



**Edson Forest Products**

A division of West Fraser Mills Ltd.

# Timber Harvest Planning and Operating Ground Rules

March 2014



2014

**EDSON FOREST PRODUCTS,  
A DIVISION OF WEST FRASER MILLS LTD**

**TIMBER HARVEST PLANNING AND OPERATING  
GROUND RULES**

**EDSON FOREST PRODUCTS,  
A DIVISION OF WEST FRASER  
MILLS LTD**

**ALBERTA  
ENVIRONMENT AND  
SUSTAINABLE RESOURCE  
DEVELOPMENT**

ENDORSEMENTS

The EDSON FOREST PRODUCTS, A DIVISION OF WEST FRASER MILLS LTD, FMA Timber Harvest Planning and Operating Ground Rules, having been prepared in accordance with Section 16 (2) of FMA 9700032, and hereby endorsed this 11 day of March, 2014.

Edson Forest Products, A Division of West Fraser Mills Ltd

HER MAJESTY THE QUEEN in right of Alberta as represented by the Minister of Environment and Sustainable Resource Development

Per:

Original Signed by  
Bruce Alexander

Per:

Original Signed by  
Darren Tapp

(print name)  
BRUCE ALEXANDER  
(title)  
WOODLANDS MANAGER

(print name)  
DARREN TAPP  
(title)  
EXECUTIVE DIRECTOR, FOREST MANAGEMENT  
PROFESSIONAL FORESTORS BRANCH

Edson Forest Products Operating Ground Rules  
*Revisions From 2009 to 2014*  
*(Effective Date: March 11, 2014)*

Ground Rule Number	2009 Version of the Ground Rule	2014 Version of the Ground Rule
General	<b>Some edits were made outside of the joint review that included deletion of word(s), correction of spelling &amp; grammar, changes to bolded text, etc., that did not change the intent, meaning or requirements of the OGRs, but rather to provide clarification. These changes are not documented in this table.</b>	
Section 1.0		<p>Authorization of the Annual Operating Plan (AOP) does not constitute waiver or exemption from the ground rules, nor is authorization of the AOP verification of compliance with the ground rules.</p> <p>Alberta has the authority to approve Annual Operating Plans and may also waive or amend the application of specific ground rules in unusual or special circumstances. However, waivers must be completed in writing and conform to all applicable provincial legislation or statutes.</p>
3.4	Final Harvest Plan (FHP)	Forest Harvest Plan (FHP)
3.5.1	AOP Submission date of March 1st	AOP Submission date of April 1st
3.5.4		Scheduling of harvest areas in the AOP does not imply the approval of harvest operations during the restricted activity periods in any of the Key Wildlife Areas (example: operations that are proposed during the restricted activity period of the Key Ungulate and Biodiversity Zone (January 15 – April 30)). Where a company identifies scheduling conflicts with the restricted activity period, the conflicting harvest areas shall be identified explicitly in the AOP and adequate justification shall be provided (see section 7.7.4.1).

3.5.5 a)		<p>The AOP shall contain the following components:</p> <p>a) shape files (or other digital formats approved by Alberta) of FHP blocks, laid out retention patches, FHP roads (interior and exterior block roads) and watercourse crossings locations. At a minimum, the following attributes are to be included:</p> <p>FHP Blocks (Polygons):</p> <p>i) Opening Number ii) Block Number iii) FHP Number</p> <p>FHP Inter-block Roads (Lines):</p> <p>iv) Company road identifier</p> <p>Watercourse Crossing Locations for Channeled watercourses (Points):</p> <p>v) Company watercourse crossing number</p>
3.5.6		<p>Added Notification and Minor amendment section</p>
4.1.2	<p>Added to current text</p>	<p>Each FHP shall be measured against the sub-unit to ensure that the cumulative variance (see 4.1.3) does not exceed 20%. The proposed FHP shall be included in the sub-unit variance report</p>
5.2.4	<p>FHPs affecting recreational sites should provide opportunities for the enhancement of existing recreational trail and road systems whenever possible.</p>	<p>Deleted</p>
5.4.1	<p>Changed Directive Number</p>	<p>Directive SD 2011-03</p>

6.0.1	Updated text to align with FOMP measurement protocols	<p>6.0.1 Watercourses shall be classified according to Table 1, Watercourse Classification. In the event the channel classification is not distinctly evident, the width shall be determined by applying the average of measurements taken at representative, undisturbed points along the channel at 50 m intervals over the length of the watercourse bordering the block.</p> <p>a) a minimum of four measurements are required. The measurement locations shall flagged or identified for audit purposes;</p> <p>b) The channel width is the horizontal width of the channel between high-water marks (mean or annual), or the rooted vegetation on the banks, measured at right angles to the direction of flow. The widths of multiple channels are summed to represent total channel width. (Dictionary of Natural Resource Management) It is measured from where the channel bank begins to slope down towards the channel bottom across to the same point on the opposite bank;</p> <p>c) where the distance bordering the block is not enough for four measurements, reduce the measurement interval as required.</p>
6.0.2	Where an approved FMP does not provide an estimate of increased water yield, the following applies. Watersheds shall not be unduly affected by large harvest areas or harvesting large amounts of timber in a watershed unless otherwise approved in the FMP. Predicted average annual water yield increases should not exceed 15% within third-order streams. Companies will report the increase in water yield annually in a mutually agreeable format.	Deleted old rule and entire section is re-numbered
6.0.12		<p>The use of the Special Management Zone practice, in lieu of standard fixed width buffers requires the reporting of the overall balance of special management zones by FHP. For every hectare (ha) of active landbase that is removed within an SMZ, an equivalent area of active landbase must be left adjacent (and in addition) to the SMZ in other areas. A no net loss of special management zone must be achieved by watercourse classification (unless otherwise approved by Alberta) in each FHP. The balance is to take into account both sides of any watercourse that is within the FHP area. Previously harvested cutblocks that are adjacent to the FHP watercourses and have not yet reached 14 years, shall be included (as Operating Area Within the SMZ (ha)) in the</p>

		balance to ensure that a net loss to SMZ's does not occur.
6.0.13		Additions to the SMZ must be part of the active landbase. Additions to the SMZ are limited to areas between existing SMZ's and harvest area boundaries, providing they are a riparian ecotype or are the same ecotype to that which is proposed for harvest in the FHP. These additions will be considered deletions from the SHS and will contribute to variance tracking.
6.0.14		In addition to the requirements above, no more than 33% of the Special Management Zone area (by watercourse classification), including both sides of the FHP watercourses, can be harvested (including previously harvested blocks) at any given time, unless otherwise approved by Alberta. The performance age of previously harvested blocks will be used for this determination. Blocks older than 14 years can be considered contributing to the Total SMZ in the FHP.
6.0.15		Created SMZ Table 1 and notes
Section 6.0 Table 1.	Ephemeral Draw:  Physical Description - Often a vegetated draw	Ephemeral Draw:  Physical Description - A vegetated draw, with distinct vegetation differences to the surrounding upland sites, and demonstrates connectivity to a higher order watercourse.  Also added "Amphibian Habitat" to Fisheries/Wildlife Values and Potential Impacts
Section 6.0 Table 2.	Class "A" waterbodies:  No disturbance or removal of timber within 100m of the high water mark. No duff disturbance of intermittent or ephemeral (min 10 m vegetated buffers) or ephemeral drainages (minimum 5 m vegetated buffer) within 2 km upstream of Class A waterbody.	Class "A" waterbodies:  SMZ's don't apply on Class A and B
Section 6.0 Table 2.	Intermittent – Equipment operation:  Added	Watercourse Protection Areas:  A buffer of brush and lesser vegetation is to be left undisturbed on either side of the channel  Equipment Operation:  Buffer of lesser vegetation to be maintained during silviculture operations including herbicide applications

<p>Section 6.0 Table 2.</p>	<p>Ephemeral – Watercourse Protection areas:</p> <p>Buffer of undisturbed vegetation in wet gullies, Class “A” and “B” waterbody tributaries to be left undisturbed.</p>	<p>Ephemeral – Watercourse Protection areas:</p> <p>A buffer of brush and lesser vegetation is to be left undisturbed on either side of the channel or in distinct riparian gullies that do not necessarily exhibit direct connectivity to a higher order watercourse;</p> <p>Width of buffer may vary according to soils, topographical breaks, water source areas and fisheries values</p>
<p>Section 6.0 Table 2.</p>	<p>Added to Ephemeral – Equipment operation:</p>	<p>Buffer of lesser vegetation to be maintained during silviculture operations including herbicide applications</p>
<p>7.1</p>	<p>Revised</p>	<p>In line with the version from HWP’s OGR’s. Line of sight concepts (old 7.2.1-7.2.3) have been incorporated into section 7.3 and the old 7.2.4 has been moved to 9.8 in the soils section. Old 7.2.5 has been moved to been moved to 3.4.8</p>
<p>Section 7.3</p>	<p>Discussion:</p> <p>The FMP target for structure retention is to leave 1.5% by compartment and across the FMA</p>	<p>Revised Discussion:</p> <p>The approved FMP indicates that within the timber producing landbase, 1.5% of the area will be retained in patches of various sizes to provide additional structure. Non-merchantable single stems and non-merchantable clumps will also be left as structure, where appropriate.</p> <p>Added:</p> <p>Hiding cover and line of site are important concepts to address through the forest management and operational plans. In the 1994 ground rules, strict block sizes and shapes enabled companies to meet standards such as 200m distance to hiding cover and 400m line of sight. The small blocks that were mandated in the past led to increased road density and block edge, both of which have been shown to be detrimental to many species. Increased predation and more fragmented habitat were issues that were addressed when Alberta moved towards a stand based spatial harvest sequence. A range of block sizes are created and structure retention strategies are used to mitigate line of sight and distance to hiding cover in larger blocks.</p>
<p>7.3.5</p>	<p>Old 7.4.3 Moved</p>	<p>Combined with 7.3.1 in new version</p>

7.4	Old 7.5 – Revised Discussion	In line with the version from HWP’s OGR’s.
7.6	Old 7.7 – <b>COMPLETELY REVISED</b> to clean up this section. Mostly re-sequencing of rules and amalgamation of similar sections and rules (eg. Grizzly Bear).	Please refer to OGR document section 7.6 for content
7.6.3.1		Timber harvest operation should not be planned during the restricted activity period (January 15 – April 30), in the Key Ungulate and Biodiversity zone. Where operations during this period are unavoidable, and if these operations have not been previously addressed and approved specifically in the AOP, a minor amendment is required.
8.1.5	Reference to STIA	Replaced with FGRMS – replaced old STIA manual
8.2.1	The reforestation program submission date is March 1	The reforestation program submission date is April 1
8.2.3	Removed condition d) and e) re Stratum declarations and LIG Declarations	Deleted
Section 8.3	Removed old 8.3.2 and 8.3.3	Other Ground rules bumped up in numbering
9.3	The total area covered by temporary roads, rutting, bared landing areas, and displaced soil, created by timber harvesting operations shall not exceed five percent of each harvest area without prior approval of Alberta.	The total area covered by temporary roads, bared landing areas, and displaced soils, created by timber harvesting operations shall not exceed five percent of each harvest area without prior approval of Alberta
10.1	30m Mistletoe Buffer	20m Mistletoe Buffer
11.1.2	All roads, regardless of class, with a lifespan of greater than <b>five</b> years shall be built under the authority of a LOC	All roads, regardless of class, with a lifespan of greater than <b>three</b> years shall be built under the authority of a LOC



Table 3 – Road Classification and Design	Old “Sundance” Version replaced with HWP template for consistency	Please refer to OGR document for content
11.3.2.6	All sand and gravel pits off the ROW must be authorized under an appropriate disposition	Deleted
11.3.2.7	Removal of sand and gravel from within the channel or floodplain of any watercourse is prohibited	Deleted
11.3.3.1	Erosion control shall be implemented as per Table 3	Deleted
11.3.4.6 f)	Added	limited off highway vehicle access may be left for silvicultural purposes. This is intended to enable slow OHV access
11.4.1	Replaced old Table 4 – Applicability of the Code of Practice with the new Table 4 from the Template	Please refer to OGR document for content
11.6.2	Moved this condition to the discussion	<ul style="list-style-type: none"> <li>any facility or camp must adhere to all provincial regulations related to the camp (ie. Public Health Act – <i>Work Camp Regulation</i>.)</li> </ul>
12.5	As Built Submission date was <b>September 1</b>	As Built Submission date is now <b>December 1</b>

## Table of Contents

<b>1.0</b>	<b>GROUND RULE SCOPE</b>	<b>1</b>
1.1	REGULAR REVIEWS	1
<b>2.0</b>	<b>THE TOPICS</b>	<b>1</b>
<b>3.0</b>	<b>OPERATIONAL PLANNING</b>	<b>2</b>
3.1	PLANNING PROCESS	2
3.2	COMPARTMENT ASSESSMENT (CA)	3
3.3	GENERAL DEVELOPMENT PLAN	3
3.4	FOREST HARVEST PLAN	5
3.5	ANNUAL OPERATING PLAN	8
3.6	SALVAGE PLANNING	11
<b>4.0</b>	<b>UTILIZATION</b>	<b>12</b>
4.1	STAND UTILIZATION	12
4.2	TREE UTILIZATION	15
<b>5.0</b>	<b>INTEGRATION WITH OTHER USERS</b>	<b>16</b>
5.1	DECIDUOUS/CONIFEROUS INTEGRATION	16
5.2	FOREST RECREATION AND TOURISM	16
5.3	TRAPPING	17
5.4	RANGE MANAGEMENT	18
5.5	FOREST AESTHETICS	18
5.6	HISTORICAL RESOURCES	19
<b>6.0</b>	<b>WATERSHED PROTECTION</b>	<b>20</b>
	<b>Table 1. Watercourse Classification</b>	<b>23</b>
	<b>Table 2. Standards and Guidelines for Operating Beside Watercourses</b>	<b>25</b>
<b>7.0</b>	<b>HABITAT MANAGEMENT</b>	<b>28</b>
7.1	BLOCK LAYOUT AND DESIGN	28
7.2	DEBRIS MANAGEMENT	29
7.3	STRUCTURE RETENTION	30
7.4	UNDERSTOREY PROTECTION	33
7.5	FISHERIES AND THE AQUATIC ENVIRONMENT	34
7.6	SPECIES OF SPECIAL MANAGEMENT CONCERN	35
<b>8.0</b>	<b>SILVICULTURE</b>	<b>40</b>
8.1	PLANNING	40
8.2	REFORESTATION PROGRAM	41
8.3	SILVICULTURE OPERATIONS	42
<b>9.0</b>	<b>SOILS</b>	<b>43</b>
<b>10.0</b>	<b>FOREST HEALTH/PROTECTION</b>	<b>44</b>
10.1	INSECT AND DISEASE	44
10.2	WEED MANAGEMENT	45
<b>11.0</b>	<b>ROADS</b>	<b>46</b>
11.1	ROAD CLASSIFICATION	46

**Table 3. Road Classification and Design** **47**

11.2	ROAD PLANNING AND DESIGN	49
11.3	ROAD CONSTRUCTION, MAINTENANCE AND RECLAMATION	49
11.4	WATERCOURSE CROSSINGS	53
11.5	ACCESS CONTROL	56
11.6	CAMPS AND FACILITIES	57

**12.0 REPORTING** **58**

**Appendix 1 – Role of Registered Forest Practitioner in Forest Management**

**Appendix 2 – Debris Disposal Policy**

**Appendix 3 – Directive for Weed Management**

**Appendix 4 – Alberta Definitions**

**Appendix 5 – FHP and AOP Checklists**

# **EDSON FOREST PRODUCTS, A DIVISION OF WEST FRASER MILLS LTD. Timber Harvest Planning and Operating Ground Rules**

## **1.0 GROUND RULE SCOPE**

Operating Ground Rules (OGR) are the practices used in planning and conducting forest management operations which constitute the methods used to implement decisions made in the Forest Management Plan (FMP) and other higher level plans such as Integrated Resource Plans (IRP). In the event that these strategic plans do not exist, the ground rules shall establish practices that minimize the chance of negative impacts from roads, timber harvesting and forest management activities. Authorizations by Alberta do not imply authorization under federal legislation and requirements. The proponent must seek advice and approvals of the federal agencies regarding federal legislation requirements.

Authorization of the Annual Operating Plan (AOP) does not constitute waiver or exemption from the ground rules or any statutory requirement, nor is authorization of the AOP verification of compliance with the ground rules or any statutory requirement.

Alberta has the authority to approve Annual Operating Plans and may also waive or amend the application of specific ground rules in unusual or special circumstances. However, waivers shall be completed in writing and must conform to departmental policy, the Forests Act, the Timber Management Regulation, the Public Lands Act and all other applicable provincial legislation or statutes. Ground rule waivers identified in the FHP meet the intent of “in writing” as required above.

## **1.1 REGULAR REVIEWS**

The intent is to have an annual review of ground rules if requested by either forest disposition holders or Alberta. This is not meant to be a complete redevelopment but rather an opportunity to fine-tune the ground rules. It is expected that regular reviews will allow participants to plan revisions more systematically and to correct any inconsistencies or problems. It will also create the ability to regularly consider modifications that reflect the best and most current knowledge and tools available.

## **2.0 THE TOPICS**

### **PURPOSE**

**Each topic in the ground rules includes a purpose, discussion, and ground rule heading . It includes a statement of what the topic is designed to accomplish.**

### **DISCUSSION**

Includes background information and research knowledge, about the topic and focuses on why a ground rule is needed. Alternative actions or solutions may also be discussed here.

### **GROUND RULES**

Definitive statements of the results to be achieved and a clear indication of what is expected. The ground rules are relevant, measurable, understandable and achievable.

## **3.0 OPERATIONAL PLANNING PROCESS**

### **3.1 PLANNING PROCESS**

#### **PURPOSE**

**The operational planning process is designed to expedite the implementation of the FMP. Where management direction has not been established through an approved FMP, then required decisions shall be made during this operational planning process.**

#### **DISCUSSION**

The planning process includes five main components:

1. Approved Forest Management Plan (FMP), including:
  - a) Spatial Harvest Sequence (SHS) for first two 10-year periods
  - b) Approved Road Corridor Plan
2. Compartment Assessment (CA) – A CA shall be required when information or major issues are identified that in Alberta’s opinion, have not been addressed in the FMP. In the event that the SHS is deemed by Alberta to be inappropriate due to a significant change in circumstances since the approval of the FMP, a compartment assessment describing current issues, shall be required. (see section 3.2)
3. General Development Plan (GDP) The GDP gives a comprehensive description of a forest operator's proposed harvest strategy, road building plans, and reclamation operations for a five-year period, and includes all licences and permits. The GDP is used to guide integration of activities. (see section 3.3)
4. Forest Harvest Plan (FHP) – The FHP is a map and associated report describing the laid out harvest plan. (see section 3.4)
5. Annual Operating Plan (AOP) – The AOP describes the current year’s operations through a series of plans, programs or schedules that are submitted together, or individually on a schedule approved by Alberta (as per section 3.5). These plans, programs or schedules include:
  - a) Operating Schedule and Timber Production Plan
  - b) Forest Harvest Plans
  - c) General Development Plan
  - d) Compartment Assessments as required
  - e) Reforestation Program
  - f) Fire Control Plan
  - g) Road Plan

## 3.2 COMPARTMENT ASSESSMENT (CA)

### PURPOSE

- **To address significant issues that have arisen since the approval of the FMP.**

### DISCUSSION

It is recognized that circumstances change over time. CA's are necessary when major issues develop or when new information becomes available, since FMP approval, that make the SHS inappropriate (e.g., forest fires, outbreaks of insect or disease, species of special management concern, a major change in land use direction or if SHS variance exceeds the 20% threshold and it is determined to be unacceptable). The CA shall describe how the new issue(s) or information will be incorporated into Forest Harvest Plans (FHP). Edson Forest Products Ltd. must consult with stakeholders and strive to reach general agreement on issues. The CA provides an opportunity to reconsider FMP management strategies at the time of operational planning if warranted.

### GROUND RULES

- 3.2.1** Alberta shall decide on the boundaries for which a CA is required, and the requirements of the CA, after consultation with the FMA holder.
- 3.2.2** If a CA is required, the forest operator must receive Alberta's approval of the CA prior to the approval of any new FHP.
- 3.2.3** A CA is considered current if it has been approved by Alberta within the last three years.
- 3.2.4** The CA shall include any maps, analyses, and reports deemed necessary by Alberta to adequately address the developments and/or issues.

## 3.3 GENERAL DEVELOPMENT PLAN (GDP)

### PURPOSE

**To provide a projection of activities for the next five years that:**

- **Guides the integration of activities;**
- **Schedules timber dispositions administration activities;**
- **Predicts the cut control status;**
- **Schedules the development and reclamation of roads.**

### DISCUSSION

The primary components of the GDP include a forecast of the areas scheduled for harvest for a five year period and a summary of variance from the SHS for existing FHPs or long-term road plans outlined in the FMP. The GDP must also include the current status and forecast of the respective AACs and cut control period for each of the operators within the planning area. This could be either a joint submission by all operators or separate submissions containing consistent information between operators.

The GDP shall also include details regarding road requirements, and fish and wildlife issues within the planning area where these are not already described in the FMP or a FHP. First Nations consultation,

at the GDP level, is a requirement of Alberta's First Nations Consultation Guidelines on Land Management and Resource Development.

## **GROUND RULES**

- 3.3.1** The GDP submission date is May 1 of each year unless otherwise approved by Alberta. Alberta shall respond within 30 days. The GDP shall be approved subject to an appraisal by Alberta.
- 3.3.2** The GDP shall contain a summary of any proposed variances from the SHS and the long-term road plan in the FMP (see section 4.1.3).
- 3.3.3** The GDP shall describe the volume supply by area, the LOC construction schedule, and reclamation activities. All overlapping forest operators must agree to the GDP in writing before it can be approved. Overlapping means that other forest operators are operating within the same compartment(s). It is the responsibility of all forest operators to ensure that an over-cut, in excess of that approved in their tenure document, does not occur (as per section 5.1.1).
- 3.3.4** When a major change in a company's general development strategy is proposed after the GDP is approved, a revision may be requested by Alberta where the change may affect issuance of dispositions, the orderly review of AOPs, or integration with other forest operators.
- 3.3.5** The GDP consists of the following:
- a) Schedules with the following information:
    - I. annual volume/compartment/ disposition for the next five years;
    - II. timber production summary table for all dispositions (as per the date of submission);
    - III. Class I, II and III road developments showing planning and construction time lines and the status of LOCs;
    - IV. all LOC roads noted that are to be monitored, and all outstanding and anticipated reclamation work related to LOC road and stream crossings;
    - V. a brief description of potential issues that have been identified through discussions with Alberta or other resource users;
    - VI. proposed and actual volumes for any approved satellite yards; and
    - VII. a description of variances (see section 4.1.3) from the SHS by subunit and/ or variance from the FMP long-term corridor plan, which is supported by appropriate documentation.
  - b) A map (of appropriate scale) that shows the following:
    - I. proposed haul routes (differentiating existing roads from roads to be constructed);
    - II. satellite yard locations;
    - III. the timber dispositions to be operated;
    - IV. the general location of LOC routes, dispositions and facilities where reclamation work is scheduled and where roads and watercourse crossings are reclaimed; and
    - V. other company dispositions where reclamation work is scheduled.

## 3.4 FOREST HARVEST PLAN

### PURPOSE:

- To describe the laid out harvest and road design

### DISCUSSION

The primary components of a Forest Harvest Plan (FHP) include a map and a report that clearly describes the harvest area, roads and watercourse crossings for the FHP area. The plan shall be valid for five operating years after the year of approval, unless issues deemed significant by Alberta arise during this period. The design will not be deemed invalid without significant discussion with the company first.

It is expected that there will be substantial discussion on significant issues with Alberta before the FHP is submitted. FHP's are approved through acceptance and will be considered approved on the date Alberta acknowledges receipt of the work. Alberta shall notify the organization by acknowledging receipt within 5 working days of submission. The notification date will be documented by Alberta as the start date for FHP approval. Alberta shall periodically check the work and supporting documentation to verify its accuracy.

### GROUND RULES

**3.4.1** An FHP shall be approved by acceptance if the following criteria have been met:

- a) the plan is validated by a RFP;
- b) the FHP does not cause the cumulative variance to exceed 20% as described in section 4.1.2;
- c) the harvest area (ha) does not exceed 100% of the total area in the SHS by subunit per decade as tracked in the GDP; and
- d) it adheres to all ground rules as per the FHP checklist (Appendix 5);

If the FHP does not meet one or more of the criteria above, it shall undergo a full appraisal by Alberta. Alberta reserves the right to appraise any plan.

**3.4.2** If a CA was completed, the FHP shall undergo a full Alberta appraisal to ensure the direction specified in the CA has been implemented.

**3.4.3** All FHPs submitted by operators who harvest more than 30,000 m<sup>3</sup> each year from crown land, must be validated by a RFP. Validation means that, the OGRs were followed, the SHS was followed or variances identified, and all affected operators have agreed to the plan. (see section 5.1.1)

**3.4.4** The company shall provide documentation that overlapping operators have been consulted with during the development of the FHP.

**3.4.5** Maps shall accurately show the following information:

- a) the approved landbase including stand label;
- b) the approved SHS as well as any additions or deletions from the SHS;
- c) all LOC roads within the FHP area used for timber operations;
- d) all class 5 AOP roads within the FHP area;
- e) current dispositions and reserves (e.g., Alberta permanent sample plot locations);
- f) identified watercourses, springs, water source and seepage areas;



- g) uniquely numbered or identified planned watercourse crossing locations (may be further defined in table format in 3.4.6);
- h) previously harvested areas, existing trails, seismic lines, power lines, pipelines and access routes (using the provincial and updated company layers);
- i) special management zones (SMZ), proposed operating areas within SMZ as well as any proposed additions to SMZ's; and
- j) current wildlife sensitivity map layers as updated by Alberta.

**3.4.6** In addition to the FHP map, the following information is required:

- a) summary of the area (ha), as well as the coniferous and deciduous volume for each proposed harvest area;
- b) summary of the FHP variance as per section 4.0, Variance Table 1;
- c) regeneration stratum for each harvest area (based on dominant or largest area of pre-harvest stratum within the harvest area, or stratum conversion if known;
- d) potentially affected dispositions (e.g., PNT, FGL, CNT, DRS, other timber dispositions);
- e) if required, a description of how the CA is addressed in the FHP;
- f) list of watercourse crossing locations and watercourse crossing structure types;
- g) if required, access control methods;
- h) description of integration with other users (see section 5.0); and
- i) description and location of sensitive wildlife sites as per section 7.7.4.2.

**3.4.7** The company shall follow existing ILM or access development strategies when developing LOC roads. Alberta may approve deviations from these strategies after discussions with the company.

**3.4.8** Alberta PSPs and PNTs as enabled by the Public Lands Act shall not be disturbed or harvested unless such action is approved by Alberta. PSP's are protected by a blue painted buffer that is not to be disturbed

**3.4.9** Where applicable the following comments shall be mapped and/or described for each harvest area:

- a) block comments may be included on the individual block map;
- b) layout bordering and encompassing riparian special management zones (SMZ) including proposed operating areas within SMZ as well as any proposed additions to SMZ's;
- c) watercourse classification and protective buffer;
- d) layout bordering restricted areas (e.g., permanent sample plots (PSPs), private land);
- e) identification of understorey avoidance areas (see section 7.5);
- f) harvest area-specific structure retention and woody debris management strategies including the proposed locations of wildlife piles;
- g) tactics to address forest health issues;
- h) protection of roadside vegetation - applicable or not, and how it will be protected;
- i) strategies to address sight distance concerns with an attempt to maintain sight distance of 400m or less from Class I, II or III roads;
- j) important wildlife sites as defined in section 7.7.4.2;
- k) historical site considerations;
- l) soil protection measures when any of the following are present:
  - unstable areas, water-source areas, springs or seepages
  - steep or sustained slopes or grades (>30%)
- m) non-frozen/frozen operating conditions.

**3.4.10** Detailed harvest area plans (DHAP) are required when there is higher potential for environmental damage. Circumstances that require a DHAP include but are not limited to:

- a) areas of steep topography requiring specific road location and construction or specialized harvesting /silviculture equipment;
- b) harvest areas with water source areas, seepages, or watercourses;
- c) where harvesting is proposed within a Special Management Zone;
- d) harvest areas that contain sensitive wildlife areas;
- e) harvest areas requiring understorey protection using protection techniques, (see section 7.5);
- f) harvest areas located near recreation areas, tourism areas, and facilities;
- g) partial harvests, excluding commercial thinning (CT) and pre-commercial thinning (PCT);
- h) when harvesting is used as a tool to control insects and disease infestations; and
- i) when specifically requested by Alberta.

The DHAP shall include a map of appropriate scale to the issue(s) and describe how the concern will be addressed during operations..

## 3.5 ANNUAL OPERATING PLAN

### PURPOSE

**To annually authorize all road, harvest and forest management activities for the operator.**

### DISCUSSION

The AOP articulates in detail the activities proposed for the current year and must be approved by Alberta before timber operations commence. The AOP components include:

- a) Operating Schedule and Timber Production - appraised – Alberta has 30 days to respond;
- b) Applicable Forest Harvest Plans - accepted;
- c) Compartment Assessments (if applicable) – appraised;
- d) Reforestation Program - accepted;
- e) Fire Control Plan – accepted;
- f) Road Plan - accepted; and
- g) General Development Plan – appraised.

Refer to Appendix 1 of Annex 4 for RFP validation requirements

For timber permit operators and small quota holders who harvest less than 30,000 m<sup>3</sup> annually, Alberta has alternate AOP submission requirements.<sup>1</sup>

### GROUND RULES

- 3.5.1** The AOP submission date is April 1 of each year unless otherwise approved by Alberta. Alberta shall respond within 30 days. The AOP shall be appraised by Alberta in accordance to the AOP checklist (see Appendix 5) with approval subject to the outcome of the appraisal.
- 3.5.2** The Operating Schedule and Timber Production, Reforestation Program, Fire Control Plan, and Road Plan, are submitted as per 3.5.1 above, unless otherwise agreed to by Alberta. The schedule for submitting any necessary CA, GDP and FHPs may be different.
- 3.5.3** Only harvest areas and roads with FHP approval shall be scheduled for operations in the AOP submission.
- 3.5.4** Scheduling of harvest areas in the AOP does not imply the approval of harvest operations during the restricted activity periods in any of the Wildlife Sensitivity Areas (example: operations that are proposed during the restricted activity period of the Key Ungulate and Biodiversity Zone (January 15 – April 30)). Where a company identifies scheduling conflicts with the restricted activity period, the conflicting harvest areas shall be identified explicitly in the AOP and adequate justification shall be provided (see section 7.6.3.1).

---

<sup>1</sup> TM118 form

**3.5.5** The AOP shall contain the following components:

- a) Shape files (or other digital formats approved by Alberta) of FHP blocks, laid out retention patches, roads (interior and exterior block roads) and watercourse crossings locations. At a minimum, the following attributes are to be included:

FHP Blocks (Polygons):

- I. opening Number
- II. block Number
- III. FHP Number

FHP Inter-block Roads (Lines):

- IV. company road identifier

Watercourse Crossing Locations for Channeled watercourses (Points):

- V. company watercourse crossing number

- b) Administrative and Timber Production Information:

- I. name of disposition holder(s);
- II. number of the disposition(s);
- III. date of submission and effective period;
- IV. location of mill where timber will be manufactured or processed, unless alternative reporting has been approved;
- V. where all volumes (deciduous and coniferous) will be charged (Quota, deciduous timber allocation, FMA, Commercial Timber Permit);
- VI. proposed harvest volume to be harvested by timber disposition;
- VII. Community Timber Program Operators shall include all road use agreements;
- VIII. scaling methodology, e.g., weigh scale, other arrangements, (not necessary if otherwise submitted);
- IX. utilization standards; and
- X. declaration or list of resource user notifications, including the date of notification (see Sec 5.0 e.g., trappers, grazing);

- c) Operating Schedule – a table which outlines:

- I. list of harvest areas proposed for harvest (including area and volume by species or species group, with totals). Scheduled and optional blocks must not exceed two years of AAC with any AOP submission (QAAC balancing is required as per Alberta's requirements). A volume summary of both scheduled blocks and optional blocks shall be provided;
- II. Scheduled blocks located within both key wildlife and biodiversity zone and core grizzly bear zones shall be listed separately;
- III. a list of non- LOC roads proposed for construction and reclamation, not including in-block roads. It includes watercourse crossings to be built or installed or removed/maintained;
- IV. table showing status of non-LOC roads (see section 11.2.3.2);
- V. declaration of outstanding operational items, or an agreement with Alberta on reporting of outstanding operational items

- d) Annual Reforestation Program (see section 8.2);
- e) Fire Control Plan (see section 7.2);
- f) Road Plan (see section 11.2);
- g) GDP (see section 3.3); and
- h) CA if applicable (see section 3.2)

**3.5.6** Amendments to approved plans must be justified and submitted to Alberta in writing. RFP validation of all amendments is required. Any changes must be incorporated into the as-built plan and/or the annual silviculture report. Unless otherwise agreed to with Alberta, the following applies to the FMA Holder (Area offices will determine if embedded operators can follow this amendment procedure).

**3.5.6.1** Changes meeting the following criteria are considered either 'Notifications' or Minor Amendments. Notifications and minor amendments shall not adversely affect buffers established for the protection of riparian areas, wildlife sites, historical resources, or aesthetic values.

Any other change or amendment to approved plans, not outlined below, requires Senior Forester approval prior to implementation.

**Notifications** (within seven working days of implementation of the change) – do not require Alberta's approval, provided all appropriate background checks (e.g., Application Disposition Processing and Tracking, ADEPT have been made.

- a) Changes that trigger AOP administrative amendments: road name, block number or crossing number change;
- b) Additions to the approved AOP harvest area boundary where the final area does not vary from the area in the approved FHP by more than five percent for blocks greater than 20 ha, or more than 1.0 ha for blocks less than or equal to 20 ha;
- c) Movement of any roads within harvest area boundaries that cause a change in the crossing location over ephemeral or intermittent watercourses;
- d) Inter-block roads (including ephemeral or intermittent watercourse crossings if present) that are moved up to two Right-of-Way widths from the approved FHP location, or that are moved to existing access or conventional seismic lines where re-growth is less than 3m, provided that no additional intermittent or larger watercourse crossings are required;
- e) Additional road crossing structures on ephemeral watercourses within harvest area boundaries or Additional crossing locations required for temporary equipment movement over intermittent watercourses;
- f) Watercourse crossing structures that have changed from the approved FHP, providing that it is still an acceptable crossing as per table 4;
- g) Repairs to crossings on non-fish bearing streams;
- h) Using an alternative route for silviculture access (existing seismic or trail) with no impacts to regeneration or watercourse crossings;
- i) Planting of additional openings not listed in the approved AOP (providing the requirements of the FGRMS manual are met);
- j) Substitution of planting stock type, seedlot, species, or density (providing the requirements of the FGRMS manual are met); and
- k) Completing establishment or non-legislated surveys in openings not listed in the approved AOP.

**Minor Amendments – requires validation by company and require Forest Officer or Forester approval prior to implementation. Approval may be by way of formalized letter or via e-mail.**

- a) Inter-block roads that are moved more than two Right-of-Way widths from the approved FHP location, including associated crossings;
- b) Construction of up to 100m of new inter-block access, that connects to an approved access route;
- c) Additional crossing structures on intermittent watercourses;
- d) A change to the crossing structure, to a type that is not listed in Table 4 for ephemeral and intermittent watercourses;
- e) Accessing borrow material, adding turn-arounds or temporary workspaces outside of an approved Right-of-Way;
- f) Additional decking areas outside of an approved harvest area boundary;
- g) Mechanical scarification of additional openings not listed in the approved AOP;
- h) Movement of FHP approved small permanent crossing location within harvest area boundaries;
- i) Inter-block road reclamation or deactivation activities not identified in the GDP and/or AOP. Maps and spatial files shall be submitted in the as-built/year end report and annual access layer update; and
- j) assigning a status of LIG to an opening not listed in the AOP providing the survey data supports LIG as a retreatment.

### 3.6 SALVAGE PLANNING

#### PURPOSE

Salvage planning shall be implemented when necessary to reduce the potential for loss of fibre.

#### DISCUSSION

Under certain circumstances, planning shall be expedited to reduce the loss of fibre from fire, disease or insect infestation; blowdown or other such unforeseen disturbances. Other requirements for Mountain Pine Beetle can be found in the Action Plan for Mountain Pine Beetle, the Interpretive Bulletin *Planning Mountain Pine Beetle Response Operations* and the MPB Operating Ground Rules Addendum.

Salvage planning shall not be used when:

- a) the disturbance regime is slow moving and can be accommodated under conventional planning timeframes and protocols;
- b) the regime is not an imminent threat to green fibre; and
- c) fibre loss is deemed to be within an acceptable range.

Salvage planning does not confer rights to the planner to ignore other values, or the inherent value of a natural disturbance. It does allow for consideration of all values and for prompt, qualified, professional opinion to drive the process. See Directive 2007-01 for further direction on Salvage Planning.

#### GROUND RULES

**3.6.1** Salvage planning and operations shall follow directive 2007-01.

**3.6.2** An FHP for the salvage area must be developed, and shall form part of the AOP. Modified timelines and content for the FHP shall be considered by Alberta. Detailed requirements may be published from time to time by Alberta. It is expected that there will be substantial discussion to resolve significant issues with Alberta before the FHP is submitted.

## **4.0 UTILIZATION**

### **4.1 STAND UTILIZATION**

#### **PURPOSE:**

**Track variance from the approved Forest Management Plan (FMP) SHS as well as total area harvested in order to:**

- **ensure a sustainable harvest level and future forest objectives are maintained through operations adhering to the FMP**
- **improve information for the next FMP, (eg. landbase, yields)**
- **make decisions around Forest Harvest Plan Acceptance**

#### **DISCUSSION**

The *Alberta Forest Management Planning Standard, Annex 1, Section 6.0 Harvest Planning Standards* indicates scheduling of stands through the FMP - SHS is dependent upon the timber merchantability criteria allocated in the disposition holder's tenure document (e.g. FMA, quota certificate) and the management assumptions used in the timber supply analysis (TSA). Pertinent assumptions are comprised of deletions from the net landbase (e.g. subjective deletions, stream buffers, protected areas) and parameters that determine a stand's eligibility for harvest (e.g. earliest age of harvest). The SHS results from the analysis of these TSA inputs coupled with basic field reconnaissance. The SHS identifies spatially (subunit and location) and temporally (period) the queue of stands that will produce the sustainable timber harvest level (AAC) and desired future forest condition.

Adhering to the SHS is imperative to achieving the timber supply forecasts and the forest conditions expected. Variance from the SHS will not allow the FMP to realize its objectives and forecasted outcomes. Operational variance is unavoidable but must be effectively managed.

Variance shall be monitored and reported where:

- 1) **Merchantable Stands** scheduled in the first decade of the SHS are not harvested in that decade; and
- 2) **Special Features** not identified in the FMP net landbase are encountered during layout or harvesting and are deleted from the SHS.

Timber Harvest Planning and Operating Ground Rules require timber operators to protect special features through detailed harvest planning and careful operations. (e.g. riparian buffers, steep slopes, sensitive sites, cultural/heritage sites, areas with high aesthetic value shall be removed from the SHS.)

Disposition holders shall complete Variance Table 1 and Variance Table 2 as they monitor the operational implementation of their plans against the SHS. The format of the tables may be changed based on discussions between the Area and the company as required fields may vary regionally.

#### **Definitions:**

**Deletion** - Those stands or portions thereof removed from the 10 year SHS after its approval. Entire stands which are bypassed (not harvested) are to be tracked and reported as a deletion unless approved by Alberta. Entire stands may not be temporarily bypassed unless they form part of a logical operational group of harvest areas or are approved by Alberta for other reasons (i.e stands near an all

weather road to be temporarily bypassed and saved for contingency purposes). Only deletions of 1 ha and greater will be classified as variance and reported in the FHP and GDP.

**Bypassed** – A stand that is deferred from harvest until later in the 10 year SHS timeframe. Entire stands that are deleted are to be tracked as variance as they are deleted from the FHP. The reason for deleting a stand must be explained in the FHP.

**Variance** - Is any deletion from the SHS to the laid out harvest design as shown in the FHP (Area is not harvested yet). Where the area tracked as variance in Table 1 has changed by more than 5% after harvesting is complete, an update to variance shall be provided in the next submission of Variance Table 2 (see 4.1.3 below).

**Total SHS Area** - Is defined as the total SHS area within the FHP.

**SHS Planned Area** - Is the total area of the SHS laid out in the FHP.

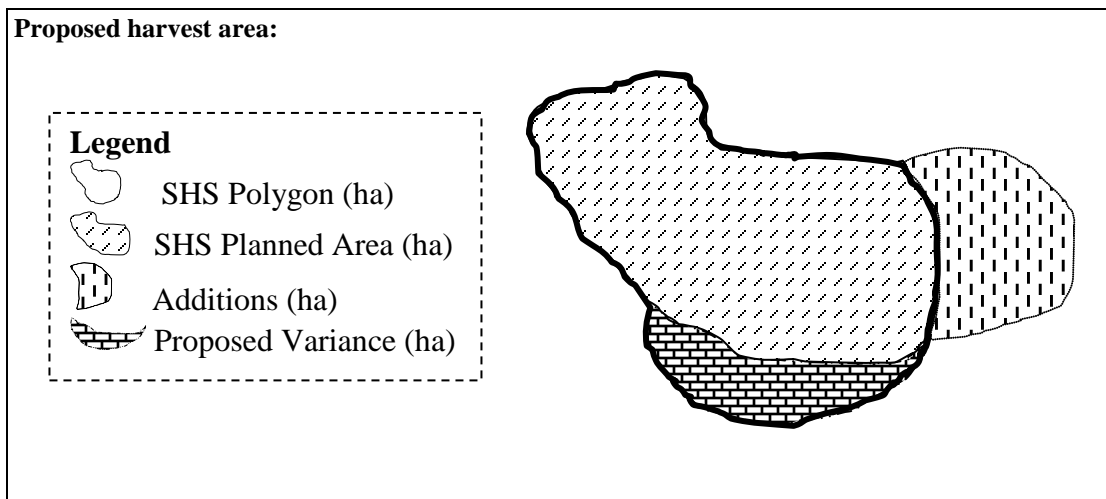
**Actual Harvested Area** - Is the as-built harvested area in the FHP.

**Additions** - Area not part of the 10 year SHS that is added to the FHP harvest area. Area can only be added to the SHS polygon during layout when an equal or greater amount has been deleted and tracked as variance. The sum of total area to be harvested and total area already harvested cannot exceed 100% of the SHS area/Subunit without moving to appraisal of the FHP. Only additions of 1 ha or greater will be reported in the tables below. Where the area tracked as additions in Variance Table 1 has changed by more than 5% after harvesting is complete, an update to additions shall be provided in the next submission of Variance Table 2 (see 4.1.3 below)

**Total FHP Area** - Is *SHS Planned Area* + *Harvested Area*.

**Stratum** - Is the yield stratum used in the FMP timber supply analysis.

**Subunit or Compartment** - Operational subunits of an FMU delineated by environmental, operational or watershed characteristics.







## 4.2 TREE UTILIZATION

### PURPOSE

To utilize all merchantable trees and pieces in a merchantable stand as defined by the timber disposition and the FMP.

### DISCUSSION

Tree utilization assumptions in the FMP must be followed so that sustainability is not affected.

### GROUND RULES

#### 4.2.1 The tree/piece utilization standard:

##### Coniferous Utilization Standards - 15/11 Utilization

- Merchantable Tree: one that has a minimum diameter of 15 cm outside bark at stump height (15 cm) and a usable length of 3.84 m to a 11 cm top diameter (inside bark).
- Merchantable Piece: one that is 3.84 m (plus 5 cm trim allowance) or longer, with an 11 cm (inside bark) small end, where rot content or form does not render it unusable.

##### Deciduous Utilization Standards - 15/10 Utilization

- Merchantable Tree: one that has a minimum stump diameter of 15 cm outside bark and a merchantable length of 4.88 m or greater to a 10 cm top diameter (inside bark), or to the point where the stem is unusable or there is no central stem due to heavy branching.
- Merchantable Piece: one that is 2.49 m or longer to a 10 cm (inside bark) small end, where rot content or form does not render it unusable.

##### Salvage Operations - 19/13 Utilization

- This standard may be adopted by Alberta to encourage recovery of timber damaged by fire or insects and diseases in coniferous and deciduous stands.
- Merchantable Tree: one with a minimum diameter of 19 cm outside bark at stump height (30 cm) and a merchantable length of 5.0 m or greater to a 13 cm top diameter (inside bark).
- Merchantable Piece: one that is 3.84 m (same as above) (plus 5 cm trim allowance) or longer, to a 13 cm (inside bark) small end, where rot content or form does not render it unusable.

4.2.2 Coniferous and deciduous log butts or large ends exhibiting advanced decay greater than 50% in area of the cut surface (basal area) may be bucked at 0.61m intervals or less to 50% sound wood. Conifer trees with a butt diameter of 19cm or less, containing soft rot, may be bucked at 0.61 m intervals to 100% clear face.

4.2.3 Maximum stump height when measured from root collar shall be no more than 15 cm. Exceptions may be approved in the FHP. (e.g. to delineate harvest areas, create rub posts for understorey protection). Where stumps are left to delineate areas eg. (harvest areas, create rub posts for understorey protection, or to delineate poorly defined watercourses), they shall be no less than 30 m apart and no higher than 4 m.

4.2.4 As per the Debris Management and Structure Retention ground rules, forest operators are permitted to leave merchantable volume in harvest areas if the approved FMP identifies specific stand structure retention strategies.

4.2.5 All trees/pieces used in the construction of crossing structures may be scattered or piled along the ROW or in the harvest area, but they shall not be piled in riparian areas. It is acceptable to use these pieces for erosion control on the road bed

## **5.0 INTEGRATION WITH OTHER USERS**

### **5.1 DECIDUOUS/CONIFEROUS INTEGRATION**

#### **PURPOSE**

**To ensure that planning, harvesting and reforestation in overlapping dispositions are carried out efficiently and with a minimum of environmental impact.**

#### **DISCUSSION**

Due to overlapping tenures, integration of activities between the various operators is essential. Alberta monitors the integration of roads and harvesting, but the responsibility for co-ordinating plans and operations lies with the operators.

Integration of activities is necessary to:

- a) reduce the amount of time roads are open;
- b) reduce disturbance of wildlife;
- c) enable prompt reforestation .

#### **GROUND RULES**

- 5.1.1** All operators with timber operations within the same boundaries of a FHP must agree to the FHP and GDP before approval is granted. If agreement cannot be reached after all meaningful consultation has taken place, the following dispute resolution process can be implemented. Areas of disagreement will be documented and forwarded to the SRD Senior Forester for review with the reviewing forester. Depending on the exact nature of the disagreement, SRD will either: 1) facilitate a dispute resolution process, or 2) direct the operators on areas of disagreement through conditions of approval. If either proponent disagrees with the determination of the Senior Forester, they may appeal the decision to the Senior Forester.
- 5.1.2** All roading, harvesting and silviculture operations shall be completed at a time and in a manner that enables effective reforestation and minimizes road access.

### **5.2 FOREST RECREATION AND TOURISM**

#### **PURPOSE**

**To manage the implications of forest management activities on forest recreation.**

#### **DISCUSSION**

Forest management activities can impact recreational opportunities. Potential exists for increased public awareness and for increased recreational opportunities through co-ordination with forest management practices. The FMP shall have addressed recreational issues through a variety of tactics such as deferrals or buffers around specific sites or access management strategies.

#### **GROUND RULES**

- 5.2.1** Operational tactics to mitigate impacts on recreation and tourism shall be described in the FHP.

- 5.2.2 The forest operator shall work with groups that have raised concerns and/or those that have been identified by Alberta.
- 5.2.3 Roads should be planned to avoid recreation sites. Roads shall be designed to ensure they can be used safely while minimizing their impact on the recreation values of the area.

## 5.3 TRAPPING

### PURPOSE

**To avoid damage to the infrastructure associated with Registered Fur Management Areas (RFMA) and to reduce the impact on trapping opportunities.**

### DISCUSSION

Communication with the senior partner of a RFMA is a key element in minimizing the impact of timber operations. Discussions held early in the planning process allow both the trapper and the forest operator to work co-operatively, with the least amount of disruption to their individual operations.

To facilitate communication between forest operators and trappers, Fish and Wildlife shall annually update the list of RFMAs with the current senior partner. Upon request the local Fish and Wildlife office shall provide the relevant list of trappers to the forest operators before January 1 of each year.

### GROUND RULES

- 5.3.1 A representative of the forest operator shall personally contact, or send a registered letter to the senior partners of a RFMA during the preparation of the FHP. Information such as cabin locations, trails and other improvements, or concerns shall be noted at this stage. During the development of the FHP, information and concerns shall be integrated into the plan. The forest operator shall provide the trapper with a copy of the approved FHP map.
- 5.3.2 At least ten days prior to commencing operations, the forest operator shall notify the senior partner, preferably in person or by phone, that timber operations are beginning in the RFMA.

## 5.4 RANGE MANAGEMENT

### PURPOSE

**To integrate forest and range management operations.**

### DISCUSSION

The goal is to develop a co-operative, long-term relationship between grazing disposition holders and forest operators to sustain fibre and forage resources.

At the GDP, FHP and AOP stages of planning, the emphasis is to integrate harvesting, silviculture, and grazing schedules to ensure the sustainability of timber, forage, wildlife and watershed values (i.e. wildlife habitat, watershed protection). Specific harvesting and reforestation operations and grazing systems would be identified within components of the AOP.

Effective communication between the timber and grazing operators is necessary. Discussions held early in the planning process are intended to enable the grazing disposition holder and the forest operator to work co-operatively minimizing the disruption to their individual operations. Alberta has developed standards to guide the integration of timber and grazing. These standards will be used by the two industries to ensure effective communication and integration is occurring on overlapping dispositions.

### GROUND RULES

- 5.4.1 The forest operator shall conduct all operations in accordance to the Grazing Timber Integration Manual and Directive SD 2011-03.
- 5.4.2 The forest operator has ensured that timber operations do not negatively impact the range management of the grazing disposition. Examples of these impacts include: damage or disruption to range improvements, infrastructure, roads, and bridges (e.g. fencing, water developments). The forest operator is responsible to repair and/or replace any damage to these improvements and infrastructure.
- 5.4.3 The forest operator has contacted the grazing disposition holder preferably in person or by phone, a minimum of 21 days prior to commencing timber operations to discuss access and any other issues affecting the range management of the grazing disposition.

## 5.5 FOREST AESTHETICS

### PURPOSE

**To manage the visual impact of timber operations on the forest landscape.**

### DISCUSSION

The objective is to mitigate the impact of timber operations on the visual quality of the forest landscape by:

- identifying the location of forest landscapes and other areas of high visual and scenic value, and setting objectives for their management;
- Addressing visual quality issues identified in the FMP.

Areas considered highly sensitive are those:

- a) within, adjacent to or viewed from recreational sites and tourist developments;
- b) seen from elevated viewpoints;
- c) adjacent to or viewed from major travel corridors (roads, lakes and rivers), rural/urban forest interface and site-specific areas identified during the referral and public review process; and
- d) adjacent to primary and secondary highways in Alberta.

Tactics to reduce the impacts of timber harvest and reforestation on visual quality may include: retention of forest structure and lesser vegetation at strategic vantage points in the harvest area, modification of harvest area design, low impact scarification techniques, vegetative buffers, and utilizing natural topography.

## **GROUND RULE**

- 5.5.1** Highly sensitive areas shall be assessed and tactics shall be employed in the FHP to mitigate the impacts of harvesting and reforestation on visual quality.

## **5.6 HISTORICAL RESOURCES**

### **PURPOSE**

**To ensure that forest operators identify and protect historical and cultural resources.**

### **DISCUSSION**

There are many thousands of historical resources (e.g. archaeological and paleontological sites) located on Alberta's Crown land. In keeping with the requirements of Alberta, forest operators shall develop and implement a process for identifying and protecting resources that are regulated by the Historical Resources Act.

### **GROUND RULES**

- 5.6.1** All known historical resources shall be identified and managed in keeping with the requirements of Alberta.
- 5.6.2** If a previously unknown historical resource is discovered during road building, harvesting, or silviculture operations, the operations that may directly affect the historical resource shall cease and Alberta shall be notified.

## **6.0 WATERSHED PROTECTION**

### **PURPOSE**

**To manage the implications of timber operations on water quality, quantity, and flow regime by:**

- minimizing the potential for sedimentation in watercourses;
- preventing soil, logging debris and deleterious substances from entering watercourses;
- maintaining aquatic and terrestrial habitat;
- complying with the Water Act.

### **DISCUSSION**

Ground rules define operating practices to protect water quality and riparian values.

Riparian areas adjacent to watercourses and water source areas perform a number of ecological functions. Riparian areas help to regulate stream flows (storage and release of surface and groundwater); reduce sheet, rill and gully erosion; and moderate stream temperature. Functional riparian areas provide bank stability, debris for creating aquatic habitats and provide a source of food and nutrients for aquatic organisms. Riparian areas also provide habitats supporting a high diversity of wildlife species and other terrestrial biota, and provide corridors that can link different landscape and habitat features.

Design harvest layouts that minimize the impacts of harvest operations on water yield, regime and quality, watercourse structure, soils, cover and riparian habitat for fish and wildlife. Harvest Area design will be determined on a site-by-site basis allowing more flexible patterns on the landscape.

A single prescription for operating adjacent to a variety of water bodies is not possible. Variations in soil, vegetation, slope and local climate create a wide range of conditions. It is expected that these Ground Rules will be used in conjunction with training, and experience to determine appropriate management strategies in riparian areas.

Special Management Zones (Measured from the high water mark of the watercourse) will be established adjacent to all watercourses as described in Table 2. Each Special Management Zone will contain a retention area, where no harvesting will occur, and may also contain an operating area, where harvesting activities will take place. Operating areas and retention areas within a Special Management Zone will be identified in the FHP. Detailed Harvest Area Plans (DHAP) will be provided whenever an operating area is proposed within a Special Management Zone. Variable-width operating areas and retention areas may be established within Special Management Zones along all transitional and permanent watercourses

The width of retention areas will be determined through assessment of the watercourse and the surrounding topography. Where a distinct change in ecosite or a topographical break is evident, the ecosite boundary or topographical break will be used to define the boundary between a retention area and an operating area within a Special Management Zone. Where a distinct change in ecosite is not evident, other natural features will be used to determine the appropriate boundary.

Some of the merchantable trees within special management zones may be removed depending on watercourse classification, site conditions and other resource values.

Authorizations by Alberta do not imply authorization under federal legislation and requirements, notably the federal Fisheries Act. The proponent must seek advice and approvals of the federal agencies (Department of Fisheries and Oceans) regarding federal legislation requirements.

## **GROUND RULES**

- 6.1 Watercourses shall be classified according to Table 1, Watercourse Classification. In the event the channel classification is not distinctly evident, the width shall be determined by applying the average of measurements taken at representative, undisturbed points along the channel at 50 m intervals over the length of the watercourse bordering the block.
  - a) a minimum of four measurements are required. The measurement locations shall flagged or identified for audit purposes;
  - b) the channel width is the horizontal width of the channel between high-water marks (mean or annual), or the rooted vegetation on the banks, measured at right angles to the direction of flow. The widths of multiple channels are summed to represent total channel width. (Dictionary of Natural Resource Management) It is measured from where the channel bank begins to slope down towards the channel bottom across to the same point on the opposite bank; and
  - c) where the distance bordering the block is not enough for four measurements, reduce the measurement interval as required.
- 6.2 Measures must be implemented, including temporary and permanent erosion control measures, to minimize erosion and sedimentation into a watercourse or waterbody.
- 6.3 Special Management Zones (SMZ) shall be established as per Table 2, Standards and Guidelines for Operating Beside Watercourses. Where uncertainty exists on the classification of the watercourse, the watercourse protection area shall be that required by the higher order of watercourse.
- 6.4 All unmapped or incorrectly classified watercourses encountered during operations shall be given the appropriate protection as described in Table 2.
- 6.5 Unless otherwise approved in a FMP variances from the standards in Table 2, must demonstrate that aquatic and terrestrial objectives are met. Any such proposals shall undergo a full review by Alberta prior to being considered for approval.
- 6.6 Sediment, logging debris or deleterious materials (e.g. fuels, oils, greases, industrial or household chemicals or refuse) shall not be deposited into any watercourse or water body during road construction, maintenance, harvesting, reclamation or silviculture operations.
- 6.7 Equipment shall cross watercourses only at approved crossings.
- 6.8 Logs shall not be decked in watercourses, riparian areas, or seepage areas.
- 6.9 Authorized in-stream activities in fish-bearing watercourses shall be scheduled to avoid disturbing migration, spawning and incubation of fish species, and carried out in such a manner as to avoid stream sedimentation.
- 6.10 Beaver ponds shall have same classification as the watercourse flowing out of the pond as measured at a representative width within 50 m of the dam.
- 6.11 Harvesting is not permitted within water source areas during non-frozen periods.



- 6.12 The use of the Special Management Zone practice, in lieu of standard fixed width buffers requires the reporting of the overall balance of special management zones by FHP. For every hectare (ha) of active landbase that is removed within an SMZ, an equivalent area of active landbase must be left adjacent (and in addition) to the SMZ in other areas. A no net loss of special management zone must be achieved by watercourse classification (unless otherwise approved by Alberta) in each FHP. The balance is to take into account both sides of any watercourse that is within the FHP area. Previously harvested Area that are adjacent to the FHP watercourses and have not yet reached 14 years, shall be included (as Operating Area Within the SMZ (ha)) in the balance to ensure that a net loss to SMZ does not occur.
- 6.13 Additions to the SMZ must be part of the active landbase. Additions to the SMZ are limited to areas between existing SMZ's and harvest area boundaries, providing they are a riparian ecotype or are the same ecotype to that which is proposed for harvest in the FHP. These additions will be tracked as a variance from the SHS.
- 6.14 In addition to the requirements above, no more than 33% of the Special Management Zone area (by watercourse classification), including both sides of the FHP watercourses, can be harvested (including previously harvested blocks) at any given time, unless otherwise approved by Alberta. The performance age of previously harvested blocks will be used for this determination. Blocks older than 14 years can be considered contributing to the Total SMZ in the FHP.
- 6.15 SMZ operations shall be reported in accordance with SMZ Table 1.

**SMZ Table 1**

<b>Watercourse Classification</b>	<b>SMZ (M)</b>	<b>Total SMZ Area (ha)</b>	<b>Operating Area within the SMZ (ha)</b>	<b>Operating Area within the SMZ (%)</b>	<b>Additions to SMZ (ha)</b>	<b>NET SMZ (ha)</b>
<b>Large Permanent</b>	<b>60</b>					
<b>Small Permanent</b>	<b>30</b>					
<b>Transitional</b>	<b>10</b>					

*Note 1: The SMZ on a Class B watercourse is dependent on whether the characteristics of the channel are representative of a large or small permanent watercourse*

**Table 1. Watercourse Classification**

Watercourse Classification					Fisheries/Wildlife Values	Potential Impacts
Type	Mapping Designation	Physical Description	Portion of Year Water Flows	Channel Development		
<b>Class “A” Waterbodies</b>	Solid Red Line on Watercourse Crossing Codes of Practice (Water Act)	Not applicable	Not applicable	Not applicable	Known habitats critical to the continued viability of locally or regionally important fish species; Habitat areas are sensitive enough to be damaged by any type of in-stream activity or changes to water quality or flow regime.	Fish and fish habitat affected by sediment load, turbidity, disposition of sediment, chemical contamination or alteration of stream flow.
<b>Class “B” Waterbodies</b>	Solid (Variable Colour) lines overlain by small circles on Watercourse Crossing Codes of Practice (Water Act)	Not applicable	Not applicable	Not applicable	Key broadly distributed habitat areas important to the continued viability of a population of locally or regionally important fish species; Habitat areas are sensitive enough to be potentially damaged by in-stream activities; Potential short and long-term effects of in-stream activities considered to have detrimental effects on, and are high risk to, the survival of fish populations.	Fish and fish habitat affected by sediment load, turbidity, disposition of sediment, chemical contamination or alteration of stream flow.
<b>Large Permanent</b>	Solid heavy line or double line	Major streams or rivers; Well-defined flood plains; Often wide valley bottoms.	All year	Non-vegetated; channel width exceeds 5 m	Resident and migratory fish populations; Important over wintering, feeding and rearing habitat; Important wildlife feeding/travel corridors.	Water quality often reflects all upstream land use impacts and natural processes; Primarily sedimentation of stream channels; Loss of wildlife habitat, restriction of movement.
<b>Small Permanent</b>	Usually solid although are sometimes broken heavy lines	Permanent streams; Often small valley bottoms; Bench floodplain) development.	All year but may freeze completely in the winter or dry up during periods of drought. Some are ‘transitional’ to intermittent and dry up during drought.	Banks and channel well-defined; channel width from greater than .7 m to 5 m.	Significant insect populations; Important spawning and rearing habitat; Resident and migratory fish populations; Over wintering for non-migratory species; Important wildlife feeding/travel corridors.	Primarily sedimentation of stream channels; Water quality and water yield; Fish population sensitive to siltation; Loss of stream bank fish habitat; Loss of wildlife habitat, restriction of movement.
<b>Transitional</b>	Usually solid although are sometimes broken heavy lines	Permanent streams; Often small valley bottoms; Bench floodplain) development.	All year but may freeze completely in the winter or dry up during periods of drought. Some are ‘transitional’ to intermittent and dry up during drought.	Transitional streams; channel widths are between .4 and .7 m.	Significant insect populations; Important spawning and rearing habitat; Resident and migratory fish populations; Over wintering for non-migratory species; Important wildlife feeding/travel corridors.	Primarily sedimentation of stream channels; Water quality and water yield; Fish population sensitive to siltation; Loss of stream bank fish habitat; Loss of wildlife habitat, restriction of movement.

Continued...

**Table 1. Watercourse Classification**

Watercourse Classification					Fisheries/Wildlife Values	Potential Impacts
Type	Mapping Designation	Physical Description	Portion of Year Water Flows	Channel Development		
<b>Intermittent</b>	Usually broken line; To be identified during layout.	Small stream channels; Small springs are main source outside periods of spring runoff and heavy rainfall.	During the wet season or storms; Dries up during drought.	Distinct channel development; Channel usually has no terrestrial vegetation; Channel width less than 0.4 m; Usually some bank development.	Food production areas; Potential spawning for spring spawning species; Drift invertebrate populations in pools and riffles; Spring fed areas may provide spawning potential for fall spawning species.	Sedimentation from bank and streambed damage will damage fish spawning and invertebrate habitat as well as downstream fish habitat; Water quality and water yield.
<b>Ephemeral</b>	Not normally mapped.	A vegetated draw, with distinct vegetation differences to the surrounding upland sites, and demonstrates connectivity to a higher order watercourse.	Flows only during or immediately after rainfall or snowmelt.	Little or no channel development; Flow area is usually vegetated.	Siltation may impact fish habitat downstream. Amphibian habitat	Sedimentation downstream due to ground disturbance. Loss of Amphibian habitat
<b>Water-Source Areas</b>	To be identified during layout .	Areas with saturated soils, surface flow or seepages contributing directly to stream flow.	All year; May or may not freeze in winter.	No channel development, but may be pronounced vegetation changes.	Year-round springs provide potential value to fall spawning fish; Potential high-use areas terrestrial wildlife.	Disturbance may cause downstream sedimentation; Interruption of winter flow may disrupt fish egg incubation; Loss of mineral licks.
<b>Lakes</b>	Solid outline a water body; Reserved areas noted on referral map.	Large water collection areas permanently filled with water.	Normally frozen in winter.	Shorelines defined by absence of permanent terrestrial vegetation.	Important fish-bearing habitat; Important bird nesting/rearing areas.	Aesthetic values may be disrupted; Potential for wildlife disturbance; Local sedimentation.
<b>Oxbow Lakes</b>	Solid Heavy or Outline.	Large water collection area formed when oxbow cut off from main river channel; Often vegetated.	Normally frozen in winter.	Not applicable	Important habitat for ungulates.	Thermal cover/grazing areas.

**Table 2. Standards and Guidelines for Operating Beside Watercourses**

Watercourse Classification	Roads, Landings, Decking and Bared Areas	Special Management Zone	Operating Conditions Within Riparian Areas and Water Source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
<b>Class “A” Waterbodies</b>	Not permitted within 100 m of high water mark of the main stem of the Class A unless approved in the AOP. Any existing roads may be maintained at present classification standards. Any proposed watercourse crossings on a tributary within 2 km upstream must be a temporary Type 1 crossing as defined by the code of practice and specifically approved in the AOP. All crossings are identified in the FHP.	Unless specifically approved in the AOP, no disturbance or removal of timber within 100m of the high water mark on the main channel of the Class A. SMZ don't apply on Class A and B.	Not permitted without specific Alberta approval.	Not permitted without specific Alberta approval.
<b>Class “B” Waterbodies</b>	Not permitted within 60 m of high water mark of the main stem of the Class B. Any existing roads may be maintained at present classification standards. Any watercourse crossings within 2km upstream must be a temporary crossing as defined by the code of practice and specifically approved in the AOP.	No disturbance or removal of timber within the appropriate Special Management Zone specified by the stream type below.unles specifically approved in the AOP.	Not permitted without specific Alberta approval	Not permitted without specific Alberta approval
<b>Large Permanent</b>	Not permitted within 100 m of the high water mark or water source areas within the riparian management zone unless specifically approved in the AOP.	A Special Management Zone will extend 60 m from the high water mark. No appraisal by Alberta is required where less than 33% of the SMZ, as described in section 6.0.14, is designated as an operating area. Any timber within 10m of the high water mark shall be retained unless otherwise approved by Alberta.	Trees shall be felled so that they do not enter watercourse. Should slash or debris enter the watercourse immediate removal is required without a machine entering the watercourse.	Where removal of timber within 60 m is approved, no machinery is permitted within 20 m of the high water mark.
<b>Small Permanent</b>	Not permitted within 30 m of the high water mark or water source areas within the riparian management zone unless specifically approved in the AOP.	A Special Management Zone will extend 30 m from the high water mark. No appraisal by Alberta is required where less than 33% of the SMZ, as described in section 6.0.14, is designated as an operating area. Any timber within 10m of the high water mark shall be retained unless otherwise approved by Alberta.	Trees shall be felled so that they do not enter watercourse. Should slash or debris enter the watercourse immediate removal is required without a machine entering the watercourse.	Where removal of timber within 30 m is approved, no machinery is permitted within 20 m of the high water mark.
<b>Transitional</b>	Not permitted within 30 m of the high water mark or water source areas within the riparian management zone unless specifically approved in the AOP.	A Special Management Zone will extend 10 m from the high water mark. No appraisal by Alberta is required where less than 33% of the SMZ, as described in section 6.0.14, is designated as an operating area. Any timber within 5m of the high water mark shall be retained unless otherwise approved by Alberta.	Trees shall be felled so that they do not enter watercourse. Should slash or debris enter the watercourse immediate removal is required without a machine entering the watercourse.	Heavy equipment may operate within 20 m only during frozen or dry periods. No skidding through watercourse except on snow/ice bridge or logfill. Crossings must be planned with adequate crossings to be removed on completion of operations. Where fish and spawning movements have been identified, special crossings that do not obstruct upstream fish passage or cause stream siltation may be required.

Continued...

**Table 2. Standards and Guidelines for Operating Beside Watercourses**

Watercourse Classification	Roads, Landings, Decking and Bared Areas	Watercourse Protection Areas	Operating Conditions Within Riparian Areas and Water Source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
<b>Intermittent</b>	Not permitted within 30 m of the high water mark or water source areas within the riparian management zone unless specifically approved in the AOP.	A buffer of brush and lesser vegetation is to be left undisturbed on either side of the channel;;  Width of buffer may vary according to soils, topographical breaks, water source areas and fisheries values.	Trees shall be felled so they do not enter watercourses. Should slash or debris enter the watercourse, immediate removal is required without the machine entering the watercourse.	Heavy equipment may operate within 20 m only during frozen or dry periods. No skidding through watercourse except on snow/ice bridge or logfill. Crossings must be planned with adequate crossings to be removed on completion of operations. Where fish and spawning movements have been identified, special crossings that do not obstruct upstream fish passage or cause stream siltation may be required. Buffer of lesser vegetation to be maintained during silviculture operations including herbicide applications
<b>Ephemeral</b>	Construction not permitted within a watercourse or water source area.	A buffer of brush and lesser vegetation is to be left undisturbed on either side of the channel or in distinct riparian gullies that do not necessarily exhibit direct connectivity to a higher order watercourse.;  Width of buffer may vary according to soils, topographical breaks, water source areas and fisheries values.	Accumulations of slash and debris to be removed progressively.	Skidding restrictions apply on Class “A” and “B” waterbody tributaries; Skidding shall only be during dry or frozen conditions. Temporary crossings to be removed on completion of operations (as per 11.4.29). On Class “A” and “B” waterbody tributaries, special crossing structures that do not cause stream siltation may be required. Buffer of lesser vegetation to be maintained during silviculture operations including herbicide applications
<b>Lakes (little or no recreation, waterfowl or sportfish potential)</b>	Not permitted within 100 m of high water mark unless specifically approved in the AOP.	On lakes exceeding 4 ha in area, no disturbance of timber within 100 m of high water mark except where specifically approved in FHP. Where approval is granted to remove timber within the 100 m zone, no timber shall be removed within 30 m of the high water mark.	Trees shall be felled so they do not enter watercourses, unless otherwise approved by Alberta. Should slash or debris enter the watercourse, immediate removal is required without the machine entering the watercourse.	If timber removal is approved, no machinery to operate within 40 m of the high water mark.

**Table 2. Standards and Guidelines for Operating Beside Watercourses**

Watercourse Classification	Roads, Landings, Decking and Bared Areas	Watercourse Protection Areas	Operating Conditions Within Riparian Areas and Water Source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
<b>Lakes (with recreational, waterfowl or sport fish potential)</b>	For shorelines not located within reserved areas, no disturbances shall be permitted within 200 m of the high water mark unless specifically approved in the AOP.	On lakes exceeding 4 ha in area, no disturbance or removal of timber within 100m of the high-water mark. Alberta in the FHP may require additional protection. On lakes less than 4 ha, removal of timber prohibited within 30 m of the high-water mark and any removal within 100 m requires Alberta’s approval.	Trees shall be felled so they do not enter the waterbody, unless otherwise approved; Should slash or debris enter the watercourse, immediate removal is required without the machine entering the watercourse.	Consideration must be given to aesthetics when harvesting adjacent to lakes with recreational potential.
<b>Water source Areas and Areas Subject to Normal Seasonal Flooding</b>	Construction not permitted unless approved in the AOP; No log decks permitted; The number of stream crossings must be minimized; No disturbance of organic duff layers or removal of lesser vegetation.	A Special Management Zone will extend 20m from the high water mark; No harvest of merchantable trees or disturbances of lesser vegetation unless specifically approved in the AOP and done under frozen conditions; Buffer width may be altered according to its potential to produce surface water, provided it is approved in the AOP.	Heavy machinery not permitted with in water source areas during non-frozen soil conditions; Minimal disturbance or removal of duff or lesser vegetation; If specifically approved, timber may be harvested under frozen conditions. provided there is no disturbance of the organic soils and lesser vegetation On unstable areas subject to blowdown, merchantable trees shall be carefully harvested from water source areas to minimize root disturbances of duff layers and watercourse damming.	Road construction, timber harvest, reforestation and reclamation shall be done with equipment capable of operating without causing excessive disturbance to the soil layers; Heavy equipment is not permitted during moist or wet soil conditions, but may be operated during frozen periods; No soil caps or depositing of soil permitted on roads in water source areas, unless a separation layer is incorporated or the road is designed to provide adequate surface and sub-surface drainage away from the road bed; Where a separation layer is used, the soil cap shall be removed as operations are completed.
<b>Oxbow Lake</b>	Construction not permitted within 100 m of oxbow lake unless specifically approved in the AOP.	The buffer shall encompass the area from the high water mark of the main watercourse to 20 m beyond the high water mark of the oxbow lake. Oxbow lakes outside the buffer of the main watercourse shall be treated as watercourse areas.	Heavy equipment not permitted around oxbow lakes during unfrozen conditions. Trees shall be felled so they do not enter the waterbody, unless otherwise approved; Should slash or debris enter the watercourse, immediate removal is required without the machine entering the watercourse.	Approved activities shall be done with equipment capable of operating without causing excessive disturbance.

See Water Act for definitions of class A and B waterbodies.

## **7.0 HABITAT MANAGEMENT**

### **7.1 BLOCK LAYOUT AND DESIGN**

#### **PURPOSE**

To provide direction for designing blocks to support habitat conservation..

#### **DISCUSSION**

Detailed planning of blocks must address reforestation, wildlife habitat (e.g., hiding cover, sensitive sites), watercourse protection, understory protection, structure retention, road development and reclamation.

The following items affect block size and shape:

- current inventory polygon boundaries;
- tree species, age and silvicultural characteristics;
- habitat requirements of species of management concern and species at risk;
- key wildlife zones;
- amount and distribution of non-productive lands and immature treed lands;
- location and size of watercourses and buffers;
- location of roads, pipelines and power lines;
- topographic features;
- presence of viable understory;
- retention of shrub and tree patches;
- accessibility to all or part of the compartment;
- potential blowdown of peripheral and within-block trees;
- insects and diseases;
- visual sensitivity.

The FHP area will be consistent with the approved GDP and should also identify and classify all watercourses, critical wildlife habitat, as well as existing trails, seismic, power lines, and access within the planning area.

During the development of the FHP, efforts shall be made by EFP to notify all overlapping disposition holders and stakeholders that may be affected by the proposed development.

#### **GROUND RULES**

- 7.1.1** Unless skidding to roadside, the roadside vegetation shall be protected in blocks to limit the line-of-sight distance across the block. To minimize breaks in the vegetation screen, road entry points should be minimized.

## 7.2 DEBRIS MANAGEMENT AND WILDFIRE PROTECTION

### PURPOSE

To manage the amount and distribution of woody debris left in harvest areas to:

- minimize wildfire risk, particularly near communities
- optimize ecological benefits
- minimize the loss of productive landbase
- to minimize the risk of wildfires, and to improve fire suppression capability.

### DISCUSSION

Debris or slash accumulation resulting from timber harvest operations must, as a priority, be redistributed or disposed of to minimize the risk of wildfire ignition and spread. However, it is recognized that some retention of debris is valuable from an ecological perspective, and that a reasonable amount of debris retention shall occur to emulate natural forest floor accumulations. Ecological benefits include microtine habitat, furbearer habitat (when piled), and soil nutrient inputs. When debris is maintained, it must be in such a distribution and amount to: 1) minimize wildfire risk as a priority, 2) minimize the amount of productive landbase loss by limiting lost area available for tree planting, or deciduous species suckering and 3) provide ecological benefit (coarse filter vs. fine filter).

Landscape-level issues regarding the risk of large fires is addressed in the development of the SHS. The FMP has developed objectives that consider the risk of occurrence and spread of fire at the stand and landscape levels.

Opportunities may exist to implement fuel reduction, isolation and conversion on the landscape while accounting for other values. Where applicable, forest operators shall follow the guidelines in the FireSmart Protecting Your Community from Wildfire manual.

Acceptable methods of reducing slash hazards are defined in FPD policy *Debris Disposal Requirement for Timber Harvest Operations* (see Appendix 2).

### GROUND RULES

- 7.2.1 Slash accumulations resulting from timber harvesting, road, and campsite construction shall be disposed of within 24 months in a manner acceptable to Alberta.
- 7.2.2 Identification of debris piles for wildlife habitat shall be described and approved in the FHP. Piles containing larger logs are preferred over piles of finer debris. Wildlife piles should be located as per appendix 2, *Debris Management Standards for Timber Harvest Operations*.
- 7.2.3 Slash fuel accumulation is not permitted within 5 m of the perimeter of the harvest area. The bordering undisturbed forest floor shall be used as a benchmark to determine what constitutes a significant accumulation. Unacceptable accumulations include piles of trees or non-merchantable timber, and tops or branches deposited during logging that could create fuel ladders for fire bordering the stand (refer to 9.3 for further requirements).
- 7.2.4 In addition to 7.2.3, Debris scheduled for disposal by piling and burning shall be piled no closer than 25m from the harvest area edge and in a manner that ensures adjacent vegetation is not affected during burning operations.



7.2.5 Burning operations shall :

- a) not be conducted during the fire season, unless otherwise approved;
- b) require a post burning survey to ensure all holdover fires are extinguished.
- c) reduce the individual burn pile area by at least 80% unless otherwise approved.

7.2.6 The FHP shall comply with direction provided in Community FireSmart Plans.

7.2.7 The AOP shall not be approved without a fire control plan.

## 7.3 STRUCTURE RETENTION

### PURPOSE

**To create temporary refuges for forest biota to re-colonize harvest areas.**  
**To maintain snags and live residual trees in harvested areas for biota that depend on these structures following natural disturbances.**  
**To provide wildlife thermal and hiding cover within harvest areas throughout the rotation.**  
**To provide wildlife travel corridors within large harvest areas and compartments.**

### DISCUSSION

Although many types of natural disturbance (fire, floods, avalanches, wind events, insects and disease infestations, and slumps) occur within Alberta's forests, fire is the most common. Virtually all trees within intense fires are killed, but following low and moderate-intensity fires many scattered live trees are present. In addition, within all fire types, fire "skips" or "islands" result in residual patches of live trees remaining within larger burned areas. Following other types of natural disturbances, even higher densities of live trees, and patches of live trees, are present. Approximately 30% of the birds and mammals living in Alberta's forests nest, forage or find shelter within live trees that have a basal diameter greater than 20 cm. Many of these species are able to use single large live trees and residual patches of large live trees that remain after natural disturbances. The approved FMP indicates that within the timber producing landbase, 1.5% of the area will be retained in patches of various sizes to provide additional structure. Non-merchantable single stems and non-merchantable clumps will also be left as structure, where appropriate.

The retention of single trees and patches of large live trees in harvest areas makes the harvested areas more similar to burned areas. In addition, residual live trees may create some old forest attributes in young regenerating harvest areas. Many of the birds, mammals, insects, beetles, fungi and nonvascular plant species that live in recently disturbed forests require large snags for food and shelter. This unique biotic community changes rapidly as the snags fall and the downed logs are incorporated into the forest floor. Some biota become rare within ten years following a fire, and many of the early colonizing species have disappeared by the time the stand is twenty years old.

Retaining some large snags within harvest areas creates habitat for some biota associated with naturally disturbed habitat. Additional large snags may be created, by retaining large live trees, as some of these trees will die throughout the rotation. To a large extent, however, it will be necessary to rely on natural disturbances to create abundant large snags for biota that depend on this dead woody material.

Where larger harvest areas are created, it is important to retain a number of individual trees, snags and residual tree patches distributed across the harvest area. These residual tree patches shall be located

such that natural features, riparian areas, wildlife features, stand structure and composition, and proximity to standing forests are taken into account to maximize their utility or usefulness by the biotic community.

The retention of patches will be considered where suitable structure is available, there is evidence of high ungulate use of the area and hiding and/or thermal cover is required, a significant wildlife habitat feature requiring some buffer exists (e.g. mineral lick, springs frequented by wildlife, raptor nest), visual impacts of harvesting require mitigation to reduce sight distances or for aesthetic purposes.

Hiding cover and line of sight are important concepts to address through the forest management and operational plans. In the 1994 ground rules, strict block sizes and shapes enabled companies to meet standards such as 200m distance to hiding cover and 400m line of sight. The small blocks that were mandated in the past led to increased road density and block edge, both of which have been shown to be detrimental to many species. Increased predation and more fragmented habitat were issues that were addressed when Alberta moved towards a stand based spatial harvest sequence. A range of block sizes are created and structure retention strategies are used to mitigate line of sight and distance to hiding cover in larger blocks.

Current information suggests that ecological benefits are directly proportional to the amount of structure retention; ecological benefits increase with greater levels of structure retention. Larger patches of residual structure generally have more benefits than smaller patches (lower blowdown probability, interior forest characteristics, hiding and thermal cover) and patches generally have more benefit than individual stems.

## **GROUND RULES**

- 7.3.1 Patches of structure retention will be laid out and identified in the FHP. Structure retention will vary by block. Some blocks may contain no structure retention and some may contain greater amounts. Care will be taken to protect the trees around the perimeter of patches from damage caused by harvesting or silviculture operations.
- 7.3.2 Buffers that are retained around sensitive sites (as per 7.7.5) can be counted as structure retention and may be included in achieving the FMP targets.
- 7.3.3 The structure retention targets will be reconciled at the end of each 5-year cut control period. The area of structure retention patches shall be measured and the area will be used to estimate, or determine a volume.
- 7.3.4 Patches greater than 2.0ha will be designated as a reserve harvest area and will not contribute to achieving the structure retention targets of the FMP.
- 7.3.5 Patches of residual structure or single stems shall be retained as per the following:
  - a) merchantable volume representative of the original stand shall be left in patches that are less than 2 hectares in size;
  - b) larger contiguous patches are preferred to multiple smaller patches and individual live stems;
  - c) individual stems that are merchantable and representative of the pre-harvest profile of the harvest area may be retained where the likelihood of blowdown is low; and
  - d) areas of non-merchantable timber and existing shrub cover within a harvest area should be left intact during all stages of operations.
- 7.3.6 Where possible, snags will be left in groups of 2 or more and may be incorporated as part of an understory retention clump or a retention patch. Snag retention will be prioritized as follows:
  - a) existing snags where worker safety is not compromised;
  - b) all trees with evidence of an existing cavity; and
  - c) snags or live trees that exhibit windfirm characteristics.

- 7.3.7 Forest operators may create stubs anywhere within the harvested area to supplement snag densities, aid in wind-firmness of residual patches or for use as rub posts.
- 7.3.8 All structure retention, including snags that are left during active harvest operations shall also be avoided and/or protected throughout all phases of silviculture treatments while considering worker safety.
- 7.3.9 Structure retention and topography will be used to help provide cover for wildlife by minimizing distance to hiding cover.
- 7.3.10 Unless skidding to roadside, the roadside vegetation shall be protected to limit the line-of-sight distance across the harvest area. Where line of sight is an issue, one entry point into a harvest area shall be approved.
- 7.3.11 Line of sight should be minimized where harvest areas are adjacent to LOC roads. Line of sight should not exceed 400m.

## 7.4 UNDERSTOREY PROTECTION

### PURPOSE

To protect coniferous understorey during timber harvesting and reforestation operations.

### DISCUSSION

The main objective of this ground rule is to protect coniferous understorey that will contribute to future forest values.

Silviculture systems must be ecologically suited to the tree species and forest site being managed. These systems should result in prompt, healthy regeneration. Advanced regeneration will be evaluated during FHP preparation to determine its potential for future management and forest value. The highest priority for advanced regeneration protection will be given to stands that have understoreys with the following characteristics:

- are comprised of acceptable trees as defined in the Reforestation Standards of Alberta (RSA);
- are healthy, demonstrate vigorous growth, are windfirm and exhibit generally good form;

### GROUND RULES

- 7.4.1 The FHP shall identify harvest areas requiring understorey avoidance. Avoidance techniques will be described in the FHP.
- 7.4.2 Understorey discovered in the field, but not previously identified in the FHP should be avoided.
- 7.4.3 Understorey that is left during active harvest operations shall be maintained throughout all phases of silviculture treatments.

## 7.5 FISHERIES AND THE AQUATIC ENVIRONMENT

### PURPOSE

To conduct timber operations in a manner that shall minimally affect:

- The health, diversity and natural distribution of aquatic biota;
- The quantity and productive capacity of the aquatic environment, including fish habitat, and;
- Fisheries management objectives identified in the FMP

### DISCUSSION

Current provincial and federal legislation require that the aquatic environment and fisheries resources in Alberta must be protected.

Timber operations can directly affect the aquatic environment and fish habitat in a number of ways. Tree removal in riparian areas and along stream banks can alter light intensity, nutrient supply, sediment inputs, water temperatures, stream bank stability and recruitment of large woody debris to the watercourse. Watercourse crossings, if not properly designed, can create physical barriers to the movement of fish and other aquatic biota along watercourses. Roads and ditches can intercept and transport sediments from the upland source to crossing sites where they are deposited in the watercourse. Upland timber harvesting can also affect watershed water yield and flow regimes. These effects can lead to changes in aquatic primary productivity, food-web pathways, aquatic species abundance and distribution, and channel morphology.

The primary strategy for maintenance and protection of the aquatic environment and fish habitat values is to maintain treed buffers along watercourses and water bodies and adopt rigorous watercourse crossing and erosion control measures. Alternate management proposals for riparian areas would be considered to support aquatic environment and fisheries management objectives in the area, where acceptable to Alberta.

Authorizations by Alberta do not imply authorization under federal legislation and requirements, notably the federal Fisheries Act. The proponent must seek advice and approvals of the federal agencies (Department of Fisheries and Oceans) regarding federal legislation requirements.

Additional ground rules for any work carried out in and around watercourses are found in section 11.4 – Watercourse Crossings.

### GROUND RULES

- 7.5.1 All waterbodies and watercourses are presumed to be fish bearing or support fish-bearing habitat. However, the company may confirm the distribution of fish and fish habitat within the planning area by:
- a) checking the Fisheries and Wildlife Management Information System (FWMIS), Water Act Codes of Practice and fisheries inventory data;
  - b) conducting new inventories; or
  - c) consulting with the appropriate area's Fisheries Management Biologist.
- 7.5.2 For any activity that disturbs or alters the bed and banks of a fish-bearing waterbody, an assessment of the potential effects on fish and fish habitat must be conducted by an individual with expertise in fisheries and aquatic assessment methods and habitat mitigation measures. For assessment requirements and methods, refer to Schedule 4 of the Code of Practice for Watercourse Crossings Guidelines for Complying with the Code of Practice for Watercourse crossings.

## 7.6 SPECIES OF SPECIAL MANAGEMENT CONCERN

### PURPOSE

To conduct planning and timber operations in a manner that shall:

- Conserve and plan for an agreed upon level of effective habitat for species of special management concern including grizzly bear, trumpeter swan and others as determined by Alberta from time to time.
- Maintain the effective winter habitats for ungulates.

### DISCUSSION

The FHP shall describe the harvesting program that is agreed will create the desired future forest, taking into consideration the full range of values including habitat for species of special management concern.

### GRIZZLY BEAR

The Grizzly Bear recovery plan has been approved by Alberta and is in the process of being implemented. Ongoing implementation of this plan may lead to recommendations that override these ground rules. Grizzly bears are classified as a “May be at Risk” species under the Alberta Wildlife Act and as a species of “Special Concern” under the national COSEWIC system.

Timber operations in grizzly bear range can affect grizzly bear populations directly or indirectly in three main ways:

- 1) altering natural and human caused bear mortality rates through the creation and maintenance of access routes
- 2) altering the amount, quality, and effectiveness of grizzly bear habitat, and
- 3) displacing and causing undue sensory disturbance to individual grizzly bears.

Landscape level planning is necessary to ensure the availability of effective habitat and to manage mortality risk for grizzly bears. The indicators of suitable landscape conditions for grizzly bears are habitat effectiveness, security areas, road density and habitat connectivity.

Long term access routes have negative effects on grizzly bear populations through increased mortality rates, disturbance and displacement. These negative effects shall be managed by minimizing the amount, tenure and class of new access roads, and by reviewing and acting upon management options (i.e., access management, reclamation strategies for existing routes, avoiding or minimizing access development in critical grizzly bear habitat and by using grizzly bear habitat maps when planning new access).

The goal is for development of temporary, frozen ground access and minimal grade development. Retention areas should be planned in harvest areas to provide hiding cover and connectivity to forest patches. Summer roads and crossings should attempt to avoid riparian corridors. Those routes that lie within riparian corridors shall minimize the ROW width and reduce vehicle speeds through construction standards and company operating procedure. Preference shall be given to development and use of winter (frozen ground) roads since this reduces negative impacts on wildlife, permits minimization of long-term infrastructure, and facilitates reclamation.

### GROUND RULES

#### 7.6.1 Core Grizzly Bear Areas

7.6.1.1 If specifically requested by Alberta, a CA must be completed that includes the following:

- (a) an agreed upon habitat effectiveness (including mortality risk) supply forecast including the amount, type, and spatial arrangement of Grizzly habitat. (completion of this forecast is subject to more technical direction from Alberta);
- (b) the location of all proposed harvest areas;
- (c) the amount, alignment, standard (road type) and longevity (tenure) of all access roads;
- (d) use of and improvements to existing access roads;
- (e) access road reclamation plan and schedule, which will also consider options for reforestation of roads. This shall take into account options for existing (“traditional”) access routes;
- (f) effective measures to achieve public and industrial “highway vehicle” access management;
- (g) general operating schedule (road construction, harvesting, silviculture);
- (h) protection of key grizzly bear habitat features (as identified by Alberta and company);
- (i) berry crop management strategies (in relation to both harvesting system and silvicultural prescription);
- (j) proposed summer operations.

7.6.1.2 Harvesting of stands within the core grizzly bear area shall be during frozen conditions where possible.

7.6.1.3 To the extent possible, all new access roads must follow existing disturbances.

7.6.1.4 Except where identified and agreed upon within the FHP, only temporary access roads shall be used.

7.6.1.5 Roads shall be built no sooner than one year prior to harvesting operations. Temporary roads shall be re-contoured, reclaimed and where possible, reforested within 18 months of completion of harvesting and hauling operations, unless otherwise agreed to in the operating schedule

7.6.1.6 As agreed to between the company and Alberta, effective forms of public access control for highway vehicles shall be maintained. Control of highway vehicle use of any open temporary or permanent access route may be required. All “non-traditional” access routes that are open must have measures in place to prevent highway vehicle traffic. Options for access management on “traditional” routes must be considered during the CA or FHP. The need for options to manage off highway vehicle traffic must be considered in the CA or FHP. See section 11.5 for more detail on Access Management.

7.6.1.7 Summer roads may be developed and approved, subject to the following:

- a) Road width and grade shall be minimized. Temporary summer roads shall be “dry weather” routes, with use suspended when ground conditions are unfavourable.
- b) Summer harvesting areas should be located outside of Core Grizzly range. Where this is not possible, activities should be (within 100m) to an existing all-weather road thereby reducing the need for new summer access routes. As an alternative, summer harvesting in more remote areas should have hauling deferred to take advantage of frozen ground conditions

7.6.1.8 Roads, skid trails, landings and campsites shall be located where they avoid natural meadows, beaver dam and den locations.

7.6.1.9 Reclamation techniques used on access routes must strive to prevent highway vehicle use and limit off-highway vehicle use.

## TRUMPETER SWAN

### DISCUSSION

Trumpeter swans are classified as a “Threatened” species under the Alberta Wildlife Act. The “Recommended Land Use Guidelines for Trumpeter Swan Habitat in Alberta” provides background, intent, and specific direction for managing industrial work near trumpeter swan breeding wetlands. Locations of breeding wetlands are found on provincial land use referral maps. A provincial trumpeter swan recovery process has been initiated which may have implications for timber harvest in Alberta.

Trumpeter swans are sensitive to human disturbance, and human activity in breeding areas may decrease survival of eggs or cygnets. Trumpeter swans that are disturbed may not nest or may abandon an existing nest. Therefore, the breeding population continues to be dependent on current management practices and habitat protection.

Timber harvest planning and operating ground rules must reflect the sensitive nature of this species. These operating rules serve three primary purposes:

- a) protection of the long-term integrity and productivity of trumpeter swan breeding habitat;
- b) avoidance of industrial disturbance to trumpeter swans during nesting and rearing of cygnets; and
- c) minimize the access created near swan lakes to reduce the potential for secondary disturbance of trumpeter swans from recreational use.

During the breeding season (April 1 to Sept. 30), low-level (<2000') aircraft flights may disturb trumpeter swans. Low-level aircraft flights are discouraged over identified trumpeter swan lakes or water bodies.

### GROUND RULES

#### 7.6.2 Trumpeter Swan Areas

- 7.6.2.1 From April 1 to Sept. 30, there shall be no harvesting, hauling, road building or scarification activity within 800 m of the high water mark on identified trumpeter swan lakes or water bodies.
- 7.6.2.2 There shall be no timber harvesting within 200 m of the high water mark on identified Trumpeter Swan lakes or water bodies.
- 7.6.2.3 An area 200-500 m from the high water mark on identified trumpeter swan water bodies shall be managed in a manner that provides additional protection for the swans. Special measures shall be determined on a site-specific basis during the FHP. Special measures within this zone shall include site preparation that reduces the potential for future vehicular access, no aerial application of herbicides unless approved by Alberta, and attempts to limit maximum line of sight to 100 m. Attempts to retain sufficient structure to contribute to a “forested” habitat in this zone are encouraged. Techniques that limit line of sight and contribute to the treed buffer of the wetland are encouraged.
- 7.6.2.4 There shall be no development of long-term infrastructure (roads and camps) within 500 m of the high water mark on identified trumpeter swan water bodies. Only seasonal winter routes shall be permitted within the 500 m buffer.



## **KEY WILDLIFE AND BIODIVERSITY ZONES**

### **DISCUSSION**

Key winter range for deer, elk and moose in Alberta, is often found in river valleys. These landforms contain the topographic variation and site productivity conditions that provide winter foraging conditions in proximity to forest and topographic cover. Also, south-facing valley slopes have relatively lower snow accumulations and warmer bedding sites. The valley landform itself provides protection from high wind chills. Traditional, high use and high quality winter ranges have been identified on the Wildlife Sensitivity Maps on the basis of several decades of winter aerial population surveys, supplemented by habitat assessments using aerial photo interpretation and ground surveys.

Key ungulate winter ranges play a disproportionately large role, given their localized size and distribution, in maintaining the overall productivity of regional ungulate populations. These ranges ensure that a significant proportion of the breeding population survives to the next year.

Habitat effectiveness, including maintenance of thermal cover, foraging areas and escape cover is important for ungulates. Timber operations within and adjacent to key wintering areas adds stress and increases energy drain for animals. They may be forced to move about unnecessarily and even relocate to less favourable habitat. This becomes an increasingly significant factor as winter progresses. Activities associated with timber harvest may also create temporary and permanent access that exposes animals to additional non-industrial disturbances, increased levels of harvest from licensed and non-licensed hunting, and to increased predator efficiency.

It is recognized that in some cases work will occur throughout the winter season to take advantage of frozen ground access. Completing operations in ungulate habitat areas early in the winter season remains a management objective.

In the interest of maintaining productive ungulate populations, operating ground rules must reflect an understanding of the biology of these animals and the importance of their key winter ranges. These must serve two primary purposes:

- a) protection of the long term integrity and productivity of key ungulate winter ranges, and;
- b) avoidance of direct and indirect disturbance to animals that are using these winter ranges during the mid-to late-winter period.

### **GROUND RULES**

#### **7.6.3 Key Ungulate and Biodiversity Zone**

- 7.6.3.1 Timber harvest operation should not be planned during the restricted activity period (January 15 – April 30), in the Key Ungulate and Biodiversity zone. Where operations during this period are unavoidable, and if these operations have not been previously addressed and approved specifically in the AOP, a minor amendment is required.
- 7.6.3.2 New long-term and permanent access roads shall not be developed below the valley “breaks” of rivers, except in isolated cases for river crossings.
- 7.6.3.3 Where possible all access roads shall avoid known key habitat features (as identified by Alberta or identified by the company’s field program), including riparian areas, meadows and shrub areas, and mineral licks;

- 7.6.3.4 Use of existing access roads must be described in the FHP, with particular reference to public access management.
- 7.6.3.5 Mechanical thinning and/or selective use of ground or aerial herbicide, as approved by Alberta, may occur within this zone.
- 7.6.3.6 In order to maintain browse availability, mechanical stand tending activities shall only remove competing vegetative growth that interferes with the Reforestation Standard of Alberta (RSA) targets.

## Other Species

### DISCUSSION

Habitat for other selected wildlife species requires maintenance of undisturbed areas (e.g., breeding or denning locations) In order to complete all, or part, of these species life cycles.

### GROUND RULES

#### 7.6.4 Other Species

- 7.6.4.1 Sensitive sites listed below shall be protected through the retention of an undisturbed, buffer from the edge of the entrance of these sites, or from the centre of sites without a specific entrance. Both Alberta and the forest operator shall make a reasonable effort to identify sensitive sites in the FHP. Buffer widths shall be agreed to in the FHP.
- 7.6.4.2 In the event that site-specific buffers or other management techniques are not agreed to in the FMP and FHP, the following buffer widths shall apply. In the event that a sensitive site not previously identified during layout and is found during harvest activities it shall be identified on the self reporting form and buffered as appropriate and feasible.

Sensitive Site	Minimum Width of undisturbed Buffer
Breeding Sites and Hibernacula of special concern, threatened or endangered Amphibians, Reptiles and Bat Hibernacula	100m
Grizzly Bear Den	100m
Wolverine Den	100m
Colonial Bird Nesting Area	100m
Raptor Nest Tree	100m
Natural Mineral Licks (doesn't include shot holes)	100m
Natural Springs and Beaver Ponds with no outflow channel	20m vegetated

## **8.0 SILVICULTURE**

### **PURPOSE**

**To plan and implement silvicultural practices that result in reforested stands that meet approved regeneration standards.**

### **DISCUSSION**

A reforestation program is required by Alberta under TMR 143.1. The reforestation program is a component of the AOP and contains reforestation prescriptions by strata, and a schedule of treatments for the upcoming year. The proposed reforestation program provides a link between reforestation operations and the FMP. The reforestation program must be based on the most current knowledge of treatments (by strata) which lead to reforestation success in terms of reforestation standards. Reforestation prescriptions are a critical point in the sustainable forest management planning system where growth and yield strata targets from the FMP are delivered through well-planned silviculture treatments. Knowledge of how sites respond to different treatments result in better prescriptions, and greater probability of success in meeting growth and yield strata targets, for height, stocking, density and ultimately, strata volumes.

An acceptable silvicultural process includes:

- Site assessment (pre or post harvest) based on ecosite classification
- A table or 'matrix' of silviculture treatments or tactics for specific strata
- Developing regeneration standards based on yield curve strata targets
- An annual treatment schedule of activities
- An assessment/survey system, and feedback mechanisms to ensure regeneration data is used to refine the prescription matrix and, in conjunction with all data sources (including permanent sample plot information), the regeneration standards and post harvest growth and yield assumptions.

### **GROUND RULES**

## **8.1 PLANNING**

- 8.1.1** The conditions outlined by Alberta must be met prior to planning reforestation of balsam fir or alpine fir as an acceptable species. See Directive 2001-01 or successors.
- 8.1.2** The company shall avoid damaging regeneration during timber operations.
- 8.1.3** Reforestation timelines prescribed by Alberta shall begin at the start of the timber year following the end of the timber year when the harvest area has received skid clearance from Alberta, or from a company representative pursuant to a self-inspection agreement between the company and Alberta.
- 8.1.4** Reforestation prescriptions shall be based on site assessments (pre or post-harvest) that include considerations specific to the site. Eg. Ecosites of West Central Alberta.
- 8.1.5** All reforestation planning and operations shall adhere to The Alberta Forest Genetics Resource Management and Conservation Standards (FGRMS). The standard specifies rules for seed and vegetative material collection, registration, storage, handling, and improved stock testing.

## 8.2 REFORESTATION PROGRAM

- 8.2.1 The reforestation program submission date is April 1 of each year unless otherwise approved by Alberta, and is submitted as part of the Annual Operating Plan (AOP).
- 8.2.2 Harvest areas (openings) shall be clearly identified. Eg. maps, spatial files, or delineation on the ground through visual markings.
- 8.2.3 The reforestation program shall include the following components and information:
- a) Silviculture Prescriptions;
  - b) Proposed Silviculture Treatment Schedules; and
  - c) Maps as requested by Alberta.

a) Silviculture Prescriptions

The Forest Management Plan contains a Silviculture Strategy table for prescriptions specific to different forest stratum. Changes to the approved strategy in the FMP are outlined in the AOP.

Proposals for herbicide application shall be submitted for approval in accordance with approved vegetation management strategies, these operating ground rules, and Alberta's requirements as outlined in the Herbicide Reference Manual, which is updated from time to time. Herbicide proposals are a component of the reforestation program in the AOP, but may be submitted separately from the AOP.

Commercial thinning proposals shall be submitted for approval as part of the AOP unless otherwise agreed by Alberta, in accordance with Alberta's requirements.

b) Proposed Silviculture Treatment Schedule

The Silviculture Treatment Schedule shall contain the following information:

- Opening number
- A list of harvest areas and the estimated area (ha) to be treated,
- The reforestation strata standard for each harvest area (see below for more detail)
- season or date of activity shall be provided upon request

The following proposed reforestation activities for each harvest area (or stand) shall be listed:

- I. Site Preparation
- II. Planting –declaration if seedlot is outside its seed zone and whether or not an approved variance has been obtained from the Alberta Tree Improvement and Seed Center (ATISC)
- III. Seeding – declaration if seedlot is outside its seed zone and whether or not an approved variance has been obtained from ATISC
- IV. Leave for Natural – including the desired species
- V. Manual Tending
- VI. Fertilization – including the type of fertilizer
- VII. Commercial thinning
- VIII. Legislated Regeneration surveys

- IX. Cone/cuttings collection – (if unknown, Alberta shall be notified regarding collections as per the FGRMS)
- X. NSR declarations with retreatment proposed.

c) Maps

As part of the reforestation program, a map may be requested that identifies:

- I. All harvest areas to be treated, and all roads and watercourse crossings to be constructed or used (designating their season of use).
- II. The reforestation map shall include all harvest areas from integrated operations.

See Section 12.0 REPORTING for reforestation activity reporting requirements.

### **8.3 SILVICULTURE OPERATIONS**

- 8.3.1** Site preparation and other silviculture activities must follow the same AOP conditions and ground rule standards which apply to timber operations.
- 8.3.2** Herbicide, pesticide and fungicide use shall be performed in accordance with, these operating ground rules, and Alberta's requirements as outlined in the Herbicide Reference Manual, which is updated from time to time.
- 8.3.3** Site preparation equipment shall be cleaned and free of prohibited noxious and noxious weed seed or plant parts before entry into the working area or before mobilizing between projects according to Directive 2001-06.
- 8.3.4** Planting boxes shall be disposed of within 24 months of skid clearance and are to be removed to an appropriate disposal facility if ground access exists or the block does not contain any debris piles. If ground access does not exist, boxes may be securely placed within existing debris piles for disposal by burning. All plastic shall be removed from boxes and disposed of at an approved waste disposal site prior to burning.

## **9.0 SOILS**

### **PURPOSE**

**To conduct timber harvest, road construction, reforestation and reclamation operations in a way that shall:**

- **Minimize the potential for soil erosion**
- **Prevent soil, logging debris and deleterious substances from entering watercourses**
- **Ensure that the capability of the site to support healthy forest tree growth is maintained.**

### **DISCUSSION**

Minimizing soil displacement, compaction and rutting/puddling during road construction, harvesting, and silvicultural operations is required. Soils are most at risk of compaction and rutting/puddling when the soil is moist or wet, with the more poorly drained soils remaining wetter longer. The soils are equally at risk in the winter months if they are wet and the soil has not frozen. Rehabilitation of compacted soil in harvest areas is seldom an option because additional machine traffic will often cause more soil damage. Therefore, protection of soil is best achieved through the choice of proper equipment for the site, staff training and advanced planning of operations. In terms of advanced planning, it is recommended that a pre-harvest site assessment include the evaluation of the soil drainage classes across the harvest area and the delineation of sensitive areas with imperfectly and poorly drained soils. Operations occurring on dry or frozen ground conditions will help to mitigate the risks of negative soil impacts. The weather and percentage of sensitive areas in the harvest area shall be taken into account when scheduling areas for harvesting.

### **GROUND RULES**

#### **Planning**

- 9.1** Areas susceptible to rutting, puddling or compaction shall be avoided when planning temporary roads, decks, landings and skid trail locations.
- 9.2** Areas susceptible to rutting, puddling or compaction shall be scheduled for harvest during dry or frozen conditions (e.g., harvest areas with predominantly imperfectly-poorly drained soils).

#### **Harvesting**

- 9.3** The total area covered by temporary roads, bared landing areas, and displaced soils, created by timber harvesting operations shall not exceed five percent of each harvest area without prior approval of Alberta.
- 9.4** Operations shall not occur during heavy rainfall or when soil conditions are above field capacity (saturated).
- 9.5** Operations shall cease when instances of multiple ruts in a limited area are created that are clearly related to operations during unfavourable ground conditions.
- 9.6** Erosion and soil disturbance must be limited, with effort made to retain organic matter and soil nutrients.
- 9.7** Timber harvesting shall not occur on any area where the likelihood of soil water table increases following harvesting is high, and the risk that the reforested area will not achieve the regeneration standard is also high. (moved from 7.2.4).

## **Reclamation and Reforestation**

- 9.8 Site preparation creating linear disturbance patterns shall be oriented to minimize channelling of water downslope and to ensure sediment is not directly entering watercourses.
- 9.9 Roads within harvest areas that are no longer required shall be reclaimed and reforested. Treatments acceptable to Alberta are required on compacted soils. Acceptable treatments may include decompaction if required, roll back of debris, and planting.

# **10.0 FOREST HEALTH/ PROTECTION**

## **10.1 INSECT AND DISEASE**

### **PURPOSE**

- **To minimize the risk of occurrence, and spread of insects and disease, which have negative impacts on forest management objectives.**
- **To prioritize the salvage of timber damaged by insects and disease.**

### **DISCUSSION**

The impact of certain insects and diseases shall be addressed when planning timber harvest and silviculture operations. Several biotic and abiotic forest health agents affect the growth and survival of trees. Each agent poses a potential threat to forest values. Priority for management shall be given to those agents that have the greatest impact or could potentially cause the most damage by:

- a) increasing the wildfire hazard
- b) reduction or loss of merchantable volume
- c) detracting from landscape aesthetics

### **GROUND RULES**

- 10.1.1** Harvest plans and operations shall be prioritized in stands with insect and disease issues. Variance from the SHS to address insect or disease issues will be acceptable if approved by Alberta. Infected and infested stands shall be ranked based on the type and intensity of insect and disease, or the presence of dead trees. Stands or trees shall be prioritized for treatment or harvest as follows:

**Priority 1:** Stands or trees with the presence of the mountain pine beetle or the spruce beetle

**Priority 2:** Stands with a significant number of dead or dying trees resulting from fire, insects or disease, and blowdown.

**Priority 3:** Stands infected with mistletoe, spruce budworm, forest tent caterpillar, root disease (Tomentosis, Armillaria) or jack pine budworm.

**Priority 4:** Significantly impacted Stands infected with needle cast, Western gall rust, root collar weevils, Atropellis or other miscellaneous forest health agents.

- 10.1.2** Management tactics are based on the Forest Protection ranking as follows:

**Priority 1 stands or trees:** Control Measures must be undertaken before adult beetles take flight, either through harvest or single tree treatment. Alberta and forest operators shall work co-operatively to prevent spread.

**Priority 2 stands:** Shall be managed through the salvage planning process (see section 3.6,) to address highly unpredictable spread rates and patterns.

**Priority 3 stands:** To manage dwarf mistletoe operators shall:  
a) create a 20m wide mistletoe-free zone adjacent to the harvest area;  
b) create a 20m wide non-host buffer beside the harvest area perimeter; or  
c) reforest the harvest area to a non-host species.

**Priority 4 stands:** Generally, no control is required for mature stands. Regenerated stands affected by Western gall rust or root collar weevils may require site treatments.

**10.1.3** Insect and disease assessment information shall be utilized in the CA. Where a CA is not required, the assessment information will be used to develop the GDP. Known or new infestations shall be identified and addressed in the FHP

**10.1.4** All infestations of Priority 1 agents shall be reported to Alberta immediately. Any supporting data that was collected shall also be submitted.

**10.1.5** Where dues relief is requested, mistletoe infected stands must be surveyed using an acceptable rating system (e.g., Hawksworth system).

## 10.2 WEED MANAGEMENT

### PURPOSE

To minimize the impact of non-native, prohibited noxious and noxious weeds, in the Green Area.

### DISCUSSION

The invasion of prohibited noxious and noxious weeds into the forested area of Alberta negatively affects the integrity of the ecosystem. Invasive weeds alter natural processes and displace organisms that naturally occur in these areas.

Under Alberta statutes, the occupant (or owner if there is no occupant) must destroy all prohibited noxious weeds, control all noxious weeds and prevent the spread or scattering of nuisance seeds.

### GROUND RULES

**10.2.1** Forest operators shall follow Alberta's requirements (Directive 2001-06 or its successors) for weed management in forestry operations. (see Appendix 3)



## **11.0 ROADS**

### **11.1 ROAD CLASSIFICATION**

#### **PURPOSE**

**To define a road classification system that provides guidelines to all forest operators and potentially all resource users within the FMA.**

#### **DISCUSSION**

As roads are one of the most significant components of forest harvesting operations, forest operators along with Alberta shall co-ordinate and integrate road planning and construction plans with other resource operators. This classification system will provide consistent working guidelines to be used in planning and operation activities, to facilitate integration. It is important to identify not only construction schedules but closure and reclamation timelines as well. Long term planning of access roads is a significant tactic to address landscape access issues.

#### **GROUND RULES**

- 11.1.1** EFP shall utilize the classification system described in Table 3 during all planning and operations activities.
- 11.1.2** All roads, regardless of class, with a lifespan of greater than three years shall be built under the authority of a LOC.

**Table 3. Road Classification and Design**

Road Description and Tenure	Planning Requirements	Layout	Design and Construction Descriptions		Borrow Pits	Timber Salvage	Debris	Erosion Control
			Right of Way					
			Maximum Clearing Width	Road Surface Width				
Class 1 Paved Highways	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Class 2 Primary Permanent All Weather 20+ Years	Identified in higher-order plans, i.e., long term access plans.  Phased planning approach shall be followed.  LOC required.  Detailed design plan (see “guidelines”).	Centre line marked. Side ribbons required.	40 m	8 – 12 m	Location identified prior to construction (EFR) or as per submitted TFA.	As per TM Regulations and EFR under LOC.	Total disposal. Stripping and fine debris to be retained for erosion control by spreading on cuts and fills and any other critical area.	Concurrent with construction. Cross drains and ditch blocks dictated by slope and soil conditions. Water to be diverted off the ROW in as short a distance as possible.
Class 3 Secondary Permanent All Weather or Dry Weather 5 – 20 + years	Identified in higher-order plans, i.e., long term access plans.  LOC required.  Detailed design plan: through route selection process a need for detail shall be assessed, i.e., need for cross-sectional profiles based on sensitive area identification.	Centre line marked. Side ribbons may be required for LOC roads and sensitive sites.	30 m	5 – 10 m	Location identified prior to construction (EFR) or as per submitted TFA.	As per TM Regulations and EFR under LOC.	Total disposal. Stripping and fine debris to be retained for erosion control by spreading on cuts and fills and any other critical area.	Concurrent with construction. Cross drains and ditch blocks dictated by slope and soil conditions. Water to be diverted off the ROW in as short a distance as possible.

**Table 3. Road Classification and Design (continued)**

Road Description and Tenure	Planning Requirements	Layout	Design and Construction Descriptions		Borrow Pits	Timber Salvage	Debris	Erosion Control
			Right of Way					
			Maximum Clearing Width	Road Surface Width				
<p>Class 4</p> <p>Tertiary Permanent</p> <p>Winter or Dry Weather</p> <p>Up to 20 Years</p>	<p>Identified in higher-order plans, i.e., long term access plans.</p> <p>LOC Required</p> <p>Detailed design plan: through route selection process a need for detail shall be assessed, i.e., need for cross-sectional profiles based on sensitive area identification</p>	<p>Centre line marked. Side ribbons may be required for LOC roads and sensitive sites.</p>	20 m	5-10 m	<p>Location identified prior to construction (EFR) or as per submitted TFA.</p>	<p>As per TM Regulations and EFR under LOC.</p>	<p>Total disposal. Stripping and fine debris to be retained for erosion control by spreading on cuts and fills and any other critical area.</p>	<p>Concurrent with construction. Cross drains and ditch blocks dictated by slope and soil conditions. Water to be diverted off the ROW in as short a distance as possible.</p>
<p>Class 5</p> <p>Temporary</p> <p>Connects one Harvest area to another</p> <p>Winter or Dry Conditions</p> <p>Up to three Years</p>	<p>Details to be addressed in FHP.</p> <p>Required to be shown on FHP map.</p> <p>Approved in AOP.</p>	<p>Centre line marked.</p> <p>Track status in Operations Status Report</p> <p>Block access roads mapped.</p>	20 m	10 m	<p>Location identified prior to construction or as per submitted TFA.</p>	<p>As per FHP.</p>	<p>Partial disposal. Mechanical or manual cutting of slash and debris to reduce fire hazard to acceptable levels.</p>	<p>See 11.3.3</p>
<p>Class 6</p> <p>Within Harvest Areas</p> <p>Up to three years</p>	<p>Not required to be mapped in FHP unless passing through reserve or outside block.</p> <p>Approximate watercourse crossing location is identified in the FHP</p>	<p>Status tracked with block in Operations Status Report</p>	n/a	5 – 10 m	<p>Location may be identified prior to construction, but not in all cases</p>	<p>Part of block</p>	<p>Part of block</p>	<p>See 11.3.3</p>

## 11.2 ROAD PLANNING AND DESIGN

### PURPOSE

**To outline the plan to construct, maintain and reclaim roads.**

### DISCUSSION

The impacts of roads are recognized as long-term. It is therefore important that the initial placement of roads be carefully examined. Resource values shall be assessed during the process in order to best mitigate impacts or enhance benefits associated with those values.

The submission of road plans will assist Alberta to facilitate the integration of access management among all resource users (e.g., oil and gas industry). Road plans shall forecast corridor development linking all compartments and other industrial developments.

LOC roads are authorized under the authority of the Public Lands Act. The Application process identified by Alberta is to be followed for all LOC roads.

### GROUND RULES

**11.2.1 EFP shall annually submit a road construction and reclamation plan for LOC roads in the GDP. Proposed variances from the FMP long-term corridor plan requires Alberta's approval. The minimum scope of the road construction schedule shall be a five-year forecast and a map showing:**

- existing EFP roads by other existing roads if the digital information is available;
- proposed EFP corridors, including corridors approved in the FHP
- access control points – See section 11.5 Access Control.

**Temporary Roads: Class 5 and Class 6 (with an active lifespan of up to three years from start of construction).**

**11.2.2 Temporary class 5 roads shall be built as per the approved AOP. Only roads with FHP approval shall be included in the AOP submission.**

**11.2.3 EFP shall submit a table or report tracking the status of all their AOP class 5 roads over two years old. This applies to AOP roads developed after the signing of these ground rules. Pre-existing AOP roads that are reused will be stabilized by removing water crossings and establishing erosion control as per 11.3.4.6. These roads shall be reclaimed as soon as timber operations are complete or within three years of construction. This may be submitted as part of the Road Plan in the AOP or in a monthly Operations Status Report.**

## 11.3 TEMPORARY ROAD CONSTRUCTION, MAINTENANCE AND RECLAMATION

### PURPOSE

**The roads shall be constructed, maintained and reclaimed in a timely manner to minimize environmental impacts.**

### DISCUSSION:

Access management is essential to maintain and enhance current and future forest values. Access management is often achieved through proper construction, and reclamation techniques. Conscious efforts need to be made to conserve top soil and debris from newly constructed access.

Strategic placement of debris is required to achieve access management objectives. Debris should be placed over the entire width of the reclaimed surface in order to help with erosion control, speed vegetation re-establishment and to discourage vehicle traffic. Where limited debris exists for deactivation or reclamation activities, priority for placement should be given to slopes adjacent to watercourses, other unstable slopes and to the first 200m of clearing off of an existing access point.

## **GROUND RULES**

### **11.3.1 General**

- 11.3.1.1 Existing access (e.g., seismic lines, trails, existing roads), shall be used as a priority wherever practical and feasible.
- 11.3.1.2 Road ROWs shall be cleared according to standards established in Table 3 and any additional conditions approved in the FHP.
- 11.3.1.3 Roads and landings shall be constructed to avoid:
  - a) unstable soils, water source areas, springs and seepage areas;
  - b) creating disturbed, compacted or bared soils that exceed the amount specified in section 9.3.
- 11.3.1.4 All roads built under the authority of the AOP shall be reclaimed within 3 years of the date of initial construction.

### **11.3.2 Construction**

- 11.3.2.1 Roads, skid trails and landings shall be placed in locations and constructed so that soil erosion, damage to streambeds or sedimentation into watercourses is mitigated.
- 11.3.2.2 On those parts of the ROW not used for grade construction, disturbance to the duff and organic soil shall be minimized to reduce damage to the roots of bordering trees and to provide a protective soil cover.
- 11.3.2.3 Trees with root systems seriously damaged by road construction activities shall be removed from the edge of a road cut.
- 11.3.2.4 The fill required for road construction shall be taken from the ROW unless specifically approved by Alberta.
- 11.3.2.5 All borrow pits required off the ROW must be approved by Alberta or an appropriate land use disposition before they are developed.

### **11.3.3 Erosion Control/Prevention**

- 11.3.3.1 Initial erosion control measures shall be concurrent with grade construction. Preferably, no more than a two kilometre length of bared surface shall be developed between the time the sub-grade is constructed and the completion of erosion control activities.

- 11.3.3.2 Constructed roads require erosion control and stabilization of disturbed soils.
- 11.3.3.3 Ditch backslopes shall have a regular profile from the top of the cut to the bottom.
- 11.3.3.4 Water from roads, ditches and bared soil surfaces shall not be permitted to drain directly into any watercourse. Appropriate erosion control measures shall be implemented that divert the flow of water into the surrounding vegetation and prevent sedimentation into a watercourse.
- 11.3.3.5 Cross-drainage culverts and other drainage devices shall be installed as road sub-grade construction progresses. Cross-drainage structures shall:
  - a) reduce water movement along ditches;
  - b) divert water from the ROW into the surrounding vegetation;
  - c) provide cross movement for water from seeps and springs;
- 11.3.3.6 Where required for erosion control, re-vegetation shall be completed concurrent with operations or as soon as soil conditions permit. Existing ditch vegetation shall be protected during road maintenance wherever possible and re-established where necessary.
- 11.3.3.7 Debris from road and landing construction shall be retained and used for re-vegetation and erosion control on disturbed areas.

#### **11.3.4 Reclamation**

- 11.3.4.1 Roads not under LOC that are no longer required shall be deactivated or reclaimed, have crossings removed, and their condition monitored until they are considered satisfactorily reclaimed (see 11.3.4.7).
- 11.3.4.2 Certified weed free seed shall be used when seeding is used for reclamation.
- 11.3.4.3 All borrow pits no longer required must be reclaimed (re-contoured to stable slopes and re-vegetated)

#### Seasonal Deactivation

- 11.3.4.4 Certain roads that are not used continuously throughout the year may require the following:
  - a) cross ditches based on slope and soil type;
  - b) erosion/sedimentation control
  - c) watercourse crossing removal;
  - d) re-establishment of water flow;
  - e) soil and slope stabilization; and
  - f) access control measures.

#### Deactivation

- 11.3.4.5 Roads that are not immediately required but necessary for future operations shall be deactivated to the following standards unless otherwise approved in the AOP:
  - a) watercourse crossing and drainage structures that have a high risk of erosion or failure are removed, and stream banks and approaches will be re-contoured and reclaimed.
  - b) all erodible soils and slopes are stabilized through rollback, seeded to an approved vegetation species mix, and cross-ditched to disperse runoff and suspended sediment into undisturbed areas.

- c) Access closure structures are installed or effective rollback is completed where required.

#### Final Reclamation

11.3.4.6 Roads and associated bared areas that are no longer required, shall be permanently reclaimed by completing all of the following:

- a) decompaction, and return to an acceptable landform (re-contouring);
- b) removing all watercourse crossings and drainage structures and reclaiming stream banks and approaches; (see section 11.4.27)
- c) cross-ditching, rolling back topsoil (including slash and logging debris) and re-vegetating;
- d) soil and slope stabilization;
- e) reforesting disturbed areas inside harvest areas and where mutually agreed to, outside of the harvest area;
- f) limited off highway vehicle access may be left for silvicultural purposes. This is intended to enable slow OHV access; and
- g) establishing access closures where required.

## 11.4 WATERCOURSE CROSSINGS

### PURPOSE

To provide guidance so that crossings are constructed, maintained and reclaimed in a manner that ensures negative environmental impacts are minimized and fish and fish habitat are protected.

### DISCUSSION

It is important to implement watercourse crossings of acceptable standards to meet the needs of all users. Of primary importance is protection of the aquatic environment. It is intended that water quality, fish passage, bank stability and aquatic fauna habitat are not compromised during watercourse crossing construction, maintenance and reclamation.

The planning of watercourse crossings must consider tenure, user integration, timing constraints, existing plans and assessments, as well as pertinent policy and legislation. Watercourse crossings shall be designed, installed, maintained and deactivated in accordance with all applicable policy and legislation. See Section 7.6.1 and 7.6.2 for additional information.

### GROUND RULES

- 11.4.1** The watercourse crossing types listed in table 4 are acceptable for its corresponding watercourse classification. Deviations from this table shall be identified as a ground rule deviation in the FHP and requires approval by Alberta as per 3.5.6.

Table 4 – Acceptable Crossing Structures

Watercourse Classification	Acceptable Crossing Structures	
	Non-Frozen conditions	Frozen conditions
Ephemeral	Log Fill Culvert Bridge	Snow Fill Log Fill Culvert Bridge
Intermittent	Culvert Bridge	Snow Fill Log Fill Culvert Bridge
Transitional	Culvert Bridge	Snow Fill Culvert Bridge
Small Permanent	Culvert Bridge	Snow Fill Culvert Bridge
Large Permanent	Bridge	Bridge

- Unless previously identified in the AOP, notification of crossing type to ESRD is required on the first operations report after installation,
- Modified log fill can be used on streams less than 1.5 m wide. It consists of a pipe supported by logs and constructed as defined in 11.4.21.



- 11.4.2** Intermittent and higher-order watercourses shall be identified in the FHP.
- 11.4.3** Proposed watercourse crossing structures and locations shall be identified in the FHP.
- 11.4.4** Unless otherwise approved, watercourse crossings shall:
- a) maintain fish passage where fish are present;
  - b) minimize erosion and sedimentation;
  - c) have stable approaches;
  - d) be at right angles to the watercourse;
  - e) be at locations where the channel is well defined, unobstructed and straight;
  - f) be at a narrow point along the watercourse;
  - g) allow room for direct gentle approaches;
  - h) have no direct runoff from either the road surface or ditches; and
  - i) shall have erosion control structures implemented where required.
- 11.4.5** Watercourse crossings shall accommodate peak stream flows at the following levels as measured using a method acceptable to Alberta:
- a) long-term roads (Class 1-4) – shall be designed for a minimum of 1:50 year flood levels; and
  - b) temporary roads (Class 5 and 6) – shall be designed for a minimum of 1:25 year flood levels with the exception of temporary winter crossings, which are removed before break-up.
- 11.4.6** On approaches to watercourse crossings, the organic soil layer and lesser vegetation shall not be stripped from portions of the ROW not needed for the road grade.
- 11.4.7** Any in-stream activities shall be scheduled to avoid migration, spawning and incubation periods of migratory or resident fish species (restricted activity periods). Mitigative measures approved by Alberta may allow for deviations from the in-stream timing constraints.
- 11.4.8** Fish passage must be maintained through all watercourse crossings on fish-bearing waterbodies, except where exempt under legislation.
- 11.4.9** The flow of the watercourse must be maintained at all times when carrying out activities within the watercourse, unless otherwise approved under the Water Act.
- 11.4.10** Measures must be implemented to minimize the duration and amount of disturbance of the bed and banks of the watercourse or waterbody. Where damage to the bed and banks of a watercourse occur, appropriate measures to restore the bed and banks must be undertaken.
- 11.4.11** During timber operations, measures must be implemented to prevent the deposition of soil and logging debris into a watercourse. Any other deleterious substances and/or materials that are toxic, or pose an immediate threat to fish and other aquatic organisms that enter a watercourse must be removed immediately and reported to Alberta.
- 11.4.12** Measures must be implemented to prevent the transfer of biota that are not indigenous to the environment at the watercourse-crossing site.
- 11.4.13** Watercourse crossings shall be kept free of accumulated debris. Culverts plugged with ice shall be reopened to prevent flooding during spring thaw.
- 11.4.14** Interim erosion control measures (e.g., silt fences, matting, or gravel check dams) must be implemented and maintained until the slopes have been stabilized, permanent vegetation has established and the crossing site is considered reclaimed.

- 11.4.15** Watercourse crossings structures that fail shall be replaced with a new or more appropriate crossing structure, or the site shall be reclaimed.
- 11.4.16** Bridge abutments shall not constrict the normal watercourse channel. Where the banks are built up to construct a bridge abutment, soil shall be brought in and deposited from the end of the grade. Equipment shall not enter any watercourse channel. Bridge spans must extend beyond the banks and the abutment walls.
- 11.4.17** The use of bridges is preferred on fish-bearing streams; however, steel culverts may be permitted where they will not restrict upstream passage of fish.
- 11.4.18** Culverts for all classes of streams must be properly sized and installed to prevent erosion at both the inflow and outflow ends of the structure. Culverts shall be of sufficient length beyond the fill and the overburden shall be adequately backsloped and stabilized to prevent sediment from entering the watercourse. The ends of the culvert shall remain open at all times. Any culvert that becomes a hanging culvert shall be repaired or replaced as soon as conditions permit.
- 11.4.19** Logfills (see 11.4.21 below) on temporary roads may be used as per Table 4. Logfills installed during frozen periods shall be removed prior to spring break-up. A bottom layer of logs may be left in place when removing the logfill to provide for summer crossing over ephemeral watercourses.
- 11.4.20** Crossing intermittent or ephemeral watercourses within harvest areas shall be avoided when possible. When the crossings are necessary, they shall be constructed at specified locations using appropriate watercourse crossing structures as per Table 4.
- 11.4.21** A properly constructed logfill has all of the following:
- a) enough logs to adequately cross or fill an ephemeral draw so that when the logs are removed there is little or no damage to the banks or channel bottom;
  - b) logs delimbed and bucked to at least 1.5 m longer than the grade fill at each end; and
  - c) logs covered by a layer of suitable material that separates the soil from the logs, which shall permit total removal of the soil cap.
- 11.4.22** In fish-bearing watercourses, any negative impacts on the bank stability and fish habitat shall be minimized. Damage to banks and the resulting corrective actions taken by the company shall be reported to Alberta within 7 days of the occurrence.
- 11.4.23** A native timber bridge (bridge) may be used as per table 4, provided that all of these requirements are met:
- a) bridge abutments do not restrict watercourse channel;
  - b) a brow log is installed on both sides of the bridge deck to prevent soil from entering the watercourse;
  - c) no equipment enters the watercourse channel;
  - d) timber of suitable size and strength is available for construction;
  - e) the span extends beyond banks and abutment walls;
  - f) a separation layer is used between soil cap and timber to prohibit material falling into the creek;
  - g) the soil cap and separation layer is removed as soon as harvest and hauling is complete unless the crossing is required for silviculture operations, and adequate sedimentation and erosion control methods have been employed.
- 11.4.24** A snow fill may be used on watercourses during frozen conditions and when the watercourse is frozen to the bottom of the channel, provided that all of the following requirements are met:

- a) sufficient clean snow exists to fill creek channel;
- b) bank integrity is maintained;
- c) any soil cap or temporary structure (eg. Logs) installed over the snow is removed prior to break-up;
- d) measures are in place to prevent soil or other debris from entering watercourse channel or ice surface; and
- e) Water flow is not impeded.

**11.4.25** An ice bridge may be used during frozen conditions provided that all of the following requirements are met:

- a) no capping material is used;
- b) winter water flow is not impeded;
- c) snow and ice approaches protect the banks of the watercourse;
- d) appropriate ice thickness exists to bear the necessary load requirements; and
- e) there are no alterations to the streambed or bank.

**11.4.26** Each operator shall establish a watercourse crossing monitoring program acceptable to Alberta. Documentation as to current condition, repair requirements, or removal dates of the crossing structures must be maintained and made available to Alberta upon request.

**11.4.27** Watercourse crossings that are no longer required shall be reclaimed with the objective of minimizing any sediment from entering the watercourse. Their condition shall be monitored annually until they are satisfactorily stabilized meeting the following requirements.

- a) removing all watercourse crossing and drainage structures and reclaiming stream banks and approaches; and
- b) cross-ditching approaches, rolling back topsoil (including slash and logging debris) and within one year re-vegetating erodible bared surface areas with vegetation capable of maintaining bank stability, eg. this may include the use of sedges and willow cuttings.

## 11.5 ACCESS CONTROL

### PURPOSE

**To manage existing and proposed surface access recognizing key resource values.**

### DISCUSSION

The impacts of roads on resource values may require mitigation through access control measures. Wildlife, sensitive areas (i.e., historical sites, soils), protection of road quality and safety are reasons for implementing access control. A number of strategies and tactics are available for controlling or restricting access.

Access control measures for long-term roads shall be identified through the submission and review of the phased planning process. For temporary roads, the CA or GDP, and FHP shall be the mechanisms used in identifying access control requirements.

The following list of access control methods identifies a number of options that may be implemented:

- Physical Barriers (e.g., gates; barricades, pilings, crossing removal)
- Road Condition (e.g., berms, ditches, road standard, selective grade removal, roll-back, no snow removal)
- Regulatory (e.g., sanctuaries, timing restrictions, signage)

## GROUND RULES

- 11.5.1** Where access control has been identified as an objective in an access management plan, Alberta shall consult with the forest operator to determine an access control strategy. In the event that an access management plan has not been developed, the FHP shall describe specific access control measures identified in the FMP (see section 3.4).
- 11.5.2** In designated areas, Alberta may direct forest operators to restrict road access during specified periods, implemented in accordance with Alberta policy. Restricted access issues may be dealt with differently depending on whether the road is new access or is existing access.

## 11.6 CAMPS AND FACILITIES

### PURPOSE

**To give guidance to forest operators so that the planning, construction, maintenance and reclamation of camps and miscellaneous facilities is done in a manner that minimizes negative impacts on the forest environment.**

### DISCUSSION

Camps and other facilities are often a necessary part of operations in remote areas. Forest operators require that such facilities operate in an efficient and cost-effective manner and are implemented without compromising the integrity of the environment.

Some of the best practices for camps and facilities include:

- place sites out of visual and auditory range from mineral licks and key wildlife areas;
- safe camp locations are a priority. Therefore, an evaluation of potential risks shall be conducted prior to selecting a final camp location;
- camps and fuel storage sites shall be identified in the annual fire control plan when the proposed locations are known;
- camps shall be kept clean. Proper mechanisms for the disposal of hazardous and non-hazardous waste shall be implemented;
- camp food and garbage storage shall minimize the potential for problems with wildlife. It is recommended that operators follow the Bear Smart guidelines for specific mitigation relating to bears. Problems with wildlife shall be dealt with in consultation with Alberta.
- any facility or camp must adhere to all provincial regulations related to the camp (ie. Public Health Act – *Work Camp Regulation*.)

### GROUND RULES

- 11.6.1** Any facility or camp that shall be in place for more than twelve consecutive months requires an appropriate disposition under the Public Lands Act. Temporary field authorities (TFAs) are required for camps that will be in place less than twelve consecutive months.
- 11.6.2** Where feasible, forest operators shall establish temporary camps and/or other facilities within new harvest areas or existing clearings (ie. gravel and borrow pits).
- 11.6.3** Temporary fuel storage sites shall not be located within 100m of any waterbody

## **12.0 REPORTING**

### **PURPOSE**

**To ensure that timber operation activities are reported to Alberta in order to maintain an accurate and current database across the Province.**

### **DISCUSSION**

Reporting and monitoring is necessary to ensure legislated requirements are met. The intent of reporting is to communicate that a given activity has occurred, where it occurred and when it occurred. This information shall also be used for annual and stewardship reports and shall be RFP validated as per Appendix 1 of Annex 4.

### **GROUND RULES**

- 12.1** Forest operators who conduct silviculture work on their disposition shall report the details of all work completed in the previous year annually into ARIS no later than May 15. The required information is outlined in the ARIS Industry Operations Manual. Information shall be submitted in accordance with all requirements of the manual and associated policy directives.
- 12.2** Alberta may require additional reporting for forest management activities such as thinning, herbicide, pesticide spraying, or fertilization as per Alberta requirements.
- 12.3** Companies harvesting more than 30,000 m<sup>3</sup>/year shall have self-inspection agreements in place and shall carry out periodic inspections of active timber operations and report the information to Alberta in an acceptable format. Reports based on the 2006-04 directive shall be submitted to Alberta once per month or at agreed to intervals.
- 12.4** A harvest summary (shapefiles or other digital formats approved by Alberta) including actual harvest area boundaries, as built road locations, and watercourse crossing locations from the previous timber year's harvest activities shall be submitted by December 31 as part of the annual performance report. At a minimum, the following attributes are to be included:

FHP Blocks (Polygons):

- I. Opening Number
- II. Block Number
- III. FHP Number

FHP Inter-block Roads (Lines):

- IV. Company road identifier

Watercourse Crossing Locations for Channeled watercourses (Points):

- V. Company watercourse crossing number

# **Appendix 1 - Role of Regulated Forestry Professionals<sup>2</sup> (RFP) in Forest Management**

The Alberta Government is committed to sustainable management of forests on public land to provide benefits and opportunities for Albertans. Alberta relies on the professional integrity of RFPs to enhance the effectiveness of forest resource management planning, implementation and harvest activity, while recognizing the interdisciplinary nature of forest management planning.

Alberta requires a RFP to submit the components of forest management plans, annual operating plans and harvest activity reporting, as identified in this annex, for approval.

## **1.0 Validation by a RFP**

RFPs shall validate their submitted work by one of the following methods:

- i. Signing using their professional title and registration number, or
- ii. Stamping and signing using the seal provided by a *College*, or
- iii. Using other mechanisms approved by Alberta.

## **1.1 Significance of RFP Validation**

RFP *validation* provides assurance to Alberta that work is *accurate* and has been prepared with *due diligence*. Government RFPs shall review *validated work* by conducting a reasonable assessment for accuracy and shall take appropriate *corrective actions* where *validated work* is not *accurate*.

The documentation required to demonstrate *due diligence* is viewed as a significant source for validating accuracy. Alberta will not accept inadequate documentation and may refer such occurrences to the Complaints Director of the appropriate *College*.

## **1.2 Approval of Validated Work**

Alberta's approval does not transfer the accountability for the plan or its implementation from the Organization or the submitting RFP to Alberta or its staff. Government RFPs who review submissions are accountable for their reviews and any direction provided to the Organization. *Approval of validated work* shall be addressed as described below.

### **1.2.1 Appraisal**

Work with far-reaching and significant potential effect if inaccurate (such as but not limited to timber supply analysis, GDP). *Validation* of this type of work demonstrates confidence the work is *accurate*; however, due to its potential significance, it is both necessary and important to examine the work carefully. Approval shall be granted after the work has been reviewed by appropriate RFPs to assess accuracy. The timeline for this shall be established by Alberta and will vary depending on the nature of the *validated work*. Those preparing work for appraisal are advised to communicate with the reviewing government RFPs regularly and effectively to minimize confusion over the standards expected of the work.

### **1.2.2 Acceptance**

Work with a more limited potential effect (such as, but not limited to silviculture reports, operations inspections). The work is considered approved on the date Alberta acknowledges receipt of the work. Alberta shall notify the organization by acknowledging receipt within 5 working days of submission. The notification date will be documented by Alberta as the start date for FHP approval. Alberta shall periodically check the work and supporting documentation to verify its accuracy.

---

<sup>2</sup> Refer to Alberta Definitions

## 2.0 Work Validated by a RFP

All entities that conduct timber harvesting or silvicultural activities on public land, except those harvesting less than 30,000 m<sup>3</sup> annually from public land, must validate the items described below (the list of work to be validated may be amended from time to time by Alberta to adapt to change).

### 2.1 Forest Management Plans

The entire *forest management plan* shall be approved through an appraisal and must be validated by the senior RFP responsible for its preparation.

The following components must be validated by the RFP most directly responsible for their preparation. A RFP validated checklist describing the extent of compliance with applicable standards for each component shall be included with each submission:

- i. Yield projections and all associated data and analyses – for appraisal
- ii. Vegetation inventory data – for appraisal
- iii. Landbase description (analysis and report) – for appraisal
- iv. Silviculture strategies (refer to Annex 1, standard 5.5 on managed assumptions)– for appraisal
- v. Forecasting (timber supply analysis) – for appraisal
- vi. Harvest planning (*spatial harvest sequence*) - for appraisal
- vii. Monitoring reports - annual - for acceptance; stewardship – for appraisal

### 2.2 Annual Operating Plans<sup>3</sup>

The minimum *validation* requirements are as follows:

- i. General Development Plan – for appraisal
- ii. Compartment Assessments - for appraisal
- iii. Final Harvest Plan – for acceptance
- iv. Road Plan and Fire Control Plan – for acceptance
- v. Reforestation Program – for acceptance<sup>4</sup>

### 2.3 Harvesting and Reforestation Activities

*Accurate* and timely submission of timber production and sales information is important and must be validated. The activities related to reporting timber production and sales must be approved by the senior RFP responsible for the submission.

The following components of timber production and sales must be validated by the RFP directly responsible for their preparation:

- i. Scaling populations (TM262) – for appraisal
- ii. Timber production audits – for acceptance
- iii. Letters of Understanding – for appraisal
- iv. Statutory Declarations of production – for appraisal
- v. Harvest tenure standings – for acceptance
- vi. Timber production reporting – for appraisal
- vii. Silviculture information - regeneration strata balance/swap/trade summaries – for acceptance
- viii. Field operations inspection reports – for acceptance
- ix. Herbicide reports – for acceptance

AOPs are approved subject to an appraisal by Alberta. Where a compartment assessment has been completed the CA, FHP and AOP shall be appraised by Alberta.

Where thinning plans, herbicide plans, and reforestation prescriptions vary from FMP silviculture strategies the silviculture program shall be appraised by Alberta.

---

<sup>3</sup> AOPs are approved subject to a review by Alberta. Where a compartment assessment has been completed the CA, FHP and AOP shall be appraised by Alberta.

<sup>4</sup> Where thinning plans, herbicide plans, and reforestation prescriptions vary from FMP silviculture strategies the silviculture program shall be appraised by Alberta.

## Appendix 2 - Debris Disposal Policy

<b>BRANCH: WILDFIRE MANAGEMENT</b>	<b>MARCH 15, 2010</b>
<b>SECTION: WILDFIRE PREVENTION</b>	
<b>DEBRIS MANAGEMENT STANDARDS FOR TIMBER HARVEST OPERATIONS</b>	
<p><b>1. AUTHORITY</b></p> <ul style="list-style-type: none"><li>○ Alberta Sustainable Resource Development (SRD)</li></ul>	
<p><b>2. PURPOSE</b></p> <ul style="list-style-type: none"><li>● To provide standards for debris management in timber harvesting operations in compliance with the <i>Forest and Prairie Protection Act</i> (FPPA) and the <i>Forests Act</i>. Compliance will reduce the threat of wildfire to communities and other values within the Forest Protection Area.</li></ul>	
<p><b>3. POLICY</b></p> <ul style="list-style-type: none"><li>○ The FPPA defines debris management standards for debris produced from timber harvest operations. Timber and reforestation activities must comply with the FPPA and the <i>Forests Act</i>. The standards will be enforced.</li><li>○ The <i>Debris Management Standards for Timber Harvest Operations</i> policy is effective March 1, 2010 and may be revised. In addition to the management of debris through disposal, this policy also applies to debris retained for reforestation, wildlife habitat or other landscape management objectives.</li></ul>	
<p><b>4. <u>APPLICATION AND IMPLEMENTATION OF THE DEBRIS MANAGEMENT STANDARDS</u></b></p> <ul style="list-style-type: none"><li>● Debris management strategies must be linked to landscape objectives and must not conflict with the FPPA. The loss of productive land base resulting from timber harvest operations (debris piles, roads, landings) within the harvest area must not exceed the specifications outlined in applicable Operating Ground Rules. (As per the Timber Management Regulations of the <i>Forests Act</i>.)</li></ul>	
<p><b>A. Level II Mountain Pine Beetle Control Debris Management Standards</b></p> <p>The standards specified under sections B, C, D and the FPPA apply.</p>	
<p><b>B. FireSmart Debris Management Standards</b></p> <p>During harvest operations, there is a need to manage debris to minimize the risk of wildfire to communities or other values at risk. In order to minimize this risk, the following standards shall be applied:</p> <ul style="list-style-type: none"><li>I. Within the FireSmart Community Zone (Generally a 10 kilometre buffer of the community's development centre.), debris management strategies, for any purpose, must not include the retention of debris piles for reforestation, wildlife habitat or other landscape management objectives.</li><li>II. Outside of the FireSmart Community Zone, debris pile retention for reforestation, wildlife</li></ul>	



habitat or other landscape management objectives may be considered an acceptable debris management strategy. Retention is subject to SRD Forestry Program Manager approval through the Annual Operating Plan and in accordance with the standards described herein.

### **C. Wildlife Habitat and Biodiversity Debris Management Standards**

Debris piles that are retained in the harvest area outside the FireSmart Community Zone for wildlife habitat or landscape biodiversity objectives must adhere to the following guidelines:

- I. If the strategy involves random scattered piles throughout the harvest area, the following standards apply:
  - Height of piles must not exceed 2 metres
  - Base diameter of piles must be no greater than 3 metres
  - Distance between piles must be no less than 25 metres
  - Distance from block edge must be no less than 25 metres
- II. If the strategy involves random scattered piles made up of chip residue from chipping operations throughout the harvest area, the following apply:
  - Height of piles must not exceed 2 metres
  - Base diameter of piles must be no greater than 3 metres
  - Distance between piles must be no less than 15 metres
  - Distance from block edge must be no less than 25 metres
- III. If the strategy involves piling of debris at roadside, piles must meet the following standards:
  - Piles can only be left along roads scheduled for reclamation and abandonment following the completion of reforestation (i.e. scarification, planting)
  - Piles must be compacted to a maximum of 2 metres in height, 3 metres in width, 12 metres in length and perpendicular to the road
  - A group of piles may consist of a maximum of 5 piles with a spacing of 6 metres of slash free area between each pile within the group
  - Pile groups must be separated by a 50 metre slash free spacing

### **D. Reforestation Debris Management Standards**

Debris piles or windrows created from reforestation operations must adhere to the following specifications:

- I. If the strategy results in debris piles, the following standards apply:
  - Height of piles must not exceed 2 metres
  - Base diameter of piles must be no greater than 3 metres
  - Distance between piles must be no less than 25 metres
  - Distance from block edge must be no less than 25 metres
- II. If the strategy results in windrows (large logs, humus, and duff), the following standards apply:
  - Windrows must not be greater than 2 metres in height
  - Windrows must not be greater than 3 metres in width
  - Windrows must not exceed an average of 75 metres in length and must have slash free spacing of 8 metres
  - Distance from block edge must be no less than 25 metres

**E. Enforcement / Approval**

SRD will serve as the "one window" for industry contact and approval and will complete field inspections as required.

Debris piles to be disposed of must be in conjunction with the terms of these standards and the two year timeline set out in the FPPA. SRD will issue an "Order to Reduce or Remove a Fire Hazard" when debris piles have not been properly disposed of in accordance with this Policy and the Annual Operating Plan approved by the department.

Forest Industry may apply to SRD for a one-year extension where drought conditions have prevented them from completing disposal through burning operations. The SRD Forestry Program Manager must approve the extension.

Where debris disposal by burning is the strategy, Industry must report all burning locations to SRD one month before the start of the fire season.

**F. Review Process**

Research will be carried out by FP Innovations to assess the threat of wildfire associated with debris resulting from timber harvest operations. If findings indicate that standards within this policy directive are not sufficient to support wildfire hazard reduction, the standards and policy will be modified.

**G. Cross Reference**

Forest and Prairie Protection Act  
Forest and Prairie Protection Regulations, Part I and Part II

**H. Contact**

Hugh Boyd, Director  
Wildfire Prevention Section  
780-427-7811

**DATE:**

**APPROVED BY:**  
  
\_\_\_\_\_  
Bruce Mayer, Executive Director, Wildfire Management  
Branch

## **Appendix 3 - Directive for Weed Management.**

2001-06

### **Directive No.**

**Subject** Weed Management in Forestry Operations

---

**Purpose** To implement effective weed management programs administered by holders of *Forests Act* dispositions engaged in forestry operations. This policy applies only to *Forests Act* dispositions.

---

**Policy** Section 60 of the *Public Lands Act* sets out a disposition holder's responsibility with respect to noxious and restricted weeds on dispositions issued under that Act. Similarly, Section 31 of the *Weed Control Act* requires that the occupant (or if the land is unoccupied, the owner) of land destroy all restricted weeds, control all noxious weeds and prevent the spread or scattering of nuisance weeds.

The weed control duties on holders of dispositions issued pursuant to the *Public Lands Act* are reasonably clear and would apply to such dispositions that are issued in relation to forestry operations (e.g. camps, roads, processing sites and other associated land uses). It is, however, not entirely certain as to how the courts would interpret and apply the definition of "occupant" under the *Weed Control Act* in respect of timber dispositions issued under the *Forests Act*.

In terms of forestry operations, the vast majority of weed management situations should fall under either the *Public Lands Act* or the *Weed Control Act*. This Directive attempts to address weed management, in a forest operations context, where neither of these two Acts apply.

The Crown's goal is to address weed management issues on a landscape level, as opposed to on a disposition by disposition level. To accomplish this, a two step approach will be taken. Firstly, the disposition document and annual operating plans (AOP) will be used to describe the disposition holder's obligations with respect to weed management activities. Secondly, the Land and Forest Service (LFS) (and ideally, municipalities) will establish landscape level, co-operative weed management groups, with a mandate to developing a single management plan for all stakeholders involved.

Invasive weeds can alter the ecosystem's natural processes and displace native, threatened, and endangered vegetation and habitat. For these reasons, forest companies are expected to assist in managing weeds in the forested area of Alberta.

---

## **Procedure**

### **Amendment of Annual Operating Plans and Dispositions**

In order to address situations that fall outside the requirements of either the *Public Lands Act* or the *Weed Control Act* all AOPs prepared and submitted for timber dispositions are to include the following condition. Additionally, this statement is to be incorporated into the disposition itself upon issuance or renewal.

“{*Disposition holder*} shall, with respect to the land contained in this timber disposition, prevent the establishment of and control all noxious and restricted weeds to which the *Weed Control Act* applies, in a manner acceptable to the Minister.”

The Minister will consider the “*Recommended Standards of Good Practice for Prevention*”, described in the **Guidelines** section to be the minimum level of performance for all disposition holders. Where a disposition holder or weed management group (as described below) prepares a plan outlining weed management, the commitments in that plan will become the standards to which the disposition holder or parties to the group will be expected to meet. This plan will be approved, where appropriate, by the Regional Director.

### **Co-operative Weed Management Groups**

The LFS will establish co-operative weed management groups where willing participants are identified. The specific purpose of the groups will depend on the level of current involvement the individual participants have in weed management. Where participants are currently managing weeds, the purpose of the group may be to review individual existing weed management plans to identify opportunities for co-operative management. Where participants are not currently involved in weed management the purpose of the group may be to develop a single weed management plan for all group participants, or to assist individuals in the development of individual plans if desired.

The role and degree of involvement of LFS staff on these groups will depend on the make-up and desires of each individual group. Typically, the LFS will convene and co-ordinate weed management group meetings, in addition to other roles defined by the group. Forest Management Division staff will work with Forest Area staff to develop provincially consistent Terms of Reference for each group, and provide technical expertise and support where possible. Each group will select its own chairperson and define the roles for each member.

Weed management plans should address inventory, control, education, and prevention. Once a co-operative or individual weed management plan is agreed to, that plan will be implemented through the individual’s AOP. The results of this implementation will be used as the benchmark to which the Minister’s satisfaction for weed control and prevention is measured (i.e. vis-à-vis the AOP clause described above).

---

## **Guidelines**

To assist in determining whether a disposition holder’s weed management activities are acceptable to the Minister, the following guidelines describe the four essential aspects of weed management: goals, prevention, inventory and control. All of these should be considered when developing weed management activities and plans.

### **A. Goals**

The goals should be specific to noxious and restricted weed prevention, inventory and

---

control. They can be short-term and long-term, as is the nature of weed management.

## **B. Recommended Good Standards of Practice for Prevention**

### **1. Limit Soil Disturbances**

To limit the establishment of weed infestations, prevent unnecessary soil disturbances wherever possible.

### **2. Clean Equipment**

Practice due diligence by ensuring that all equipment and vehicles are free of weed seeds and plant parts before arriving on a job site. All agricultural implements or any equipment knowingly exposed to weeds are to be pressure washed prior to use in forested areas.

### **3. The Use of Straw Bales for Erosion Control**

The use of straw bales for erosion control is discouraged in the Green Area. Unlike hay, it is very difficult to determine if the straw bales are free of weed seeds. Therefore, certified “weed free” hay bales acquired from producers with a “Certificate of Inspection” should be used for erosion control.

### **4. Use Certified “Weed Free” Seed for Re-vegetation of Disturbed Sites**

Canada #1 Seed, approved under the *Canada Seed Act*, may not be weed free. To ensure a seed mix is virtually weed free, a purchaser can request a “Certificate of Seed Analysis.” To get a more detailed “Certificate of Seed Analysis”, the purchaser can request a larger seed sample analyzed, rather than the typical 25g sample to improve the confidence of the analysis. Alternatively, one can start with pure seed and then prepare the seed mix manually.

### **5. Rapid Response to Weed Infestations**

Because a single plant and small infestations are easier to control than large infestations, it is important to manage weeds proactively. To do this effectively, industry and LFS field staff should be trained in the identification of restricted and noxious weeds, and the importance of destroying individual weed plants and reporting new infestations.

## **C. Inventory**

A weed management program is most effective with an accurate account of existing weed infestations. Inventorying is most effective during the months of June through September, when most plants are in bloom and are the most easily recognized. “Noxious” and “Restricted” weed species to be surveyed are listed in the *Weed Designation Regulation (138/80)*. Additionally, the *Weed Control Act* provides municipalities with the authority to designate other species of local concern as restricted or noxious. For this reason weed surveyors should obtain a list of restricted and noxious weeds from the municipal district(s) within which they are surveying.

## **D. Prioritizing Areas for Control Measures**

As some areas within which weeds are managed consist of a large land base, control throughout the entire area is not feasible. Specific areas should be targeted each year, based on priorities. When prioritizing areas for control treatments, many factors must be considered to deliver the most effective and efficient control program. The following example criteria are not ranked in order of importance, with exception of *Restricted and Noxious*:

---

## 1. Restricted vs. Noxious

Target restricted weed infestations over noxious weed infestations. Control of restricted weeds should be implemented immediately following their discovery.

## 2. Location of Infestation

Target infestations in highly traveled areas over those in isolated areas, thereby limiting the threat of seeds or plant parts being Tran located.

## 3. Size of Infestation

Target small infestations before large ones, as it is easier to gain control of small infestations. This also applies to outlying pockets of larger infestations, which should be controlled prior to tackling the larger infestation. When dealing with a large infestation, a “contain and control” strategy (targeting outlying pockets, and/or the perimeter of the infestations) is an excellent option when resources are not available to control an entire infestation.

## 4. Weed Species

To prevent their establishment, target weed species that are less abundant on a regional basis. When controlling infestations, target the weed species with the greatest ecological impacts. In many situations this may be difficult to quantify, although generally speaking it can be done. For instance, a weed infestation encroaching on a habitat of an endangered plant species would have a higher priority than an infestation among common or non-native vegetation.

## 5. Co-operative Control Opportunities

Co-operative control is the most effective and efficient method to control weed infestations that span multiple dispositions or border of responsibility. Unless one is adopting a “contain and control” strategy, generally it is not a good idea to control only part of an infestation.

### E. Control Options

When selecting a control method, it is important to note that different species respond differently to each method. The most efficient programs will have an integrated control plan that includes both prevention and one or more of the following control methods:

- ◆ **Mowing / Cutting** - Effective for perennial weeds. Careful monitoring and proper timing are necessary for this to be a viable option. If a site is mowed over several years, well-developed root systems can eventually be depleted. Weeds should not be mowed once seed set has occurred, as this will aid in spreading seed.
- ◆ **Hand Pulling** - Effective for annual or biennial weeds, especially when dealing with small infestations or individual plants. Hand pulling may have to be done annually (before seed set) for several years, as dormant seeds in the soil may continue to germinate. If any weeds are pulled when in flower, they must be bagged and burned, as they will set seed if they are left on the ground.
- ◆ **Herbicide Application** - Very effective but will not guarantee 100% control. Sites may have to be revisited again the next year for follow-up treatments. Several herbicides are effective for each weed species. Chemical selection should be determined by site, weed species, existing desirable vegetation, and whether or not a residual effect is wanted. Assistance with selecting a herbicide and application rate can be obtained through a Municipal District, County Agricultural

---

Fieldman, or Certified Pesticide Applicator.

- ◆ **Biological Control** - This method of control is the introduction of insects or diseases that attack or infect a specific weed species. Biological control agents can be difficult to obtain, and in some cases they are in the testing phase to determine effectiveness. Information regarding the biological control of weeds can be obtained through the Alberta Research Council in Vegreville, Alberta.

---

**Authorities**

**Weed Control Act** - provincial legislation describing weed control and management requirements.

**Weed Designation Regulation** - lists weed species designated as restricted, noxious and nuisance in Alberta.

**Forests Act** - describes the requirements with respect to forest allocation.

---

**Cross -  
Reference**

- ◆ **FPD Policy 16.0 - Restricted and Noxious Weed Management Jurisdiction**
- ◆ **Land and Forest Service “Forest Management Herbicide Reference Manual”**

**Contacts**

Doug Sklar      422-4590  
Hideji Ono      422-8801

**Approved**

---

## **APPENDIX 4 – GLOSSARY**

Appendix 1 - Role of Registered Forest Practitioner in Forest Management Alberta	The Department of Sustainable Resource Development, including the Public Lands and Forests Division, Fish and Wildlife Division, and Forest Protection Division or as amended from time to time.
Alberta Vegetation Inventory (AVI)	An inventory of vegetation and forest stands including non vegetated areas.
Analysis	A detailed examination of a body of data, a series of decisions, or the implications of one or more policies, and a determination of what this examination reveals about the nature, function and/or relationships in effect.
Annual allowable cut (AAC)	The volume of timber that can be harvested under sustained-yield management in any one year, as stipulated in the pertinent approved forest management plan. In Alberta it is the quadrant cut divided by the number of years in that quadrant, usually five.
Annual Operating Plan (AOP)	A plan prepared and submitted by the forest operator each year, which provides the authorization to harvest. An AOP is a requirement of the Timber Management Regulation. (See section B 1.4)
Approval	Issued by Alberta. Approval Decision is prepared outlining significant items considered in plan approval and outlining conditions to be met within specified time periods by the Organization or a decision made by Alberta on an AOP.
As built harvest boundary	An opening number accompanied by a spatial depiction of the harvest area generated either from cutover photography or from GPS technology capable of 3m or better accuracy
Assumptions	A judgmental decision made by a planner or decision maker that supplies missing values, relationships, or societal preferences for some informational component necessary for making a decision
Audit	An official examination and verification of records, activities, accounts, actions, operations, etc., against stated standards of performance and compliance.
Bared soil	Any soil where the organic layers and vegetation have been removed.
Borrow pit	A small quarry or excavation, which provides material for use in the construction project. [Revised from Dunster]
Buffer	Used in several contexts. 1 In protecting critical nesting habitat areas, the buffer is an area of forest land that reduces the impacts of adjacent activities on the critical area. The dangers associated with adjacent disturbances might include wind-throw or wind damage to nest trees and young birds in the nest, increased predation and loss of interior forest conditions. 2 A strip of land between two areas under different management regimes. Pesticide buffer zones are used to limit the possible drift, run-off or leachate of pesticide from a site into other areas, such as waterbodies or creeks. Streamside buffers are used to limit the effects of logging on creeks, such as siltation, loss of shading, loss of nutrient inputs from trees and degradation of riparian zones. The size and composition of the buffer zone depends on its intended function. 3 An area maintained around a sample or experimental plot to ensure that the latter is not affected by any treatment applied to the area beyond the buffer. 4 In GIS work, a new polygon computed on distance from a point, line or existing polygon. 5 In managing biosphere reserves, an area or edge of a protected area. Examples of compatible activities might include tourism, forestry, agroforestry, etc. The objective of the buffer zone is to provide added protection for the core reserve area. [Dunster]
Coarse filter	Conservation of land areas and representative habitats with the assumption that the needs of all associated species, communities, environments and ecological processes will be met. [Dunster]
College	The College of Alberta Professional Foresters (CAPF) or the College of Alberta Professional Forest Technologists (CAPFT).
Commercial Thinning	A partial cut where trees of a merchantable size and value are removed to provide an interim harvest while maintaining a high rate of growth on the remaining, well-spaced, final crop trees. Used to capture volume likely to succumb to competition pressures and be lost to disease, insect, or dieback.
Commercial timber	A timber disposition issued under Section 22 of the Forests Act authorizing the permittee to



permit (CTP)	harvest public timber.
Compaction	A transfer of wheel pressure to soils causing collapse of large air-filled pores, a type of disturbance when tire imprint is often invisible under the duff layer. Soil susceptibility to compaction is maximal when soil is at field capacity, which can be detected by stability of hand cast. Most of soil compaction occurs during the first passes of equipment because soil gains strength with each additional pass.
Compartment	A subsection of an FMA for which operational plans are developed.
Connectivity	A measure of how well different areas (patches or a landscape are connected by linkages, such as habitat patches, single or multiple corridors, or "stepping stones" of like vegetation. The extent to which conditions among late successional/climax forest areas provide habitat for breeding, feeding, dispersal and movement of late successional - or climax-dependent wildlife or fish species. Natural landscapes often tend to be better connected than those that have been heavily influenced and disturbed by human activities. Consequently, there is a body of opinion that the best way to avoid fragmentation of landscapes is to maintain, or re-establish, a network of landscape linkages. At a landscape level, the connectivity of ecosystem functions and processes is of equal importance to the connectivity of habitats. [Dunster]
Constraints	The restriction, limiting, or regulation of an activity, quality or state of being to a predetermined or prescribed course of action or inaction. Constraints can be a result of policies or political will; management direction, attitudes and perceptions; or budget, time personnel and data availability limitations; or, more typically, a complex interaction of all these factors. [Dunster]
Corridor	1 A physical linkage connecting two areas of habitat and differing from the habitat on either side. Corridors are used by organisms to move around without having to leave the preferred habitat. A linear habitat patch through which a species must travel to reach habitat more suitable for reproduction and other life sustaining needs. Many corridors, linking several patches of habitat, form a network of habitats. The functional effectiveness of corridors depends on the type of species, the type of movement, the strength of the edge effects and its shape. 2 An area of uniform width bordering both or one side of a lineal feature, such as a stream or route. [Dunster]
Cross-drainage structures	Culverts or other drainage structures that permit water to move from one side of a road to the other, normally under the road grade.
Deactivation	Taking a road out of active use through implementation of erosion control measures, road blocks and/or other methods.
Deciduous timber allocation (DTA)	A quota of deciduous timber.
Deleterious material	Section 34(1) of the Fisheries Act defines "deleterious substance" as: (a) any substance that, if added to water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water, or (b) any water that contains a substance in such quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water.
Desired Future Forest	A spatially explicit projected range of conditions of the forest landscape 100+ years into the future. The range of forest conditions defines the goal towards which forest management will be directed. It is our best guess today on the arrangement of forest age classes, roads and habitats that will provide for a set of objectives and desired outcomes that have been identified for the area.
Displaced soil	Mixed mineral, surface and sub-surface horizons that have been deposited off the road or disturbed surface to a depth of 15 cm or greater.
Disturbance patterns	The spatial and temporal arrangement of disturbances.
Ditch blocks	Barriers constructed across ditches to retard water flow, to redirect water from the ditch or to form a small catch basin.

Drought	Extended period of below average precipitation causing a lowering of the water table. Generally occurs over several years but locally may happen seasonally. Signs would be lowering of lake levels and drying of streams that would normally flow all year.
Due Diligence	<p><b>- taking and documenting steps to ensure that the desired outcome is achieved or that the chances of a negative consequence or outcome is minimized.</b></p> <ul style="list-style-type: none"> <li>- ensuring completeness, correctness, consistency and repeatability.</li> <li>- demonstrating how conclusions were reached.</li> <li>- using mechanisms, such as but not limited to checklists and standard operating procedures, to demonstrate that appropriate procedures were followed and to ensure that no relevant steps or considerations were missed.</li> <li>- keeping and maintaining appropriate files and filing systems as well as document retention policies and practices.</li> </ul>
Duff	The organic horizons of the soil profile (LFH). Commonly referred to as the forest floor.
Dwarf mistletoe	<i>Arceuthobium americanum</i> Nutt.
Ecological integrity	The quality of a natural, unmanaged or managed ecosystem in which the natural ecological processes are sustained, with genetic, species and ecosystem diversity assured for the future. [Dunster]
Environmental field report (EFR)	A document that must be submitted for most green area disposition applications as required under the Public Lands Act. The disposition applicant completes the EFR, which includes details on construction practices and environmental issues, and contains operating conditions that apply to the approved disposition. The EFR forms part of the approval for the Public Lands Act disposition.
Features	The features represented on a map which describe the physical aspects of the harvest design. E.g. harvest area boundaries, roads, buffers, wildlife habitat.
FireSmart Community Zone	A standard 10 kilometre radius around the community extending from the Wildland Urban Interface Zone. A unique data set will be gathered for this zone for community protection planning to provide a fundamental linkage between FireSmart Communities and FireSmart Landscapes
FireSmart Landscape Zone	This zone extends beyond the FireSmart Community Zone overlapping multiple jurisdictions at a broad landscape level. This zone focuses on mitigating the likelihood of large, high intensity, high severity fires. Fire, Forest and Land Management planning are integrated and designed to reduce the negative ecological, economic and social impacts of wildfire while maximizing the positive attributes of wildfire.
FireSmart Landscapes	The philosophy that seeks to mitigate the likelihood of large, high intensity and high severity fires. FireSmart landscapes are designed to recognize the interaction between ecological, economic and social impacts, hence maximize the positive ecological impacts and minimize the negative economic and social impacts.
Floodplains	Flat land bordering a stream or river onto which a flood will spread. The underlying materials are typically unconsolidated and derived from past stream transportation activity. The extent of the floodplain varies according to the volume of water, and its 50-year-old floodplain would be defined by the largest flood that would, on average, occur once within a 50-year-period, estimated from historic stream flow records. [Dunster]
Forest Health	A condition of the forest; a forest is considered healthy if it can sustain itself to meet the specific forest land management objectives of today or in the future.
Forest Management Agreement (FMA)	<p>A contract between the province of Alberta and the FMA holder whereby the province provides an area-based Crown timber supply. In return, the FMA holder commits to the following:</p> <ul style="list-style-type: none"> <li>Managing the timber resource on a perpetual sustained yield basis, taking into consideration a broad range of forest values in determining forest management practices.</li> <li>Meeting defined economic objectives, including capital investment and job creation, and seeking out new business opportunities that provide measurable economic benefits for both the province and the FMA holder.</li> </ul> <p>The FMA gives the FMA holder the right to access Crown fibre. In return, the FMA holder commits to forest management responsibilities, which may change from time to time.</p>

Forest Management Unit (FMU)	An administrative unit of forest land designated by the Minister, as authorized under Section 14(1) of the <i>Forests Act</i> .
Forest operations	Includes all activities related to timber harvesting, including site assessments, planning, road construction, harvesting, reclamation and reforestation.
Forest operator	The timber disposition holder or person responsible for controlling harvest planning and operations in the timber disposition. It also refers to those persons working on behalf of the disposition holder while conducting forest operations.
Forest tent caterpillar	<i>Malacosoma disstria</i>
Forests Act, the	The legislative statute that authorizes the Minister to administer and manage the forested lands of Alberta.
Full Review	An evaluation of the acceptability for approval of a submitted document involving referrals to government departments, independent experts, or others as appropriate, and a risk analysis prior to Alberta granting approval to the submitting Organization.
Genetic Diversity	The genetic variability within a population or a species; the number and relative abundance of alleles. Genetic diversity can be assessed at three levels: Diversity within breeding populations, Diversity between breeding populations within any one geographic area, Diversity within the species
Grazing disposition	An authorization issued by Alberta for the purpose of domestic livestock grazing on public land (i.e., lease, license or permit).
Ground Rules	Standards for operational planning and field practices that must be measurable and auditable and based forest management plan objectives.
Guideline	A preferred or advisable course of action respecting land and resource management. Guidelines imply a degree of flexibility, based on administrative judgment or feasibility of applying the guideline, and are consequently not normally enforceable through legal means.
Harvest area	A specified land area with defined boundaries where timber harvesting is scheduled, or has occurred. (commonly referred to as a cut block)
Hiding cover	See “ <i>sight distance</i> .”
High-water mark	Stream course water levels corresponding to the top of the unvegetated channel or lakeshore.
Historical resource	Any work of nature or man that is primarily of value for its palaeontological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest, including, but not limited to, the structure or object and its surrounding site.
Harvest Level	A volume or area of timber determined through timber supply analysis available for harvest on an annual sustainable basis within a DFA. A harvest level is not an AAC unless approved by the Minister.
Insects and Diseases	Biological, physiological, and environmental agents that have an adverse effect on the health of the forest. These agents include insects; nematodes; micro-organisms (viruses, bacteria, fungi); parasitic plants; mammals; birds; and non-infectious disorders caused by climate, soil, applied chemicals, air pollutants and other physiographic conditions.
Inter block road	Any temporary road that extends through a block to reach another block. It ends at the edge of the last block connected to the road.
Integrated resource plan	A regional plan developed by provincial government agencies in consultation with the public and local government bodies. It provides strategic policy direction for the use of public land and its resources within the prescribed planning area. It is used as a guide for resource planners, industry and publics with responsibilities or interests in the area.
Jack pine budworm	<i>Choristoneura pinus</i>
Landing	Any area where logs are gathered for processing or further transport to a mill site.
Landscape	A landscape (or LMU) is a heterogeneous area in which the pattern of the mosaic of local ecosystems or land uses is repeated in similar form throughout kilometres wide area (after Forman 1986). Landscapes may coincide with a climatic, physiographic or ecological boundary. However, landscapes are not strictly ecologically based and include human use and modification of the area.
Large residual tree	A residual tree with a diameter measured at breast height (DBH) greater than the approximate average merchantable tree DBH of the harvest area.
Large woody debris	Woody material >1cm in diameter, stumps and snags < 1.3 m tall and dead trees leaning >45

	degrees. The woody material left on site after logging including both pre-existing and harvest-generated material (downed boles, limbs, tops and stumps). Includes highly decomposed and vegetated material as long as it is recognizable as woody.
License of occupation (LOC)	A disposition issued by Alberta authorizing occupation of a linear corridor, often for an access road.
Logfill	Stream crossings constructed with logs placed in a streambed parallel to the flow of the water.
Mature stands	Stands that have reached rotation age or have a decreasing growth rate.
Mountain pine beetle	<i>Dendroctonus ponderosae</i>
Non-traditional access	Access with conditions on the disposition limiting its use by the public.
Noxious Weed	A plant designated under the Weed Regulation (AR 171/2001) of the Weed Control Act.
Organization	The proponent charged with developing the FMP. This may be a corporation, cooperative, or a public agency.
Partial cutting	A treatment where significantly less than 100% of the trees are harvested from a stand or area. It includes commercial thinning, even when the intention is leading to a final clearcut.
Pattern	The arrangement of forest stands or harvest units.
Permanent roads	Roads that will be in use for more than five years.
Permanent sample plots (PSP)	A fixed or variable area plot established for (forest) sampling and measurement purposes, and designed for remeasurement.
Pre-commercial Thinning	A silvicultural treatment to reduce tree density in young stands, carried out before the stems reach merchantable size. The intent is to concentrate the site's growth potential on fewer trees thereby accelerating stand development and reducing the time to final harvest, retaining more live crown, creating opportunities for future commercial thinning activities and improving stand operability.
Prescribed burn	The planned use of carefully controlled fire to accomplish predetermined management goals (e.g., site preparation for planting, reduction of fire hazards or pest problems, improvement of the ease with which the site can be traversed, and creation of better quality browse for wildlife). [Dunster]
Prohibited debris	Any flammable debris or waste material that, when burned, may result in the release of dense smoke, offensive odours or toxic air contaminants. It includes: (a) Garbage or refuse from commercial or industrial operations (b) Rubber or plastic, or anything containing or coated with rubber or plastic or similar substances (c) Used oil from internal combustion engines, hydraulic oil and lubricants (d) Motor vehicle tires.
Quota	The timber quota is a share of the allowable cut of coniferous timber within a forest management unit.
Reclamation of roads	Permanent removal of watercourse crossings; re-contouring of road crown and ditches; reseeding or planting of the former right-of-way.
Recreation Site	Includes areas designated by Alberta as Ecological Reserves, Wilderness Areas, Wildland Parks, Provincial Parks, Heritage Rangelands, Natural Areas, and Recreation areas.
Regeneration	The renewal of a tree crop by natural or artificial means. It may also refer to the young crop itself.
Regulated Forestry Professional	A Registered Professional Forester (RPF) on the Registered Professional Forester Register of the College of Alberta Professional Foresters (CAPF) or a Registered Professional Forest Technologist (RFPT) on the Registered Professional Forest Technologist Register of the College of Alberta Professional Forest Technologists (CAPFT).
Reserve	In its strictest sense, an area of land designated as being off-limits to any exploitive activities that might change the nature of the area. Not all reserves are so tightly controlled. [Dunster]
Residual structure	Standing structure that is taller than 2 m, within a harvested area. Areas buffered for sensitive ecological or wildlife habitat may be included for residuals. Required buffers for lakes and small and large permanent streams are not included. This includes non-merchantable trees and shrubs, live merchantable trees, snags and stubs.
Residual tree	A live canopy tree that is spatially within a harvested area. Areas buffered for sensitive ecological or wildlife habitat may be included for residuals. Required buffers for lakes, small and large permanent streams are not included.

Resources	Physical and intrinsic features of the land, including but not limited to timber, wildlife, water and soil.
Restricted Weed	A plant designated under the Weed Regulation (AR 171/2001) of the Weed Control Act.
Review	Acceptance or appraisal conducted by Alberta
Right-of-way (ROW)	A cleared area, usually linear, containing a road and its associated features such as shoulders, ditches, cut and fill slopes, or the area cleared for the passage of utility corridors containing power lines or over- or under-ground pipelines. Typically, the right-of-way is a specially designated area of land having very specific rights of usage attached. Rights-of-way may be owned by someone else. [Dunster]
Riparian area or management zone	(1) The band of land that has a significant influence on a stream ecosystem or is significantly affected by the stream. It often has specialized plant and animal communities associated with it. [Anon] (2) Terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils that exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs and wet meadows. The riparian zone is influenced by, and exerts an influence on, the associated aquatic ecosystem. [Dunster]
Root collar weevils	<i>Hylobius</i> spp.
Rotation	The period of years required to establish and grow even-aged timber crops to a specified condition of maturity.
Ruts	Machine depressions in the soil which are determined by depth and length: where the depth of the organic dark humus material is greater than 30 cm, a rut is a depression that shears the organic layer of soil (a sheared organic will expose a vertical face greater than 20 cm of the organic layer). Where the depth of the organic material is less than 30 cm, a rut is a depression exceeding 10 cm into the mineral soil. Length: An impacted area meeting the rut depth criteria that is greater than 4 m long. A continuous track with a rut less than 4 m because of stumps, logs or rocks lifting the vehicle will still count as a rut if the total length of the smaller holes is greater than 4 m.
Rutting/ puddling	A paste-like behaviour of wet soil when most of the soil pores are filled with water and soil literally flows from underneath the wheel to the sides and upward forming visible tire imprint into the mineral soil. Intensity/depth of rutting is directly related to the number of equipment passes. Soil is considered susceptible to rutting when it forms a stable hand cast.
Sensitive sites	Sites that have soil, water, slope, aesthetic, vegetation or wildlife characteristics that require special protection beyond the normal precautions described in the ground rules. They may be complex if many values or issues are involved.
Senior Forester	The senior Alberta representative located at a Forest District charged with approval and supervision of all forest management activities in a Forest Area. This position is authorized to approve the AOP.
Seral stages	A stage in succession. A series of plant community conditions that develop during ecological succession from a major disturbance to the climax stage. Most common characteristics/classifications include tree species and age.
Sight distance	The distance at which 90% or more of an adult big game animal is hidden from the view of a human. This distance may vary from one stand to another.
Silt fence	Permeable fabric barriers installed along the contour to filter surface water runoff and trap sediment from sheet or overland flow and prevent it from entering streams.
Silviculture	The theory and practice of controlling the establishment, composition, health, structure and growth of forests in order to achieve specified management objectives.
Site preparation	Any action taken in conjunction with a reforestation effort (natural or artificial) to create an environment favourable for survival of suitable trees during the first growing season. Altering the ground cover, soil or microsite conditions can create this environment; using biological, mechanical or manual clearing; prescribed burns; herbicides or a combination of methods. [Dunster]
Skid trail	An unimproved temporary forest trail suitable for use by equipment such as bulldozers and

	skidders in bringing trees or logs to a landing or road.
Small patch	A patch of less than 0.2 ha of undisturbed canopy forest surrounded by harvested area. The patch must be composed of at least four canopy trees. At least two of the trees in the patch should be large residual trees.
Snag	A dead tree that is taller than 2 m.
Soil Displacement	A loss of nutrient-rich organic layers, and top mineral soil as a result of harvesting activities. Bare mineral soil is susceptible to raindrop impact causing soil crusting, increased surface runoff, and erosion.
Soil disturbance	In the context of the 5% maximum allowable area within a harvest area, includes bared landing areas, temporary roads, displaced soils or ruts.
Spatial	Of, or existing in, space. [Webster's]
Species at risk	Any species known to be "at risk" after formal detailed status assessment and designation as "Endangered" or "Threatened" in Alberta. The list of species is maintained by Alberta.
Species of management concern	Species within the forest management planning area that have an identified value (social, economic, ecological) and are managed to ensure their continued protection and/or use. This includes species that are hunted or trapped, as well as those that are endangered or threatened.
Spruce beetle	<i>Dendroctonus rufipennis</i>
Spur road	
Stand	A community of trees sufficiently uniform in species, age, arrangement or condition as to be distinguishable as a group in the forest or other growth in the area. A stand may also be that polygon as defined in the AVI or Phase III inventory.
Strippings	Layers of humus-bearing topsoil and fine woody material above mineral soil that have been stripped off during road or landing construction.
Stub	A large residual tree that has been "topped off" at approximately 6 m to create an artificial snag.
Subunit	Portions of an FMU delineated by environmental, operational or watershed characteristics.
Suppression capability	The effectiveness of traditional fire suppression tactics. It is an objective evaluation of initial attack response time, access for ground support resources, water availability and terrain which might adversely impact movement of resources.
Sustainable forest management (SMF)	Management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social and cultural opportunities for the benefit of present and future generations.
Temporal	Of, or limited by, time. [Webster's]
Temporary field authority (TFA)	An authority issued under Section 19 of the Public Lands Act by an Alberta officer to grant short-term land use activities on public land in the White or Green Areas. The TFA may or may not be related to an existing disposition that has also been issued under the Public Lands Act. The concept is to provide field-level service to an applicant, with access to public land for a specific purpose/use/activity, for a term of less than or equal to one year.
Temporary road	Roads that are part of a harvest area or that connect harvest areas, and are built, used and reclaimed before expiry of the Annual Operating Plan (AOP) or reclaimed within five years of construction.
Thermal cover	Generally, an area of at least 10 ha having a coniferous canopy at least 10 m in height, with at least 70% crown closure and a minimum width of 200 m. This cover is used by animals to assist in their temperature regulation during extreme weather conditions.
Timber disposition	Licenses and permits that allow forest operators to harvest from Crown lands.
Timber Management Regulation	The legislative statute that describes the mechanism and regulations by which the forested lands of Alberta are managed. The Regulation is associated with the Forests Act.
Timber Operations	Includes all activities related to timber harvesting including site assessments, planning, road construction, harvesting, reclamation and reforestation.
Timber supply analysis (TSA)	Calculations/computer models with built-in assumptions regarding forest growth patterns, used to determine the annual allowable cut (AAC).
Timing constraints	A restriction or limitation on when an activity may be carried out.
Trapper	Holder of a trapping license.
Understorey	The trees and other woody species growing under the canopies of larger adjacent trees and other woody growth. [Dunster]

Unstable slope	Slopes of loose or poorly consolidated materials beyond the angle of repose, geological features having a high probability of failure, or soils that will not support loads.
Utilization	The portion of the stand or individual tree used for manufacture of wood products, defined in terms of piece length and diameter at each end. Minimum standards for utilization are defined in the timber disposition.
Validated work (Validation)	Work that has been prepared by, or reviewed and approved by an RFP. These professionals are subject to an enforceable code of ethics and standards of practice and are expected to complete their work with due diligence to ensure such work is accurate. The RFPs who validate the work may have done the work themselves, contracted the work to be done, or supervised those who did the work, but in any case, the validating RFPs are accountable for the work being prepared with due diligence and being accurate. If more than one RFP is involved in preparing the work, the RFP that is most directly involved in the work is to validate the work.
Values at risk	A listing of values which may be at risk of being reduced by wildfire. In order to complete a spatial “priority” evaluation, information regarding values is required.
Variance (SHS)	Any deletion to a stand scheduled in the spatial harvest sequence. Additions to stands identified in the spatial harvest sequence are not considered variance but are tracked in section 3.4.1 of the ground rules.
Viable understorey	Trees of desirable merchantable species that are windfirm and of sufficient vigour that they will continue to grow after harvest.
Water source area	That portion of a watershed where soils are water-saturated and/or surface flow occurs and contributes directly to streamflow. The area of saturated interflow associated with a stream.
Watercourse /waterbody	The bed, bank or shore of a river, stream, creek or lake or other natural body of water, whether it contains or conveys water continuously or intermittently.
Watershed	An area of land, which may or may not be under forest cover, that drains water, organic matter, dissolved nutrients and sediments into a lake or stream. The topographic boundary, usually a height of land, that marks the dividing line from which surface streams flow in two different directions. [Dunster]
Western gall rust	<i>Endocronartium harknesii</i>
Wildlife	Any species of amphibian, bird, fish, mammal and reptile found in the wild, living unrestrained or free roaming and not domesticated. Some definitions include plants, fungi, algae and bacteria. [Dunster]
Wildlife corridor	A strip of forest with a minimum width of 100m or a series of forest retention patches that connect two forested areas. These may include merchantable or unmerchantable stems.
Wildlife zone	As defined on the Wildlife Sensitivity Maps.
Windfirm	The ability of a tree or stand of trees to remain standing post harvest.
Yield Curve	Graphical representation of a yield table.

**List of Initialisms**

AAC	Annual Allowable Cut
AOP	Annual Operating Plan
ARIS	Alberta Regeneration Information System
AVI	Alberta Vegetation Inventory
CA	Compartment Assessment
CAPF	College of Alberta Professional Foresters
CAPFT	College of Alberta Professional Forest Technologists
CNT	Connotative Notation
CT	Commercial Thinning
CTP’s	Commercial Timber Permits
DHAP	Detailed Harvest Area Plan
DFMP	Detailed Forest Management Plan
DRS	Departmental Reserve
DTP’s	Deciduous Timber Permits
EFR	Environmental Field Report

FGL	Forest Grazing Lease
FERIC/FP Innovations	Forest Engineering Research Institute of Canada
FGRMS	Forest Genetics Resource Management and Conservation Standards
FHP	Forest Harvest Plan
FMA	Forest Management Agreement
FMP	See definitions - Forest Management Plans (generic)
FMU	Forest Management Unit
FPPA	Forest and Prairie Protection Act
FWMIS	Fish and Wildlife Management Information System
GDP	General Development Plan
ILM	Integrated Landscape Management
IRP	Integrated Resource Management Plan
LFS	Land and Forest Service
LOC	License of Occupation
LSAS	Land Status Automated System
NSR	Not Satisfactorily Restocked
OGR's	Operational Ground Rules
PCT	Pre-commercial Thinning
PNT	Protective Notation
PSP's	Permanent Sample Plots
RFMA	Registered Fur Management Areas
RFP	Regulated Forestry Professional
ROW	Right of Way
RPF	Registered Professional Forester
RPFT	Registered Professional Forest Technologist
RSA	Reforestation Standard of Alberta
SHS	Spatial Harvest Sequence
SRD	Alberta Sustainable Resource Development
TMR	Timber Management Regulation made under the Forests Act
TFA	Temporary Field Authority
TSA	Timber Supply analysis
QAC	Quadrant Allowable Cut



# APPENDIX 5 – FHP And AOP CHECKLISTS

<b>Forest Harvest Plan (FHP) Checklist</b>																							
Planning Unit _____	Disposition Number _____																						
Company _____	Submission Date _____																						
<table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 60%;">APPROVAL ITEM</th> <th style="width: 15%;">YES/NO</th> <th style="width: 25%;">INITIAL/DATE</th> </tr> </thead> <tbody> <tr> <td>* Validated by RFP</td> <td></td> <td></td> </tr> <tr> <td>* Deletions and deferrals &lt;20% of SHS area by cover type in the FHP</td> <td></td> <td></td> </tr> <tr> <td>* Area does not exceed 100% of SHS by cover type in the FHP</td> <td></td> <td></td> </tr> <tr> <td>*** Adheres to all Ground Rules (if "NO", see OGR Variance portion of the harvest design report )</td> <td></td> <td></td> </tr> <tr> <td>* Compartment assessment not required</td> <td></td> <td></td> </tr> <tr> <td>* Plan agreed to in writing by affected forest companies</td> <td></td> <td></td> </tr> </tbody> </table>	APPROVAL ITEM	YES/NO	INITIAL/DATE	* Validated by RFP			* Deletions and deferrals <20% of SHS area by cover type in the FHP			* Area does not exceed 100% of SHS by cover type in the FHP			*** Adheres to all Ground Rules (if "NO", see OGR Variance portion of the harvest design report )			* Compartment assessment not required			* Plan agreed to in writing by affected forest companies				
APPROVAL ITEM	YES/NO	INITIAL/DATE																					
* Validated by RFP																							
* Deletions and deferrals <20% of SHS area by cover type in the FHP																							
* Area does not exceed 100% of SHS by cover type in the FHP																							
*** Adheres to all Ground Rules (if "NO", see OGR Variance portion of the harvest design report )																							
* Compartment assessment not required																							
* Plan agreed to in writing by affected forest companies																							
<small>* Appraisal of the FHP is required as per 3.4.1 of the OGRs if "No" has been indicated on these Approval Items            ** Appraisal of deviations is required if "No" has been indicated on this Approval Item.</small>		<b>Company</b>  (Y,N,NA)																					
<b>Administrative Considerations</b>																							
Copies required as per FMA, regional OGR or agreement with Alberta.		_____																					
FHP consistent with approved higher order plans (DFMP, SHS, GDP)		_____																					
Required disposition been issued and approved		_____																					
FHP complete and legible		_____																					
- maps		_____																					
- block tables		_____																					
- blocks requiring detailed block plans identified		_____																					
- reforestation program		_____																					
<b>Ground Rule Deviations (see OGR Variance portion of the harvest design report)</b>																							
All blocks containing ground rule deviations have been identified		_____																					
Justification provided for all ground rule deviations		_____																					
<b>Utilization</b>																							
SHS Variance reported in FHP		_____																					
Deviations from utilization standards identified, explained and justified		_____																					
Utilization standard matches license document (if not, Company has approval documentation for temporary deviation)		_____																					
<b>Integration with Other Users</b>																							
Trappers have been identified and contacted		_____																					
Trapper information and concerns, where applicable, have been integrated into the plan		_____																					
Forest recreation groups identified and contacted		_____																					
GTA completed and grazing disposition holders have been contacted (Directive 2011-03)		_____																					
Historical resources integrated into the plan		_____																					
Any issues raised by other users or the public have been documented		_____																					
Potential land use conflicts have been documented and mitigated (PNT, CNT, road use agreements, etc.)		_____																					
<b>Access Management</b>																							
Access management, including control measures have been described and identified (location, timing, signage, etc) (7.6.1.9 & 7.6.3.4)		_____																					
<b>Sensitive Sites</b>																							
Aesthetic/recreation concerns addressed		_____																					
Water source areas identified and potential impacts mitigated		_____																					

<b>Road Design</b>		
Location and design have been identified		_____
List of channelled watercourse crossings including watercourse classification, map identifier, etc		_____
Crossings not exempt under the <i>Water Act</i> are identified		_____
Any proposed permanent access in Key Wildlife and Biodiversity zones has been identified		_____
Access opened for layout under TFA is incorporated into road design		_____
Existing access and LOCs integrated into the plan are identified (if "N/A", these must be identified in the AOP)		_____
Road reclamation and abandonment plan included (if "N/A", plan must be included in the AOP)		_____
Removal and reclamation of old crossings is identified (if "N/A", this must be identified in the AOP)		_____
<b>Wildlife</b>		
Wildlife zones within the planning area are identified and addressed		_____
FWMIS search completed		_____
Harvest areas with timing restrictions identified		_____
All known sensitive wildlife sites have been addressed (mineral licks, raptor nests, den sites, etc)		_____
<b>Insect, Disease &amp; Fire</b>		
FireSmart tactics are identified and described		_____
Known infestations of insect and disease are identified and mitigation is described		_____
Debris disposal methods identified		_____
<b>Silviculture</b>		
Pre-harvest strata declaration is included		_____
Watercourse crossings maintained for silviculture purposes are identified (if "N/A", these crossings must be identified in the AOP)		_____
<p>-FHP's are approved through acceptance and will be considered approved on the date Alberta acknowledges receipt of the work.          -Alberta shall notify the organization by acknowledging receipt within 5 working days of submission.          -The notification date will be documented by Alberta as the start date for FHP approval.          -Alberta shall periodically check the work and supporting documentation to verify its accuracy.          -At any time, approval can be revoked where Alberta learns the FHP is inaccurate or deficient in content</p>		
<b>Company Sign Off</b>		
_____	_____	_____
Submitting RFP Validation	Company	Date
_____	_____	_____
Submitting RFP Validation (for integrated plans)	Company (Integrated operator)	Date
<b>ESRD Sign Off</b>		
_____		_____
Reviewing RFP Validation		Date

Appendix 5 - FHP Checklist, September 28, 2012

Annual Operating Plan (AOP) Checklist	
<b>Administrative and Timber Production Information</b>	
Company/Disposition Holder _____	Disposition Number(s) _____
Submission Date _____	Manufacturing Facility _____
Effective Period _____	QAAC _____
Date Disposition Issued _____	Quadrant Production to Date _____
Date Disposition Expires _____	Quadrant Volume Remaining _____
Scaling Methodology _____	Proposed Production (this year) _____
	<b>Company</b> (Y, N, N/A)
-Plan is signed off and validated by RFP	_____
-Digital and paper copies of AOP (including maps) submitted to appropriate Alberta representative(s)	_____
-The Final AOP submitted prior to submission deadline	_____
-Delegation of signing authority included where required	_____
-Company is requesting dues relief, explanation and justification provided	_____
-Utilization standard matches tenure document or documentation for other approvals has been provided	_____
-Deviations from utilization standards are identified and justified (rub posts, high stumps, retention, etc.)	_____
-Proposed volumes to be harvested have been listed by disposition	_____
-Road Use agreements are in place for all access on PLA dispositions (agreements submitted in plan (CTP's only))	_____
<b>Operating Schedule (as per section 3.5.4 c)</b>	
-Block table submitted for all blocks scheduled for harvest including area & covertype volumes (i.e. D, Sw, Pj, Sb) with totals	_____
-List of non-LOC roads proposed for construction & reclamation, except spur roads	_____
-List of channeled watercourse crossings to be built or installed or removed/maintained (in a format agreed to by Alberta)	_____
-Outstanding operational items have been declared, and there is an agreement with Alberta on reporting	_____
-Debris disposal schedule is included and methods of disposal are identified. (variances to policy) are identified for appraisal	_____
<b>Applicable Forest Harvest Plans (as per section 3.4)</b>	
-All Forest Harvest Plans (FHPs) identified in the Operating Schedule have been submitted and approved (as per section 3.4)	_____
-Annual update on the progress of all FHPs is included	_____
<b>Reforestation Program (as per section 8.2)</b>	
Due to the submission timing of the spring and fall reforestation program schedules, the checklist content of the Reforestation Program section of the AOP checklist can be submitted as an addendum. A signed and validated Reforestation Program Checklist is to be included along with each silviculture plan submission.	
<b>Fire Control Plan (as per section 7.3)</b>	
-Fire Control plan is complete and meets the ground rule requirements listed under section 7.3.5	_____
<b>Road Plan (as per section 11.2)</b>	
-Existing access and LOCs integrated into the plan are identified	_____
-All roads regardless of class, with a lifespan of >5 years have been built under the authority of an LOC	_____
-All watercourse crossings are documented in a monitoring program as per section 11.4.27	_____
-Road reclamation/abandonment plan complete for all non-LOC roads	_____
-Roads identified for disturbance monitoring/outstanding and anticipated reclamation on LOC roads and crossings	_____

General Development Plan (as per section 3.3)		
-The Final GDP was submitted prior to submission deadline (3.3.1)		_____
-As required under sections 3.3.3, the GDP describes the following:		_____
Road standards and construction schedule		_____
Reclamation activities for LOC roads		_____
-GDP is signed off by all affected forest companies		_____
-The GDP submission includes the following schedules & maps as per section 3.3.5:		_____
Planned five year volume supply by harvest area by year (i.e. Planning Unit/License)		_____
Timber Disposition Production Summary table by year		_____
Class I, II and III road development/requirements corridor plan and construction schedule (3.3.5 a III) (11.2.1)		_____
Status of LOC applications		_____
Un-scaled volumes in satellite yards are identified (3.3.5 a VI)		_____
FMU level - 5 year summary of variance as per section 4.1		_____
-The GDP map(s) submitted includes information required as per (3.3.5 b):		_____
Planning Unit Level Access (proposed construction and reclamation)		_____
Satellite yard locations		_____
Timber dispositions to be operated		_____
Key wildlife and biodiversity zones if not shown on the FHP map		_____
-Operational tactics to mitigate impacts to recreation and tourism have been identified (5.2.1)		_____
-Stand Structure Reporting requirements have been addressed (7.4.11)		_____
-Access control measures have been identified (11.5.1)		_____
-Fish and wildlife issues within the planning area have been addressed		_____
-Consultation on the GDP as per the First Nations Consultation Guidelines have been done		_____
<b>Company Sign Off</b>		
_____	Company	Date
Submitting RFP Validation		
_____	Company	Date
Submitting RFP Validation (for integrated plans)	(Integrated operator)	
<b>SRD Sign Off</b>		
_____		Date
Reviewing RFP Validation		

Note: The AOP shall be appraised by Alberta in accordance by the AOP checklist, with approval subject to the outcome of the appraisal.