



**Hinton Wood Products FMA Timber
Harvest Planning and Operating Ground
Rules**

2018

Hinton Wood Products
A Division of West Fraser Mills Ltd.

TIMBER HARVEST PLANNING AND OPERATING
GROUND RULES

Hinton Wood Products

**ALBERTA
AGRICULTURE and
FORESTRY**

ENDORSEMENTS

**The Hinton Wood Products FMA Timber Harvest Planning and Operating
Ground Rules, having been prepared in accordance with Section 16 (2) of
FMA 8800025, and hereby endorsed this 9th day of May, 2018.**

Hinton Wood Products
A Division of West Fraser Mills Ltd.

HER MAJESTY THE QUEEN in right of Alberta
as represented by the Minister of Agriculture and
Forestry

Per:

Original Signed

Per:

Original Signed

Richard Briand

Darren Tapp

(print name)

(print name)

Woodlands Manager

Executive Director, Forest Management Branch

(title)

(title)

Hinton Wood Products Timber Harvest Planning and Operating Ground Rules

Hinton Wood Products FMA Timber Harvest Planning and Operating Ground Rules

*Revisions from 2011 to 2018
(Effective Date: May 1, 2018)*

2018 Revisions

Ground Rule Number	2011 Version of the Ground Rule	2018 Version of the Ground Rule
General	<p>Some edits were made outside of the joint review that included deletion of word(s), correction of spelling & 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.</p> <p>All changes to ground rule intent have been identified in the table below and have also been identified within the document itself by having a box placed around the changes. Where the Section number and heading have been outlined, that means that ground rules from the previous version have been deleted and don't show up in the current document.</p>	
3.3.1	<p>The GDP submission date is April 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.</p>	<p>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 and once approved it replaces the previously approved GDP. The AOP for the upcoming year/period is covered by the GDP submitted the previous year.</p>
3.4.1	<p>A FHP shall be approved by acceptance if:</p> <ul style="list-style-type: none"> a) validated by a regulated forestry professional (RFP); b) deletes less than 20% of the area sequenced in the SHS by compartment per decade; c) the harvest area (ha) does not exceed 100% of the total area in the SHS by compartment per decade as tracked in the GDP; and 	<p>A FHP shall be approved by acceptance if:</p> <ul style="list-style-type: none"> a) validated by a regulated forestry professional (RFP); b) adds less than 20% of the area sequenced in the SHS by compartment per decade; c) the harvest area (ha) does not exceed 100% of the total area in the SHS by compartment per decade; and
3.4.4 h)	<p>Map(s) shall accurately show the following information:</p> <p>planned watercourse crossing locations (may be further defined in table format). Channelled watercourses will have a unique crossing number and ephemeral watercourses will have a symbol on the map; and</p>	<p>Map(s) shall accurately show the following information:</p> <p>planned watercourse crossing structures and locations (may be further defined in table format). Channelled watercourses require a unique crossing number and ephemerals require an appropriate symbol; and</p>

3.4.7 m)	Where applicable the following shall be mapped and/or described for each block: areas of steep topography requiring specific road location and construction or specialized harvesting equipment;	Where applicable the following shall be mapped and/or described for each block: areas where topography would dictate specific road or skid trail location and construction, or specialized harvesting equipment;
4.2.3	Trees with butts (or large ends) of ≤ 19 cm diameter containing soft rot may be bucked at 0.61 m intervals to 100% clear face.	Deleted
4.2.4	Stubs (cut trees exceeding 50 cm in height) may be left for biodiversity, to delineate areas such as existing pipelines, to create rub posts for understory protection, or to delineate poorly defined watercourses, etc. With the exception of understory protection, stubs left for purposes as defined above shall be no less than 30 m apart and utilize lower merchantability species and tree sizes where possible.	Stubs (cut trees exceeding 50 cm in height) may be left for biodiversity, to delineate areas such as existing pipelines, to create rub posts for understory protection, or to delineate poorly defined watercourses, etc. With the exception of understory protection, stubs left for purposes as defined above shall be no less than 30 m apart for merchantable stems and no less than 15 m apart for non-merchantable stems.
4.2.8	New	Company processing practices cannot make an unmerchantable piece from a merchantable tree or merchantable piece.
6.7	Equipment shall cross watercourses only at approved crossings.	Equipment shall cross channeled watercourses only at approved crossings. Any crossing structures used for equipment crossings (in-block and not associated with a road) must be reported in the operations status report after installation.
Table 3 Equipment Operation (ephemerals)	Skidding restrictions apply on Class "A" and "B" waterbody tributaries. Skidding shall only during dry or frozen conditions or on approved crossings. Temporary crossings to be removed on completion of operations, except bottom log layer of logfills. Road crossings will maintain uninterrupted water flow.	Skidding shall only occur during dry or frozen conditions, or on approved crossings (when soil condition is susceptible to degradation). Skidding restrictions apply on Class "A" and "B" waterbodies. Any temporary crossings installed (as per Table 4) are to be removed on completion of operations, except bottom log layer of logfills. Crossings will maintain uninterrupted water flow.
Table 3 Roads, Decking and Bared Area (Lakes)	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.	No disturbances shall be permitted within 100 m of the high water mark unless specifically approved in the AOP.
Table 3 Watercourse Protection Areas (Lakes)	On lakes, no disturbance or removal of timber within 100 m of the high-water mark unless specifically approved in the AOP. Alberta in the FHP may require additional protection.	On lakes greater than 4 ha, no disturbance or removal of timber within 100 m of the high-water mark unless specifically approved in the AOP.
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.	Deleted
7.2.1	Slash accumulations resulting from timber harvesting, road, and campsite construction shall be disposed of within 24 months.	Slash accumulations resulting from timber harvesting, road, and campsite construction shall be disposed of within 12 months after the completion of harvest operations as per Directive 2007-02.

7.3.1	New	1% of the area harvested (ha) will be retained as merchantable structure retention across the FMA.
7.3.2	New	Merchantable volume retained shall be reported to Alberta in an acceptable manner.
7.3.3	<p>7.3.2 Structure retention shall include trees left in the following priority:</p> <p>7.3.2.1 Retain non pine species</p> <p>7.3.2.2 Retain non-sawlog pine (very low MPB risk)</p> <p>7.3.2.3 Retain sawlog pine (low MPB risk)</p> <p>7.3.2.4 Retention patches are merchantable trees accounting for a cross section of the pre-harvest profile.</p>	<p>Merchantable structure retention that contributes to the target shall be representative of the harvest area given the following priorities:</p> <p>Priority 1 – Retain merchantable non-pine species (no MPB risk).</p> <p>Priority 2 – Retain merchantable pine (moderate MPB risk).</p>
7.3.4	New	Non-merchantable retention will not count towards the 1% target.
7.3.5	New	Retention shall be within the harvest block boundary.
7.3.5.1	New	<p>Proximal retention is not required but may be left as per the following:</p> <ul style="list-style-type: none"> a) Where a waterbody described in Table 2 runs into or along the block and retention is left in addition to the required buffer. b) Where sensitive sites defined in 7.6.6.2 are within 100m of the block boundary. c) Proximal retention must be excluded from harvest for one rotation. d) Proximal retention does not contribute to the harvest block retention target.
7.3.10	Structure retention shall be left as approved in the FHP to protect mineral licks.	Deleted
7.3.11	Structure retention and topography will be left to help provide cover for wildlife minimizing distance to hiding cover.	Deleted
7.5.1	All waterbodies and channelled watercourses are presumed to be fish bearing unless proven otherwise by consulting a – d below. Even if no fish are present, the watercourse still supports downstream fish bearing habitat.	All waterbodies and channelled 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 areas by:

7.5.3	New	<p>Locations of existing bull trout can be identified using the Fisheries and Wildlife Management Information System (FWMIS), and the associated Fish and Wildlife Internet Mapping Tool (FWMIT). Within these identified areas:</p> <p>7.5.3.1 Operational planning by the company should incorporate the use of Alberta’s Wet Areas Mapping tool to identify areas that are sensitive to disturbance. Field confirmation of these sites including depth to water, potential disruption of groundwater flows, and areas at high risk of erosion in wet or riparian areas can be a useful tool in determining road and crossing location.</p> <p>7.5.3.2 Where crossing of wet areas cannot be avoided, the operator shall ensure that the forest floor remains intact ensuring that normal ground water flows are maintained after reclamation.</p>
7.6.4 (Trumpeter Swan)	New	See section 7.4 for details
7.6.5	Ungulate Habitat in River Valleys	Revised to Key Wildlife and Biodiversity Zones
8.3.1.1	<p>With the authority of a TFA, HWP may use existing seismic lines.</p> <p>An AOP amendment is required for any access not meeting 8.2.3 (3) and 8.3.1.1.</p>	Deleted
9.2	Areas susceptible to rutting, puddling or compaction shall be harvested during dry or frozen conditions (e.g., blocks with predominantly imperfectly-poorly drained soils).	Areas susceptible to rutting, puddling or compaction shall be harvested during dry or frozen conditions (or when soil condition is not susceptible to degradation).
9.3	The total area covered by temporary roads, rutting, bared landing areas, displaced soil, and debris piles created by timber harvesting operations shall not exceed five percent of each block without prior approval of Alberta. Debris piles proposed for disposal are not considered part of the five percent.	The total area covered by temporary roads, bared landing areas, displaced soil, and skid trails created by timber harvesting operations shall not exceed five percent of each block without prior approval of Alberta. Debris piles proposed for disposal are not considered part of the five percent.
9.6.1	Ruts are defined in the Alberta Soil Conservation Guidelines.	Areas with single ruts or a limited number of short ruts can be indicative of an operator becoming aware of unfavorable conditions and making the decision to cease operations.
11.1.2	All roads, regardless of class, with an active lifespan of greater than five years shall be built under the authority of a DLO.	All roads, regardless of class, with an active lifespan of greater than three years shall be built under the authority of a DLO.

11.2.2	Temporary Roads: Class 5 and Class 6 (with an active lifespan up to five years from start of construction).	Temporary Roads: Class 5 and Class 6 (with an active lifespan up to three years from start of construction).
11.3.1.4	New	<p>Temporary road construction activities that are required outside an approved ROW can be considered incidental to construction and will be approved as part of the AOP provided the following is met:</p> <ul style="list-style-type: none"> a) Be immediately adjacent to AOP approved disposition (temporary road and associated ROW only); b) Be reclaimed or reforested in the same fashion as the adjacent AOP approved disposition (if applicable); c) Be without conflict of existing dispositions and/or adjacent land uses; and d) Be an activity type and within the parameters as described below: <ul style="list-style-type: none"> •Log Decks or Decking Areas: <ul style="list-style-type: none"> i. ≤ 0.18 hectares in size; ii. Located on average ≥400 metres apart •Bank Stabilization: <ul style="list-style-type: none"> i. Related to hill cuts impacted during construction; •Push Outs: <ul style="list-style-type: none"> i. ≤0.04 hectares in size; ii. Located on average ≥800 metres apart. Where this distance is not feasible due to operational constraints, line of sight between push outs should be minimized.
11.3.2.1	Roads and skid trails shall be placed in locations and constructed so that soil erosion, damage to streambeds and sedimentation of watercourses are minimized.	Roads and skid trails shall be placed in locations and constructed so that soil erosion, damage to streambeds and sedimentation of watercourses are minimized. Use of skid trails requires notification (e-mail is acceptable) to Alberta and include an updated FHP map as per 3.4.7 (m).
11.4.1.1	New	Unless previously identified in the AOP, notification of crossing type to Alberta is required on the first operations report after installation.
Table 5	New	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 11.4.19.
11.4.3	Proposed watercourse crossing structures and locations shall be identified in the FHP.	Proposed watercourse crossing structures and locations (does not include ephemerals) shall be identified in the FHP.

11.4.18	Logfills (see 11.4.20 below) on temporary roads may be used as per Table 5. Logfills shall be removed when the temporary road is deactivated. A bottom layer of logs may be left in place when removing the logfill to provide for summer crossing of ephemeral watercourses.	Logfills or modified logfills (see 11.4.19 below) on temporary roads may be used as per Table 5. Logfills or modified logfills shall be removed when the temporary road is deactivated. A bottom layer of logs may be permanently left in place when removing the logfill to provide for crossing of ephemerals for post-logging access (including site preparation) provided the associated timber volume is reported to Alberta (TPRS). The volume will be based on an estimate supplied by the company.
11.4.23	New	Bridges may be used for silviculture access provided all of these requirements are met: <ul style="list-style-type: none"> a) they are intended specifically to accommodate ATV (All-Terrain Vehicle) load(s); and b) measures are in place to prevent soil or other debris from entering the watercourse channel.
11.4.25	New	The placement of merchantable pieces for corduroy is permitted as long as the associated timber volume is reported to Alberta (TPRS). The volume will be based on an estimate supplied by the company. These may be left in place as long as water movement is not inhibited.
12.5	List of open compartments by December 31.	Deleted
12.6	Annual status of channelled watercourse crossings.	Deleted
Glossary	New – Exterior Road	Inter-block road that exists outside block boundary.
Glossary	New – 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.
Glossary	New – Soil Degradation	A reduction in soil quality caused by but not limited to the following conditions: rutting, compaction, puddling or soil displacement.

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Hinton Wood Products (HWP) Timber Harvest Planning and Operating Ground Rules

1.0 GROUND RULES 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 operations and activities. Authorizations by Alberta do not imply authorization under federal legislation and requirements, notably the federal Fisheries Act and Migratory Birds Convention Act. The proponent must seek advice and approvals of the federal agencies (Department of Fisheries and Oceans, Environment Canada) regarding federal legislation requirements.

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.

The Delegated Authority (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, amendments or 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 Hinton Wood Products (HWP) 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

Each topic includes a purpose, discussion, and ground rule heading. All ground rules shall be written following this format.

PURPOSE

A statement of what the topic is designed to accomplish.

DISCUSSION

Include background information, research knowledge, and reasons for the concern. The discussion shall focus on why a ground rule is needed. Alternative actions or solutions could also be discussed here.

GROUND RULES

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

3.0 OPERATIONAL PLANNING

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, 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. CAs are necessary when major new issues or information that have been identified since FMP approval make the SHS inappropriate (e.g., forest fire, insect or disease, species of special management concern, a major change in land use direction or an unacceptable variance of >20% of the SHS/compartments/decade as determined by the Delegated Authority and the Executive Director of Forest Management Branch (FMB)). The CA shall describe how the new issues will be incorporated into the Forest Harvest Plan (FHP). In completing the CA Hinton Wood Products (HWP) 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 After consultation with HWP, Alberta shall decide on the requirement for a CA, the boundaries of the area on which a CA is required and the requirements of the CA.**
- 3.2.2 If a CA is required, HWP must receive Alberta's approval of the CA prior to, or concurrent with the approval of an FHP.**
- 3.2.3 A CA is considered current if it has been approved by Alberta and the FHP is submitted to Alberta within three years of approval.**
- 3.2.4 The CA shall include any maps, analyses, and reports deemed necessary by Alberta to adequately address the issues.**

3.3 GENERAL DEVELOPMENT PLAN (GDP)

PURPOSE

To provide a projection of activities for the next five years to:
a) guide the integration of activities;
b) predict cut control status as per the FMA; and
c) schedule 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 for existing FHPs or long-term road plans outlined in the FMP. The GDP must also include the status and forecast of the coniferous and deciduous annual allowable cut (AAC) by the current cut control period.

The GDP shall also include details regarding road requirements and any identified issues within the planning area where these are not already described in the FMP. Consultation of the GDP is a requirement of the *Government of Alberta's Guidelines on Consultation with First Nations and with Metis Settlements on Land and Natural Resource Management*

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 and once approved it replaces the previously approved GDP. The AOP for the upcoming year/period is covered by the currently approved GDP until replaced by a newly appraised GDP.
- 3.3.2** The GDP shall describe volume supply by area, and a schedule for Department License of Occupation (DLO) road construction and reclamation activities by road class (see section 11). The plan is a notification to Alberta of proposed activities and exceptions to guide future regulatory activities.
- 3.3.3** The GDP consists of the following:
- 1. Schedules with the following information:**
 - a) timber production summary table listing volume by compartment (by year for the next five year period);**
 - b) a brief description of new potential issues arising from the proposed harvest activities that have been identified through discussions with Alberta or other known resource users; and**
 - c) proposed and actual volumes in satellite yards as per Directive 2006-01 (this may be submitted under separate cover).**
 - 2. A map (of appropriate scale) that shows the following:**
 - a) mill site location;**
 - b) DLO roads to be constructed;**
 - c) proposed haul routes (differentiating existing roads from roads to be constructed) and primary routes to be used for reforestation access;**
 - d) satellite yard locations; and**
 - e) compartments or other land units to be operated for the next five year period.**

3.4 FOREST HARVEST PLAN (FHP)

PURPOSE

To describe the laid out harvest and road design.

DISCUSSION

The primary components of an FHP are a map and report that clearly show and document the block boundaries, roads, and watercourse crossings for the compartment. The design 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 HWP first.

GROUND RULES

- 3.4.1** A FHP shall be approved by acceptance if:
- a) validated by a regulated forestry professional (RFP);**
 - b) adds less than 20% of the area sequenced in the SHS by compartment per decade;**
 - c) the harvest area (ha) does not exceed 100% of the total area in the SHS by compartment per decade; and**

- d) it adheres to all ground rules as per the FHP checklist (see Appendix 3).
 - i. All deviations to the ground rules will be identified and provided by the company. Acceptance or appraisal of the plan will be based on the magnitude of the deviations.

Where the FHP does not meet one or more of the above standards, the FHP shall undergo a full review by Alberta. Variances from the SHS shall be reported annually in the FHP in a format acceptable to Alberta (see section 4.1).

- 3.4.2 If a CA was completed, the FHP shall undergo a full Alberta referral and review to ensure the direction in the CA has been implemented.
- 3.4.3 All FHPs shall be validated by a regulated forestry professional (RFP). Validation means that the OGR was followed.
- 3.4.4 Map(s) shall accurately show the following information:
 - a) the agreed upon approved forest inventory with the laid out block boundaries;
 - b) all laid out DLO roads within blocks and block boundaries;
 - c) all Class V annual operating plan (AOP) roads to or between blocks;
 - d) current dispositions and reserves (e.g., registered fur management area (RFMA) boundaries, Alberta permanent sample plot (PSP) locations);
 - e) identified watercourses, waterbodies, water source areas, and wetlands;
 - f) road corridors and DLO numbers (may be in table format in 3.4.5) and differentiate DLO and temporary roads. These are further broken down into existing and proposed roads;
 - g) locations of access control measures;
 - h) planned watercourse crossing structures and locations (may be further defined in table format). Channelled watercourses require a unique crossing number and ephemerals require an appropriate symbol; and
 - i) HWP current information on previously harvested areas, existing trails, seismic lines, power lines, pipelines and access routes.
- 3.4.5 In addition, the following tabular information is required:
 - a) area (ha), and coniferous and deciduous volume estimate for each proposed block;
 - b) regeneration stratum for each block (see Directive 2005-01 for further details);
 - c) potentially affected dispositions and reservations (e.g., protective notation (PNT), forest grazing lease (FGL), consultative notation (CNT), departmental reserve (DRS), industrial sample plot (ISP));
 - d) where applicable a description of how the CA is addressed in the FHP;
 - e) list of watercourse crossing locations by block or road;
 - f) watercourse classification and protective buffer for watercourses larger than an intermittent if operations are proposed within the watercourse protection area as defined in Table 3;
 - g) access control methods employed;
 - h) table showing status of AOP roads (see section 11.2.2.2); and
 - i) description of integration with other users.
- 3.4.6 HWP shall follow existing Long Term Access Plan (LTAP), Road Corridor Plan (as approved in FMP), integrated landscape management (ILM), or access development strategies when developing DLO roads.

- 3.4.7** Where applicable the following shall be mapped and/or described for each block:
- a) block comments may be included on the individual block map;
 - b) layout bordering and encompassing riparian management zones when different than the standards in section 6.0 shall be both mapped and described;
 - c) watercourse classification, protective buffer and crossing location;
 - d) identified ephemerals and planned crossings;
 - e) layout bordering restricted areas (e.g., FMA boundary, PSPs, private land);
 - f) identification of understory (see section 7.4);
 - g) block-specific structure retention strategies;
 - h) tactics to address forest health issues;
 - i) protected roadside vegetation;
 - j) individual description of sensitive wildlife sites as per section 7.6.6.2;
 - k) historical site considerations;
 - l) soil protection measures when any of the following are present:
 - identified unstable areas, ephemerals or water source areas,
 - steep or sustained slopes or grades (> 35%);
 - m) areas where topography would dictate specific road or skid trail location and construction, or specialized harvesting equipment;
 - n) harvest areas located near high-value recreation areas, tourism areas, and facilities;
 - o) partial harvests, excluding commercial thinning (CT) and pre-commercial thinning (PCT); and
 - p) when harvesting is used as a tool to control insects and disease infestations.
- 3.4.8** A temporary field authority (TFA) is required for temporary access that was not identified on the FHP map outside of 3.5.5 (c) (e.g., using a seismic line for equipment access between blocks).
- 3.4.9** Layout that borders previously harvested areas shall be completed so that harvest will avoid damaging regeneration.

3.5 ANNUAL OPERATING PLAN (AOP)

PURPOSE

To annually authorize all HWP road, harvest and forest management activities.

DISCUSSION

The AOP describes the activities proposed for the current AOP year (May 1 to April 30) 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 FHPs - accepted;
- c) CAs (if applicable) - appraised;
- d) reforestation program - accepted;
- e) fire control plan - accepted;
- f) road plan - accepted;
- g) GDP - appraised.

Refer to Appendix 1 for RFP validation requirements

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 (Appendix 3) 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 in 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 blocks and AOP roads with FHP approval shall be scheduled for operations in the AOP submission.**
- 3.5.4 **The AOP shall contain the following components:**
 - a) **map(s) and shape files showing the location of all blocks and roads that appear in the AOP schedule;**
 - b) **administrative and timber production information:**
 - I. **Hinton Wood Products, FMA 8800025;**
 - II. **date of submission and effective period;**
 - III. **location of mill where timber will be manufactured or processed;**
 - IV. **proposed harvest volume to be harvested by timber disposition;**
 - V. **scaling methodology if not by approved weigh scale;**
 - VI. **utilization standards if different than section 4.2; and**
 - VII. **declaration or list of resource user notifications (Section 5.0);**
 - c) **operating schedule – a table which outlines:**
 - I. **list of blocks, including opening number, proposed for harvest (including area and volume by coniferous and deciduous species groups, with totals); (the opening # may change due to block shape changing so understand that opening # in ARIS is correct and one submitted with AOP is interim number)**

- II. list of AOP roads (class V – new and existing) proposed for harvest, construction, haul, maintenance and reclamation. This list doesn't include class VI block roads. Includes channelled watercourse crossings to be installed, maintained, or removed (see 11.2.2.2 for additional reporting requirements).
 - III. declaration of outstanding operational items, a list of carried over blocks including commencement date (harvest or hauling), or an agreement with Alberta on reporting of outstanding operational items. Blocks where timber operations are not completed within the second timber year will have the harvested portion assigned an opening number and skid clearance date. The remainder of the block will be assigned a new block number that will require submission in a subsequent AOP prior to approval for harvest being granted; and
 - IV. summary of planned debris disposal;
- d) annual reforestation program (see section 8.2);
 - e) fire control plan (see section 7.2);
 - f) road plan (see 11.2.1); and
 - g) GDP and CA if applicable.

3.5.5 All FHP amendment requests must be submitted to Alberta in writing. RFP validation of all amendments is required. Any changes must be incorporated into the as-built plan.

3.5.5.1 Changes meeting the following criteria are considered 'minor amendments', and require only HWP RFP validation and notification to Alberta. Minor amendments don't require Alberta's approval, provided all appropriate background checks have been made and a HWP supervisor has approved the change before it is implemented. Changes can be implemented prior to notification but must be reported in map format, where appropriate, no later than seven working days after implementation. Changes shall not adversely affect buffers established for the protection of riparian areas, wildlife sites, historical resources, or aesthetic values:

- 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 interior roads that cause a change in the crossing location on stream classes greater than intermittent watercourses;
- d) Exterior 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;

- f) **Additional crossing locations required for temporary equipment movement over intermittent watercourses;**
- g) **Watercourse crossing structures that have changed from the approved FHP, providing that it is still an acceptable crossing as per Table 5;**
- h) **Planting of additional openings not listed in the approved AOP (providing the requirements of the FGRMS manual are met);**

Any change to the approved AOP not listed in 3.5.5.1 shall be treated as an AOP major amendment and requires the approval of Alberta prior to implementation. Alberta will provide HWP feedback and/or approval of the AOP amendment within five working days of the submission.

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. Requirements for mountain pine beetle (MPB) can be found in the Action Plan for Mountain Pine Beetle or the Interpretive Bulletin Planning MPB Response Operations.

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) for insects or disease 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 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 is initiated as per 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

To define merchantability specifications for stands and to determine which stands will be included in the planning process. The planned and harvested timber profile shall be the same.

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. With increased levels of variance from the SHS, there is greater risk that the operational harvesting will not allow the FMP to realize its objectives and forecasted outcomes. Operational variance is unavoidable but must be effectively managed.

During the FHP planning process, an operator will select an area over which to plan a series of harvest areas (blocks) for a period of up to 5 years. This could be considered the FHP planning unit and is typically smaller than a FMA defined compartment or subunit. Within the FHP planning unit, the operator can address all the 1-10 year SHS assigned to that operator, deciding on either a harvest prescription, or a decision to not harvest at all (deletion) or to delay harvest outside the first 10 year period (deferral). Where deletions or deferrals consist of entire AVI polygons, specific justification is required.

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 **Table 1** as they monitor the operational implementation of their plans against the SHS.

Definitions:

Additions – Any area planned for harvest, or which has been harvested that is not part of the 10 year SHS in the approved FMP. Additions will be divided into two categories: substantial and slivers.

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

Approved FMP 10 Year SHS – Is the total SHS area within the compartment for the first 10 years of the approved Spatial Harvest Sequence.

Deferral – any area included in the 10-year SHS that will not be harvested during the current FMP. Deferrals are not removed from the contributing landbase, as there is an expectation they will be harvested later in a future FMP. Deferrals will be divided into two categories: Substantial or Slivers. Deferrals are those stands or portions of which are operable, not isolated, and should be available under current technological and economic constraints for future harvest.

Deletion - Any area included in the 10-Year SHS that will never be harvested under current planning assumptions and technical constraints. This area shall be tracked spatially and removed from the contributing landbase in the subsequent FMP. Deletions are divided into two categories: Substantial or slivers.

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

FHP Planning Unit: Defined operational subunit of an FMU, delineated by environmental, operational, or watershed characteristics. An FHP is the operational plan for a planning unit, and may be a compartment, sub-unit or an area of a smaller scale. FHP Planning units are discrete, and FHPs for the same operator cannot overlap spatially with the exception of access routes.

Planned Area For Harvest - Is the total area of the SHS laid out in the FHP, and includes the information for all previously approved FHPs (either planned or as-built) information for the same compartment.

Provincial Base 10 Yield Stratum- One of ten Alberta yield stratum defined in the yield projection Interpretive Bulletin in the Alberta Forest Management Planning Standard (AFMPS)

Slivers- any polygon component of variance (addition, deferral or deletion) less than 2ha in size. Generally these are long, narrow features along the edge of a block. Slivers exclude stand-alone features (blocks not bordering of or not being adjacent to SHS polygons). Slivers do not contribute to variance calculations but shall be tracked and reported separately. Sliver deletions and sliver deferrals can be aggregated together (e.g. Sliver Deletions & Deferrals)

Substantial- any polygon component of variance (addition, deferral or deletion) other than Slivers

Variance – any deviation from the 10-year Spatial Harvest Sequence (SHS) in the approved Detailed Forest Management Plan (DFMP). Variance is classified into one of these three categories: Additions, Deletions or Deferrals.

GROUND RULES

- 4.1.1 For the FHP submission, the company shall submit a map to show the comparison of the 1-10 year SHS to the laid out harvest areas. The map shall distinguish using symbology between:
- substantial deletions
 - substantial deferrals
 - sliver deletions and deferrals (combined)
 - substantial additions
 - Sliver additions.
- 4.1.2 Variance shall be reported by Alberta Base 10 stratum for each FHP. The table shall include the minimum information as per Table 1. A Forest Harvest Plan will be appraised when additions exceed 20% of planned SHS 1-10 year for the particular FHP, or when substantial additions exceed the combination of substantial deletions and deferrals. Table 1 shall include cumulative information from all previously approved FHP's in the compartment.
- 4.1.3 *Variance* from the SHS shall be monitored and reported by compartment. The cumulative as-built variance for all FHPs shall be compiled by compartment and reported annually in the GDP. The table shall include information as per Table 1 for all compartments operated within the current FMP effective period.

Total FHP/GDP variance shall be calculated using the following:

$$SHS \text{ Variance (Additions \%)} = \frac{\text{Area of Substantial Additions}}{\text{Area of Approved 10 yr SHS}} \times 100$$

- 4.1.4 Where stands are added for harvest, preference should be for stands in the 11-20 year period. Stands currently not part of the net landbase that are found to be productive merchantable landbase may be considered for addition with Alberta's approval. Stands shall not be added without evaluating why the stand is not within the net landbase (e.g. Meeting wildlife VOIT).
- 4.1.5 Justification shall be provided in the FHP (block comments) in the following instances:
- i. entire deleted or deferred stands (AVI Polygons);
 - ii. entire stand (AVI Polygon) additions
- 4.1.6 Entire stands or portions of stands may not be deferred unless they form part of a logical future harvest.
- 4.1.7 All substantial deletions shall be coded and tracked spatially by the operator to allow for incorporation into the subsequent Forest Management Plan net landbase development process.

Table 1. SHS Assessment (Variance reporting)

Harvest Profile	As-Built										Planned for Harvest (ha)	Combined As-Built & Planned																							
	Harvested (ha)							Variance				SHS Assessment (Excluding Slivers)	Variance			SHS Assessment (Excluding Slivers)																			
	Substantial			Slivers				Substantial					SHS Assessment (Excluding Slivers)																						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	SHS 21-70 yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Additions	Deletions & Deferrals	Total	Total Slivers (%)	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	SHS 1-10yr	SHS 11-20yr	SHS 21-70 yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested & Planned - 10yr FMP SHS			
100	All	All	-	-	-	-	-	-	-	-	-	-	-	-	-	-	###	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	1A	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	###	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	2A	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	###	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	3A	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	###	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	::	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	###	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

4.2 TREE UTILIZATION

PURPOSE

To utilize all merchantable trees and pieces in a merchantable stand as defined by the Forest Management Agreement 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 is stated in the Forest Management Agreement and shall normally be one of the following standards.

Coniferous Utilization Standard

15/11 Utilization

- Merchantable Tree: has a minimum diameter of 15 cm outside bark at stump height (15 cm) and a usable length of 4.88 m to an 11 cm top diameter (inside bark).
- Merchantable Piece: is 3.76 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 Standard

15/10 Utilization

- Merchantable Tree: 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 is 1.78 m or longer to a 10 cm (inside bark) small end, where rot content or form does not render it unusable.

Salvage Utilization Standard

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 has 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: is 3.76 m (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 > 19 cm diameter exhibiting advanced decay greater than 50% in area of the cut surface (basal area) may be bucked at 0.61 m intervals or less to 50% sound wood.

4.2.3 Maximum stump height when measured from the root collar shall be no more than 15 cm. Variance up to 30 cm in height is allowed for site specific reasons (e.g., physical obstacle, steep slope, tree form, blowdown). For the purposes of determining tree utilization, measurements start at the 15 cm stump height.

- 4.2.4 Stubs (cut trees exceeding 50 cm in height) may be left for biodiversity, to delineate areas such as existing pipelines, to create rub posts for understory protection, or to delineate poorly defined watercourses, etc. With the exception of understory protection, stubs left for purposes as defined above shall be no less than 30 m apart for merchantable stems and no less than 15 m apart for non-merchantable stems.**
- 4.2.5 HWP is permitted to leave merchantable volume in blocks if the approved FMP identifies specific stand structure retention strategies. In the absence of FMP guidance, the standards in section 7.3 apply.**
- 4.2.6 All trees/pieces used in the construction of crossing structures may be scattered or piled along the ROW or in the block.**
- 4.2.7 HWP is not required to utilize paper birch, tamarack or dead wood as per the timber supply.**
- 4.2.8 Company processing practices cannot make an unmerchantable piece from a merchantable tree or merchantable piece.**

5.0 INTEGRATION WITH OTHER USERS

5.1 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. See section 11.3.1.3 for road requirements around recreational sites.

GROUND RULES

- 5.1.1 Operational tactics to mitigate impacts on recreation and tourism shall be described in the FHP.**
- 5.1.2 HWP shall work with groups that have raised concerns with HWP or have been identified by Alberta.**
- 5.1.3 FHPs affecting recreational sites should consider opportunities for the enhancement of existing recreational trail and road systems.**

5.2 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 the senior partner and HWP to work co-operatively with the least amount of disruption to their individual operations.

To facilitate communication between HWP and trappers, Alberta shall annually update the list of RFMAs and senior partners and provide the information to HWP before January 1 of each year.

GROUND RULES

- 5.2.1 An HWP representative shall personally contact, or send a registered letter to the senior partner of a RFMA during the preparation of the FHP. Information supplied by the senior partner such as cabin locations, trails, other improvements, and concerns shall be noted at this stage. During the development of the FHP, information and concerns shall be integrated into the plan, where reasonable. HWP shall provide the trapper with a copy of the approved FHP map.**

- 5.2.2 At least ten days prior to commencing operations, HWP shall notify the RFMA senior partner, preferably by personal contact, that timber operations are beginning in the RFMA. When unforeseen events arise the contact may be made less than ten days in advance of operations to ensure the senior partner and HWP have resolved issues.**

5.3 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 HWP 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 habitat and watershed protection values. Specific harvesting and reforestation operations would be identified within components of the AOP.

Effective communication between HWP and grazing disposition holders is necessary. Discussions held early in the planning process are intended to enable the grazing disposition holder and HWP to work co-operatively to minimize disruption to their individual operations.

GROUND RULES

- 5.3.1 HWP shall conduct all operations in accordance to the Grazing Timber Integration Manual and Directive SD 2011-03.**
- 5.3.2 HWP shall ensure 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). HWP is responsible to repair and/or replace any damage caused by HWP to these improvements and infrastructure.**
- 5.3.3 At least ten days prior to commencing operations, HWP shall notify the grazing disposition holder, preferably by personal contact that timber operations are beginning in the disposition. The contact may be made less than ten days in advance of operations provided the grazer and HWP have resolved issues.**

5.4 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; and
- addressing visual quality issues in the FMP.

Areas considered highly sensitive are those areas identified as Visual Quality Objective (VQO) 1-3 on the FMA visual sensitivity map.

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 block, modification of block design, vegetative buffers, and utilizing natural topography.

GROUND RULE

- 5.4.1 VQO 1-3 areas shall be assessed and tactics shall be employed in the FHP to mitigate the impacts of harvesting and reforestation on visual quality.**

5.5 HISTORICAL RESOURCES

PURPOSE

To ensure that HWP identifies and protects historical and cultural resources.

DISCUSSION

There are many thousands of historical resources located on Alberta's Crown land. In keeping with the requirements of Alberta, HWP shall develop and implement a process for identifying and protecting resources that are regulated by the Historical Resources Act. Historical resource records are confidential and should not be shared with the public.

GROUND RULES

- 5.5.1 All known historical resources, and lands on which they are likely to occur shall be identified and managed in keeping with the requirements of Alberta.**
- 5.5.2 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

The FMP shall address watershed water quantity and flow issues. 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 watercourse flows (storage and release of surface and groundwater), reduce sheet, rill and gully erosion, and moderate water temperature. Functional riparian areas provide bank stability, debris for creating aquatic habitats and 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.

Authorizations by Alberta do not imply authorization under federal legislation and requirements, notably the federal Fisheries Act administered by Fisheries and Oceans Canada. The proponent may need to seek advice and approval of the federal agencies (Transport Canada for the Navigable Waters Act) regarding federal legislation requirements.

As new management strategies are developed within the FMP they will be implemented through future ground rules.

GROUND RULES

- 6.1 Waterbodies, watercourses, related landforms and wetlands shall be classified according to Table 2, Waterbody Classification.**
- 6.2 Temporary and permanent erosion control measures must be implemented to minimize erosion and sedimentation into the watercourse or waterbody.**
- 6.3 Riparian protection areas shall be established as per Table 3. Where uncertainty exists on the classification of the watercourse, the watercourse protection area shall be that required by the higher class of watercourse.**
- 6.4 All unmapped or incorrectly classified watercourses encountered during operations shall be given the appropriate protection as described in Table 3 and reported in the as-built plan.**
- 6.5 Unless otherwise approved in a FMP variances from the standards in Table 3 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 shall not be deposited into the water or onto the ice of any watercourse or waterbody during timber operations.**

- 6.7** Equipment shall cross channeled watercourses only at approved crossings. Any crossing structures used for equipment crossings (in-block and not associated with a road) must be reported in the operations status report after installation.
- 6.8** On ephemerals, skidding shall only occur during dry or frozen conditions, or on approved crossings (when soil condition is susceptible to degradation).
- 6.8** Logs shall not be decked in watercourses, riparian areas, or water source areas. Alberta may approve decking in these areas during frozen conditions.
- 6.9** Authorized in-watercourse 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 watercourse sedimentation.
- 6.10** Beaver ponds shall have the 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.

Table 2. Waterbody Classification

Classification					Fisheries/Wildlife Values	Potential Impacts
Type	Mapping Designation	Physical Description	Portion of Year Water Flows	Channel Development		
Class “A” Waterbody	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-watercourse activity or changes to water quality or flow regime.	Fish and fish habitat affected by sediment load, turbidity, deposition of sediment, chemical contamination or alteration of water flow
Class “B” Waterbody	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-watercourse activities; Potential short and long-term effects of in-watercourse 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, deposition of sediment, chemical contamination or alteration of water flow.
Large Permanent	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 watercourse channels; Loss of wildlife habitat, restriction of movement.
Small Permanent	Usually solid although 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.	Banks and channel well-defined. Channel width from ≥ 0.7 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 watercourse channels; Water quality and water yield; Loss of bank fish habitat; Loss of wildlife habitat, restriction of movement.
Transitional	Usually solid although 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.	Transitional streams channel widths are between .4 and 0.7 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...

Classification					Fisheries/Wildlife Values	Potential Impacts
Type	Mapping Designation	Physical Description	Portion of Year Water Flows	Channel Development		
Intermittent	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.
Ephemeral	Not normally mapped	Often a vegetated draw.	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.	Sedimentation downstream due to ground disturbance.
Water source Area	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.
Lake	Solid outline Reserved areas noted on referral map	Large water collection areas permanently filled with water with an aerial size of 1 ha or greater.	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.
Open Wetland (no tree cover)	Mapped by the Ecological Land Classification	Usually marsh, open fen, or shallow water. Areas with saturated organic or mineral soils. Water present at or near surface all year.	Normally frozen in winter	Not applicable	Important habitat for ungulates, birds, bears, etc.	
Treed Wetland (tree cover present)	Mapped by the Ecological Land Classification	Usually bogs, fens, or swamps. Areas with saturated organic or mineral soils. Water present at or near surface all year.	Normally frozen in winter	Not applicable	Important habitat for ungulates.	
Oxbow Lake	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 3. Standards and Guidelines for Operating beside Waterbodies

Watercourse Classification	Roads, Decking and Bared Areas	Watercourse Protection Areas	Operating Conditions Within Riparian Areas and Water source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
Class “A” Waterbodies¹	Not permitted within 100 m of high water mark. Any existing roads may be maintained at present classification standards. Any proposed crossings within 2 km upstream must be specifically approved in the AOP.	No disturbance or removal of timber within 100 m of the high water mark unless specifically approved in the AOP; No duff disturbance of intermittent (min 10 m vegetated buffer) or ephemeral watercourses (minimum 5 m vegetated buffer) within 2 km upstream of Class A waterbody.	Not permitted without specific Alberta approval.	Not allowed without specific Alberta approval.
Class “B” Waterbodies¹	Not permitted within 60 m of high water mark. Any existing roads may be maintained at present classification standards. Any crossings within 500 m upstream must be specifically approved in the AOP.	No disturbance or removal of timber within the appropriate riparian area specified by watercourse type. (See Large and small permanents) No disturbance of hydrophytic vegetation on intermittent or ephemeral watercourses within 500 m upstream of Class B waterbody.	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 30 m of the high water mark.
Large Permanent	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.	No disturbance or removal of timber within 60 m of high water mark unless specifically approved in the AOP. No removal of timber shall be approved within 10 m of the high water mark.	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.
Small Permanent	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.	No disturbance or removal of timber within 30 m of high water mark unless specifically approved in the AOP. No removal of timber shall be approved within 10 m of the high water mark.	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.

Transitional	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.	Buffer of treed vegetation will be left for 10 m from the high water mark or to the top of the break in slope, whichever is further.	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 10 m is approved, no machinery is permitted within 10 m of the high water mark; Heavy equipment may operate within 20 m only during frozen or dry periods (when soil condition is not susceptible to degradation). No skidding through watercourse except on approved crossing. Where fish and spawning movements have been identified, special crossings that do not obstruct upstream fish passage or cause watercourse siltation are required.
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Continued...

Watercourse Classification	Roads, Decking and Bared Areas	Watercourse Protection Areas	Operating Conditions Within Riparian Areas and Water source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
Intermittent	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.	Buffer of trees or brush and lesser vegetation to be left undisturbed along the channel. Width of buffer shall vary according to soils, topographical breaks, water source areas and fisheries values.	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.	Heavy equipment may operate within 20 m only during frozen or dry periods (when soil condition is not susceptible to degradation). No skidding through watercourse except on approved crossing. 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 watercourse siltation may be required.
Ephemeral	Construction not permitted within the ephemeral area.	Buffer of undisturbed hydrophytic vegetation (see requirements for Class “A” and “B” waterbody tributaries).	Accumulations of slash and debris to be removed progressively.	Skidding shall only occur during dry or frozen conditions, or on approved crossings (when soil condition is susceptible to degradation). Skidding restrictions apply on Class “A” and “B” waterbodies. Any temporary crossings installed (as per Table 4) are to be removed on completion of operations, except bottom log layer of logfills. Crossings will maintain uninterrupted water flow.
Lakes	No disturbances shall be permitted within 100 m of the high water mark unless specifically approved in the AOP.	On lakes greater than 4 ha, no disturbance or removal of timber within 100 m of the high-water mark unless specifically approved in the AOP. 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 waterbody.	Consideration must be given to aesthetics when harvesting adjacent to lakes with recreational potential.

Watercourse Classification	Roads, Decking and Bared Areas	Watercourse Protection Areas	Operating Conditions Within Riparian Areas and Water source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
Water source Areas and Areas Subject to Normal Seasonal Flooding	Construction not permitted unless approved in the AOP; No log decks permitted; The number of crossings must be minimized; No disturbance of organic duff layers or removal of lesser vegetation.	Treed riparian management zone of at least 20 m on all water source areas; No harvest of merchantable trees or disturbances of lesser vegetation unless specifically approved in the AOP; Buffer width may be altered according to its potential to produce surface water, provided it is approved in the AOP.	Heavy machinery not permitted within water source areas during unfrozen soil conditions; Minimal disturbance or removal of duff or lesser vegetation; Timber may be harvested if watercourse sedimentation is the only resource concern, provided there is minimal disturbance of the organic soils and lesser vegetation when harvesting and reforesting the site; 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 away from the road bed; Where a separation layer is used, the soil cap shall be removed when operations are completed.
Treed Wetland	Construction only during frozen conditions.	None		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 dry or frozen periods;
Oxbow Lake	Construction not permitted within 100 m of oxbow lake unless specifically approved in the FHP.	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 water source 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 waterbody.	Approved activities shall be done with equipment capable of operating without causing excessive disturbance.

¹Recommended buffers on Class “A” and “B” waterbodies are not a requirement of the Code of Practice for Watercourse Crossings. “Mapped” Class “A” and “B” watercourses refer to maps in Schedule 6 of the Code of Practice for Watercourse Crossings.

7.0 HABITAT MANAGEMENT

7.1 BLOCK DESIGN AND LAYOUT

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 silviculture 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.

GROUND RULES

- 7.1.2 Alberta PSPs and PNTs, as enabled by the Public Lands Act, shall not be disturbed or harvested unless such action is approved by Alberta. Alberta PSPs shall also be protected from blowdown by protection of the existing buffer.**

7.2 DEBRIS MANAGEMENT AND WILDFIRE PROTECTION

PURPOSE

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

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

DISCUSSION

Debris or slash accumulation resulting from timber harvest operations must 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 deciduous species suckering, or tree planting, and 3) provide ecological benefit.

Landscape-level issues regarding the risk of large fires are addressed in the FMP. The FMP shall develop objectives, strategies and tactics 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.

Acceptable methods of reducing slash hazards are defined in Debris Management Standards for Timber Harvest Operations AF-FDP-2017-07.

GROUND RULES

- 7.2.1** Slash accumulations resulting from timber harvesting, road, and campsite construction shall be disposed of within 12 months after the completion of harvest operations as per Directive 2017-07.
- 7.2.2** Slash fuel accumulation is not permitted within 5 m of the perimeter of the block. 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.
- 7.2.3** Burning operations shall:
- a) Not be conducted during the fire season, unless otherwise approved in the Fire Control Plan in the AOP.
 - b) Require a post burning survey to ensure all holdover fires are extinguished.
 - c) Be completed effectively where individual piles are 80% consumed and attempts have been made to burn all piles.
- 7.2.4** The FHP shall comply with direction provided in Community Fire Smart Plans.
- 7.2.5** The Fire Control Plan of the AOP shall contain the specifications in the fire control agreement:

- a) **duty roster;**
- b) **list of HWP woodlands personnel and their fire control training;**
- c) **key HWP contacts;**
- d) **heavy equipment resource list;**
- e) **small hand tool resource list and their location;**
- f) **HWP communication system and numbers and call-signs;**
- g) **fire prevention policies;**
- h) **fire prevention strategies;**
- i) **fire prevention priorities (high values at risk);**
- j) **fire operations schedule (i.e., harvesting and silviculture activities within the fire season);**
- k) **identification of barriers to fire spread.**

7.3 STRUCTURE RETENTION

PURPOSE

To create temporary refuges for forest biota to re-colonize blocks.
To maintain snags and live residual trees in harvested areas for species that depend on these structures following natural disturbances.
To provide wildlife thermal and hiding cover within blocks throughout the rotation.
To provide wildlife travel corridors within large blocks 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 retention of single trees and patches of large live trees in blocks makes the harvested areas more similar to burned areas. In addition, residual live trees may create some old forest attributes in young regenerating blocks. 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 species 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 blocks 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 species that depend on this dead woody material.

Where larger blocks are created, it is important to retain a number of individual trees, snags and residual tree patches distributed across the block. 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.

These ground rules describe the average number of patches per hectare of residual material that will be left within harvested areas of a landscape unit for those where this is not defined in a FMP. There may be zero patches of residual structure in any particular block as long as the amount identified in the timber supply analysis (TSA) is met across the landscape over time.

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 1% of the area harvested (ha) will be retained as merchantable structure retention across the FMA.

7.3.1.1 FHP will show laid out structure retention proposed in the block. Structure retention will vary by block with some blocks containing zero structure and others containing greater amounts.

7.3.2 Merchantable volume retained shall be reported to Alberta in an acceptable manner.

7.3.3 Merchantable structure retention that contributes to the target shall be representative of the harvest area given the following priorities:

Priority 1 – Retain merchantable non-pine species (no MPB risk).

Priority 2 – Retain merchantable pine (moderate MPB risk).

7.3.4 Non-merchantable retention will not count towards the 1% target.

7.3.5 Retention shall be within the harvest block boundary.

7.3.5.1 Proximal retention is not required but may be left as per the following:

- a) Where a waterbody described in Table 2 runs into or along the block and retention is left in addition to the required buffer.**
- b) Where sensitive sites defined in 7.6.6.2 are within 100m of the block boundary.**
- c) Proximal retention must be excluded from harvest for one rotation.**
- d) Proximal retention does not contribute to the harvest block retention target.**

7.3.6 Structure retention includes all patches -> .04ha.

7.3.6.1 Patches -> .04ha will be measured using either GPS or aerial photography and summarized in the HWP annual report.

7.3.7 Large patches (≥ 1 ha) will be laid out and identified in the FHP.

- 7.3.8 In addition to merchantable structure retention, individual non-merchantable trees may be left where silviculturally and operationally feasible and where worker safety is not compromised.**
- 7.3.9 HWP 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 (see section 4.2.4).**

7.4 UNDERSTORY PROTECTION

PURPOSE

To protect coniferous understory during timber harvesting and reforestation operations.

DISCUSSION

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

The silviculture system employed must be ecologically suited to the tree species and forest site being managed, and likely to result in prompt, healthy regeneration. Advance regeneration will be evaluated during the preparation of the FHP to determine its potential for future management. The highest priority for protection will be given to stands with understories that have the following characteristics:

- are comprised of acceptable trees as defined in the Reforestation Standard of Alberta (RSA);
- are thrifty (healthy, vigorous, wind firm);
- have good form;
- have the potential to grow vigorously when released; and
- are comprised of species that will realize the full site potential.

Where understory is protected, the advanced regeneration or residual trees left during harvesting shall be protected throughout all phases of HWP management activities. HWP may reassess the value of protected understory and revise prescriptions accordingly

GROUND RULES

- 7.4.1 Detail on avoidance techniques shall be described in the FHP block comments.**
- 7.4.2 Mapped and unmapped clumps of White spruce understory shall be protected where feasible.**
- 7.4.3 Other species may be protected on a site-specific basis to meet non-timber objectives.**
- 7.4.4 Considerations for protection of understory are:**
- **the reforestation expectations for the site;**
 - **the relative susceptibility of the species to natural hazards (insects, disease, sun scald, drought, wind);**
 - **the feasibility of completing the required harvesting and silviculture treatments;**
 - **the non-timber management objectives for the area;**

- density and height of the understory;
- condition of the understory (form, root condition, height-growth, health);
- limiting site factors (soil drainage, frost, drought, rooting depth, soil nutrient, soil temperature, competing vegetation, Chinook winds, etc.).

7.4.5 Understory discovered in the field but not previously identified shall be protected as per 7.4.1 and 7.4.2.

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 species;
- 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 watercourse banks can alter light intensity, nutrient supply, sediment inputs, water temperatures, watercourse 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 species 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 called riparian reserve zones 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 Canada) 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 channelled 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 areas by:

- Checking the Fisheries and Wildlife Management Information System (FWMIS), Water Act Codes of Practice and fisheries inventory data,
- Conducting new inventories,

- c) Consulting with the appropriate Area Fisheries Management Biologist, or
- d) Checking the Foothills Research Institute probability of fish occurrence map.

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.

Bull Trout

DISCUSSION

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

Bull Trout are classified as “Threatened” under the Alberta Wildlife Act. One of the greatest contributing factors threatening this species related to the forest industry is the density of linear features (e.g., Class I-IV roads, skid trails, and all preexisting access). Development of the FHP must focus on ensuring that best management practices related to construction, maintenance and reclamation of roads is in place, with the primary intent being the protection of fish habitat and productivity. This is achieved through the maintenance of natural hydrologic processes, avoiding erosion, and increasing protection of streams where risks to this species are identified.

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, connectivity, productivity and access of bull trout to the spawning, rearing, feeding and over wintering habitat within the watershed;
- b) protection of water quality and quantity that provide a key component of the habitat that supports native fish species within watersheds (e.g. temperature, dissolved oxygen content, natural sediment, avoidance of anthropogenic sedimentation and productivity) to ensure the continued occupancy and use of historical watersheds by this species; and
- c) minimize the industrial footprint and density of linear features intersecting watercourses within bull trout watersheds to reduce the potential for secondary disturbance and mortality from recreational use.

GROUND RULES

7.5.3 Bull Trout

Locations of existing bull trout can be identified using the Fisheries and Wildlife Management Information System (FWMIS), and the associated Fish and Wildlife Internet Mapping Tool (FWMIT). Within these identified areas:

- 7.5.3.1 Operational planning by the company should incorporate the use of Alberta’s Wet Areas Mapping tool to identify areas that are sensitive to disturbance. Field confirmation of these sites including depth to water, potential disruption of groundwater flows, and areas at high risk of erosion in wet or riparian areas can be a useful tool in determining road and crossing location.**

- 7.5.3.2** Where crossing of wet areas cannot be avoided, the operator shall ensure that the forest floor remains intact ensuring that normal ground water flows are maintained after reclamation.

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 woodland caribou, grizzly bear, trumpeter swan and other species as determined by Alberta from time to time;
- maintain the effective habitats for ungulates in river valley environments.

GROUND RULES

- 7.6.1** Access management within Woodland Caribou, Grizzly Bear, and Key Wildlife and Biodiversity Zones:

In the absence of a Long Term Access Plan, ground rules 7.6.1.1 – 7.6.1.5 apply.

7.6.1.1 Where existing disturbances exist, new roads must follow existing disturbances that are suitable for the access need. If existing disturbances are present but not used, a rationale for alternate routes must be provided with the FHP.

7.6.1.2 Planning of all roads shall ensure that other values are addressed through access planning, season of use and access management.

7.6.1.3 Summer roads may be developed and used, subject to the following:

- a) Preferentially, summer roads shall be temporary “dry weather” routes, with access management discussed prior to approval.

7.6.1.4 AOP roads that are built sooner than one year prior to harvesting operations will be deactivated until operations commence.

7.6.1.5 Temporary roads shall be deactivated or reclaimed (and potentially reforested) within 18 months of completion of harvesting and hauling operations, unless otherwise agreed to in the operating schedule (AOP).

7.6.1.6 As agreed to between HWP and Alberta, effective forms of public access control for highway vehicles shall be maintained on non-DLO roads.

7.6.1.7 Options for control of highway vehicle use on any open road must be considered in the CA or FHP. See section 11.5 for more detail on access management.

7.6.1.8 Reclamation techniques used on access routes must strive to prevent highway vehicle use (e.g., a section of rollback, earth berm, logs etc.).

Woodland Caribou

DISCUSSION

The FMP strategies and SHS shall describe the harvesting program that will create the desired future forest, taking into consideration the full range of values including habitat for species of special concern.

Woodland caribou are protected as a “Threatened” species under Alberta’s Wildlife Act and the Federal Species at Risk Act. “A Woodland Caribou Policy for Alberta” provides Government of Alberta intent and direction for recovery of woodland caribou populations and habitat, including managing industrial work on caribou range. Both national and provincial woodland caribou recovery processes have been initiated which may have implications for timber harvesting in Alberta. Woodland caribou range is delineated by Alberta (Wildlife Sensitivity Maps).

Timber operations and management in caribou range can affect caribou populations and habitat directly or indirectly and in four main ways: 1) creating and maintaining public access routes, 2) altering natural and human-caused mortality rates on caribou populations (both through access route development and habitat changes), 3) altering the amount, quality, and effectiveness of caribou habitat, and 4) displacing and causing undue sensory disturbance to individual caribou. All of the four factors are consequential for caribou conservation; however, predation rates and habitat changes are of primary concern.

The negative effects of creating and maintaining access routes (public travel, predation, reduced habitat effectiveness, disturbance and displacement) shall be managed by planning the amount, tenure and class of new access routes (roads), and by reviewing and acting upon management options (i.e., access management, abandonment, reclamation) for existing routes.

GROUND RULES

7.6.2 Woodland Caribou

Upon approval of a Woodland Caribou Range Plan applicable to this FMA, company operations will adhere to that plan. In the absence of an approved Range Plan the following ground rules shall apply.

7.6.2.1 If not addressed in the approved FMP and SHS strategies, a CA must be completed that addresses the following issues:

- a) provide an agreed upon habitat supply forecast including the amount, type, and spatial arrangement of Caribou habitat;
- b) the location of all proposed harvest areas;
- c) options for partial harvest systems;
- d) the amount, alignment, standard (road type) and longevity (tenure) of all access roads;
- e) use of, and improvements to existing access roads;
- f) access road reclamation plan and schedule, which shall also consider options for reforestation of roads. This shall take into account reclamation options for existing access routes;
- g) measures to achieve public and industrial access management;
- h) operating schedule (road construction, harvesting, silviculture);

- i) **protection of key caribou habitat features (as identified by Alberta and company);**
 - j) **terrestrial lichen management strategies (in relation to both harvesting system and silviculture prescription);**
 - k) **proposed summer operations.**
- 7.6.2.2 Silviculture prescriptions shall strive to limit non-coniferous shrub and tree regeneration in habitats dominated by coniferous species prior to harvest, and where regeneration to coniferous-dominant stands is planned. Silviculture prescriptions shall strive to protect existing terrestrial lichens, and facilitate terrestrial lichen regeneration.**
- 7.6.2.3 A sufficient amount of habitat (considering both habitat quality and effectiveness) must be maintained at all times within the caribou ranges. The FMP shall provide direction of the amount, configuration and location/adjacency of harvest areas and older seral stage retention areas, and on rate of harvest.**
- 7.6.2.4 Retention patches shall be used in large harvest areas to protect areas of concentrated terrestrial lichen growth, and reduce, watershed, aesthetic, and wildlife related concerns.**
- 7.6.2.5 Areas of concentrated terrestrial lichen growth (where terrestrial lichens are the predominant ground cover) within proposed harvest areas must be delineated in the FHP. Structure retention in harvest areas within the Caribou range should focus on these lichen areas.**
- 7.6.2.6 Winter operations are preferred to protect existing terrestrial lichen growth within harvest areas, and to retain lichen propagules.**
- 7.6.2.7 Harvest area boundaries shall be based upon natural stand edges, breaks in topography, and other natural features.**
- 7.6.2.8 Summer harvesting areas shall preferentially be located outside of caribou range or if within caribou range, be located in proximity to previously existing all-weather access roads to assist in reducing the need for new summer access routes. As an alternative, summer harvesting in more remote areas shall have hauling deferred to take advantage of frozen ground conditions.**

Grizzly Bear

DISCUSSION

The Alberta Grizzly Bear Recovery Plan 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 “Threatened” species under the General Status of Alberta Wildlife 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 human use through the creation and maintenance of access routes, which in turn influence human caused bear mortality rates 2) altering the amount, quality, and effectiveness of grizzly bear habitat, and 3) displacing and causing undue sensory disturbance to individual grizzly bears. 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 core and secondary grizzly bear habitat and by using grizzly bear habitat maps in planning new access).

Landscape level planning is necessary to ensure the availability of effective habitat and managing mortality risk for grizzly bears. The indicators of suitable landscape conditions for grizzly bears are habitat (Resource Selection Function (RSF)), mortality risk, open route density, and safe harbour index. Specific strategies for landscape planning for grizzly bear shall be agreed upon in the FMP and at the CA level.

HWP shall reference the fRI Research grizzly bear model assessments provided by Alberta as part of the 2014 FMP to guide planning of permanent road locations in Core and Secondary grizzly bear range with the objective being to contribute to the following Alberta grizzly bear access management objectives:

- a) RSF – Minimize permanent roads in higher value RSF habitat, and strive to maintain or increase current RSF values over the long term;
- b) Mortality Risk - Maintain or reduce current levels of mean mortality risk over time as determined through the mortality risk model.
- c) Safe Harbour - Maintain or increase the current safe harbour area over time.

It is recognized that RSF values change over time and that they may decrease before they increase.

GROUND RULES

7.6.3 Grizzly Bear

7.6.3.1 If specifically requested by Alberta, a CA must be completed that addresses the following issues within Core Grizzly Bear Watershed Units (GBWU):

- a) **the location of all proposed blocks;**
- b) **the amount, alignment, standard (road type) and longevity (tenure) of all access roads;**
- c) **use of and improvements to existing access roads;**
- d) **access road reclamation plan and schedule, which will also consider options for reforestation of roads. This shall take into account options for existing access routes;**
- e) **measures to achieve public and industrial “highway vehicle” access management;**
- f) **general operating schedule (road construction, harvesting, silviculture);**
- g) **protection of key grizzly bear habitat features (as identified by Alberta and HWP);**
- h) **proposed summer operations.**

7.6.3.2 AOP Summer roads should attempt to avoid riparian corridors. Those routes that lie within riparian corridors should reduce vehicle speeds through signage and/or HWP operating procedures.

7.6.3.3 AOP Roads, skid trails, and campsites shall be located where they avoid natural meadows, beaver ponds and den locations.

7.6.3.4 Retention areas should be used in blocks to provide hiding cover, connectivity to forest patches, and protection for dens.

Trumpeter Swan

DISCUSSION

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

Trumpeter swans are classified as a “Species of Special Concern” 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 Wildlife Sensitivity Maps or layers. 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

7.6.4 Trumpeter Swan

7.6.4.1 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 breeding sites.

7.6.4.2 There shall be no timber harvesting within 200 m of the high water mark on identified Trumpeter Swan breeding sites.

7.6.4.3 An area 200-500 m from the high water mark on identified trumpeter swan breeding sites 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:

- 7.6.4.3.1 site preparation that reduces the potential for future vehicular access;
- 7.6.4.3.2 no aerial application of herbicides unless approved by Alberta; and
- 7.6.4.3.3 attempts to limit maximum line of sight to 100 m.

7.6.4.4 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.

7.6.4.5 There shall be no development of new long-term infrastructure (roads or camps under Public Lands Act disposition e.g.) within 500 m of the high water mark on identified trumpeter swan breeding sites. Only seasonal winter routes shall be permitted within the 500 m buffer.

Key Wildlife and Biodiversity Zone

DISCUSSION

The SHS and FMP describes the harvesting program that will create the desired future forest, taking into consideration the full range of values including habitat for species of special management concern.

For deer, elk and moose in Alberta, key winter range 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.

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

7.6.5 Key Wildlife and Biodiversity Zone (KWBZ)

- 7.6.5.1 The amount, tenure and class of new forest company access roads shall be minimized. Access development will strive to minimize new human infrastructure.**
- 7.6.5.2 New permanent crossings shall be avoided.**
- 7.6.5.3 Where possible all access roads shall avoid known key habitat features such as mineral licks, riparian areas and meadow and shrub areas.**
- 7.6.5.4 Use of existing access roads must be described in the FHP, with particular reference to public access management, any proposed road improvements and ongoing maintenance. Potential opportunities for partial or complete route closure and/or reclamation following planned harvesting and silviculture shall be discussed.**
- 7.6.5.5 HWP shall monitor winter operations within key wildlife and biodiversity zones and curtail operations when deemed detrimental to wintering ungulates. In the absence of this monitoring, timber operations should be conducted outside of the period January 15 to April 30 unless otherwise approved in an AOP. Upon request, HWP will provide any site level assessments completed within the KWBZ.**
- 7.6.5.6 Mechanical thinning and/or use of ground or aerial herbicide as approved by Alberta may occur.**

Other Species **DISCUSSION**

Additional habitats of selected wildlife species require maintenance of undisturbed habitats (e.g., breeding or denning locations). These species require specific sites in order to complete all or part of their life cycles.

7.6.6 Other Species

- 7.6.6.1 Sensitive sites listed below shall be protected by retention of an undisturbed, forested buffer (or other management technique) from the edge of the opening associated with these sites, or from the centre of sites without openings. Both Alberta and the forest operator shall make a reasonable effort to identify sensitive sites in the FHP. Sites discovered in the field shall receive the same buffer as those sites previously identified in planning. Buffer widths and duration shall be agreed to in the FHP or according to the table where agreement isn't reached.**
- 7.6.6.2 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 is found during harvest activities, it shall be buffered as appropriate and feasible and identified on the as-built block map.**

Sensitive Site	Width of Forested Buffer
Breeding Sites of Special Concern, Threatened or Endangered amphibians and reptiles	100 m
Bat Hibernacula	100 m
Colonial Bird Nesting Area	100 m
Sandhill Crane Nesting Area	100 m
Wolverine Den	100 m
Mineral Licks	100 m
Raptor Nest Tree	100 m
Natural Springs and Beaver Ponds with no outflow channel	20 m-vegetated
Grizzly Bear Den	100 m

8.0 SILVICULTURE

PURPOSE

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

DISCUSSION

A reforestation program is required by Alberta under Timber Management Regulation (TMR) 143.1(1). The reforestation program is a component of the AOP and contains reforestation prescription by stratum, 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 treatments, 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;
- 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.

8.1 PLANNING

GROUND RULES

- 8.1.1 Balsam fir or Sub-alpine fir is an acceptable species as per Directive 2001-01 or approved RSA.**
- 8.1.2 Reforestation timelines prescribed by Alberta shall begin at the start of the timber year following the end of the timber year when the block has received skid clearance**

from Alberta, or from an HWP representative pursuant to a self-inspection agreement between HWP and Alberta.

8.1.3 Reforestation prescriptions shall be based on site assessments (pre or post-harvest) that include considerations specific to the site (e.g., ecosite field guide for Alberta).

8.1.4 The Alberta Forest Genetics Resource Management and Conservation Standards (FGRMS) shall be adhered to in all silviculture planning and operations. The standards specify rules for seed and vegetative material collection, registration, storage, handling, and improved stock testing.

8.2 REFORESTATION PROGRAM

GROUND RULES

8.2.1 The reforestation program, which is part of the AOP, shall be submitted on or before April 15 for silviculture operations commencing May 1.

8.2.2 Harvest areas (openings) shall be clearly identified (e.g., maps, spatial files, or delineation on the ground through visual markings). Where stubs are left to delineate areas (e.g., harvest areas) they shall be approximately 30 m apart and no higher than 2 m.

8.2.3 The reforestation program shall include the following components and information:

- a) silviculture prescription;
- b) proposed silviculture treatment schedule; and
- c) maps as requested by Alberta.

a) Silviculture Prescription

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 and Alberta requirements. (see Herbicide Reference Manual). 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
- 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.

Example of Silviculture Treatment Schedule

Working Circle	Compartment	Block	Opening Number (ARIS)	Planned Tactic	Block Area Ha
3	2	0144	5190472544A	SFN-P	7.5

Should the proposed reforestation activities for a harvest area change after AOP approval, the following items require an amendment to the AOP:

- changing to a treatment not approved in the silviculture strategy table for the specific strata;
- additional harvest areas to be treated by any means of treatment;
 - the remaining changes require notification to Alberta through ARIS (Alberta Regeneration Information System) reporting.

If a harvest area is declared sensitive, the forest operator shall provide additional information beyond the strategic and tactical levels. This information shall include the actual techniques (e.g., type of site preparation machine) and their expected impact on the harvest area attribute(s) that make it a sensitive site (e.g., providing frequent furrow trenching breaks on downhill run to reduce erosion).

Note that proposals to deploy seed or vegetative material outside the seed zone or breeding region require prior approval of the Provincial Seed Officer at the Alberta Tree Improvement and Seed Centre.

c) Map(s)

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

- I. all harvest areas to be treated, and all roads and stream crossings to be constructed or used (designating their season of use);
- II. all harvest areas from integrated operations.

See Section 12.0 REPORTING for reforestation activity reporting requirements.

8.3 SILVICULTURE OPERATIONS

GROUND RULES

- 8.3.1 Site preparation and other silviculture activities must follow the same AOP conditions and ground rule standards which apply to timber operations (i.e., watercourse crossing requirements, watercourse buffers, tree/understory retention, and Forest Soils Conservation Guidelines).**
- 8.3.2 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.**
- 8.3.3 Planting boxes shall 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. 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 are primary concerns. 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, which is a common occurrence. Rehabilitation of compacted soil in blocks (off-road) is seldom an option because they are generally wet and additional machine traffic will often cause more soil damage. Therefore, protection of soil is best achieved in choice of equipment, 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 soil class across the block delineating sensitive areas with imperfectly and poorly drained soils. Management of field operations shall involve operating on soils when they are as dry as possible. The weather and percentage of sensitive areas in the block shall be taken into account when scheduling areas for harvesting. Following a long dry period in summer, the sensitive sites shall be scheduled accordingly.

GROUND RULES

Harvest planning

- 9.1 Areas susceptible to rutting, puddling or compaction shall be avoided when planning temporary roads, decks, and skidding patterns.**
- 9.2 Areas susceptible to rutting, puddling or compaction shall be harvested during dry or frozen conditions (or when soil condition is not susceptible to degradation).**

Harvesting

- 9.3 The total area covered by temporary roads, bared landing areas, displaced soil, and skid trails created by timber harvesting operations shall not exceed five percent of each block without prior approval of Alberta. Debris piles proposed for disposal are not considered part of the five percent.**
- 9.4 Unless otherwise approved, operations shall not occur during heavy rainfall or when soil conditions are above field capacity (saturated).**
- 9.5 Minimize the machine traffic on sensitive areas, depending on soil susceptibility to disturbance according to the results of a hand test (see Figure 1).**
- 9.6 Operations shall cease when instances of multiple ruts in a limited area are created that are clearly related to operations during unfavourable ground conditions.**

9.6.1 Areas with single ruts or a limited number of short ruts can be indicative of an operator becoming aware of unfavorable conditions and making the decision to cease operations.

- 9.7 Erosion and soil disturbance must be limited, with effort made to retain organic matter and soil nutrients.**

Reclamation/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 Block roads that are no longer required shall be reclaimed and reforested. Treatments acceptable to Alberta are required on compacted soils. Acceptable treatments may be decompaction if required, roll back of debris, and planting.**

Change in soil moisture and susceptibility to compaction and rutting following rainfall

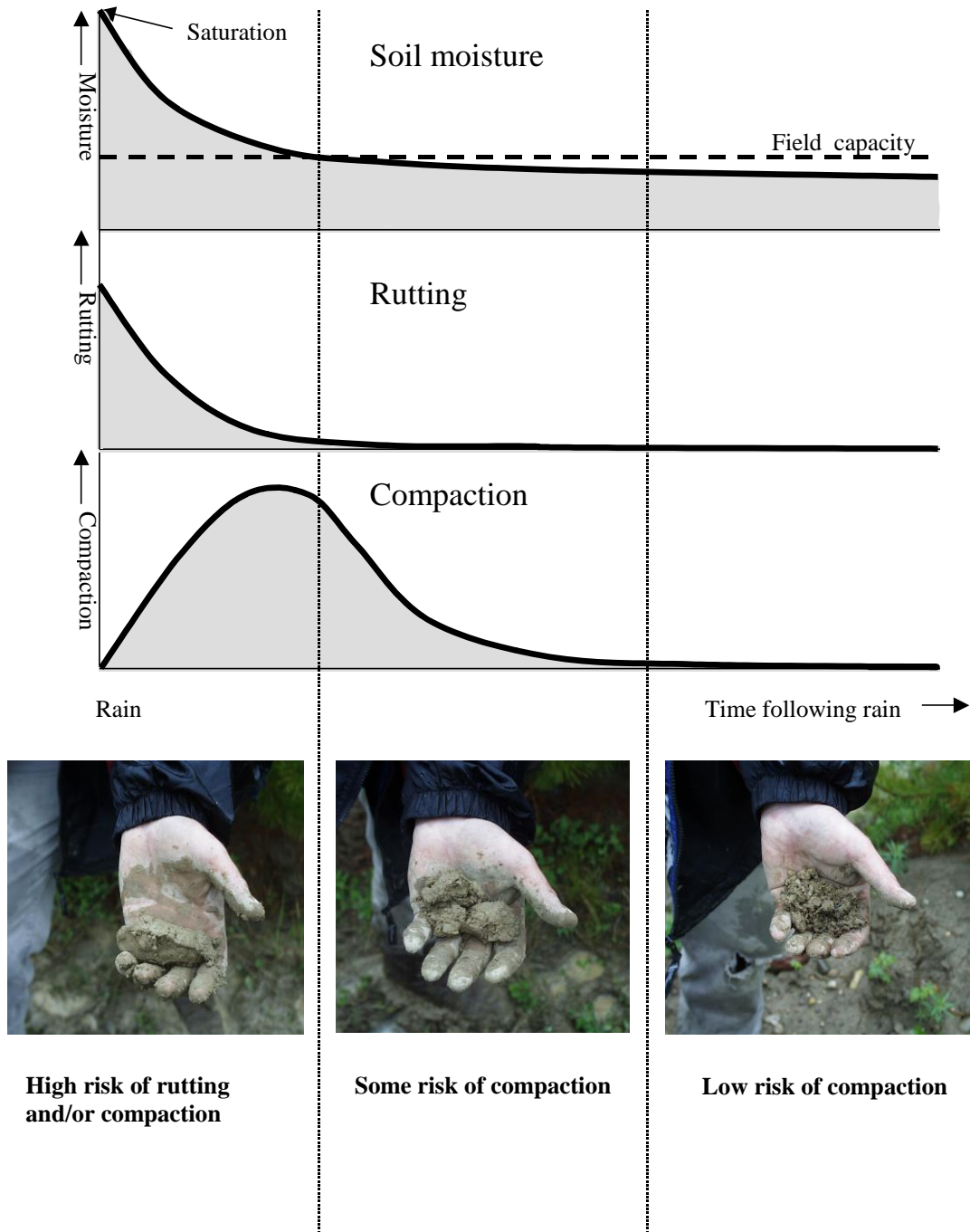


Figure 1. Change in soil moisture and susceptibility to compaction and rutting following rainfall

Courtesy of Andrei Startsev, Alberta Research Council

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 the potential to impact 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 harvesting, silviculture operations, and surveys. Several biotic and abiotic forest health agents affect the growth and survival of trees. Each agent poses a threat to the forest. 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.

The following ground rules do not supersede the management strategies of species of special management concern. Alberta will provide direction where insects or disease concerns overlap with strategies for species of special management concern.

Documents concerning MPB can be found on the applicable government website.

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 may be acceptable if approved by Alberta. Infected and infested stands shall be ranked based on the type and intensity of insect and disease present, or the presence of dead trees. Stands or trees shall be ranked for treatment or harvest as follows:

Risk 1: Stands or trees with the presence of MPB or spruce beetles.

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

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

Risk 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:

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

Risk 2 stands: Shall be addressed through the salvage planning process (see section 3.6, Salvage Planning). Highly unpredictable spread therefore, salvage planning is initiated.

Risk 3 stands: To manage dwarf mistletoe HWP shall:

- create a 20 m wide mistletoe-free zone adjacent to the block, or
- create a 20 m wide non-host buffer beside the block perimeter, or
- reforest the block to a non-host species.

Any wildlife tree patches shall consist of non-pine species where possible. For other pests, contact Alberta.

Risk 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. Contact Alberta.

- 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 and new infestations shall be addressed in the FHP.**
- 10.1.4 Any Risk 1 agent infestation and all data must be reported to Alberta immediately.**
- 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 restricted and noxious weeds in the forested area of Alberta negatively affects the integrity of the ecosystem. Invasive weeds alter natural processes and displace organisms that naturally occur in the area.

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 HWP shall follow Alberta Directive 2001-06 for weed management in forestry operations.**

11.0 ROADS

11.1 ROAD CLASSIFICATION

PURPOSE

To define a road classification system that provides guidelines to HWP and potentially all resource users of the FMA.

DISCUSSION

As roads are one of the most significant components of forest harvesting operations, HWP 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 operations 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.

The ground rules do not supersede approvals authorized by the Public Lands Act.

GROUND RULES

- 11.1.1 HWP shall utilize the classification system described in Table 2 during planning and operations.**
- 11.1.2 All roads, regardless of class, with an active lifespan of greater than three years shall be built under the authority of a DLO.**

Table 4. Road Classification and Design

Road Description and Tenure	Planning Requirements	Layout ¹	Design and Construction Descriptions ¹		Borrow Pits ¹	Timber Salvage ¹	Debris ¹	Erosion Control ¹
			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. DLO 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 DLO.	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. DLO 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 DLO 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 DLO.	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 4. Road Classification and Design (continued)

Road Description and Tenure	Planning Requirements	Layout ¹	Design and Construction Descriptions ¹		Borrow Pits ¹	Timber Salvage ¹	Debris ¹	Erosion Control ¹
			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>DLO 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 DLO 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 DLO.</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>To or through block to another block</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>	7 - 20 m	5 – 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 block (may pass through reserve or outside block to access other portions of the block)</p> <p>Up to three years</p>	<p>Not required to be mapped in FHP unless passing through reserve or outside block.</p>	<p>Status tracked with block in Operations Status Report</p>	7 – 20 m	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>

¹For Department License of Occupation (DLO) roads, actual requirements may be different in approved Disposition document.

11.2 ROAD PLANNING AND DESIGN

PURPOSE

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

DISCUSSION

DLO roads are authorized under the Public Lands Act. The application process identified by Alberta is to be followed for all DLO roads.

GROUND RULES

Road Planning

11.2.1 HWP shall annually submit a permanent road construction and reclamation plan in the GDP. Proposed variances from the FMP road corridor plan require Alberta's approval. The minimum scope of the road construction schedule shall be a five-year forecast with the content requirements being:

Map showing:

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

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

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

11.2.2.2 HWP 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 (c). 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:

Existing access (e.g., seismic lines, trails, existing roads), shall be used as a priority wherever practical and feasible. This section applies to activities occurring after the signing of these ground rules.

GROUND RULES

11.3.1 General

11.3.1.1 Road ROWs shall be cleared according to standards established in Table 4, road comments, and any additional conditions approved in the FHP.

11.3.1.2 Roads shall be constructed to avoid:

- a) unstable soils and water source areas; and
- b) creating disturbed, compacted or bared soils that exceed the amount specified in section 9.3 – Soils.

11.3.1.3 Where proposed roads may impact a recreational site, there shall be documented discussions with the manager of the recreation site on how HWP will mitigate impacts on the recreational values of the area.

11.3.1.4 Temporary road construction activities that are required outside an approved ROW can be considered incidental to construction and will be approved as part of the AOP provided the following is met:

- a) Be immediately adjacent to AOP approved disposition (temporary road and associated ROW only);
- b) Be reclaimed or reforested in the same fashion as the adjacent AOP approved disposition (if applicable);
- c) Be without conflict of existing dispositions and/or adjacent land uses; and
- d) Be an activity type and within the parameters as described below:
 - **Log Decks or Decking Areas:**
 - i. ≤ 0.18 hectares in size;
 - ii. Located on average ≥ 400 metres apart
 - **Bank Stabilization:**
 - i. Related to hill cuts impacted during construction;
 - **Push Outs:**
 - i. ≤ 0.04 hectares in size;
 - ii. Located on average ≥ 800 metres apart. Where this distance is not feasible due to operational constraints, line of sight between push outs should be minimized.

11.3.2 Construction

11.3.2.1 Roads and skid trails shall be placed in locations and constructed so that soil erosion, damage to streambeds and sedimentation of watercourses are minimized. Use of skid trails requires notification (e-mail is acceptable) to Alberta and include an updated FHP map as per 3.4.7 (m).

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 Hazardous trees and trees outside the ROW 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 when feasible.

11.3.2.5 All borrow pits required outside of the Class 5 or Class 6 ROW must be authorized by Alberta or an appropriate land use disposition before they are developed.

11.3.2.6 All sand and gravel pits off the ROW must be authorized under an appropriate disposition.

11.3.2.7 Removal of sand and gravel from within the channel or floodplain of any watercourse is prohibited unless approved by Alberta.

11.3.3 Erosion Control/Prevention

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

11.3.3.3 Constructed roads require maintenance for erosion control and stabilization of disturbed soils.

11.3.3.4 Where practical, ditch backslopes shall have a regular profile from the top of the cut to the bottom with no hanging banks or vertical cuts. In all cases the backslopes shall be stabilized to prevent erosion.

11.3.3.5 Water from roads, ditches and bared soil surfaces shall not be permitted to drain directly into channelled watercourses. Where vegetated buffers alone do not retard water and sediment movement effectively, appropriate obstructions (e.g., logs, rocks, mounds) or sediment control structures (e.g., silt fence) shall be installed to dissipate the flow of water and capture sediment prior to entering the watercourse.

11.3.3.6 Cross-drain culverts and other drain devices shall be installed as road sub-grade construction progresses. Cross-drain 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 watercourse areas; and
- d) be installed with erosion-preventing spillways or downspouts where they drain onto unstable or bare soil.

11.3.3.7 Where necessary for erosion control, revegetation treatments 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.

11.3.3.8 A portion of the clearing debris and topsoil stripping from road and landing construction shall be retained and used for revegetation and erosion control on disturbed areas.

11.3.4 Reclamation

11.3.4.1 Temporary roads that are not in active use or no longer required shall be deactivated or reclaimed (see 11.3.4.4 and 11.3.4.5), and their condition shall be monitored until they are considered satisfactorily stabilized (see 11.3.4.6).

11.3.4.2 Certified weed free seed shall be used when seeding is used for reclamation.

11.3.4.3 All borrow and gravel pits no longer required must be reclaimed (re-contoured to stable slopes and re-vegetated) unless approval has been given to allow water to fill the pit for wildlife or wildfire purposes.

Seasonal Deactivation

11.3.4.4 Roads that are not used continuously throughout the year require intermediate erosion control measures, where necessary, such as:

- a) watercourse crossing removal;
- b) shallow surface cross ditches based on slope and soil type;
- c) re-established water flow;
- d) slope stabilization;
- e) rut-free driving surface establishment; and
- f) access control measures.

Deactivation

11.3.4.5 Roads that are not immediately required but are necessary for future operations shall be deactivated to the following standards unless otherwise approved in the AOP:

- a) Remove watercourse crossing and structures that have a high risk of erosion or failure and reclaim watercourse banks and approaches;
- b) Stabilize all potentially erodible slopes through rollback, seed to approved vegetation species, and cross-ditch to disperse runoff and suspended sediment into undisturbed areas; and

- c) **Install access closure structures including rollback at access points, at the same time as crossing removal.**

Reclamation

11.3.4.6 Except for seismic lines, roads and associated bared areas that are no longer required shall be permanently reclaimed by completing all of the following:

- a) **decompact (if required) and return to an acceptable landform;**
- b) **remove all watercourse crossing and drain structures and reclaim watercourse banks and approaches (see section 11.4.27);**
- c) **cross-ditch, roll back topsoil (including slash and logging debris) and re-vegetate a minimum of 80% coverage of erodible bared surface areas;**
- d) **reforest disturbed areas inside blocks and where mutually agreed to, outside of the block;**
- e) **establish access closures where required; and**
- f) **with Alberta's approval, road reclamation may occur in a manner that permits OHV access considering the following:**
 - **reforestation plans;**
 - **wildlife concerns;**
 - **fire control requirements;**
 - **erosion potential;**
 - **trapper or other user needs;**
 - **aesthetic concerns; and**
 - **recreation requirements.**

11.4 WATERCOURSE CROSSINGS

PURPOSE

To provide guidance so that watercourse 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, and pertinent policy and legislation. Watercourse crossings shall be designed, installed, maintained and deactivated in accordance with all applicable policy and legislation. See Section 7.5.1 and 7.5.2 for additional information on the implications of the Fisheries Act.

GROUND RULES

11.4.1 The company shall require approval for any crossing structure not listed in Table 5 for the appropriate watercourse type.

11.4.1.1 Unless previously identified in the AOP, notification of crossing type to Alberta is required on the first operations report after installation.

Table 5. Acceptable Crossing Structures

Stream Classification	Acceptable Structure	
	Non-Frozen	Frozen
Ephemeral	Log Fill	Log Fill
	Culvert	Snow Fill
	Bridge	Culvert
Intermittent		Bridge
	Log Fill/Modified Log Fill	Log Fill
	Culvert	Snow Fill
	Bridge	Culvert
Transitional Small Permanent		Bridge
	Modified Log Fill	Log Fill/Modified Log Fill
	Culvert	Snow Fill
	Bridge	Culvert
Small Permanent		Bridge
	Modified Log Fill	Log Fill/Modified Log Fill
	Culvert	Snow Fill
	Bridge	Culvert
Large Permanent		Bridge
	Bridge	Bridge
		Ice bridge

- Any change within a category only requires notification to Alberta.
- 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 11.4.19.

11.4.2 Intermittent and higher-order watercourses shall be classified in the FHP.

11.4.3 Proposed watercourse crossing structures and locations (does not include ephemerals) shall be identified in the FHP.

11.4.4 Unless otherwise approved, watercourse crossings shall:

- prevent erosion and sedimentation;
- have stable approaches;
- be at right angles to the watercourse;
- be at locations where the channels are well defined, unobstructed and straight;
- be at a narrow point along the watercourse;
- allow room for direct gentle approaches;
- have no direct runoff from either the road surface or ditches; and
- have erosion control structures installed during construction.

- 11.4.5** Watercourse crossings shall accommodate peak stream flows at the following levels as measured using a method acceptable to Alberta:
- a) Permanent roads (Class 2 – 4) – shall be designed for a minimum of 1: 50 year flood levels; and
 - b) Temporary roads (Class 5 – 6) – shall be designed for a minimum of 1:25 year flood levels with the exception of temporary winter crossings that 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** In-stream activities shall be scheduled to avoid migration, spawning and incubation periods of migratory or resident fish species (restricted activity periods) except where Alberta has approved mitigation measures that allow for deviations from the in-stream timing constraints.
- 11.4.8** Upstream fish passage must be maintained at all watercourse crossings on fish-bearing watercourses except where exempt under the legislation.
- 11.4.9** The flow of the watercourse must be maintained at all times when carrying out in-watercourse activities, 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 occurs, 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 channelled watercourse or other deleterious substances and materials that are toxic, or an immediate threat to fish and other aquatic organisms, into any watercourse. Any such substances or materials deposited in a channelled watercourse must be removed immediately and reported to Alberta.
- 11.4.12** Watercourse crossings shall be kept free of accumulated debris. Culverts plugged with ice shall be reopened to prevent flooding during spring thaw.
- 11.4.13** Interim erosion control measures (e.g., silt fences, matting, or gravel check dams) must be implemented and maintained until permanent vegetation and erosion control measures are established (where necessary).
- 11.4.14** Watercourse crossings that fail shall be reclaimed (or replaced if still needed) with more appropriate crossing structures as soon as possible.
- 11.4.15** Bridge abutments shall not constrict the normal watercourse channel. Where watercourse banks must be built up to construct a bridge abutment, soil shall be brought in and deposited from the end of the grade – no equipment shall enter the watercourse channel. Bridge spans must extend beyond watercourse banks and abutment walls.
- 11.4.16** Bridges are preferred for crossings on fish-bearing watercourses. Culverts are acceptable where they will not restrict upstream passage of fish.

11.4.17 Culverts for all classes of watercourses 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 with the overburden properly backsloped and stabilized to prevent sediment from entering the watercourse, and ensure that the ends of the culvert can be kept open at all times.

Any culvert on a fish bearing watercourse (as defined by the Foothills Research Institutes Fish Probability Model or other method (see 7.5.1)) that becomes a hanging culvert must be repaired or replaced as soon as possible. Non fish bearing watercourses shall be assessed for environmental concerns to determine the need for remedial action. Crossings shall be repaired when they are contributing to downstream sediment transfer.

11.4.18 Logfills or modified logfills (see 11.4.19 below) on temporary roads may be used as per Table 5. Logfills or modified logfills shall be removed when the temporary road is deactivated. A bottom layer of logs may be permanently left in place when removing the logfill to provide for crossing of ephemerals for post-logging access (including site preparation) provided the associated timber volume is reported to Alberta (TPRS). The volume will be based on an estimate supplied by the company.

11.4.19 A properly constructed logfill/modified logfill has all of the following:

- a) enough logs to adequately cross or fill an ephemeral draw;
- 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.

11.4.20 For fish-bearing watercourses, any negative impacts on the stability and fish habitat values of watercourse banks must be minimized. Any damage to watercourse banks, other than the installation of culverts, and the corrective measures taken by HWP shall be reported to Alberta within seven days of the occurrence.

11.4.21 A native timber bridge may be used as per Table 5, provided that all of these requirements are met:

- a) bridge abutments do not restrict the 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 the watercourse banks and abutment walls;
- f) a separation layer is used between the soil cap and timber to prohibit material falling into the creek; and
- g) any soil cap and separation layer shall be removed if the crossing is not used during the summer.

11.4.22 Snow-fills may be used on watercourses during frozen conditions as per Table 5 provided that all of the following requirements are met:

- a) sufficient clean snow exists to fill the channel;
- b) bank integrity is maintained;
- c) any soil cap or temporary structure (e.g., logs) installed over the snow fill is removed prior to break-up;

- d) measures are in place to prevent soil or other debris from entering the watercourse channel or ice surface; and
- e) water flow is not impeded.

11.4.23 Bridges may be used for silviculture access provided all of these requirements are met:

- a) they are intended specifically to accommodate ATV (All-Terrain Vehicle) load(s); and
- b) measures are in place to prevent soil or other debris from entering the watercourse channel.

11.4.24 Ice bridges may be used during frozen conditions provided that all of the following requirements are met:

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

11.4.25 The placement of merchantable pieces for corduroy is permitted as long as the associated timber volume is reported to Alberta (TPRS). The volume will be based on an estimate supplied by the company. These may be left in place as long as water movement is not inhibited.

11.4.26 HWP shall establish a watercourse crossings 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 within one year. The condition of reclaimed crossings shall be monitored annually until all watercourse banks and erosion-prone bared areas are satisfactorily stabilized using vegetation capable of maintaining bank stability.

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, historical sites, erosion control, protection of road quality, fire prevention, 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 permanent roads shall be identified through the submission and review of the FMP road plan or LTAP. For temporary roads, the 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, Forest Land Use Zone)

GROUND RULES

- 11.5.1 Where access control has been identified as an objective in strategic land use plans, Alberta shall consult with HWP to determine an access control strategy. In the event that a strategic land use plan has not been developed, the FHP shall describe specific access control measures identified in the FMP (see section 3.4) or Wildlife Sensitivity Map or layer.**
- 11.5.2 In designated areas, Alberta may direct HWP to restrict road access during specified periods, implemented in accordance with Alberta policy. Restricted access issues shall 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 HWP 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;
- safe camp locations are a priority. Therefore, an evaluation of all potential risks should be conducted prior to selecting a final camp location;
- camps and fuel storage sites should be identified in the annual fire control plan when proposed locations are known;
- camps should be kept clean. Proper mechanisms for the disposal of hazardous and non-hazardous waste shall be implemented;
- camp food and garbage storage should minimize the potential for problems with wildlife. Recommend following the Bear Smart guidelines for specific mitigation relating to bears. Problems with wildlife shall be dealt with in consultation with Alberta.

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. TFAs are required for camps to be in place less than twelve consecutive months.**
- 11.6.2 Any facility or camp must adhere to all provincial regulations related to the camp (i.e., Public Health Act – *Work Camp Regulation*).**
- 11.6.3 Where feasible, forest operators shall establish temporary camps and/or other facilities within either new harvest areas or existing clearings (e.g., gravel and borrow pits).**
- 11.6.4 Temporary fuel storage sites shall not be located within 100 m of any channelled watercourse.**

12.0 REPORTING

PURPOSE

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

DISCUSSION

Silviculture and harvest operations reporting and monitoring is necessary to ensure legislated requirements are met in all treatment areas. The intent of activity 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

SILVICULTURE AND HARVEST ACTIVITY REPORTING

- 12.1 HWP shall report the details of all silviculture 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 and shall be submitted in accordance with all requirements of the manual and associated policy directives.**
- 12.2 HWP shall have a self-inspection agreement and shall carry out periodic inspections of active timber operations and report the information to Alberta in a format acceptable to Alberta. Reports based on the 2006-04 directive shall be submitted to Alberta once per month or at agreed to intervals (see 3.4.8 (g) for reporting on ephemeral and intermittent crossings).**
- 12.3 HWP shall submit shape files by December 31 of as built plans (includes harvest boundaries, retention patches, road location, watercourse crossings, road percentages, etc.) from the previous year's harvest operations. This will not affect the approval of the GDP.**

Appendix 1 Role of Regulated Forestry Professionals (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.

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 m³ 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 Plans¹

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 acceptance²

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 surveys, ARIS submissions and silviculture operations reports, regeneration strata balance/swap/trade summaries – for acceptance
- viii. Field operations inspection reports – for acceptance
- ix. Herbicide reports – for acceptance

¹ 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.

² Where thinning plans, herbicide plans, and reforestation prescriptions vary from FMP silviculture strategies the silviculture program shall be appraised by Alberta.

Appendix 2 Glossary

Alberta	The Department of Sustainable Resource Development, including the Lands, Forests, and Fish and Wildlife Divisions, 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 in any one year as per the approved HWP Forest Management Plan.
Annual Operating Plan (AOP)	An annual plan which upon approval provides the authorization to harvest. An AOP is a requirement of the Timber Management Regulation.
Approval	Issued by Alberta. An 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 block map	An opening number accompanied by a spatial depiction of the block generated either from cutover photography or from GPS technology capable of 3m or better accuracy
Audit	An official examination and verification of records, activities, accounts, actions, operations, etc., compared to performance and compliance standards.
Bared soil	Any soil where the organic layers and vegetation have been removed.
Block	An area with defined boundaries where timber harvesting is scheduled, or has occurred. (commonly referred to as a cut block, harvest area or block).
Block map	A map showing the block, with a legend and associated comments where applicable.
Borrow pit	A small quarry or excavation, which provides material for use in the construction project. [Revised from Dunster]
Buffer	An area that reduces the danger of interaction between an adjacent activity and a specified value or important area. Typically the adjacent activity is not allowed in the buffer area.
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 permit (CTP)	A timber disposition issued under Section 22 of the Forests Act authorizing the permittee to 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	An administrative subunit of the Forest Management Area.
Connectivity	A measure of how well different areas (patches or landscapes) are connected by linkages, such as habitat patches, single or multiple corridors, or "stepping stones" of similar composition.
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. 2 An area of uniform width bordering both or one side of a lineal feature, such as a watercourse or route. [Dunster]

Cross-drains	Culverts or other 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.
Delegated Authority	The GoA personnel located at the Regional or Area level charged with supervision of all forest management activities in a defined Region or Area. It can also mean someone who is authorized to approve an AOP.
Deleterious substance	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.
Department License of Occupation	A disposition issued by Alberta authorizing occupation of a linear corridor, often for an access road.
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 watercourses that would normally flow all year.
Due Diligence	Taking and documenting reasonable steps to ensure that the desired outcome is achieved or that the chances of a negative consequence or outcome is minimized.
Duff	The organic horizons of the soil profile (LFH). Commonly referred to as the forest floor.
Early in/Early out	A philosophy and practice of ensuring that all activities associated with timber harvesting are completed by mid-winter. Companies plan activities to start immediately on freeze up, e.g. having blocks laid out or well sites surveyed before freeze up, then freezing in access lines as soon as possible. All activities should be concluded by late January with no disturbances in mid and late winter.
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]
Endangered Species	See Species at Risk
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. The EFR forms part of the approval for the Public Lands Act disposition.
Ephemeral watercourse	A swale, gully, or depression that conveys water either permanently or temporarily, but has no continuous water-scoured channel (see Watercourse). Ephemeral watercourses are distinguished from dry swales, etc by the presence of hydrophytic (grows in water or very moist ground) plants.

Exterior Road	Inter-block road that exists outside block boundary.
Fire Smart 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.
Floodplain	Land bordering a watercourse onto which a flood will spread. The underlying materials are typically unconsolidated and derived from past water 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 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 Area (FMA)	An area defined by a Forest Management Agreement.
Forest Management Agreement	A contract between the province of Alberta and HWP whereby the province provides an area-based Crown timber supply. In return, HWP commits to the following: Managing the timber resource on a perpetual sustained yield basis, taking into consideration a broad range of forest values in determining forest management practices. 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 HWP. The Forest Management Agreement gives HWP the right to access Crown fibre. In return, HWP commits to forest management responsibilities, which may change from time to time.
Forest management plan (FMP)	A long-term plan used to outline higher-level management objectives, sustainability and timber production assumptions for a Forest Management Agreement.
Forest operations	Includes all activities related to timber harvesting, including site assessments, planning, road construction, harvesting, reclamation and reforestation.
Forest Act	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.
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 on 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.
Hiding cover	See “ <i>sight distance.</i> ”
High-water mark	Water level corresponding to the top of the non-vegetated 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.

Inoperable	Classification of a forest site based on the potential to harvest timber on that site, as affected by physiographic characteristics, moisture regime and harvesting equipment/technology.
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.
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.
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.
Interior forest conditions	The environmental conditions typical of the central or interior part of a habitat patch. They are usually relatively stable and are not influenced by the changing climatic conditions and other variables (noise, wind, sunlight, temperature, moisture) associated with edge conditions. [Dunster]
Landing	Any area where logs are gathered for processing or further transport to a mill site.
Landscape	A landscape 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 areas (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 block.
License of occupation (LOC)	A disposition issued by Alberta (AER) authorizing occupation of a linear corridor, often for an access road.
Logfill	Watercourse crossings constructed with logs placed parallel to the water flow.
Logging slash	The unusable trees, shrubs or portions thereof that result after tree felling, skidding and processing at the harvest site.
Long Term Access Plan (LTAP)	Plan that details company's existing and future roads by Working Circle. Status of existing or proposed road(s) determined by company and includes whether road be maintained, deactivated, or reclaimed.
Machine-free zone	The area protected from machinery which would cause soil damage.
Mature stands	Stands that have reached rotation age or have a decreasing growth rate.
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.
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 road	A road that will be in use for more than three years.
Permanent sample plot	A fixed or variable area plot established for (forest) sampling and measurement purposes, and designed for re-measurement.
Pre-commercial Thinning	A silviculture 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.
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	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 (RFP)	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	An area of land designated as being off-limits to designated activities that might change the nature of the area.
Residual structure	Standing woody structure within a harvested area that is taller than 2 m.
Residual tree	A live canopy tree within a harvested area.
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 pipelines.
Riparian area or management zone	(1) The band of land that has a significant influence on a water ecosystem or is significantly affected by the water. 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]
Road Corridor Plan	Forest Management Plan requirement indicating location of future permanent roads required by company across the FMA over time.
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.
Seral stage	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 a watercourse.
Silviculture	The theory and practice of controlling the establishment, composition, health, structure and growth of forests 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.
Snag	A dead tree that is taller than 2 m.
Soil degradation	A reduction in soil quality caused by but not limited to the following conditions: rutting, compaction, puddling or soil displacement.
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 block, includes bared landing areas, temporary roads, displaced soils or ruts.
Species at risk	Any species designated as “Threatened” or “Endangered” in Alberta legislation. The list of species is maintained by Alberta.
Species of management concern	Species that have an identified social, economic, or ecological value 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.
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.
Strippings	Layers of humus-bearing topsoil and fine woody material above mineral soil that have been stripped off during road or landing construction.
Stub	Any cut or broken tree bole taller than 30 cm (maximum stump height). Commonly refers to a tree that has been cut at 4-6 m to create an artificial snag.
Stump	The remaining portion of a harvested tree \leq 30 cm in height measured from the point of origin.
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 (SFM)	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.
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 block or that connect blocks, and are built, used and deactivated or reclaimed before expiry of the Annual Operating Plan (AOP) or deactivated or reclaimed within three 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.
Threatened species	See Species at Risk.
Timber disposition	Licenses and permits that allow HWP to harvest from Crown lands.
Timber	The legislative statute that describes the mechanism and regulations by which the forested lands of

Management Regulation	Alberta are managed. The Regulation is associated with the Forest 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.
Tolerance Limits	Acceptable degree of change that can be allowed before corrective action is taken.
Trapper	Holder of a trapping license.
Treed wetland	A treed bog, fen, or swamp that may include merchantable stands.
Understory	The trees and other woody species growing under the overstory 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. 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 understory	Trees of desirable merchantable species that are windfirm and of sufficient vigour that they will continue to grow after harvest.
Viewshed	The visible area, as it appears from one or more viewpoints.
Visual quality objectives (VQO)	Broad objectives for visual resource management that set limits considered acceptable to the average viewer, as to the form and scale of visible alteration.
Waterbody	The bed, bank or shore of a permanent lake or other natural body of still water.
Water regime	Timing of water flow.
Watersource area	That portion of a watershed where soils are water-saturated and/or surface flow occurs and contributes directly to water flow. The area of saturated interflow associated with a watercourse.
Watercourse	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 waterbody or watercourse. The topographic boundary, usually a height of land, that marks the dividing line from which surface watercourses flow in two different directions. [Dunster]
Wetland	Low areas where water either covers the soil or is present at or near the soil surface for much of the year, including the growing season. Usually defined by plants adapted to saturated-soil conditions. Classes are bogs, fens, marshes, swamps, and shallow waters (see Canadian Wetland Classification: http://www.portofentry.com/Wetlands.pdf).
Wildland Urban Interface Zone	The area where various structures and other human developments meet or are intermingled with the forest and other vegetative fuel types.
Wildlife	Any species of amphibian, bird, fish, mammal and reptile found in the wild, living unrestrained or free roaming and not domesticated.

Wildlife corridor	A strip of forest or a series of forest retention patches that connect two forested areas. These may include merchantable or unmerchantable stems.
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 Acronyms

AAC	Annual Allowable Cut
AOP	Annual Operating Plan
CAPF	College of Alberta Professional Foresters
CAPFT	College of Alberta Professional Forest Technologists
CT	Commercial Thinning
COP	Codes of Practice (Watercourse Crossings Codes of Practice, Water Act).
FMA	Forest Management Area
FMP	Forest Management Plan
GDP	General Development Plan
IRP	Integrated Resource Plan
PCT	Pre-commercial Thinning
RFP	Regulated Forestry Professional
RPF	Registered Professional Forester
RPFT	Registered Professional Forest Technologist
ROW	Right-of-Way
SFM	Sustainable Forest Management
TOR	Terms of Reference
TMR	Timber Management Regulation made under the Forests Act

Appendix 3 FHP and AOP Checklists

Forest Harvest Plan Checklist - Revised May 2018						
Area		Disposition Number	FMA 8800025			
Company		Date Disposition Issued				
Submission Date		Date Disposition Expires				
APPROVAL ITEM	Company Representative	INITIAL/DATE (to be completed by AAF)				
1) Has the FHP been validated by an RFP?						
2) Are the Planned SHS additions <20% compartment/decade?						
3) Is the sum of proposed area to harvest and previously harvested area (since SHS approval) less than or equal to 100% of the SHS area?						
4) Does the FHP adhere to all Ground Rules?						
	Company (Y,N,N/A)	Company Comments (optional)	AAF (Y,N,N/A)	AAF Comments (optional)		
A. Administrative Considerations						
<ul style="list-style-type: none"> Has a copy of the FHP been provided to? <ul style="list-style-type: none"> - Area Planning Forester - Forest Officer - Fish & Wildlife - other: Is the FHP consistent with approved higher order plans (FMP, SHS, GDP)? Has the required disposition been issued and is active? Is the FHP complete and legible? <ul style="list-style-type: none"> - maps - block tables - reforestation program - detailed block plans where requested - contingency plans 						
B. Utilization						
<ul style="list-style-type: none"> Has the SHS variance been reported and summarized for the FHP? Does the utilization standard match tenure document? Are the deviations from utilization standards identified, explained and justified (rub posts, high stumps, retention, etc)? If there are no deviations, enter N/A. 						
C. Ground Rule Deviations - Complete if answered "NO" to Approval Item #4 (top of page), otherwise enter N/A						
<ul style="list-style-type: none"> Have all the blocks containing ground rule deviations been identified? Has an explanation and justification been provided for all ground rule deviations? 						
D. Integration with Other Users.						
<ul style="list-style-type: none"> If the plan is not integrated, has an explanation and justification been provided? Has the recipient of incidental volumes and chargeability been identified? If there are none, enter N/A. Have all the affected trappers been identified and contacted? If there are none, enter N/A. Have known trapper cabins, trails and other improvements been identified and integrated into the plan? If there are none, enter N/A. Have recreational groups been identified and contacted where issues have been observed? If there are none, enter N/A. Has a GTA been completed and grazing disposition holders been contacted (Directive 2006-01)? If there are none, enter N/A. Have the required historical resource assessments been completed and, if necessary, integrated into the plan? Have all issues raised by other users or the public regarding this plan been documented? If there are none, enter N/A. Have potential land use conflicts been documented and mitigated (PNT, CNT, road use agreements, etc.)? If there are none, enter N/A. 						
E. Access Management (temporary access only)						
<ul style="list-style-type: none"> Have access management measures been described and identified (location, timing, signage, etc)? If there are none, enter N/A. 						
F. Sensitive Sites						
<ul style="list-style-type: none"> Have aesthetic/recreation concerns been addressed? If there are none, enter N/A. Have water source areas been identified and potential impacts mitigated? If there are none, enter N/A. Have permafrost/peat land areas impacted by operations been identified and explained? If there are none, enter N/A. 						
G. Road Design						
<ul style="list-style-type: none"> Have the location, design and width of temporary road corridors been identified? If there are none, enter N/A. Has a list of watercourse crossings including watercourse classification been provided? If there are none, enter N/A. Have any crossings not exempt under the <i>Water Act</i> been identified? If they are all exempt, enter N/A. Have existing access/LOCs/DLOs which have been integrated into the plan been identified on the map? If there are none, enter N/A. Has a temporary road reclamation and abandonment plan been included? 						
H. Wildlife						
<ul style="list-style-type: none"> Have wildlife zones within the planning area been identified and incorporated into the plan (as per OGR Section 7.6)? If there are none, enter N/A. Have blocks with timing restrictions been identified? If there are none, enter N/A. Have all known sensitive wildlife sites been addressed (mineral licks, raptor nests, den sites, etc)? If there are none, enter N/A. 						
I. Insect, Disease & Fire						
<ul style="list-style-type: none"> Does the FHP comply with direction provided in Community Firesmart Plans? If there are no plans, enter N/A. Have known insect and disease infestations been identified and described? If there are none, enter N/A. Have mitigation strategies for infestation, diseases or endangered timber been described? If there are none, enter N/A. Have debris disposal methods been identified? 						
J. Silviculture						
<ul style="list-style-type: none"> Have any watercourse crossings that will be maintained for silviculture purposes been identified? If there are none, enter N/A. Has a pre-harvest strata declaration been included for each opening? 						
-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.						
Company Validation						
Submitting RFP Validation		Hinton Wood Products, a Division of West Fraser Mills Ltd.			Date	
		Company				
AAF Validation						
Reviewing RFP Validation					Date	
Note: Appraisal of the FHP is required if "No" has been indicated on any of the above Approval Items.						

Annual Operating Plan (AOP) Checklist - Revised May 2018							
Area			Volume Summary (m3)	Conifer	Deciduous		
Company	Hinton Wood Products		Quadrant Allowable Cut				
Disposition Number	FMA 8800025		Quadrant Production to date				
Date Disposition Issued			Quadrant Volume Remaining				
Date Disposition Expires			Proposed Production (AOP year)				
Submission Date							
APPROVAL ITEM		YES/NO	INITIAL/DATE (to be completed by AAF)				
Validated by RFP							
AOP has an approved FHP(s)							
			Company (Y,N,N/A)	Company Comments (optional)	AAF (Y,N,N/A)	AAF Comments (optional)	
Administration							
<ul style="list-style-type: none"> Have digital copies of AOP been provided to: <ul style="list-style-type: none"> Area Planning Forester Forest Officer other Have any FHP conditions been addressed? If there are none, entre N/A. Is the Company requesting dues relief with an explanation and justification? Have any amendments to AOP components been submitted and justified (reforestation program, GDP, FHP) 							
Operating Schedule (as per section 3.5.4 c)							
<ul style="list-style-type: none"> Has a table been submitted for all blocks scheduled for harvest including area & volume by species with totals? Has a list of temporary roads proposed for construction, maintenance & reclamation including watercourse crossings to be built or installed or removed/maintained been provided? Has a declaration of outstanding operational items, or an agreement with Alberta on reporting of outstanding operational items been provided? Are requested amendments to any AOP components explained (reforestation program, road plan, etc)? 							
Applicable Forest Harvest Plans (as per section 3.4)							
<ul style="list-style-type: none"> Do all blocks included in the AOP have FHP approval? 							
Reforestation Program (as per section 8.2)							
<ul style="list-style-type: none"> Is the proposed silviculture treatment schedule provided? Are summaries of stratum declarations, stratum changes, final stratum, QAC adjustments provided? Proposed blocks are listed for declaration in lieu of survey & re-treatment <ul style="list-style-type: none"> Are seed inventories sufficient as per FGRMS manual section 11.2 or otherwise approved by AAF? 							
Fire Control Plan (as per section 7.3)							
<ul style="list-style-type: none"> Is the Fire Control plan complete and provided? 							
Road Plan (as per section 11.2)							
<ul style="list-style-type: none"> Are all roads scheduled to be built under authority of the AOP planned to have a lifespan of <= 3 years? Are all required watercourse crossings documented in the monitoring program as per section 11.4.26? 							
General Development Plan (as per section 3.3)							
<ul style="list-style-type: none"> Has a summary of variance as per section 4.1 been provided? Has a summary of volume supply by area been provided? Has an DLO road construction and reclamation schedule been provided? Has a GDP schedule & map as per section 3.3.3 been provided? Has an as-built block map from previous year's harvest been provided? Have consultation activities been completed as per the applicable Consultation Guidelines? 							
Company Sign Off							
Submitting RFP Validation			Hinton Wood Products, a Division of West Fraser Mills Ltd. Company		Date		
AAF Sign Off							
Reviewing RFP Validation			Date				
<p>Note: The AOP shall be appraised by Alberta in accordance to the AOP checklist, with approval subject to the outcome of the appraisal.</p>							