non-hazardous goods. This is not a complete list of applicable provincial regulations, nor does it cover any applicable federal or municipal legislation.

1. *Hazardous Substances and Waste Dangerous Goods Regulations* (HSWDG) proclaimed under *The Environmental Management and Protection Act*;

   Gasoline and Diesel Fuel are listed as Industrial Hazardous Substances and their handling and storage are subject to certain stringent regulations.
   a. Any underground storage tank, regardless of capacity is regulated under HSWDG. The cost of meeting requirements generally prohibits this option.
   b. Above ground fuel storage is exempt from HSWDG regulations if total storage capacity on site is less than 4,000 litres (881 Canadian gallons) (aggregate). (Section7), or if fuel tank is portable (tank mounted on trailer). The total volume of 4,000 litres does not apply to all products and storage types. Contact a local Environmental Protection Officer for further clarification.
   c. If capacity exceeds 4,000 litres then all requirements of *HSWDG* apply. The tank must be constructed to the specifications found in Section 14, be coated with a rust resistant material, be equipped with a high level alarm or overfill protection system unless filled by a direct top-fill using a functional automatic shut-off nozzle, be clearly marked to identify the contents, be surrounded by an impermeable overflow system to contain leaks, etc. (see Section 14).

2. *Dangerous Goods Transportation Regulations* made pursuant to the *Dangerous Goods Transportation Act (Saskatchewan):*
   a. The regulations made by the Federal government under *the Transportation of Dangerous Goods Act, 1992 (Canada)* regarding safety and safety standards for the handling and transportation of dangerous goods are expressly adopted by Saskatchewan and compliance with them is required as though they had been made under this Act.
   b. A limited exemption is given for tanks manufactured before July 1, 1995, which are used for the storage or transportation of dangerous goods.

   Transportation of Dangerous Goods Regulations SOR/85-77 made pursuant to t*he Transportation of Dangerous Goods Act (Canada)*
   Overview
   a. These regulations prohibit the transportation of any dangerous goods anywhere in Canada except in accordance with its provisions. Gasoline,

b. The Regulations specify standards for safety requirements, documentation, safety marks, safety standards and training requirements.

The following categories of dangerous goods are exempt from certain provisions of the regulations:

Transportation of Gasoline, Diesel or Fuel Oil:

a. Transportation of fuel by road in slip tanks (tanks mounted in the bed of pick-up trucks) with a capacity of 454 litres or less is exempted from the general requirements of the regulations, except for the reporting requirements for spills and accidents in Part IX. However, the tank must be designed, constructed, filled and closed so that under normal conditions of transport there will be no leakage that could endanger public safety (sec 7.21(2) of the Regulations).
b. Transportation of gasoline, diesel or fuel oil by road is further exempted from the requirements of the regulations (except for the reporting of spills and accidents in Part IX), provided that:
    i. The product is transported in one or more containers with a total capacity of 2,000 litres or less (excluding the vehicle's own fuel tank).
    ii. Each container is stored in an open vehicle so that the containers' labels or placards are visible from outside the vehicle.
    iii. Each container is secured to the vehicle.
    iv. Each such tank is leak-tested at least every 30 months at a facility registered by Transport Canada for that purpose (Sec. 7.33.1 and 7.33.3).

Transportation of Pressure Cylinders (section 2.31)

Transportation by road of cylinders containing oxygen, acetylene or propane under pressure is exempted from the general provisions of the regulations (other than reporting of spills and accidents) providing:

a. The product is contained within not more than 5 cylinders with a total capacity not greater than 500 kg. gross mass.
b. The cylinders are transported in an open vehicle so that the label on each container are visible from outside the vehicle.
c. Each cylinder or container is secured to the vehicle during transport. (Sec 2.31)
d. A "cylinder" is defined as being a container that is of cylindrical or spherical shape, has a water capacity not greater than 454 litres and is capable of withstanding an internal absolute pressure greater than 275 kPa.

General Exemption (section 2.21)

The regulations do not apply to the transporting of dangerous goods by road between a retail outlet and the residence of the Purchaser (or the place of consumption) providing:

a. The goods are contained in a packaging or in a small container (less than 454 litres) designed to contain them.
b. The goods are not flammable gases in a pressurized cylinder with a water capacity of more than 45 litres.
c. The goods are not explosives, other than safety explosives.

Transporting of Equipment or Power Tools by Road (section 2.25)
These regulations do not apply where a person transports equipment or power tools by road, provided that the gasoline or other fuel contained in the equipment being transported is less than 500 millilitres (for plastic fuel tanks) or 1 litre for metal tanks.

Transporting of Self-Propelled Vehicles by Road (section 2.5)
The regulations (other than those in Part VIII relating to "Safety Requirements for the Transportation of Dangerous Goods) do not apply to the transporting of self-propelled vehicles by road providing such self-propelled vehicle is not enclosed nor carrying dangerous goods as cargo.

Explosives – Exemption from Placarding (section 5.19(a))
Explosives are classed as dangerous goods and every person transporting explosives is required to comply with the regulations. The placarding requirements of the Regulations do not apply to a vehicle which is used for the transporting of explosives, providing that the vehicle contains 25 kg or less of explosives that are to be transported from a retail outlet to a place where the explosives are to be used, if the explosives are in the possession of the individual who intends to use them.

3. *Used Oil Collection, and Scrap Tire Management Regulations* proclaimed under *The Environmental Management and Protection Act;*
    a. Disposal of Oil and Oil Filters: (sec 19) Every person is prohibited from disposing of or discharging used oil, used oil filters or containers by: a) spreading them on roads; b) placing them in landfills c) pouring them in sewers; d) dumping them; e) open burning; f) using deep well injection; or g) using any other method.
    b. Used oil or waste antifreeze may be stored on site in containers or 205 litre drums (up to aggregate capacity of 500 litres). In excess of 500 litres in containers or a tank in excess of 205 litres, requires the tank to be an approved Environmental Protection Tank (with secondary containment, collision protection, 6 foot fence, etc.) In either case, disposal must be to an approved receiver.
    c. Oil filters are a waste dangerous good and must not be discarded in landfills. Place in a drum and transport to approved receiving site. Used oil consignees will generally also take filters and oil containers.
    d. New oil containers should be taken to a receiver and not discarded in landfills.
    e. Batteries and any waste dangerous goods other than waste oil or antifreeze may be stored on site up to 100 kilograms combined aggregate.
    f. Scrap tires are subject to special rules for collection, disposal and recycling. Retailers of new tires are required to operate a program that meets certain

4. The *Litter Control Act*
   a. No person shall abandon any manufactured article, processed material or any waste: a) on land owned by another person; b) on Crown land; or c) into or upon any water (sec 3).

APPENDIX IV: SPILLS - ENVIRONMENTAL RULES AND REGULATIONS

The Environmental Spill Control Regulations made pursuant to *The Environmental Management and Protection Act* and the provisions of the Act itself are the applicable legislation governing all instances of spills or discharges of pollutants, whether or not *HSWDG* applies. The following provisions are taken from the Regulations, but are not exhaustive.

Report all spills in a FMA operating area meeting or exceeding the amounts in Table 1 (taken from *the Environmental Spill Control Regulations*) to the provincial Spill Report Centre (1-800-667-7525) within 24 hours of the spill. (Note: This system automatically notifies Environment Canada if the spill has occurred in a fish-bearing stream or waterway). Follow any clean-up instructions given. Complete and submit the Spill Report Centre Written Spill Report form within 7 days.

Table 1:

Form, Character Concentration	**Examples**	**Legally Reportable Amounts (min. levels) in FMA areas**
Explosives – Any	TNT, Blasting Caps	Any amount
Compressed Gas: Flammable Gas	Propane, Acetylene	10 kg / 22 pounds
Flammable Liquids (Fuels)	Gasoline, Aviation Fuel, Diesel, Kerosene	100 litres / 22 gallons
Flammable Liquids (Lubricating oil)	Brake Fluid, Engine oil, Hydraulic Oil, Waste lubricating oils,	50 litres /10 Gallons
Flammable Liquids (Solvents)	Acetone	5 litres / 2 gallons
Poisons toxic by ingestion, inhalation, or absorption	Any poisons, Pesticides, 1,1,1 Trichloroethane	5 kg / 11 pounds
Waste containing a pest control product as defined in section 1 of the Special Waste Regulation	Glyphosate	20 kg / 45 pounds
Coolants	Engine Antifreeze	25 litres/5 gallons

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