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BRITISH COLUMBIA

FOREST PRACTICES CODE

Changing the way we manage our forests.
Tough enforcement.

RULES

Proposed Forest Practices Rules for British Columbia

November 1993

Preface

The proposed Forest Practices Code sets high standards for forestry operations in British Columbia and establishes enforcement provisions that will ensure responsible forest stewardship throughout the province.

It is intended that the *Forest Practices Act* will be tabled in the spring of 1994. This document, *Proposed Forest Practices Rules for British Columbia*, presents the draft Rules being proposed for forest practices in the province. After public review, the Rules will be incorporated into Regulations and taken before the Legislature in the fall of 1994. Two additional parts of the Code–Standards (provincial and regional) and Field Guides–are currently being prepared and will also be ready next spring. These documents establish the more detailed mandatory requirements and site-specific guidance that are necessary in a province as geographically and ecologically diverse as British Columbia.

Collectively, all of these parts of the Code will bring together the many existing requirements for forest practices that were previously scattered through hundreds of acts, regulations, policies, and guidelines. The Code will lay out many new requirements, too. In doing this, it will set new levels of forest practice that will establish British Columbia as a world leader in the attainment of environmental and resource sustainability.

Among the new requirements are:

- the maintenance of **biological diversity** in the design of harvesting patterns, the selection of silvicultural systems, and the conduct of other activities such as grazing;
- the assessment and mitigation of the **cumulative effects of harvesting** and other forest practices in watersheds with significant water or downstream fisheries values;
- the restriction on **use of clearcut** silvicultural systems;
- the completion of **long-term Forest Development Plans**, at least 20 years into the future, for resource-sensitive areas;
- the attainment of **"green-up" before logging** can proceed in adjacent areas, thus precluding large, continuous clearcuts;
- the establishment of, and adherence to, **Visual Quality Objectives**; and
- the adherence to tougher and more **environmentally sensitive road building standards**.

Additional information on such details as enforcement, penalties, appeals, audits, applicable lands, and the Forest Practices Board are contained in the *British Columbia Forest Practices Code Discussion Paper*.

We welcome your comments on our efforts and look forward to your continued participation in the shaping of the Forest Practices Code. Should you respond in writing, please indicate to which sections and pages of this document your comments refer. A self-addressed envelope is enclosed for your use.

If you have any questions, you may also phone us through Enquiry BC. The telephone numbers are:

in Metro Vancouver:	660-2421
in Metro Victoria:	387-6121
in all other areas:	1-800-663-7867

Telecommunications device for the deaf (TDD)

in Metro Vancouver:	775-0303
all other areas:	1-800-661-8773

If you would like to fax your comments to us, please do so using the following facsimile numbers:

in Metro Victoria:	387-9231
in all other areas:	1-800-565-4838

Contents

Introduction

The Forest Practices Code

The purpose of the proposed Forest Practices Code is to ensure that a high level of forest stewardship is established and maintained in British Columbia. To achieve this, the Code will set and enforce mandatory minimum requirements for forestry operations. These requirements will apply on lands where decisions have already been made that harvesting and other resource management activities will occur. Future decisions about land use are currently being resolved through initiatives such as the Commission on Resources and Environment regional plans, Land and Resource Management Planning, and the Protected Areas Strategy.

The parts of the Forest Practices Code

First is the ***Forest Practices Act***, which will provide the legislative basis for all the mandatory Regulations and "Standards" that follow. In addition, it will set enforcement and penalty provisions and specify the types of administrative arrangements needed to make the Code effective. Included among those arrangements will be a Forest Practices Board, independent audits, appeals, and public reporting. The *Forest Practices Act* is thus the provincial "legislative umbrella" that authorizes the other main parts of the Code.

Second are the **Regulations**. These will be developed once the forest practices Rules (presented in this document, *Proposed Forest Practices Rules for British Columbia*) have been reviewed and the public participation process has been completed. Regulations will be the universal and fundamental practices that must be consistently applied across the province. They will be mandatory under the proposed legislation.

Depending on how exact or complex a given forest practice activity is, a Regulation may specify a required "best management practice" (for example, the directional falling of trees away from streams) or a required process (for example, the Watershed Assessment Procedure, used to determine the cumulative effects of forestry operations on watersheds). Regulations will also specify the types and contents of plans and prescriptions that are required before a forest practice activity may go ahead.

The third part of the Code is the **Standards** (provincial and regional). These will expand on the Regulations and, where possible, provide detail in the form of specific numbers and other auditable requirements (for example, maximum cutblock size). Where appropriate, Standards will provide for site-specific variability to account for the unique ecological conditions of a given area. Standards will also be mandatory under the proposed legislation.

Supporting the above mandatory Regulations and Standards, but not embedded in the legislation, are the **Field Guides**–the fourth level of the Code. These guides stipulate detailed tolerances and evaluation criteria, and provide recommended procedures, processes, and results. They also incorporate new guidelines and recommendations which are still being tested or are awaiting formal approval.

The Field Guides provide for site-specific interpretations. Relevant specifications contained in the guides will be inserted into plans, prescriptions, and contracts, where they become legally enforceable.

The four levels of the Code are shown in Table 1.

Table 1. The parts of the Forest Practices Code

Components	Description	Scope	Status
Forest Practices Act	• enables the Forest Practices Code • establishes mandatory provincial and regional requirements for forest practices • sets enforcement and penalty provisions • specifies administrative arrangements (e.g. Forest Practices Board, independent audits, and appeals)	Province-wide	Legislation to be drafted fall and winter 1993: introduced in the Legislature spring 1994
Regulations	• state the universal and fundamental forest practices that apply all the time	Province-wide	Released for public review November 1993 as *Proposed Forest Practices Rules for British Columbia*
Standards (provincial and regional)	• expand upon Regulations or other Standards • provide the site-specific variability and detail that may include specific numbers and measurements	Provincial and regional—may have ecological or administrative divisions	Currently under development by interagency working groups; due for public release in early 1994
Field Guides	• provide guidance for implementation of Regulations and Standards • allow for site-specific interpretation • become legally enforceable when inserted in plans, prescriptions, and contracts	Provincial and regional—may have ecological or administrative divisions	Most exist now; list of guides to be included currently being compiled; gaps in present guides being addressed by interagency working groups

Presented in this document, *Proposed Forest Practices Rules for British Columbia*, are the draft Rules being recommended for incorporation into the Regulations. Two additional documents, *Forest Practices Standards* and *Forest Practices Field Guides*, are currently being prepared by interagency working groups and will be released for public review next spring. The latter document will initially be a compendium of existing guidelines, policies, and procedures. For examples of subjects to be covered in the Standards and Field Guides, see Appendix 1.

First Nations participation

Aboriginal rights exist in law and are recognized and affirmed under the *Constitution of Canada (1982)*. As such, they cannot be unjustifiably infringed by activities of the Crown or activities authorized by the Crown (for example, through the issuance of tenures, leases, licences, and permits). However, it should be possible through consultation and negotiation with those aboriginal peoples directly affected by the activity to find mutually agreeable solutions when an activity impacts on an aboriginal right. Implementation of the Forest Practices Code will embody this approach.

Background

The various components of the Code have been developed under the direction of the Forest Practices Steering Committee, which includes representatives of the Ministry of Forests, Ministry of Environment, Lands and Parks, Ministry of Energy, Mines and Petroleum Resources, and Commission on Resources and Environment.

Where did the technical information to develop the Code come from?

Up until now, forestry practices have been governed by approximately 700 regulations and over 3000 separate guidelines. The latter have been mostly discretionary. In addition to this, forest activities are governed by six national and 20 provincial acts. Consistent application across the province has been difficult with so many different conditions.

Staff working on the Forest Practices Code reviewed all the existing documents and brought forward the key requirements that were appropriate to designate as Regulations. A similar process is under way to identify Standards.

The Regulations also introduce new approaches to forest management–approaches which were adopted from successful applications in other jurisdictions or which are the result of new knowledge and research.

How will ongoing revision of the Code be handled?

Since we have imperfect knowledge of ecological systems, and since new technologies, equipment and approaches are continually being tested, the Code will continue to be updated and modified as new knowledge comes to light. Ongoing public consultation will be an important part of this process.

Within government, the multi-agency Forest Practices Steering Committee will continue to oversee the management of the Code. Technical committees will continue to develop guidelines, as new information becomes available, and these committees will gain representation from interested members of the public. Recommendations from the technical committees will be sent to the Steering Committee. It will be the role of that body to decide which guidelines should be incorporated into the Code and thus have the force of law. A Forest Practices Advisory Committee will provide an ongoing public perspective to this process.

1 Administration

1.1 Preparation of Standards

Responsibility for preparation

1 The Chief Forester or the Regional Manager must prepare Standards where additional detail is needed to meet the intent of the forest practices Regulations. Standards must be complied with, subject to Section 1.2, "Alternatives approved by District Managers."

1.2 Alternatives approved by District Managers

Variances

1 The District Manager may approve alternatives if a Regulation or Standard does not adequately address a specific site condition or activity. Justification for variances must be recorded in the appropriate documents and, where applicable, the appropriate resource agencies must be consulted.

2 General requirements

Control of environmental damage

1 Any forest practice that is causing, or may imminently cause, serious damage to the environment (such as mass wasting, spillage of hazardous chemicals, or erosion that is damaging aquatic values or private property) must stop immediately. The operator must notify the B.C. Ministry of Forests and other appropriate resource agencies immediately, and must immediately take whatever temporary measures are necessary to stop or minimize further damage.

2 Where, because of adverse field conditions (such as high rainfall or excessively wet soils), forest practices are causing, or may imminently cause, soil or other environmental damage, those forest practices must stop and appropriate temporary protective measures be taken. Forest practices may resume only when the conditions that are causing or could cause the damage are no longer present.

3 Where approved forest practices have caused environmental damage, the B.C. Ministry of Forests and other appropriate resource agencies must be notified immediately. Rehabilitative and preventative measures must be developed in cooperation with appropriate agencies and enacted as quickly as is practical.

Practices within or adjacent to designated or protected areas

4 Plans, prescriptions, and forest practices within or immediately adjacent to designated areas, or immediately adjacent to protected areas, must be designed and conducted in a manner that is consistent with the approved objectives for the management of the resources in those areas. Where compliance during fire control efforts might jeopardize public or firefighter safety or result in unacceptable damage to values at risk, then safety, followed by the protection of the primary values, must take precedence.

Protection of heritage and recreation features

5 Where heritage or significant recreation features and other previously unidentified resource values are discovered during forest practices operations, such operations must stop or be modified immediately to ensure that those features or values are not damaged. The discovery must be referred to the B.C. Ministry of Forests and any other agency responsible for managing those resource values. Measures to protect those values, or minimize adverse effects on them, must be incorporated into any further plans or actions.

Forest planning framework

The forest planning framework provides a process so that government policies are translated into integrated resource management plans. The framework consists of five hierarchical levels (Table 2) that provide a context for setting resource objectives and management strategies.

Provincial, regional, and subregional plans focus on defining broad strategic management objectives and land use allocations. These plans are dealt with by policy and procedure and are not included in the Forest Practices Code.

Local resource plans establish more detailed direction at the watershed or landscape level. They generally aim to identify all known resource values, to establish landscape level zoning of acceptable activities, and to provide guidelines for the development of operational plans and prescriptions. They are prepared where local conditions warrant an intensive plan with extensive public participation, and are used to resolve land-use conflicts.

Forest Development Plans document the first five years or more of proposed harvesting and are updated annually. They consider all identified resource values and map out appropriate designated areas in entire landscape units within which forest development is proposed. These areas are defined by watershed or other natural biophysical or ecological boundaries within units of the larger land and resource management plan. Forest development plans are the recognized vehicle through which proposed forest harvesting units are reviewed and approved in principle. Once the site-specific field data are gathered, Pre-harvest Silviculture Prescriptions are developed to define forest management prescriptions for cutblocks before logging takes place. In turn, Logging (Cutting) Plans contain site-specific strategies designed to ensure that harvesting operations achieve required standards and obligations.

Table 2. Forest planning framework

Planning levels	Examples
Provincial Policies	• Protected Areas Strategy/Old-Growth Strategy
Strategic Plans	
Regional Plans	• Commission on Resources and Environment Regional Plans
Subregional Plans	• Land and Resource Management Plans • Tree Farm Licence Management Plans • Timber Supply Area Management Strategies
Local Resource Plans	• Local Resource Use Plans • Coordinated Access Management Plans
Operational Plans (covered in the Forest Practices Code)	• See Figure 1, Section 3.

3 Planning

3.1 Principles of planning

Guiding Principles

- To achieve the goals of responsible stewardship and sustainable use of forest resources, the planning process for provincial forest lands in British Columbia should be guided by the principle of integrated resource management, wherein all resource values, as well as social, economic, and environmental needs, are identified and considered.
- Forest planning should reflect social values and incorporate clear commitments to conserve biological diversity, maintain the inherent productivity of aquatic and terrestrial ecosystems, and meet the needs of an economically viable and sustainable forest industry.
- Public involvement in evaluating and assigning resource use, and in establishing integrated resource management objectives and priorities, should be identified as a key element in the planning process and should be facilitated by ensuring that opportunities for meaningful participation exist at all levels of planning.

1 Lower level plans and forest practices must be consistent with the purpose and objectives of all approved higher level plans and prescriptions.

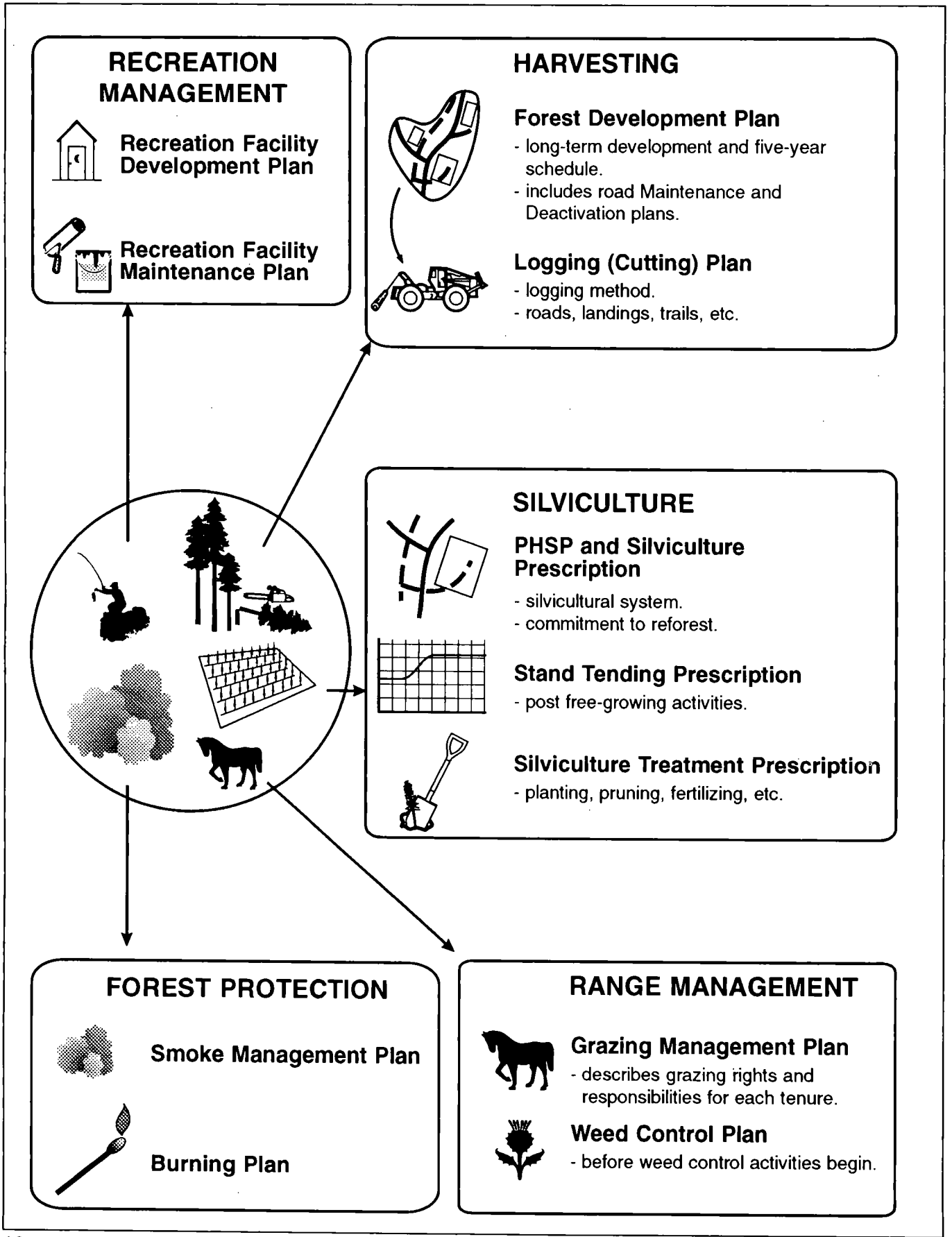
Consistency between plans

3.2 Establishing management objectives

Guiding Principles

- Strategic and operational planning processes should ensure that management objectives and forest practices designed to achieve those objectives are specified for all provincial forest lands.
- Broad-scale land use decisions and management objectives should be determined through government-approved strategic planning processes and documented in strategic plans.

Figure 1. Operational plans covered by the Forest Practices Code



- Area-specific management objectives and practices should be established through government-approved operational planning processes and should ensure that the management objectives specified in strategic plans are used.
- Where strategic plans are not yet in place or do not contain sufficient detail to guide all practices, government authorities from appropriate resource agencies should formally identify area-specific objectives and standards to be used on an interim basis to guide operational planning.

Consistency between plan objectives and forest practices

1 Where area-specific objectives and requirements have been established by an approved strategic plan or by the Standards outlined in the Forest Practices Code, then:

- all operational plans and prescriptions for that area must indicate the relevant areas on a map; and,
- all operational plans, prescriptions, and forest practices must be consistent with any objectives and requirements established for these areas.

In the absence of a strategic plan

2 Where an operational plan is required for an area that has no approved strategic plan, or that has an existing strategic plan which does not contain sufficient detail to adequately guide forest practices, the District Manager, in consultation with appropriate resource agencies, must indicate any area-specific objectives and requirements for the area that can be reasonably defined on an interim basis. These are also subject to (1) above.

3.3 Designated areas

Guiding Principles

- Areas within the provincial forest that consistently require site-specific management objectives and standards, to ensure that recognized resource values in them are protected during harvesting and other forestry activities, should be identified as recognized designated areas; and the appropriate category of designated area should be documented in operational plans.

- The basic principles of integrated resource management should apply within designated areas, although greater emphasis should be given to protecting and maintaining the specific recognized resource values indicated for each category of designated area.

- All forest land within designated areas should be classified following standardized procedures and classification criteria. The establishment of appropriate management objectives and requirements for each class of designated area should be linked to the classification.

- Old-growth management areas, wildlife habitat areas, and significant recreation resource areas should all be identified during the development of strategic plans such as Land and Resource Management Plans or Local Resource Plans. Where these strategic plans do not currently exist or contain this information, then, as an interim measure, these categories of designated area should be identified in Forest Development Plans.

- Streamside and riparian areas, lakeshore areas, and visually sensitive landscapes should usually be identified in Forest Development Plans.

- Community watersheds, because of their size and importance, should be identified at all levels of planning.

Current categories of designated areas

Community watersheds

- Community watersheds are those watersheds designated by the B.C. Ministry of Environment, Lands and Parks for domestic water production. Standards of forest practice are designed to meet the approved objectives for water quality and quantity and the timing of stream flow. (Criteria for designating community watersheds are currently under review through a provincial interagency committee.)

Streamside and riparian areas

- Streamside and riparian areas occur next to the banks of streams, rivers, and wetlands. Riparian areas include both the area dominated by continuous high moisture content and the adjacent upland vegetation that exerts an influence on it. Forest practice Standards in these areas are designed to maintain the ecological function and productivity of the areas' unique combination of values. Two management types are recognized within these areas:

1. Streamside Management Zones
   - These are directly adjacent to streams and include the land and vegetation that have a physical and ecological influence on stream processes.
   - Protective measures in these areas focus on maintaining and conserving the productive capability of fish habitat and water quality.

2. Riparian Management Zones
   - These are adjacent to rivers, streams, and wetlands and include a component of the upland vegetation.
   - Protective measures in these areas focus on maintaining biological diversity, wildlife, and recreation, as well as fisheries.

Lakeshore areas

- Lakeshore management areas pertain to the land directly adjacent to a lake. Forest practice Standards in these areas should be designed to maintain the unique combination of fish, wildlife, water, and recreation values that occur on and around lakes. Management classes are identified for each lake, and specific Standards are applied to the adjacent area of land that directly affects the values identified as important.

Wildlife habitat areas

- Wildlife habitat areas are critical habitats required for maintaining wildlife populations. Those currently recognized are habitats of sensitive and vulnerable (blue-listed) or endangered and threatened (red-listed) species, as well as those of regional or local significance. Other types of habitat and the needs of other species of wildlife are addressed through various Standards contained in the Forest Practices Code.
- Forest practice Standards for wildlife habitat areas are designed to maintain habitat productivity for specified populations.

Visually sensitive landscapes

- Visually sensitive landscapes are areas that have an approved Visual Quality Objective of partial retention, retention, or preservation. These landscapes are generally associated with views from major travel corridors, communities, and high recreation use areas.
- Standards of forest practice are designed to meet the Visual Quality Objective approved for that area.

Significant recreation resource areas

- Certain areas or linear features are considered to be highly significant as recreational features because of their biological, physical, or cultural value. Types of recreational resources recognized provincially as constituting a designated area are:
  - Forest Service recreation sites and trails;
  - Forest Service interpretive forests;

- trails designated under the *Heritage Conservation Act*;
- rivers or trails designated under a provincial or federal program; and,
- recreation features of provincial significance, as identified in planning processes, recreation inventories, or the referral process.

Old-growth management areas

- Forest practices within old-growth management areas should be designed to retain the important attributes of forest stand structure that are associated with old-growth forests, such as:
  - large trees (relative to that species or site);
  - wide variation in tree sizes and spacing;
  - large dead trees, standing and fallen;
  - multiple canopy layers;
  - canopy gaps and understory patchiness; and,
  - decadence in the form of broken or deformed tops or boles and root decay.
- Many old-growth-related objectives will be met through protected areas, through other areas where harvesting is restricted, or through management practices within various types of designated area (for example, the Standards for a riparian area may involve the retention of large trees). Separate designated areas for old-growth management should only be established where old-growth-related objectives will not be met in these other ways.
- Old-growth management areas will usually be long term, but often not permanent. In many cases, they will shift across the landscape over time on a planned basis.

Categories

1 Under the Forest Practices Code, each of the following areas is established as a category of designated area:
- community watersheds;
- streamside and riparian areas;
- lakeshore areas;
- wildlife habitat areas;
- visually sensitive landscapes;
- significant recreation resource areas; and,
- old-growth management areas.

Classification criteria

2 Areas that fall within a designated area must be identified and classified according to the definition and classification criteria in the Standards. Where area-specific objectives do not exist in an approved plan, they must be established consistent with Rule (2) in Section 3.2, "Establishing management objectives," before operational plans are approved. The District Manager may waive this requirement for operations other than road construction, harvesting, or silviculture treatments.

Area-specific objectives

3 Area-specific objectives and the Standards defined under (2) above must be consistent with any standards of practice established for that category of designated area.

4 Before an operational plan is approved, all streams, riparian areas, lakes, and visually sensitive landscapes in the vicinity of the proposed operations must be classified and mapped. The District Manager may exempt this requirement for operations other than road construction, harvesting, or silviculture treatments.

Classification of streams, riparian areas, lakes, and visually sensitive landscapes

5 Where overlapping designated areas are established across the land base, the most restrictive area Standards will be adhered to. Where a recognized value may be compromised through this procedure, the District Manager must consult with other resource agencies to determine the objectives for that area.

Overlapping designated areas

3.4 Watershed Assessment Procedure

Guiding Principle

- Changes to water quantity or quality and to fish habitat, because of the cumulative effects of site-specific impacts from various land-use practices in a watershed, should be assessed at the watershed level during the planning process so that appropriate protective or mitigative measures can be implemented.

1 The appropriate level of Watershed Assessment Procedure must be completed on all community watersheds and on all watersheds with significant water or downstream fisheries values as defined by the B.C. Ministry of Environment, Lands and Parks and the Department of Fisheries and Oceans, before a Forest Development Plan is approved. The District Manager may also require that the Watershed Assessment Procedure be carried out for additional areas.

Where required

3.5 Agency referrals

Guiding Principle

- Operational plans should be referred to resource agencies to ensure that resource values are identified and appropriate measures to incorporate or protect those values are developed and documented within these plans.

Where required

1 Forest Development Plans, Logging (Cutting) Plans where requested, Pre-harvest Silviculture Prescriptions, silviculture prescriptions, Stand Tending Prescriptions, Grazing Plans, and significant amendments to these plans or prescriptions must be referred to appropriate resource agencies before being submitted to the District Manager for approval.

For heritage resources

2 Plans for harvesting in areas with identified heritage resources must be referred to the agency responsible for heritage management.

Agency discrepancies

3 Where a District Manager approves a plan or prescription contrary to the recommendation of a referral agency, the District Manager must notify the agency and document the rationale for the decision.

3.6 First Nations

Guiding Principles

- The nature and extent of aboriginal rights should be determined in direct discussion with those aboriginal peoples affected.
- Aboriginal rights should be recognized and considered at every level of planning, but practical solutions with benefits for all parties are most likely to be found at the operational planning stages.

Accommodation of protected rights

1 Before authorizing resource use activities, resource managers must accommodate constitutionally protected aboriginal rights through discussion and negotiation.

3.7 Public participation

Guiding Principle

- To ensure effective public participation in the operational planning process, Forest Development Plans, Pre-harvest Silviculture Prescriptions, silviculture prescriptions, and Stand Tending Prescriptions should be readily available for reviewing. The location and times for viewing a plan or prescription should be clearly advertised so that the public is aware of its intent and of the geographic area being proposed for development.

3.7.1 General public participation

1 Operational planning processes must provide opportunities for public review and input.

3.7.2 Advertising

1 The following plans or prescriptions must be advertised: *Where required*
- Forest Development Plan;
- Pre-harvest Silviculture Prescription;
- silviculture prescription; and,
- Stand Tending Prescription.

2 Where available, these plans and prescriptions must be advertised together once a year to facilitate public review. *Joint advertising*

3 All significant amendments to Forest Development Plans, Pre-harvest Silviculture Prescriptions, silviculture prescriptions, and Stand Tending Prescriptions must be advertised. *Amendments*

4 Clearly visible advertisements advising the public of the availability of plans and prescriptions for review must be placed in newspapers circulating nearest to the area of proposed operations. *Timing and location*

5 Pre-harvest Silviculture Prescriptions and silviculture prescriptions not advertised with Forest Development Plans must be advertised separately in the legal section of the paper, consistent with the Standards.

3.7.2.1 Advertising forest pesticide use

Notice of intent

1 A notice of intent must be advertised according to the *Pesticide Control Act* and Regulations whenever forest pesticide use is proposed.

Public review

2 Where a Pesticide Use Permit has been issued, advertising to facilitate public review must be carried out according to the *Pesticide Control Act* and Regulations.

3.7.3 Public viewing

Timing and location

1 Forest Development Plans, Pre-harvest Silviculture Prescriptions, silviculture prescriptions, and Stand Tending Prescriptions must be made available for public review once a year, or as otherwise specified by the District Manager, in a location that provides reasonable access to the public who have an interest in the area being developed.

Response to comments

2 All written comments about these plans and prescriptions received within six weeks (two weeks for Forest Development Plans) from the last day of advertising or the last day of public review must be considered by those preparing the plans or prescriptions. The proposed actions to address the concerns raised in the written comments, or the rationale behind decisions made, must be submitted to the District Manager for approval, along with the plans or prescriptions.

Public accessibility to agency comments

3 A copy of all comments from referral agencies must be made available with the plans during the public viewing.

3.8 Amendments

Guiding Principle

- **Any significant amendment that could potentially affect resource values should be subject to rigorous review, similar to that undergone by the original application.**

1 All significant amendments to an approved Forest Development Plan or Pre-harvest Silviculture Prescription must be signed jointly by a Registered Professional Forester and a signing authority for the licence holder and be approved by the District Manager before harvesting may proceed.

3.9 Contingency planning

Guiding Principles

- Higher level plans should be both dynamic and flexible to adapt to new demands, better information, and changing circumstances.
- While contingency planning is intended to provide the flexibility required by management to respond to catastrophic events such as wildfire, insect infestations, disease, and windthrow, such planning should be consistent with the objectives of integrated resource management for an area.

1 Where existing higher level plans must be amended to address an unforeseen event, the revised content must include an assessment of identified resources affected by the event, as well as any proposed management strategies.

Amending a higher level plan

2 Where higher level plans do not exist, any response to a catastrophic event must make provisions for an integrated resource management approach to the assessment, analysis, and management of the event in the plan area.

In the absence of higher level plans

4 Forest health

Guiding Principles

- The presence and potential effects of diseases, insects, mammals, and abiotic factors that damage or destroy trees (collectively referred to as forest health agents), while being naturally occurring components of the forest ecosystems in British Columbia, should be assessed when plans and prescriptions are being developed.
- Potential short- and long-term effects of forest health agents on identified resource values should be assessed before management decisions are made. The level at which forest health concerns will be managed should be determined by the requirements of identified resource values.
- Forest health treatments should be prescribed to maintain or enhance identified resource values.

4.1 Detection

1 The incidence of forest health agents must be identified and recorded as part of the normal data gathering process for Forest Development Plans and silviculture prescriptions and surveys.

Reporting of incidence

4.2 Evaluation

1 Detected forest health agents must be evaluated to determine whether they could affect management objectives or damage identified resource values.

Impact assessment

4.3 Treatments

1 Forest health treatments must be designed and implemented to reduce the detrimental effects of pests, and must be consistent with the objectives of integrated resource management.

Design and objectives

2 When management objectives for a stand on productive and operable forest land cannot be achieved because of pests, proven and evaluated silviculture treatments must be undertaken to enhance or maintain the stand's health. These treatments can be prescribed at any stage of stand development.

3 Forest health treatments for a single pest must not be prescribed if the treatment will significantly intensify the damage from other known pests.

Compliance with other Rules

4 Forest health treatments must be conducted according to the Rules under Section 5, "Soil conservation."

4.4 Forest pesticides

Compliance with other Rules

1 Forest pesticides must be used according to the Rules under Section 11.17, "Forest pesticides."

5 Soil conservation

Guiding Principles

- The location of sensitive soils, and the measures required to ensure that the physical, chemical, and biological conditions that are essential to maintaining the long-term productivity of those soils are either protected, maintained, or enhanced, should be documented in appropriate plans and prescriptions.
- Site and soil data should be collected to facilitate the development and review of ecologically sound operational plans and prescriptions.
- To reduce the risk of damage to watersheds and aquatic habitats, forest practices that cause excessive displacement of the forest floor, exposing extensive areas of mineral soil to the erosive forces of rainfall and flowing water or causing compaction and deterioration of soil structure, should be minimized.
- Forest practices that diminish the soil's long-term capacity to supply nutrients should be minimized.
- Rehabilitation of degraded soil should be required to ensure that long-term site productivity and environmental quality are not compromised.

5.1 Site and soil data collection and mapping

Data collection

1 Plans and prescriptions for forest practices must contain sufficiently detailed ecological, site, soil, and treatment unit data and maps so that the sensitivity of the site to the proposed activities can be assessed effectively.

5.2 Terrain hazard assessment and mapping

Mapping of unstable soils

1 Before forest development proceeds in an area, all currently and potentially unstable soil areas must be mapped at a level of detail that is sufficient to meet the needs of the various levels of forest management planning.

Priority register

2 A priority register must be established for mitigating any erosion effects on sites or in watersheds, based on an inventory of current and backlog landslides and reportable erosion events.

5.3 Harvesting activities

Recording of soil disturbance hazards in PHSPs

1 For each cutblock proposed for harvesting:

- the soil disturbance hazards must be determined for each treatment unit identified and recorded in the Pre-harvest Silviculture Prescription for the cutblock;
- the total area to be harvested and the maximum proportion, if any, of that area that may incur detrimental soil disturbance from construction and use of roads, landings, gravel pits, and other similar uses that are incompatible with the establishment of a free-growing crop of trees must be recorded in the Pre-harvest Silviculture Prescription, and must not exceed the maximum amount allowed as specified in the applicable Standards;
- the net area to be reforested, and the maximum proportion, if any, of that area that may incur detrimental soil disturbance as a result of harvesting, silviculture treatments, or hazard abatement activities must be recorded in the Pre-harvest Silviculture Prescription, and must not exceed the maximum amount allowed as specified in the applicable Standards; and,
- initial planned levels of detrimental soil disturbance above the maximum amount allowed must only be approved if the planning, construction, and rehabilitation measures specified in the Pre-harvest Silviculture Prescription are adequate to facilitate the restoration of soil productivity on the identified disturbed areas to an acceptable level as specified in the Standards.

Logging (Cutting) Plan

2 The design and content of a Logging (Cutting) Plan must be consistent with, and provide for, achievement of the objectives for controlling soil disturbance as prescribed and approved in a Pre-harvest Silviculture Prescription.

Maximum soil disturbance

3 Harvesting operations must not result in levels of detrimental soil disturbance that exceed the maximum as recorded in the Pre-harvest Silviculture Prescription.

5.4 Mechanical site preparation activities

1 For each treatment unit proposed for mechanical site preparation or mechanical stand tending:

- the forest floor displacement hazard must be determined and recorded in a Pre-harvest Silviculture Prescription; and,

- the maximum allowable total forest floor displacement, expressed as a percentage of the area of the treatment unit to be reforested, must be determined and recorded in a Pre-harvest Silviculture Prescription, and must not exceed the maximum allowed as specified in the Standards.

Recording of forest floor displacement hazard in PHSPs

2 Mechanical site preparation operations must not result in levels of detrimental soil disturbance or total forest floor displacement that exceed the maximum as recorded in the Pre-harvest Silviculture Prescription.

Maximum soil disturbance permissible

3 The design and content of a silviculture prescription must be consistent with, and provide for, achievement of the objectives for controlling soil disturbance as prescribed and approved in a Pre-harvest Silviculture Prescription.

Objectives set in a silviculture prescription

5.5 Prescribed fire activities

1 Any area for which a broadcast burning treatment is prescribed must first be accurately assessed to determine the area's overall site sensitivity to fire.

Assessment of site sensitivity

2 Fire prescriptions for each treatment unit must include a field assessment of slash loading and forest floor depth, and a range of achievable Fire Weather Indexes. The prescriptions must state the desired level of fuel and forest floor consumption and, where applicable, the maximum reduction in forest floor depth allowed to ensure that site and soil productivity are not degraded.

Fire prescriptions

3 Burns must be carried out according to the Rules in Section 13.1, "Planning for protection operations."

Compliance with other Rules

4 Post-fire impact assessments on site and soil condition must be conducted as soon as is practical following all prescribed burning.

Post-fire assessment

Rehabilitation plan

5 Where the effects of prescribed fire are found to be more severe than the level specified in the approved prescription, a rehabilitation plan must be developed, approved, and implemented.

5.6 Rehabilitation and revegetation requirements

Risk of soil erosion

1 Where a licensee has created a moderate, high, or very high risk of soil erosion that may be damaging to adjacent values such as private property, aquatic habitats, and public utilities, appropriate erosion and mass wasting control measures must be applied.

Rehabilitation of excess disturbance

2 Where detrimental soil disturbance limits, as recorded in an approved Pre-harvest Silviculture Prescription, have been exceeded, sufficient disturbed area must be rehabilitated to bring the total amount of soil disturbance to within the stated limits. Rehabilitation treatments must be adequate to restore an acceptable level of soil productivity and to prevent further erosion.

Mass wasting: remedial action

3 Where mass wasting occurs as a result of road construction or harvesting, the licensee must carry out approved remedial action. Licensee responsibility remains in effect until the associated site is declared "free growing," or for a minimum of 10 years following completion of road construction or harvesting, whichever is longer.

6 Recreation management

Guiding Principles

- Recreation resources, which are shaped by current human values and perceptions, support a wide range of recreational opportunities and should be considered an integral component of the resource base of forest lands.

- Recreation resources should be managed according to:
  - public recreation needs;
  - the capability of features to attract and sustain use;
  - the recreation experience;
  - the uniqueness and quality of features; and,
  - the sensitivity of features.

- Biological, physical, cultural, or visual features that have an ability to attract and sustain recreational use (collectively referred to as "recreation features") should be managed so that their recognized inherent values are protected, maintained, or enhanced according to the principles of integrated resource management.

- Forest lands should be managed to provide for a broad range of recreation experiences based on the Recreation Opportunity Spectrum. Priority should be given to providing experiences in those areas where public demand for a specific recreation experience is increasing and the opportunities for that experience are decreasing.

- Recreational use of forest lands by the public should be facilitated through the provision and maintenance of roads, recreation sites, recreation trails, and interpretive forest sites that are safe, sanitary, socially acceptable, and environmentally sound.

- Visual Quality Objectives should be established for forest landscapes that provide the scenic backdrop so highly valued by the public and tourism industry in British Columbia. Operational plans should ensure that forest operations are harmonized with the natural visual character of areas, according to the established Visual Quality Objectives and principles of integrated resource management.

- Wilderness should be managed for conservation, recreation, and cultural values, both in designated wilderness areas and in non-designated areas with approved wilderness land management objectives.

6.1 Planning for recreation operations

6.1.1 Development

Planning for development

1 Recreation facility development plans approved by the District Manager are required before facilities can be developed. They must be consistent with higher level plans and must contain:
- an approved status clearance;
- a recreation site/trail evaluation;
- site and trail design;
- referrals to other appropriate resource agencies; and,
- a reasonable assessment of other resource values and the measures that will be taken to incorporate these values into the development.

2 Forest recreation facilities must be developed according to approved standards.

6.1.2 Maintenance

Inspection

1 Forest recreation facilities must be inspected at least once annually by a Forest Officer.

Planning for maintenance

2 An annual maintenance plan must be prepared and must contain:
- identification of facilities to be maintained;
- repairs to be carried out;
- maintenance schedule; and,
- servicing requirements.

3 Facilities must be maintained according to approved standards.

6.2 Recreation features

Identification

1 Recreation features must be identified in proposals for forest operations, through the recreation features inventory, the referral process, and planning processes.

2 All known recreation features of provincial significance that have been identified in an approved recreation inventory must be protected during forest operations.

Protection

3 Where forest operations may adversely affect identified recreation features of local or regional significance, suitable measures to protect or minimize the adverse effects on those features must be established in the planning phase of forest operations.

6.3 Recreation experience

1 All forest operations must be carried out to meet Recreation Opportunity Spectrum objectives approved in higher level plans.

Recreation Opportunity Spectrum

2 Forest operations must be planned and scheduled to minimize adverse effects on identified recreation experiences.

Protection during forest operations

6.4 Recreation facilities

1 Recreation facilities must be developed and maintained according to approved procedures.

Identification and protection of sites and trails

2 All known recreation sites and trails must be identified in the recreation features inventory.

3 Recreation sites and trails of provincial significance must be protected during forest operations.

4 The effect, if any, of forest operations on recreation sites or trails of local or regional significance must be evaluated. Measures to protect or minimize adverse effects on recreation sites or trails must be incorporated into the planning phase of proposed forest operations, and these measures must be implemented during forest operations.

5 Known recreation trails that will be affected by forest practices must be marked before such activities begin. When forest operations have concluded, trails must be reestablished on the original route or on a new one.

6 Designated heritage trails must be managed according to interagency agreements or approved trail management plans.

Heritage trails

6.5 Visual landscape management

Visual Quality Objectives

1 Before development occurs in visually sensitive areas, Visual Quality Objectives must be set by the District Manager.

2 Forest operations planned in visually sensitive areas must be designed and carried out to meet approved Visual Quality Objectives.

In the absence of landscape inventories

3 In areas where no landscape inventories are required but significant visual features have been identified, measures to minimize adverse effects on those features must be established in the planning phase of forest operations.

Incorporation into PHSPs

4 Visual landscape management objectives and strategies that have been approved in higher level plans must be incorporated into the Pre-harvest Silviculture Prescription. Pre-harvest Silviculture Prescriptions must specify the sensitivity and Visual Quality Objectives of the landscape unit where the harvesting is proposed, as well as the measures to be taken to achieve the objectives.

6.6 Wilderness

Management in designated wilderness areas

1 Designated wilderness areas must be managed to protect wilderness values.

2 In designated wilderness areas, all activities must be carried out according to established policy and approved management plans.

Management outside designated wilderness areas

3 Wilderness values outside designated wilderness areas must be managed according to management objectives approved in higher level plans.

4 Forest operations adjacent to designated wilderness areas must consider the integrity and management objectives of the wilderness area.

7 Range management

Guiding Principles

- Range management practices should protect and conserve healthy, diverse, and self-sustaining ecosystems. Enhanced production should be achieved by maintaining rather than manipulating natural ecosystems.
- Grazing Management Plans should specify the range and livestock management techniques required to ensure that continued health of the range resource and to achieve the goals outlined in higher level plans.
- To ensure the long-term health and productivity of plant communities, the amount and timing of grazing should be controlled through prescribed use.
- Weed Control Plans should specify the measures required to achieve and protect desired plant communities, as well as the integrated weed control techniques required to manage those noxious weeds that adversely affect forage production, biological diversity, aesthetics, ecological integrity, and the socio-economic value of the range resource within the plan area.
- If livestock and wildlife management techniques alone are unable to facilitate achievement of the range management objectives specified in higher level plans or Grazing Management Plans–objectives such as increasing forage quality, quantity, or availability; improving wildlife habitat; or rehabilitating plant communities damaged through human or naturally occurring disturbances–then range enhancements such as fences, stock trails, water developments, seeding, prescribed burning, and fertilization should be used.

7.1 Planning for range management

7.1.1 Grazing Management Plans

1 Grazing Management Plans must be completed for all Grazing Tenures issued under the authority of the *Range Act*.

Where required

Consistency with higher level plans

2 A Grazing Management Plan and any subsequent amendments must be consistent with and take direction from higher level plans, and must be referred to appropriate resource agencies.

Contents

3 Grazing Management Plans must include:
- a description of the management goals and strategies to address the resource values identified within and immediately adjacent to the plan area;
- a description of the current and desired plant community; management strategies for the maintenance of identified threatened, endangered, vulnerable, or sensitive species and their habitats;
- prescribed levels of use;
- a maintenance schedule for identified enhancements;
- a map showing the tenure boundary, enhancements, designated areas, and natural features;
- a grazing schedule that details livestock type, numbers, and period of use for each area used; and,
- proposed enhancements.

7.1.2 Weed Control Plans

Where required

1 Before weed control activities may proceed, a Weed Control Plan must be prepared.

Noxious weed inventory

2 A noxious weed inventory, mapped at a suitable scale, must be maintained at the provincial, regional, and district levels.

Agency referral

3 Weed Control Plans must be referred to appropriate resource agencies.

Contents

4 Weed Control Plans must be consistent with the objectives contained in higher level plans, and must include:
- a description of the target species;
- a description of the control methods proposed;
- a summary of the anticipated results and benefits; and,
- an assessment of impact on resource values.

7.2 Use

Consistency with other resource management objectives

1 Range operations must be consistent with the approved management objectives for water quality, fish and wildlife habitat, and other resource values.

2 Range use must provide for biological diversity at the landscape level and must promote the desired plant communities and the sustainability of the ecosystems being used.

Maintaining biological diversity

3 Livestock grazing must not exceed the prescribed levels of use within a grazing area.

Limits to livestock grazing

7.3 Range enhancement

7.3.1 Planning

1 Range enhancements must be:
- consistent with the objectives outlined in higher level plans and Grazing Management Plans;
- referred to the appropriate resource agencies; and,
- approved by the District Manager.

General requirements

2 Range enhancements must be consistent with approved management objectives for water quality, fish and wildlife habitat, and other resource values.

Consistency with other resource management objectives

3 Enhancements must be located in the field and mapped before construction.

Mapping enhancements

7.3.2 Design

1 Right-of-way width must be limited to the minimum required to allow maintenance access and fence visibility.

Fences

2 Cattleguard placement must be designed to ensure user safety.

Cattleguards

3 Cattleguard design must be adequate to accommodate existing vehicle sizes and volume.

4 Seeding projects designed to increase the quantity of forage available must only be used where the need has been identified in a higher level plan or Grazing Management Plan.

Seeding

5 Stock trails must be designed to be consistent with access management objectives.

Stock trails

7.3.3 Construction

Revegetation of exposed soils

1 All productive soil exposed during construction must be revegetated, unless otherwise exempted by the District Manager.

Slashburning

2 All slash created must be treated according to the Rules under Section 13.2, "Fire hazard."

Implementation

3 Range enhancements must be implemented according to specifications approved by the District Manager.

7.3.4 Maintenance and deactivation

Responsibility for maintenance

1 Range enhancements must be maintained by the designate, as directed by the District Manager, to a level that ensures the enhancement remains effective and does not become a hazard to any resource user.

Removal

2 Range enhancements that do not provide any benefit to the use and management of the range resource, or that do not protect other resource values, must be removed and the site rehabilitated, as directed by the District Manager.

7.4 Weed control

7.4.1 Implementation

Pesticide use

1 Use of pesticides must comply with the Rules under Section 11.17, "Forest pesticides."

7.4.2 Reporting

Of chemical control activities

1 A summary of all completed chemical control activities must be sent to the B.C. Ministry of Environment, Lands and Parks.

Of biological control activities

2 A summary of all completed biological control activities must be sent to the B.C. Ministry of Agriculture, Fisheries and Food.

8 Silvicultural systems

Guiding Principles

- The choice of a particular silvicultural system should be based on biological, economic, and social factors, and the objectives for integrated resource management for an area, and should, to a large extent, dictate the manner in which a stand will be harvested, regenerated, and tended over time.
- To ensure forest management objectives, including provision for biological diversity, visual quality, and timber production, are achieved at the landscape and stand levels, all relevant silvicultural systems should be considered.
- Silvicultural systems other than clearcutting should be prescribed in highly sensitive areas.
- Pre-harvest Silviculture Prescriptions should outline the harvesting, regeneration, and tending activities necessary to achieve a specified future stand structure and the integrated resource management objectives established for the stand.
- Silvicultural systems should be prescribed that are ecologically appropriate for the biogeoclimatic ecosystem unit within which they will be implemented.

8.1 Integrated resource management

Consistency with other resource management objectives

1 All silvicultural systems must be considered and a system prescribed to meet approved objectives for integrated resource management for the site.

In designated and protected areas

2 Silvicultural systems within or immediately adjacent to designated areas, or immediately adjacent to protected areas, must be prescribed in a manner that is consistent with the approved objectives for the management of the resources in those areas.

8.2 Ecological basis

Ecological suitability

1 A silvicultural system must be prescribed, and must be ecologically suited to the tree species being managed.

Maintaining biological diversity

2 The silvicultural system prescribed at the stand level must meet approved landscape level objectives for biological diversity, and must be designed to maintain the long-term sustainability of forest ecosystems. The landscape level objectives will provide stand level options for:

- harvesting methods and silviculture treatments to retain wildlife trees and coarse woody debris;
- establishment of ecologically adapted mixed species stands;
- stand treatments or regimes that encourage a variety of stand densities and structures across the landscape;
- retention of a component of deciduous trees in the managed forest; and,
- other practices that enhance the diversity of managed stands or promote development of old-growth forest attributes.

Where landscape level objectives are not in place, the silvicultural system for each stand must be designed to be consistent with Rule (3) in Section 11.2.1, "Integrated resource management," and Rule (2) in Section 12.2.1, "Integrated resource management."

Consistency with objectives in higher level plans

3 Silvicultural systems must be prescribed to meet objectives for integrated resource management specified in higher level plans, in a manner that strives to maintain and promote healthy and productive forests.

8.3 Choice of silvicultural system

Considerations

1 The process involved in choosing a silvicultural system must consider biological, environmental, social, and economic factors, and must comply with Workers' Compensation Board regulations. The rationale for the final choice must be documented in the Pre-harvest Silviculture Prescription.

2 The choice of silvicultural system must consider the current health and structure of the stand, the stand composition and structure goal, the planned residual basal area per hectare, and the planned cutting cycles or rotation ages for the stand. The characteristics and function of any trees left standing must be described in the Pre-harvest Silviculture Prescription.

3 The silvicultural system prescribed must specify a regime of harvesting, regenerating, and tending treatments that is designed to achieve a specified future stand structure and composition.

Specifying objectives

4 Silvicultural systems other than clearcutting must be prescribed for sites with very unstable terrain, sites with retention visual quality objectives, critical wildlife habitat areas where canopy retention is essential for population maintenance, streamside management zones, old-growth management areas, and other sensitive sites identified in the Standards.

Alternatives to clearcutting

5 Subject to Rules 8.2(3) and 8.3(4) above, silvicultural systems that have a reasonable likelihood of creating serious forest health problems in the understory must not be prescribed.

Forest health concerns

6 Silvicultural systems that have a reasonable likelihood of precluding successful regeneration of the preferred and acceptable species must not be prescribed.

Preferred and acceptable species

8.4 Protection of trees

1 A person who harvests timber must not harvest trees that are required by an approved prescription to be left standing.

Harvesting reserved trees

2 Damage to trees or designated understory that is required to be left standing in the prescription must be minimized to the fullest extent possible, unless otherwise specified in the prescription.

Damage to reserved trees

9 Forest road engineering

Guiding Principles

- The establishment, maintenance, and deactivation of forest roads should maximize public benefits by optimizing the integration of identified resource values.

- Planning for road establishment, maintenance, and deactivation should be carried out within the framework of forest development planning to facilitate coordination with harvesting activities and to simplify public participation and agency referral. Forest development planning should ensure that roads are planned at least five years into the future over a logical geographic unit.

- Forest road networks should be planned to optimize industrial efficiency and minimize environmental impact while providing for user safety. Consistent with these objectives, such networks should avoid unstable or otherwise hazardous terrain, incorporate well-designed and properly placed drainage structures, and minimize the total length of road for a given unit.

- Where alternatives exist, stream crossings should be minimized and sensitive areas such as critical wildlife habitat, steep slopes, areas with high-value aesthetic values, and riparian areas should be avoided. Where stream crossings cannot be minimized or sensitive areas avoided, mitigating measures or different harvesting methods should be used.

- Roads should be either fully maintained or appropriately deactivated in order to provide for user safety, to protect the road investment, and to minimize any negative effects on resource values. The main concern to be addressed by maintenance or deactivation activities, after safety of structures, should be the prevention of soil erosion and mass wasting.

9.1 Planning for engineering operations

9.1.1 Access development planning

General requirements

1 Access development planning must be carried out for all new roads, as part of the Forest Development Plan, and must identify:

- objectives for access development and the short- and long-term forest management goals;
- resource values and the effects of the road on those values; the extent of known hazards and their consequences;
- primary route corridors (projections) from the logging areas to the existing road system, their costs, and options;
- proposed roads, from the logging areas to the existing road system;
- economics of the planned development;
- duration and periods of use (seasonal or all-weather) and anticipated traffic types and volumes;
- other known users;
- existing roads (including the road network tie-in to the public road system, processing plant, or log dump) and bridges and major culverts (2000 mm diameter or greater);
- proposed and existing log dumps and other log handling and storage areas;
- private properties;
- public utilities; and,
- the density of active permanent roads within a planning area.

Hazard avoidance

2 Roads must be planned to avoid known hazards. Where it is necessary to traverse areas with known hazards, those areas must be identified so that mitigating measures can be prescribed. The District Manager, in consultation with other appropriate agencies, must approve the areas to be traversed.

Duplication avoidance

3 Duplication of access must be avoided, existing access must be used, and roads must be matched to harvesting methods and resource uses, all to the fullest extent possible.

9.1.2 Road Maintenance Plans

Where required

1 An annual Maintenance Plan must be prepared, as part of the Forest Development Plan, for all roads that are in use and have not been deactivated.

2 Maintenance Plans must identify the forest roads to be maintained each year for forest management and industrial purposes, and must detail for each road the maintenance operations required to:
- protect the structural integrity of the road and cleared area;
- minimize the environmental impact; and,
- meet industrial safety requirements.

Contents

9.1.3 Road Deactivation Plans

1 A three-year Deactivation Plan must be prepared annually, as part of the Forest Development Plan, for all roads that will no longer be regularly maintained.

Where required

2 Deactivation Plans must detail the following:
- mapping of roads that have been permanently deactivated in the past year;
- mapping of roads that are currently deactivated to a temporary or semi-permanent level;
- mapping of roads to be deactivated, by year and level of deactivation; and,
- a list that identifies the roads, level of deactivation by year, and types of vehicles expected to use each road after deactivation.

Contents

9.2 Reconnaissance

1 The optimum road location must be selected on the basis of the road and harvesting planning information.

Optimum road location

2 The optimum road location must be marked in the field.

3 Areas that may be prone to mass wasting must be identified so that mitigating measures can be prescribed where roads are anticipated to traverse these areas.

Identification of hazardous terrain

4 Areas that may be prone to surface soil erosion must be identified so that mitigating measures can be prescribed where roads are anticipated to traverse these areas.

5 Roads must be located to protect and maintain identified resource values as specified in higher level plans. Road locations that conflict with identified resources must be approved by the District Manager in consultation with other appropriate resource agencies.

Consistency with other resource management objectives

Watercourse crossing

6 Watercourse crossings must be selected such that channel and bank disturbances can be prevented or mitigated and structure security provided.

7 The number of watercourse crossings must be minimized.

Road location lines

8 Road location lines must be tied to references, other control points, and other identified resource data.

9.3 Survey

Where required

1 A site survey must be carried out for all bridges and for culverts 2000 mm diameter or greater.

2 A location survey to obtain data for detailed road design must be carried out in areas with moderate, high, or very high mass-wasting potential, or where they are required in higher level plans.

Survey level

3 The appropriate levels of survey must be selected from the following table:

Survey Level	Minimum Instrumentation	Horizontal Precision*	Vertical Precision*	Application
1	Hand compass Clinometer Chain	1:100	± 3 m/km	• level for route traverses • minimum level for location surveys
2	Staff compass Abney/ Clinometer Steel chain	1:300	± 2 m/km	• construction surveys • expensive construction operations • where tight controls are required by environmental concerns or special external contraints
3	Theodolite/ transit rod Steel chain	1:5000	± 0.3 m/km	• through private property

* Reflects instrumentation selected and expected level of accuracy. A closed traverse is not mandatory.

9.4 Roadway design

Widths

1 Road widths must be designed to accommodate the intended vehicle sizes and traffic volume, including the requirements as shown in the following table:

Stabilized Road Width (m)	Description	Turnout Width* (m)
9	2-lane off-highway	none
8	2-lane on-highway	none
6	1-lane off-highway	10
5	1-lane on/off highway	8 to 10
4	1-lane on/off highway	8

* Turnout width includes stabilized road width.

2 Clearing widths must be the minimum required to accommodate the road prism, user safety, subgrade drainage and stability, spoil areas, equipment operability, snow removal, and fencing and other structures.

Clearing widths

3 Road alignment must be designed to provide for user safety by including, for example:
- traffic controls;
- appropriate travel speeds and stopping distance; and,
- suitable stopping and sight distances at road junctions.

User safety

4 Where it is necessary to traverse areas that may be prone to mass wasting, suitable mitigating measures must be prescribed by a Professional Engineer or Professional Geoscientist.

Mitigation of soil erosion

5 Road designs must incorporate measures to mitigate surface soil erosion.

6 For roads located on steep or sensitive slopes, the final design, based on the reconnaissance and the location survey data, must ensure that:
- the placement and disposal of excavated materials are prescribed;
- excavated quantities are minimized;
- the effects on other resources are minimized; and,
- proper drainage is facilitated.

Roads on steep and sensitive slopes

7 Fill slope angles must be designed such that they do not exceed the angle of repose of the soil or rock materials.

Fill slope angles

8 Cut slope angles must be designed so as to remain stable over the expected life of the road, unless ravelling or sloughing of the cut bank would not be expected to contribute to slope failures.

Cut slope angles

9.5 Design drainage criteria

Bridges, culverts, and fords

1 Bridges, culverts, and fords must be designed to maintain natural surface drainage patterns.

2 Bridges and culverts must be designed to prevent or mitigate channel and bank disturbance and to provide structure security.

3 Cross-drain culverts must be spaced and ditches designed to prevent ditch water accumulation and accelerated ditch erosion.

4 Culvert inlet and outlet protection measures must be designed to provide protection against erosion and mass wasting.

5 Crossings in fish-bearing waters must be designed to provide safe fish passage.

6 Culverts on all seasonal and continuous watercourses must be designed so as not to destabilize the stream channel.

7 Protective measures must be designed to protect the structural integrity of culverts where debris cannot safely pass.

8 New bridges, their approaches, and stream culvert structures must be designed to meet the flood discharge criteria as shown in the following table:

	Minimum Design Discharge
Stream culverts	100 - year flood
Permanent bridges	100 - year flood
Semi-permanent bridges	100 - year flood
Temporary bridges	50 - year flood

However, bridges whose vulnerable components are removed at times of risk must be designed to pass expected flows for the season(s) of use.

9 Design drawings and technical specifications must be prepared for bridges and major culverts.

Decking

10 Full-width decking between curbs must be designed for new and replacement decks.

9.6 Design by Professional Engineers

1 Cattleguard fabrication, retaining walls, and other special structures must be designed by a Professional Engineer.

Special structures

2 All bridges and log culverts must be designed by a Professional Engineer, except where both of the following conditions apply:

- the structures are composed of single-span, temporary log superstructures on timber cribs or sills, with the superstructure sized from tables or design aids prepared by a Professional Engineer; and,
- the designer can show from past experience with similar structures that the structure is adequate for the given site condition.

Exceptions

3 All permanent material culverts having a diameter of 2000 mm or greater, or having a maximum design discharge of more than 6 m^3/second, must be designed by a Professional Engineer.

Permanent material culverts

4 A Professional Engineer must design permanent and semi-permanent bridges according to the latest code requirements of the Canadian Standards Association for Design of Highway Bridges, CAN/CSA-S6 and the latest version of the Canadian Foundation Engineering Manual. The peculiarities of logging truck unbalanced loads and eccentricities must be considered in all bridge design.

Permanent and semi-permanent bridges

9.7 Construction

9.7.1 Clearing

1 All standing trees within the clearing width must be felled.

Felling requirements

2 Trees must be directionally felled away from watercourses, to the fullest extent possible. Felling and yarding techniques must be selected to prevent streambanks from destabilizing.

3 Danger trees (as defined by the Workers' Compensation Board) with the potential to reach the proposed road surface must be felled concurrently with clearing operations.

Danger trees

Removal of soils

4 All stumps, roots, embedded logs, organics, and other unsuitable soils within the roadway prism width must be removed, except those organics outside the road subgrade width portion of the road on the downhill side, where downslope consequences are rated low.

Note: Potentially unstable slopes must be pulled back when the road is deactivated.

Use of full bench cuts and end haul

5 Full bench cuts and end haul must be used on short-term roads built on high and very high hazard terrain, unless other measures are designed by a Professional Engineer or Professional Geoscientist.

Note: If stumps and logs are left under or against the fill, the slopes must be pulled when the road is deactivated.

9.7.2 Slash and debris

Disposal

1 Slash and debris must be disposed of in an environmentally safe manner, reflecting the Visual Quality Objectives of the landscape unit.

9.7.3 Subgrade construction

Concurrent construction

1 Temporary or permanent drainage systems must be built concurrently with subgrade construction and must be fully functional.

2 Excavated material must not be sidecast on slopes with high or very high mass-wasting hazard.

On sensitive terrain

3 Roads on terrain that is identified as prone to mass wasting must be constructed according to approved prescriptions of Professional Engineers or Professional Geoscientists.

Rock work

4 In rock work, only rock drilling and blasting techniques that minimize flyrock and reduce the potential for landslides or slope instability must be used. The scheduling and procedures for blasting must accommodate other identified resources and existing improvements.

5 Borrow pits, quarries, waste areas, and end-haul disposal sites must be located on sites where eroded soil materials or other deleterious materials can be prevented from entering watercourses. These sites must be left in a stable condition and a visually acceptable state.

Site maintenance

6 The construction site must be kept clean of deleterious substances.

7 Construction surveys must be used to control construction operations in areas of high to very high mass-wasting potential.

Surveys

8 Snow road subgrade construction must be minimized through the use of clean compacted snow and ice.

Snow roads

9 Roads must be constructed in general conformance to the approved layout and design. Modifications to account for unforeseen ground conditions must be approved before construction.

Design

10 Roads must be constructed so that the road surface is above the water table during the operating period.

11 Unprotected erodible fill material must not be placed below the high water level of adjacent watercourses, whether these watercourses are continuous or seasonal.

12 Construction equipment must not be serviced adjacent to, or washed in, watercourses.

Equipment

13 Equipment crossings must be limited to one location on a stream, for each road crossing of the stream. Otherwise the District Manager, in consultation with other agencies, must approve any additional crossings.

9.7.4 Drainage

1 Bridges, culverts, fords, and ditches must be constructed to maintain natural drainage patterns.

Bridges, culverts, fords, and ditches

2 Bridges, culverts, or fords must be installed at all crossings of permanent or seasonal watercourses.

3 Drainage systems must be provided to intercept sidehill drainage, drain ditches, prevent ditch erosion, prevent ponding of water where instability may occur, and prevent water from being directed onto sensitive soils.

4 Stream and cross-drain culverts must be constructed to ensure they are structurally sound, functional, and stable.

5 Road embankment fill materials must be prevented from encroaching on culvert inlets and outlets.

6 Unstable or erodible fill at culvert outlets must be protected with erosion-resistant materials or drainage structures.

7 Bridges and culverts must be constructed to prevent or mitigate streambank disturbance and to protect downstream water quality.

8 Crossings in fish-bearing streams must be constructed at a time and in a way that provide safe fish passage and protect fish and fish habitat.

Certification by Professional Engineer

9 Once construction of those bridges and major culverts requiring professional design is completed, a Professional Engineer must certify that the entire structure is in general conformance with the design drawings and specifications and is at least as durable and as strong as the original design intended.

Ditch blocks

10 Ditch blocks must be installed immediately downstream of all cross-drain culvert inlets, except where ditch water converges at the culvert inlet.

11 Geotextile filter fabrics must be used to prevent migration of fines on gravel surface log stringer bridges and log culverts.

12 Catch basin or other sediment control devices must be constructed adjacent to the inlet of cross-drain culverts where sedimentation may adversely affect downslope resources.

13 Fords and approaches must be composed or constructed of erosion-resistant materials capable of withstanding the intended traffic.

14 All permanent bridge and culvert materials must be fabricated according to standards of the Canadian Standards Association.

15 Pile driving records and, for new materials, mill test certificates, in-plant steel fabrication drawings, concrete test results, compaction results, and other pertinent field and construction data must be obtained and kept. As-built drawings must be prepared and kept.

Documentation

9.7.5 Road surfacing

1 Road surfacing materials must be applied where, except at breakup, the subgrade material cannot carry the design wheel loads or where erosion of the subgrade material may adversely affect adjacent watercourses.

Where required

9.7.6 Revegetation

1 Seed must be applied to all exposed soil that will support vegetation in the first growing season after construction, and the soil must be revegetated within two years of road construction. The areas to be treated this way are:

- inactive borrow pits;
- waste areas;
- road cuts;
- fill slopes; and,
- other disturbed areas within the cleared width.

Otherwise, the District Manager, in consultation with appropriate resource agencies, may vary the time requirement.

Where required

9.8 Maintenance

9.8.1 Bridge and major culvert inspection, evaluation, and maintenance

1 All temporary and semi-permanent bridges and major culverts must be inspected at least once every two years and permanent bridges at least once every three years, or after unusually heavy floods or other unexpected events that are likely to damage the structures. More frequent inspections must be carried out where structural defects are evident. Records of inspection, noting the general condition of all components, must be kept.

Inspections

Evaluation by Professional Engineer

2 If, as a result of inspection by a qualified observer, a bridge is suspected of having structural deficiencies, a Professional Engineer must evaluate the bridge according to the latest code requirements of the Canadian Standards Association for Design of Highway Bridges, CAN/CSA-S6.

Deficiencies

3 Any deficiencies that put road users or the environment at risk must be corrected. Otherwise, the structure must be closed, restricted to traffic, or removed.

Signage of bridge capacity

4 Where a Professional Engineer has determined that a bridge is unable to carry its original design load, a sign must be placed on each bridge approach stating the actual capacity of the bridge.

9.8.2 Road inspection and maintenance

Objectives

1 Roads must be inspected and maintained to:
- protect the structural integrity of the road prism and cleared area;
- keep the drainage systems functional;
- minimize sediment production and the effects on other resources; and,
- meet user safety requirements.

Inspection frequencies

2 Road maintenance inspections must be carried out at frequencies commensurate with the risk to the road, its users, and adjacent resources, and must assess the adequacy of ditches and culverts, the requirements for improved drainage works or road surfacing or revegetation, and other elements of road integrity and safety.

Maintenance Plan

3 Maintenance work must be carried out according to the Maintenance Plan.

Remedial work

4 Remedial works identified by inspections must be carried out within a period of time that is commensurate with the risk to the road, its users, and the environment.

Duration of maintenance

5 Roads must be regularly maintained until the road is deactivated according to the Deactivation Plan.

9.9 Deactivation

1 Roads must be deactivated according to the approved Deactivation Plan when they are no longer in regular use and are not being regularly maintained, such that the roadway prism and cleared width are stabilized and the natural drainage is restored or maintained.

Deactivation Plan

2 Integrated resource management objectives and ongoing and future vehicle access requirements must be incorporated into deactivation planning.

Consistency with other resource management objectives

3 The extent of deactivation must be commensurate with the period of time that regular use of the road is to be suspended, and with the risk to other resources.

Durations

4 Information must be posted to advise road users of hazards that may be expected due to deactivation.

Public notice

5 Prescriptions for deactivation work must be submitted as part of the Deactivation Plan and approved before work begins.

Approvals

6 Site-specific measures must be applied to reduce erosion and must be consistent with the processes described below:

Site-specific requirements

Temporary (Seasonal) Deactivation: Temporary deactivation must be used for roads whose regular use is to be suspended for up to three years.

- Windrows on the outer edge of the road surface must be removed or breached.
- Inspections must be carried out at frequencies commensurate with the risk to the road, its users, and adjacent resources, to assess the adequacy of ditches and culverts and the requirements for improved drainage works, road surfacing, or revegetation.
- Remedial works identified by inspections must be carried out within a period of time that is commensurate with the risk to the road, its users, and the environment.
- Bridges must be repaired or removed, as necessary.
- Waterbars or cross-ditches must be constructed along the road or the road must be insloped or outsloped, as appropriate, in areas of sensitive and steep terrain or heavy rainfall, to prevent excessive flow accumulating and channeling down the road surface.

Semi-Permanent Deactivation: Semi-permanent deactivation must be used where regular use is suspended for up to three

years on winter roads, on roads with a potential for debris torrents, on those roads in particularly isolated areas, and on roads in areas where harvesting is suspended until the next pass.

- Except in flat areas with minimal downslope consequences, the natural flow patterns must be restored through the removal of all existing stream culverts, the restoration of channel stability, and the installation of fords, where possible, if access is required during the period of deactivation. Alternatively, stream culverts must be backed up with similarly sized cross-ditches on the downhill side.
- Where overflow of the stream channel is expected, stream culvert excavations must be backed up with a cross-ditch on the downhill side.
- For areas with moderate, high, or very high potential for mass wasting, all cross-drain culverts must be removed and replaced with cross-ditches, and ditch blocks must be intact.
- Additional cross-ditches must be constructed where there are steep grades, where there is heavy ground water seepage, where switchbacks and road junctions are located, and where ditches are prone to plugging.
- Temporary and semi-permanent bridges must be removed or, if the bridges are to be left in service, must be repaired or replaced, as necessary, to protect users during the period of deactivation.
- Windrows on the road surface must be removed or breached.
- The road surface must be outsloped and insloped, as appropriate.
- Sidecast fill must be pulled back onto the outsloped road grade to ensure drainage where there is a high risk of slope failure or where stability of the fill is questionable. Fill material placed against the cut slope must not exceed its angle of repose.
- Cross-ditches must be installed where the ditchline ends. Exposed soil surfaces must be revegetated.

Permanent Deactivation: Permanent deactivation must be used for roads to be closed permanently.

- The natural flow patterns must be restored through the removal of all existing stream culverts and the restoration of channel stability.
- Where overflow of the stream channel is expected, stream culvert excavations must be backed up with a cross-ditch on the downhill side.

- All cross-drain culverts must be removed and replaced with cross-ditches, and ditch blocks must be intact.
- Additional cross-ditches must be constructed where there are steep grades, where there is heavy ground water seepage, where switchbacks and road junctions are located, and where ditches are prone to plugging.
- All bridge superstructures must be removed. Substructures must be removed where failure will affect downstream values.
- Windrows on the road surface must be removed.
- The road surface must be outsloped and insloped, as appropriate.
- Sidecast fill must be pulled back onto the outsloped road grade to ensure drainage where there is a high risk of slope failure or where stability of the fill is questionable. Fill material placed against the cut slope must not exceed its angle of repose.
- Cross-ditches must be installed where the ditchline ends.
- Deactivation measures must be carried out to increase site productivity on receptive sites and must include, but not be limited to, decompaction of the soils within the road prism, revegetation of exposed soil surfaces, and reforestation.

10 Timber harvesting

Guiding Principles

- Forest Development Plans, the primary medium for planning harvesting operations over the short and long term, should be developed, reviewed, and approved in an orderly manner.

- Known resource uses and values existing within the entire landscape unit or units within which development is being proposed, such as watersheds or other biophysical or ecological boundaries within the larger management units of Timber Supply Areas and Tree Farm Licences, should be documented in Forest Development Plans and should be considered when timber harvesting operations are being developed.

- Forest Development Plans cover a minimum five-year planning period, but in sensitive or complex landscape units, or in areas where it is important to demonstrate the feasibility of resource management objectives and prescriptions, the plan should cover a longer term.

- Logging (Cutting) Plans, the link between Forest Development Plans and on-site operations, should show specific information such as equipment to be used, yarding and skidding patterns, season of operations, and deactivation plans for landings or logging trails.

- Logging (Cutting) Plans should contain sufficiently detailed site-specific information and required measures to ensure that harvesting operations can achieve the standards and obligations stated in the Pre-harvest Silviculture Prescription and cutting authority.

- Harvest patterns and cutblock design should reflect a balance of biological, social, and economic objectives.

- To achieve integrated resource management objectives, the prescription of cutblock sizes, shapes, and patterns should be based on a consideration of such factors as windfirmness, edge effects, required wildlife travel and dispersal corridors, fisheries-sensitive zones, aesthetic values, biological diversity, roles of ecosystem components in ecological processes, and the feasible application of harvesting and site preparation methods.

- Where planned cutblock size is not being influenced by catastrophic events such as blowdown and insect and disease infestations that can lead to large cutblocks, the emphasis should be on smaller cutblocks.

- The soil resource is a valuable asset that should be protected during harvesting operations. Yarding and skidding equipment and methods should be selected to minimize detrimental soil disturbance. Where heavy disturbance is unavoidable, such as on skid roads, measures should be applied immediately after use to stabilize the site and minimize potential loss of site productivity and adverse effects on other resource values.

- When selecting the season for harvesting, many factors should be considered, including the potential to:
  - optimize regeneration;
  - maximize utilization;
  - minimize erosion and detrimental soil disturbance;
  - avoid the disruption of fish and wildlife; and,
  - minimize noise and dust in populated areas, and in locations that would adversely affect guide-outfitting and peak-season tourism activities.

- The size and percentage of the land base occupied by landings should be minimized because these areas are often subject to detrimental soil disturbance. They should be located and constructed to avoid negative impacts on watercourses, wetlands, reserved timber, and aesthetic values.

- Timber utilization should reflect the objectives of maximum recovery and accounting of all waste. However, where identified in higher level plans, utilization standards may be varied to meet other objectives such as forest health considerations or the retention of coarse woody debris and merchantable timber on some sites, to help maintain biological diversity or soil productivity.

- Scheduling and conduct of harvesting operations should conform to the timelines established in the Pre-harvest Silviculture Prescription to ensure that the silviculture objectives for the site can be met.

10.1 Planning for harvesting operations

10.1.1 Harvest priority

1 Operational plans must reflect the harvesting priorities identified in higher level plans or the Standards.

Consistency with higher level plans

10.1.2 Green-up requirements

1 Green-up status must be achieved before adjacent blocks may be harvested. The District Manager may waive this requirement, in consultation with appropriate resource agencies, for the expedient recovery of damaged timber, or for meeting the objectives of higher level plans (see Section 3.9, "Contingency plans").

Green-up status and exemptions

10.1.3 Planning for harvest patterns and cutblock design

1 Harvest patterns and cutblocks must be designed to achieve a variety of sizes, shapes, and patterns across the landscape, compatible with approved resource management objectives established for the area in higher level plans.

Landscape level design: size, shape, pattern

2 Unless otherwise specified in a higher level plan, harvest patterns and cutblock designs must, wherever possible:

- incorporate a network of mature-sized timber distributed throughout the landscape, sufficiently linked to maintain wildlife travel and dispersal corridors, riparian habitat, and social and recreational values. A proportion of the mature-sized timber patches must be large enough to protect plants and animals that require such forested habitats to survive;
- be consistent with the objectives of maintaining a diversity of species, successional stages, and stand structures across a variety of ecosystems and landscapes in order to support viable populations of wildlife across their natural range;
- ensure that cutblocks are sufficiently distributed by elevation, aspect, and distance to avoid having potential detrimental effects on water and wildlife values;
- ensure that harvesting occurs, consistent with harvesting priorities, across all timber types and terrains;
- address approved Visual Quality Objectives; and,
- ensure the number of active permanent roads within the planning area does not exceed density levels set in standards.

Landscape level design: general requirements

Stand level design

3 As long as it does not conflict with objectives in higher level plans, cutblock design must:
- meet approved Visual Quality Objectives;
- minimize the amount of productive forest land occupied by roads, logging trails, landings, and similar structures;
- minimize the incidence of post-harvesting blowdown by taking advantage of wind-firm timber type changes and by avoiding high-risk locations such as exposed ridge tops, saturated soils, and thin soils;
- avoid isolating timber that would be difficult or uneconomical to harvest in the future;
- incorporate measures to simplify post-harvest site treatment so that costs and risks to adjacent forest values are minimized;
- incorporate sites of lower-value timber and higher logging costs where they form part of a logical treatment unit;
- contribute to the potential for successful regeneration; maintain or enhance use of the forest by wildlife; and,
- ensure that features such as sensitive streamside zones, unstable slopes, and sites prone to avalanche generation or avalanche zone expansion are protected.

10.1.4 Forest Development Plans

General requirements

1 Before harvesting is authorized, Forest Development Plans must be:
- prepared for any harvesting authorized under the *Forest Act*. The District Manager may waive this requirement for the following forms of agreement:
  - Licence to Cut;
  - Christmas Tree Permit;
  - Road Permit;
  - Free Use Permit;
  - a timber sale licence issued under Section 18 of the *Forest Act*; and,
  - a licence or permit issued for the harvest of special forest products;
- signed jointly by a Registered Professional Forester and a signing authority for the licence holder, and approved by the District Manager;
- advertised according to approved formats and procedures for public review and comment; and,
- made available for review and comment by the public and licensed resource users.

2 Forest Development Plans must refer to and be consistent with all approved higher level plans.

Consistency with higher level plans

3 Forest Development Plans must show proposed harvesting activity for a minimum five-year period. The required term of the plan may be varied in the following situations:

- where the term of the licence is less than five years;
- where, in the case of salvage harvesting of blowdown or insect- or fire-damaged timber, the District Manager has decided that a five-year plan cannot be developed because the exact location of the damaged timber has yet to be determined; or,
- where other special situations exist, as defined by the Regional Manager.

Term

4 Forest Development Plans must be coordinated with all operators within and immediately adjacent to the planning area, and must indicate all cutblocks proposed by other operators.

Coordination with other operations

5 Forest Development Plans must be updated annually to show five years of proposed harvesting.

Updating

6 Where available, unapproved Pre-harvest Silviculture Prescriptions for the first two years must be submitted with the Forest Development Plan.

Inclusion of PHSPs

7 A Forest Development Plan must, for a planning area of appropriate size in and around the area of proposed development, contain (based on the best information available at the time of plan preparation) detailed maps, schedules, and other related data presenting:

- topography and natural features in sufficient detail to allow adequate assessment of the proposed plan;
- forest cover, including the status of any previously harvested areas;
- the location of important known resources, designated areas, and sensitive areas within and immediately adjacent to the planning area, including sensitive soils, unstable slopes, and habitat for identified threatened, endangered, vulnerable, or sensitive species;
- the location of all existing and proposed protected areas and deferred areas, and the linkages needed as part of landscape level design;
- the location of all forest areas identified as operable for timber harvesting;

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- existing access, and any proposals for additional primary access;
- the density of active permanent roads within the planning area;
- the location of areas where aboriginal peoples have indicated they may be carrying out sustenance activities;
- the location of all roads and cutblocks proposed by other licensees or by a government agency; and,
- additional information that is required by the District Manager, which may include specific, essential, reconnaissance-level data, as requested by a resource agency.

8 Forest development planning must describe:

- the proposed boundaries, silvicultural system (partial cut vs. clearcut), and harvesting method for all proposed cutblocks;
- proposed harvesting season and year for cutblocks;
- road development, maintenance, deactivation, and the density of active permanent roads for each planning area;
- basic silviculture and any proposed incremental silviculture; and,
- surveys and/or strategies, including, but not limited to:
  - pest incidence and impact surveys;
  - evaluation of the short- and long-term effects of forest health agents on identified resource values, and appropriate management strategies for dealing with these effects;
  - the results of a Watershed Assessment Procedure; and,
  - the fuel management measures that will be undertaken to ensure that the location, extent, and amount of slash created do not pose an unacceptable hazard to identified resources.

Long-term plan

9 A long-term Forest Development Plan is required wherever harvesting is proposed in:

- a community watershed area;
- an undeveloped watershed of a size and description specified in the Standards;
- other areas specified in the Standards or in an approved strategic plan; and,
- other areas specified by the District Manager, where the District Manager or an authorized representative of the B.C. Ministry of Environment, Lands and Parks determines that a long-term plan is warranted.

10 Where a long-term plan is required, the plan must cover a planning area (or areas) of an appropriate landscape scale and must, for that entire area:
- provide the information described above; and,
- provide the following additional information:
  - the general location of proposed cutblocks for at least the next 20 years, along with an approximate schedule of harvest and a general description of the proposed silvicultural system (partial cut vs. clearcut) and harvest method for each cutblock;
  - an access development proposal for all roads associated with forest harvesting; and,
  - provide a single, coordinated plan wherever there is more than one operator expected to carry out significant harvesting within the landscape area.

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11 Where a long-term plan is required, it must be approved and signed by the District Manager and a designated representative of the B.C. Ministry of Environment, Lands and Parks.

Approvals

12 Where a long-term plan is required, the plan must be updated every five years, or sooner if warranted.

Updating

10.1.5 Logging (Cutting) Plans

1 Logging (Cutting) Plans must be prepared by the tenure holder and approved by the District Manager or a designate before harvesting may proceed.

Where required

2 Logging (Cutting) Plans must be consistent with higher level plans, including the Pre-harvest Silviculture Prescription, and with the cutting authority; and all operations must be conducted according to this plan.

Consistency with higher level plans

3 All amendments to an approved Logging (Cutting) Plan must be approved by the District Manager or a designate before operations may proceed.

Amendments

4 Where required by a higher level plan or the District Manager, a proposed Logging (Cutting) Plan must be referred to other appropriate resource agencies before going to the District Manager or a designate for approval.

Approvals

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5 A Logging (Cutting) Plan must contain (based on the best information available at the time of plan preparation) detailed maps, schedules, and other related data presenting:

- cutblock and treatment unit boundaries;
- the proposed location and details of main and secondary haul roads, skid roads and trails, backspar trails, bridges, culverts, stream crossings, landings, gravel pits, designated areas, and features requiring protection;
- the location of special resource features previously identified on Forest Development Plans or Pre-harvest Silviculture Prescriptions that are within or adjacent to the cutblock;
- harvesting methods and layout addressing the most restricting soil disturbance hazards on site (see Section 5, "Soil conservation");
- direction of yarding;
- deactivation or rehabilitation plan for landings, logging trails, and other disturbed sites;
- season of logging; and,
- other information that is required by the District Manager.

The District Manager may exempt certain information requirements where that information is already contained in an approved plan or prescription.

10.2 Operations

10.2.1 General practices

Consistency with other resource management objectives

1 The selection of a timber harvesting method must be consistent with the objectives for the management of timber and other forest resources as identified and approved in higher level plans.

Protection of streams

2 Timber harvesting or road construction equipment must not be operated below the mean annual high water mark of streams unless such practices are approved in writing by the District Manager with agreement from appropriate resource agencies.

3 Slash and debris resulting from a timber harvesting operation must not be deposited in a watercourse or deposited in a location where they could reasonably be expected to be transported into a watercourse, unless otherwise approved by the District Manager with agreement from appropriate resource agencies.

4 Stable natural material in streams or embedded in stream banks, and root systems that contribute to bank stability and fish habitat, must not be disturbed or removed during harvesting operations or approved stream cleaning operations, unless otherwise approved by the District Manager with agreement from appropriate resource agencies.

5 Changes must not be made in streams by the filling, removal, or relocation of the channel, except where approved by an appropriate agency.

6 All temporary stream crossings must be constructed to protect the streams and must be approved by the District Manager. For temporary crossings over fish-bearing streams, the District Manager must obtain agreement from appropriate resource agencies before construction.

Temporary stream crossings

7 All temporary stream crossings must be removed following harvesting, unless otherwise approved by the District Manager.

10.2.2 Felling and bucking

1 Felling and bucking must be done in a manner that allows for the maximum recovery of usable wood from a harvesting operation.

Maximum recovery

2 Felling must be confined to authorized areas.

Limitations

3 Trees must be felled away from watercourses, fisheries-sensitive zones, and marine-sensitive zones, unless otherwise specified in higher level plans or the Standards.

Protection of watercourses

10.2.3 Yarding/skidding and logging trails

1 Detrimental soil disturbance created by logging trail construction and yarding and skidding must not exceed the maximum level permitted, if any, in an approved Pre-harvest Silviculture Prescription.

Maximum soil disturbance permissible

2 Logging trails must be planned and constructed to protect identified fish habitat and other identified resource values, and to maintain natural drainage patterns while minimizing soil erosion and sedimentation.

Logging trails

3 Logging trails on high sensitivity areas must be marked on the ground and identified on the Logging (Cutting) Plan before the Logging (Cutting) Plan is submitted for approval.

4 Logging trails must be stabilized to maintain the natural drainage pattern and minimize surface runoff and soil erosion, within time periods specified in the Standards.

Yarding and skidding

5 Yarding and skidding must not be conducted through or over any stream unless otherwise approved by the District Manager. In the case of fish-bearing streams, the District Manager must obtain agreement from appropriate resource agencies.

Rehabilitation of disturbed areas

6 Where the maximum level of detrimental soil disturbance permitted in an approved Pre-harvest Silviculture Prescription is exceeded, the excess area must be rehabilitated as required in the Standards.

10.2.4 Protection of reserved trees and designated understory

Harvesting reserved trees

1 A person who harvests timber must not harvest trees that are required by an approved prescription to be left standing.

Damage to reserved trees

2 Damage to trees or designated understory that is required to be left standing in the prescription must be minimized to the fullest extent possible, unless otherwise specified in the prescription.

10.2.5 Seasonal timing considerations

Consistency with higher level plans

1 The seasonal schedule of forest operations must be consistent with resource objectives prescribed in a Pre-harvest Silviculture Prescription and higher level plans.

Harvesting on saturated soils

2 Harvesting on soils that remain continuously saturated all year or are within fisheries-sensitive areas must be scheduled for the winter, unless systems such as low ground pressure or cable or aerial yarding and felling equipment have been prescribed and can meet soil conservation Rules (see Section 5, "Soil conservation") and fisheries objectives.

3 Harvesting on soils that are saturated during certain times of the year must be scheduled to avoid these periods, unless systems such as low ground pressure or cable or aerial yarding and felling equipment have been prescribed and can meet soil conservation Rules (see Section 5, "Soil conservation") and fisheries objectives.

Harvesting on fine soils

4 Harvesting on sites with fine-textured soils must be scheduled for periods when the soil is dry, frozen, or covered by at least 1 m of compressible snowpack, unless a method such as cable or aerial yarding has been prescribed and can meet soil conservation Rules (see Section 5, "Soil conservation").

Harvesting near streams

5 Harvesting near streams with fish or water supply values, or streams that may influence fish or domestic water supplies downstream, must be scheduled to avoid periods when the introduction of silt and debris may be unavoidable.

6 Timing of in-stream operations such as structure construction or repair must comply with timing windows established by appropriate resource agencies to prevent damage to fish and fish habitat.

10.2.6 Marking of features before harvesting

1 The location of features identified in higher level plans as requiring protection must be marked in the field before harvesting to ensure they are clearly visible at the time of harvesting, unless otherwise waived by the District Manager in consultation with appropriate resource agencies.

10.2.7 Boundary marking

1 Before harvesting is approved, cutblock boundaries must be accurately delineated on the ground, mapped, and clearly marked so that they are visible.

10.2.8 Landings

Location and size

1 Unless otherwise approved by the District Manager, landings must be located to:
- protect designated timber and regeneration reserved from cutting;

- minimize disturbance to swamps, open range, meadows, visually sensitive areas, and recreation values;
- prevent the introduction of sediment or other detrimental substances into aquatic habitats;
- avoid riparian areas, seepage sites, and areas near domestic water intakes or with high fisheries values;
- avoid areas with high surface erosion hazard or mass-wasting hazards; and,
- service as large an area as practicable for present operations and, where approved in higher level plans, service future operations in adjoining stands.

2 Existing landings must be used wherever they can replace the need for a new landing, and road right-of-way landings must be located to serve as cutblock landings when the adjacent stand is harvested.

3 Landing size must be minimized without compromising worker safety.

Construction

4 Landings must be marked in the field before construction and the location and size shown on the Logging (Cutting) Plan.

5 Sidecasting from landing construction must not be deposited onto unstable slopes.

6 Fully functional drainage systems must be incorporated into landing construction to minimize runoff flowing onto the landing and to minimize erosion of the landing fill and material.

7 Landing construction methods must be consistent with plans for deactivation and rehabilitation of site productivity as determined and recorded on the Logging (Cutting) Plan. Where topsoil replacement is specified, the soil must be piled adjacent to the landing in a location accessible for respreading.

Operations

8 Debris arising from landing operations must be deposited within approved landing areas or other approved sites, and the combustible component must, to the fullest extent possible, be kept free of soil to ensure clean and complete combustion.

9 Landings must not be increased beyond their approved size during their use, unless otherwise approved by the District Manager.

Rehabilitation

10 All combustible landing and roadside debris accumulations must be safely disposed of, unless otherwise specified in higher level plans. Where disposal is required, it must be completed in the first burning season after use, except where additional curing is deemed necessary by the District Manager.

11 Roadside logging accumulations on cutblocks that will not be broadcast burned must be piled for removal or disposal on roads, landings, lower productivity sites, or soil types that are able to absorb high intensity burns, unless otherwise specified in higher level plans.

12 Landings no longer required to facilitate forest operations must be deactivated and have site productivity restored to the rehabilitation level indicated in the Logging (Cutting) Plan or Pre-harvest Silviculture Prescription.

10.3 Harvesting damaged timber

1 Damaged timber must be harvested expeditiously, subject to the management objectives and strategies specified in higher level plans, to prevent the spread of insects and the loss in value and volume of timber (see Section 3.9, "Contingency plans"), unless otherwise approved by the District Manager.

10.4 Utilization, residue, and waste

Unrecovered timber

1 Harvesting practices must conform with B.C. Ministry of Forests utilization standards and must not result in unacceptable volumes of unrecovered usable timber (designated as avoidable waste) being left on an area after harvesting has been completed, unless to do so is previously approved by the District Manager to achieve specific environmental and silvicultural objectives such as the maintenance of coarse woody debris for biological diversity or soil productivity.

Charge to licensee

2 The volume of unrecovered timber must be determined on each logging area and charged to the licensee, according to the *Provincial Logging Residue and Waste Measurement Procedures Manual*.

Surveys

3 Surveys or recovery of residue and waste must be carried out promptly to ensure that subsequent silviculture treatments stated in an approved Pre-harvest Silviculture Prescription occur within specified timeframes.

Setting of utilization standards

4 The utilization standards applicable to each cutting authority must be stated in that cutting authority.

10.5 Designated areas

Delineation

1 Designated areas must be delineated, mapped, and where applicable, based on harvesting prescriptions within the area, flagged in the field before operations begin.

10.6 Maintenance of old-growth attributes

1 Where objectives for maintaining old-growth attributes have been identified and approved at the landscape level in higher level plans, stand-level objectives and practices must be consistent with those higher level objectives.

10.7 Protection of range values

10.7.1 Protection of range improvements and values

1 Subject to higher level plans, harvesting activities must ensure that all existing range improvements and values are protected.

10.7.2 Natural barriers

1 Where harvesting operations remove timber stands that are identified by the District Manager as being needed for barriers to livestock movement, the licensee must take measures to mitigate the loss of the barrier.

10.7.3 Noxious weeds

1 In areas where noxious weeds have the potential to adversely affect the achievement of approved range management objectives, timber harvesting activities must be conducted in a manner that does not contribute to the spread of those noxious weeds.

10.8 Protection of other values

10.8.1 Forest operations adjacent to permanent experimental projects, research installations, growth and yield plots, operational trials, and snow courses

1 Experimental projects, research installations, growth and yield plots, operational trials, and snow courses must be identified before operations begin, and operations planned adjacent to these features must be designed to maintain their integrity and objectives.

10.8.2 Forest operations adjacent to or within utility rights-of-way

1 Operations planned adjacent to a utility right-of-way must be conducted according to established guidelines.

2 Operations planned within a utility right-of-way must not proceed until after approval has been received from the corporation or company with jurisdiction over the right-of-way.

10.9 Operational waste management

10.9.1 Servicing of logging equipment, portable sawmills, and portable chippers

Removal of waste

1 Waste, such as crank case oil filters, grease, and oil containers, resulting from logging operations and portable timber processing facilities must be removed from the forest and disposed of, in compliance with the *Waste Management Act*.

Cleaning of equipment

2 Equipment must be cleaned or repaired at a location and in a manner that will not allow deleterious substances to enter a seepage site, lake, stream, or any other watercourse.

10.9.2 Compliance with the *Waste Management Act*

1 Forest operations must comply with all requirements in the *Waste Management Act*.

10.9.3 Fuel storage

Storage tanks

1 The area surrounding a storage tank or group of storage tanks must be designed to accommodate accidental spillage, in compliance with the *National Fire Code of Canada* and the *Waste Management Act*.

Dikes and drainage

2 Dike construction and drainage design must conform with the *National Fire Code of Canada* and the *Waste Management Act*.

10.10 Slope instability or erosion after logging operations are completed

1 To minimize loss of site productivity and any impacts on other resource values, measures must be taken to stabilize a site where slope instability or accelerated erosion occurs as a result of logging operations, as deemed appropriate by the District Manager in consultation with the appropriate resource agencies.

11 Regenerating the forest

Guiding Principles

- Productive forest land should be promptly regenerated to a free-growing state following harvesting or following the destruction or damage of timber.
- A Pre-harvest Silviculture Prescription that specifies an appropriate silvicultural system is required for all areas proposed for harvest, for areas where timber is damaged or destroyed, and for backlog not satisfactorily restocked (NSR) areas proposed for silviculture treatments. These prescriptions should outline the harvesting, regeneration, and tending activities required to meet the integrated resource management objectives established for the stand.
- Silviculture treatments should be applied efficiently, effectively, and economically. Treatment of backlog areas should meet the strategic priorities set for integrated resource management objectives, including timber production.
- Silviculture activities should be planned and conducted in a manner that ensures the soil resource is protected.
- The prescription of ecologically appropriate silviculture treatments should be based on the biogeoclimatic ecosystem classification of the area within which they will be implemented.
- Silviculture prescriptions should incorporate actions to maintain or enhance biological diversity.
- Forest pesticides are used to achieve important forest management goals and should only be applied where they have been shown to be the most effective and economical method for meeting the objectives of integrated resource management. Their use and application method should be prescribed on a site-specific basis, following the evaluation of treatment options. The amount of pesticide applied to a treatment area should be the minimum required to be effective.

- Forest pesticides should be used in a safe manner and should be stored, handled, and applied in such a way that public health, soils, and wildlife and aquatic habitat are not adversely affected.
- Pesticide use should be permitted only after public advertising of the proposed pesticide use and consultation with appropriate resource agencies.

11.1 Legal basis

Compliance with legislation

1 In accordance with the *Forest Act* (Part 10.1), the Silviculture Regulation, and the Forest Practices Code, basic silviculture must be carried out on all areas harvested. Areas suffering from the destruction or damage of timber must be managed according to the *Forest Act* (Part 10.1), the Silviculture Regulation, and the Forest Practices Code.

2 In addition to areas referred to in the standard above, all silviculture treatments applied to forest land denuded before Part 10.1 of the *Forest Act* was enacted must comply with the Forest Practices Code.

Compliance with time period

3 Backlog reforestation treatments and basic silviculture obligations must be carried out within the time period specified in the approved prescription.

11.2 Planning for silviculture operations

11.2.1 Integrated resource management

Consistency with higher level plans

1 The management objectives for a site must be consistent with higher level plans, and must be accommodated in the Pre-harvest Silviculture Prescription, silviculture prescription, and silviculture treatment prescription.

Consistency with other resource management objectives

2 Where higher level plans are not in place and there are multiple site objectives, management objectives must be designed and approved in consultation with appropriate resource agencies. Silviculture prescriptions and treatments must be designed to achieve the approved management objectives for fish and wildlife habitat, water, and other resources.

11.2.2 Ecological basis

1 The biogeoclimatic ecosystem classification must be determined for any area proposed for harvest or silviculture treatments.

2 Silviculture treatments must be based on accepted ecological principles.

11.2.3 Pre-harvest Silviculture Prescriptions and silviculture prescriptions

PHSPs

1 The Pre-harvest Silviculture Prescription must reflect the constraints and management objectives outlined in the Forest Development Plan.

General requirements of a PHSP

2 Before harvesting can proceed, a Pre-harvest Silviculture Prescription specifying an appropriate silvicultural system, including the actions required to meet basic silviculture obligations, and the desired post free-growing stand tending treatments must be signed and sealed by a Registered Professional Forester and approved by the District Manager. If the prescription is for the holder of a major licence or a Woodlot Licence, the corporate seal, if there is one, of the holder must be included in the prescription.

3 If the Crown is required, under Section 129.2 of the *Forest Act*, to carry out basic silviculture in an area, it must do so according to a prescription approved by the District Manager.

4 If the area referred to in Rule 11.2.3 (3) above is part of a Tree Farm Licence area, the free-growing standards specified in the prescription must be within the range of standards set out in the approved management plan for that Tree Farm Licence.

Silviculture prescription

5 The holder of a Tree Farm Licence or Woodlot Licence, who is required under Section 129.4 of the *Forest Act* to submit a silviculture prescription, must submit the prescription not later than one year after the discovery of the timber on productive and operable forest land (referred to in Section 129.4) that was damaged or destroyed, unless exempted by the District Manager.

6 If the holder of a major licence or a Woodlot Licence contravenes Section 138 (1) of the *Forest Act*, the holder must prepare and submit to the District Manager a prescription (or an amendment to an existing prescription) within one year of the date of the contravention, unless the District Manager is satisfied that it is physically impossible to prepare and submit the prescription or amendment in that time. In the latter case, the holder must prepare and submit the prescription or amendment by a date set by the District Manager.

7 Where timber on productive and operable forest land in a Timber Supply Area is damaged or destroyed, the District Manager or a designate must prepare, within one year of the discovery of the destruction or damage of the timber, a silviculture prescription signed and sealed by a Registered Professional Forester, unless exempted by the Regional Manager.

8 A silviculture prescription must be prepared for any not satisfactorily restocked backlog area that is proposed for silviculture treatments, and must be signed and sealed by a Registered Professional Forester and submitted to the District Manager before treatments may proceed.

General requirements of a prescription

9 A prescription must:

- be consistent with plans formulated under the *Forest Act* and Section 4 (c) of the *Ministry of Forests Act* and be adequate to achieve the stated objectives for integrated resource management;
- be consistent with the selected silvicultural system and be adequate to ensure that the free-growing crop of trees or partial cutting residual stand structure standards specified in the prescription are established to the standards and within the time limits set out in the prescription;
- be adequate to ensure growth of ecologically suitable species for the site;
- facilitate protection of the soil according to the Rules under Section 5, "Soil conservation";
- demonstrate that a sufficient supply of seed, vegetative propagules, or both, is available at the time of harvest or before the backlog reforestation treatment proposed, to meet the goals of the prescription; and,
- outline the series of treatments required to meet the management objectives for the site, within an optimum timeframe, and that will achieve the standard in the prescription.

Contents of a PHSP

10 A Pre-harvest Silviculture Prescription must contain:

- reference to the higher level plan that guides the prescription;
- the long-term management objectives for the site, including stand composition and structure (for example, volume, piece size, stems per hectare, rotation or cutting cycle, and wildlife habitat);
- anticipated post free-growing treatments to achieve the long-term management objectives;
- the location of the timber that is to be harvested or that was destroyed or damaged; the location of the land from which the timber was cut, removed, damaged, or destroyed in contravention of Section 138 of the *Forest Act*; or the location of the backlog reforestation areas requiring remedial silviculture treatments;
- the biogeoclimatic ecosystem classification and soil sensitivity information for the area, including any site-specific variation within the area;
- a map of the location referred to above, showing the biogeoclimatic ecosystem classification and treatment units;
- a reasonable assessment of forest health risks, if any, that currently exist and that may be expected to occur before the harvest of the next crop, and the actions, if any, that are proposed to deal with those risks for the duration of the prescription;
- the choice of silvicultural system under which the stand will be managed and the rationale for the choice; the characteristics and function of any trees left standing including, for example, wildlife habitat trees; the stand structure and composition goals; the planned residual basal area per hectare, if appropriate; the planned cutting cycles or rotation; and the timber utilization objectives including, where required, timber utilization objectives for the retention of coarse woody debris;
- the season and method for the harvesting or mechanized silviculture treatment;
- the total area under the prescription and the maximum proportion, if any, of that area that may incur detrimental soil disturbance from construction and use of roads, landings, gravel pits, and other similar uses that are incompatible with the establishment of a free-growing crop of trees (see Section 5, "Soil conservation");
- the net area to be reforested, and the maximum proportion, if any, of that area that may incur detrimental soil disturbance as a result of harvesting, silviculture treatments, or hazard abatement activities (see Section 5, "Soil conservation");

- the actions, if any, that will be taken to rehabilitate areas, including roads, landings, gravel pits, skid roads, skid trails, back-spar trails, and fireguards;
- the actions, if any, to abate fire hazards;
- a reasonable assessment of any non-timber resource values known to be on or adjacent to the site, and the actions that will be taken to accommodate those resources;
- the silviculture treatments, if any, and their objectives (including site preparation, regeneration method, brushing, spacing, pruning, and fertilizing) and the proposed alternative silviculture treatments to be carried out in the event of reasonably foreseeable treatment failures or omissions; and,
- the following stocking standards, which may vary as appropriate for different areas within the area to be harvested or treated:
  - the preferred and acceptable species;
  - the optimum number of well-spaced trees of the preferred and acceptable species per hectare for the site;
  - the minimum allowable horizontal distance between well-spaced trees;
  - the regeneration delay date;
  - the free-growing assessment period measured from the start of harvesting subject to the Pre-harvest Silviculture Prescription, or the start of treatments under a silviculture prescription; and,
  - the free-growing standards, including:
    - partial cutting residual stand structure standards and the residual basal area per hectare;
    - the minimum number of healthy well-spaced trees of the preferred and acceptable species per hectare;
    - the minimum number of healthy well-spaced trees of the preferred species per hectare;
    - the maximum number of trees of the preferred and acceptable species allowed per hectare and the target spacing density range for those trees;
    - the minimum annual height growth of crop trees that must be achieved between the beginning and the end of the free-growing assessment period; and,
    - the height of the crop trees relative to competing vegetation within a radius of 1 m of the tree trunk.

Contents of a silviculture prescription

11 A silviculture prescription must contain all of the elements required in a Pre-harvest Silviculture Prescription (specified in Rule [10]). The only elements that may be excluded are (i) the choice of silvicultural system under which the stand will be

managed and (ii) the season and method for the harvesting or mechanized silviculture treatment, neither of which is required if there are no trees to harvest on the land under the prescription and the District Manager determines the requirements are not applicable.

12 Where the ultimate goal of the approved prescription will not likely be achieved by the action stated, or a more appropriate prescription has been determined, the following must be submitted to the District Manager for approval:

Amending a prescription

- the grounds for the determination; and,
- a proposed amendment to the prescription, designed to ensure that the ultimate goal of the original prescription will be achieved, signed and sealed by a Registered Professional Forester and submitted within 6 weeks of the determination, unless the District Manager is satisfied that it is physically impossible to meet the requirement within that time. In the latter case, the proposed amendment must be submitted within a time limit set by the District Manager.

13 Where the ultimate goal of the approved prescription is no longer appropriate due to changed approved objectives for integrated resource management, the following must be submitted to the District Manager for approval:

Replacing a prescription

- the reason for the proposed replacement prescription, signed and sealed by a Registered Professional Forester; and,
- the replacement prescription, signed and sealed by a Registered Professional Forester.

14 A person who fails to carry out basic silviculture according to the requirements of Section 11.3, "Soil conservation," must:

Requirements for remedial action

- prepare and submit a proposed amendment to the prescription, signed and sealed by a Registered Professional Forester, providing for remedial action to:
  - ensure that the requirements of the prescription will be met, including the treatment of disturbed areas to re-establish site productivity, and,
  - mitigate adverse impacts on the achievement of other resource objectives; and,
- implement without delay the measures set out in any amendment approved by the District Manager.

15 If an approved cutting permit or Timber Sale Licence is proposed to be extended and harvesting operations have not started under the permit, then the District Manager may,

Requirements for updating a PHSP

before approving the extension, require that a new Pre-harvest Silviculture Prescription be submitted for approval.

16 If a cutting permit or Timber Sale Licence is proposed for approval and the Pre-harvest Silviculture Prescription for the area was approved by the District Manager more than three years before the permit was submitted, then the District Manager may, before approving the cutting permit, require that a new Pre-harvest Silviculture Prescription be submitted for approval.

11.2.4 Limitations on exemptions

Maximum volume

1 The timber that has been damaged or is in imminent danger of being damaged or destroyed must be less than 500 m^3 in volume (Section 129.11 [1] [c] [iv] of the *Forest Act*).

Contiguous openings

2 In addition to (1) above, the District Manager must not exempt a person from carrying out the requirements of Part 10.1 of the *Forest Act* and the Regulation if the exemption would result in a contiguous clearcut opening larger than 1 ha in size, and if the land is adjacent to land previously exempted by the District Manager (under Section 129.11 [c] of the *Forest Act*) that is not free growing.

Excessive soil disturbance

3 In addition to (1) and (2) above, the District Manager must not exempt a person from carrying out the requirements of Part 10.1 of the *Forest Act* and the Regulation if, on the harvested land covered by the approved prescription, the area of roads, landings, gravel pits, and other such uses results in a level of detrimental soil disturbance that exceeds the limits set in the prescription (an exemption allowed by Section 129.11 [1] [a] of the *Forest Act*).

4 Before exempting a person under Section 129.11 (1) of the *Forest Act*, the District Manager must consider:

- the plans, formulated under Section 4 (c) of the *Ministry of Forests Act*, that apply to the specified land;
- the location of the Crown land that is subject to the proposal;
- the size of the area of Crown land;
- the long- and short-term effects on the productivity of the area of Crown land; and,
- the potential effect on other resource values.

11.2.5 Silviculture treatment prescriptions

1 A silviculture treatment prescription, signed and sealed by a Registered Professional Forester, must be prepared for all basic silviculture activities, including site preparation, planting, brushing, spacing, pruning, and fertilization. The silviculture treatment prescription must be retained on the major licence holder or Small Business Forest Enterprise Program files, must outline how the Pre-harvest Silviculture Prescription objectives will be met, and must be available for review on request by the District Manager.

11.3 Soil conservation

1 A person required to carry out basic silviculture must:
- stay within the specified limits for detrimental soil disturbance;
- ensure that all operations are carried out so as to minimize the amount of detrimental soil disturbance; and,
- ensure that the specified amount of detrimental soil disturbance to the net area to be reforested does not prevent the requirements of the prescription from being met.

Detrimental soil disturbance

2 A person required to carry out basic silviculture must, if required to do so by the District Manager, carry out a survey to determine the nature and extent of detrimental soil disturbance.

Survey requirements

11.4 Stocking standards

1 A Pre-harvest Silviculture Prescription or silviculture prescription must not be approved unless the treatments prescribed and their timing provide a reasonable likelihood that the target stocking standards or partial cutting stand management standards can be successfully achieved.

As set in prescriptions

2 Stocking standards or partial cutting stand management objectives stated in the approved silviculture prescription must be designed and implemented to meet the objectives of integrated resource management.

Consistency with other resource management objectives

Minimum stocking, preferred, and acceptable species

3 A person required to carry out basic silviculture must establish, by the specified regeneration delay date, and maintain after that date at least the specified:
- minimum number of healthy well-spaced trees of the preferred and acceptable species; and,
- minimum number of healthy well-spaced trees of the preferred species.

4 The measurement of stocking standards and partial cutting stand management standards must follow approved procedures.

11.5 Reforestation methods

Natural regeneration

1 Where natural regeneration is prescribed in a Pre-harvest Silviculture Prescription or silviculture prescription, the prescription must specify the biological factors that make natural regeneration a viable option.

2 When natural regeneration is the chosen treatment following partial cutting, suitable residual seed trees must be selected to meet approved objectives for maintaining or enhancing genetic quality of regeneration.

Stocking survey

3 Successful regeneration must be confirmed by a stocking survey no earlier than one year after planting or, where natural regeneration has been prescribed, no earlier than three years after harvest or site preparation, whichever was completed last.

11.6 Species selection and diversity

Choice of tree species

1 Only tree species that are ecologically adapted to the site and can meet the management objectives for the site must be used for regeneration.

Mixed stands

2 Mixed species stands must be established where it is ecologically appropriate to do so, to meet the approved objectives of integrated resource management as specified in higher level plans.

11.7 Forest health

1 Tree species susceptibility and resistance to damaging agents must be evaluated and, where relevant, incorporated in silviculture prescriptions and treatment specifications.

11.8 Seed and vegetative propagule transfer

1 If seed, seedlings, and vegetative propagules are to be transferred, the original seed source must be of a provenance suitable for the area.

11.9 Tree improvement and genetic diversity

1 Seed orchard seed or selected propagules must be used for planting when they are available for the species required in the approved prescription.

Choice of seed propagules

2 Tree breeding plans and deployment strategies for pedigreed stock must be designed so that when the tree seed or propagules from that stock are used in reforestation, they will not decrease the levels of genetic diversity across the landscape.

Genetic diversity

3 Naturally or genetically improved resistant seed sources, seedlings, or vegetative propagules must be used in preference to any others when silviculture prescriptions are otherwise restricted by forest health concerns.

Resistant families

11.10 Cone and seed regulation and seed and propagule registration

1 The collection of cones and seeds for reforestation operations must be done only with a permit obtained under the Tree Cone and Tree Seed Regulation.

Collection permit

2 The supply of seeds required by a prescription must be stored with the B.C. Ministry of Forests.

Seed storage

Operator requirements

3 In reforestation operations, all operators must:
- use seed or seedlings from seedlots registered under the Tree Cone and Tree Seed Regulation;
- use vegetative propagules registered with the B.C. Ministry of Forests; and,
- keep a record of the registration numbers of the seeds, seedlings, and vegetative propagules, and the places where they are planted.

11.11 Site preparation: application, methods, and standards

Soil conservation

1 All site preparation treatments must comply with the Rules under Section 5, "Soil conservation."

Integrated resource management

2 Site preparation treatments must accommodate the objectives of integrated resource management and, where appropriate, comply with the Rules under Section 13.1.1, "Smoke Management Plans."

Choice

3 The prescribed site preparation treatment must be suitable for the site and species being regenerated.

Use of mechanized equipment

4 All site preparation and other silviculture treatments that use mechanized equipment must comply with Section 10.9, "Operational waste management," and must not be used on sites where ground-based harvesting was not permitted because of sensitive soil conditions, unless otherwise exempted by the District Manager.

Use of sheep

5 Where domestic sheep are used for site preparation, requirements under Section 11.12, "Brushing: application, methods, and standards," must be followed.

Site preparation survey

6 If site preparation is required under the prescription or if it is to be achieved through harvesting, a site preparation survey must be carried out not later than 60 days after the site preparation or harvesting has been completed, unless the District Manager is satisfied that it is physically impossible to carry out the survey in that time. In the latter case, the survey must be carried out by a date set by the District Manager.

11.12 Brushing: application, methods, and standards

1 Brushing treatments must be carried out to control competing vegetation so that a free-growing stand is achieved, and must be consistent with objectives for integrated resource management and with higher level plans.

Where required

2 The process involved in choosing a brushing method must consider biological, environmental, social, and economic factors, and must comply with Workers' Compensation Board regulations, and the rationale for the final choice must be documented in treatment prescriptions.

Choice

3 Where domestic sheep are used for brush control, measures must be designed and carried out to:

- protect fish, wildlife, and their habitat;
- minimize predator conflicts;
- protect irrigation and domestic water supplies;
- prevent disease transmission to wildlife; and,
- maintain the health of sheep.

Use of sheep

11.13 Basic stand tending

1 Basic stand tending must be carried out in a manner that is consistent with the objectives of integrated resource management and higher level plans.

Consistency with higher level plans

2 Basic stand tending treatments must be designed to maintain or enhance the health of forest stands.

Design

3 Where a stand exceeds the maximum density specified in the Pre-harvest Silviculture Prescription or silviculture prescription to meet objectives for timber management or wildlife habitat management, the stand must be spaced before the latest free-growing date to within the target spacing density range specified in the approved prescription.

Spacing

4 Spacing must retain all non-crop species that are not significant competitors with final crop trees.

5 Spacing must promote mixed species stands, where it is ecologically appropriate to do so, if they are required to meet the objectives of integrated resource management.

6 All spacing treatments must comply with the Rules governing slash disposal, under Section 13.2.2, "Hazard abatement."

Fertilization

7 Where a major licensee or the District Manager for the Small Business Forest Enterprise Program determines that fertilization at the time of planting is necessary to achieve a healthy free-growing stand, this treatment must be considered a basic silviculture obligation.

Pruning

8 Pruning to manage white pine blister rust must be carried out as a basic silviculture practice or backlog reforestation treatment when it is required to achieve a healthy free-growing stand.

9 Pruning must be carried out as a basic silviculture practice where low stand densities have been prescribed as a condition of harvesting to achieve approved wildlife habitat management objectives in addition to high value timber production objectives, and where it is consistent with approved objectives for integrated resource management.

Compliance with other Rules

10 All pruning treatments must comply with the Rules governing slash disposal, under Section 13.2.2, "Hazard abatement."

11.14 Free-growing determination

Silviculture survey

1 A silviculture survey must be carried out within the time period determined by the earliest and latest free-growing assessment dates in the approved prescription, to enable a District Manager to determine whether a free-growing crop has been established in compliance with the approved prescription; and a survey report, with accompanying map, signed and sealed by a Registered Professional Forester, must be submitted to the District Manager.

Failure to comply

2 Where a survey discloses a failure to establish the minimum number of healthy free-growing, well-spaced trees per hectare of the preferred or acceptable species specified in the approved prescription, a prescription for the establishment of a free-growing crop, signed and sealed by a Registered Professional Forester, must be submitted to the District Manager for approval.

3 Each licensee must submit a request to the District Manager for release from basic silviculture obligations for each stand, which the District Manager may only approve if satisfied that the obligations have been met.

Release

11.15 Re-survey

1 If a District Manager is not satisfied with a survey carried out under the Rules set in Sections 11.3, "Soil conservation," 11.5, "Reforestation methods," 11.11, "Site preparation: applications, methods, and standards," or 11.14, "Free-growing determination," he or she may require the person responsible for the survey to carry out another survey by a set time and manner.

When required

2 A person who receives a notice under Rule (1) above must comply promptly with the requirements of the notice.

Compliance with re-survey notice

11.16 Information reporting

1 On an annual basis, all completed silviculture treatments, as well as the status of silviculture obligations on Crown land, must be reported to the District Manager.

Annual status report

2 The holder of a major licence or Woodlot Licence must submit to the District Manager, on an annual basis, a five-year silviculture plan, signed and sealed by a Registered Professional Forester, outlining proposed basic silviculture activities.

Five-year silviculture plan

11.17 Forest pesticides

1 All pesticides used in the forest must be registered under the *Pest Control Products Act*, unless approved for research or operational trials by the Pesticide Control Branch, B.C. Ministry of Environment, Lands and Parks.

Pesticide registration

2 A decision to use forest pesticides, and the method for applying them, must accommodate objectives for integrated resource management and be based on a documented evaluation of the biological, environmental, social, economic, and safety factors of the selected forest pesticide.

Documentation

Pesticide handling, storage, and application

3 Forest pesticides must be handled, stored, and applied according to the federal *Fisheries Act*, *Pest Control Products Act*, *Pesticide Control Act*, *Waste Management Act*, *Transportation of Dangerous Goods Act*, and *Pesticide Control Act Regulation*, and to any other applicable legislation or regulations.

Licences, permits and certificates

4 Forest pesticides must only be used with a permit issued by the Administrator of the *Pesticide Control Act*.

5 All agencies involved in the application of forest pesticides must have a valid B.C. Pest Control Service Licence.

6 Forest pesticides must be applied by certified applicators or by individuals under their supervision, as stated in the *Pesticide Control Act and Regulation*.

Pesticide Use Permits

7 A copy of an application for a Pesticide Use Permit on Crown land must be delivered by the holder of a major licence or Woodlot Licence to the District Manager who approved the pesticide use in a prescription, before the application is submitted to the Administrator of the *Pesticide Control Act*.

Pesticide-free zones and buffer zones

8 All waterbodies and streams must be protected during the application of forest pesticides by the establishment of pesticide-free zones and buffer zones to maintain the pesticide-free zones, unless exempted by the Administrator of the *Pesticide Control Act*.

Worker and public safety

9 All workers involved in the handling and application of forest pesticides must be trained in doing so safely.

10 All forest pesticide applicators must use safety equipment and clothing as specified by the B.C. Ministry of Forests and the Workers' Compensation Board.

11 The treatment area must be clearly marked along its boundaries.

12 Road access signs must be posted notifying the public before, during, and after a forest pesticide treatment.

Reporting

13 All agencies applying forest pesticides must report their pesticide usage according to the requirements of the *Pesticide Control Act* and Regulation and the Pesticide Use Permit.

14 All tree seedling containers must indicate whether the seedlings have been treated with pesticides, or are pesticide free. A record of pesticides applied to seedlings within the last year must be maintained at the nursery and made available upon request.

12 Tending the forest

Guiding Principles

- Stand tending treatments and programs should be strategically planned to meet the objectives of integrated resource management for forest land efficiently, effectively, and economically.
- Stand tending treatments carried out after the stand has reached a free-growing state are considered incremental silviculture and should be conducted where it can be demonstrated that the treatments will improve the value of the next timber crop, allow the removal of merchantable timber at an earlier age, maintain or enhance wildlife habitat, aesthetics, and other resource values, or maintain or improve forest health.
- Stand tending prescriptions should be developed for all areas proposed for stand tending treatments.
- Stand tending activities should be planned and conducted in a manner that ensures the soil resource is protected.
- The prescription of ecologically appropriate stand tending practices should be based on the biogeoclimatic ecosystem classification of the area within which they will be implemented.
- Stand tending prescriptions should incorporate actions to maintain or enhance biological diversity.

12.1 Legal basis

Compliance with legislation

1 Where stand tending treatments are legally required by licence agreements, or where they are otherwise prescribed, they must be conducted according to the Forest Practices Code.

2 In accordance with the *Forest Act* (Part 129.91), no person shall carry out incremental silviculture on Crown land unless they obtain prior approval from the District Manager.

12.2 Planning for silviculture operations

12.2.1 Integrated resource management

Consistency with higher level plans

1 The management objectives for a site must be consistent with higher level plans, and must be accommodated in the Stand Tending Prescription and silviculture treatment prescription.

Consistency with other resource management objectives

2 Where higher level plans are not in place and there are multiple site objectives, management objectives must be designed and approved in consultation with appropriate resource agencies, and all Stand Tending Prescriptions and treatments must be designed to achieve the approved management objectives for fish and wildlife habitat, water, and other resources.

12.2.2 Ecological basis

Biogeoclimatic ecosystem classification

1 The biogeoclimatic ecosystem classification must be determined for any area proposed for harvest or silviculture treatments.

2 Silviculture treatments must be based on accepted ecological principles.

12.2.3 Stand Tending Prescriptions

Where required

1 Before stand tending treatments proceed within a Forest Region, the Regional Manager may require Stand Tending Prescriptions, specifying the actions required to achieve desired future stand conditions, signed and sealed by a Registered Professional Forester and approved by the District Manager.

General requirements

2 A Stand Tending Prescription must:

- consider the management objectives and proposed post free-growing treatments developed under the approved Pre-harvest Silviculture Prescription or silviculture prescription for the area, if one exists;
- be consistent with plans formulated under Section 4(c) of the *Ministry of Forests Act* and be adequate to achieve the stated objective for integrated resource management;

- be adequate to ensure that the desired future stand condition specified in the Stand Tending Prescription is achieved to the standards set out in the prescription;
- be adequate to ensure the continued growth of species that are ecologically suited for the site; and,
- facilitate protection of the soil according to the Rules under Section 5, "Soil conservation."

3 A Stand Tending Prescription must contain:

- reference to the higher level plan that guides the Stand Tending Prescription;
- the stand level objectives;
- the location of the stand to be treated;
- the biogeoclimatic ecosystem classification for the site;
- an accurate map delineating ecosystems and treatment units;
- a reasonable assessment of forest health risks, if any, that currently exist and that may reasonably be expected to occur before the harvest of the next crop, and the actions, if any, that are proposed to deal with those risks as part of the Stand Tending Prescription;
- the choice of silvicultural system under which the stand will be managed and the rationale for the choice, the characteristics and function of any trees left standing, including, for example, wildlife habitat trees, stand structure and composition goals, the planned residual basal area or density per hectare, the planned cutting cycles or rotation, and the timber utilization objectives for the retention of coarse woody debris;
- where mechanized stand tending treatments are prescribed, the treatment season and method and the maximum proportion of the area that may incur detrimental soil disturbance from stand tending operations (see Section 5, "Soil conservation");
- the actions, if any, to abate fire hazards;
- a reasonable assessment of the non-timber resource values and the specific actions, if any, that will be taken to accommodate those resources;
- the stand strategy and planned treatments, including juvenile spacing, pruning, and fertilizing, and their objectives; and,
- the stand tending treatment standards, including different standards where appropriate, for different areas within the total area to be treated.

Contents

Amending

4 Where a previously approved Stand Tending Prescription will not likely be achieved by the actions stated, the following must be submitted to the District Manager for approval:
- the grounds for the determination; and,
- a proposed amendment to the prescription, signed and sealed by a Registered Professional Forester.

12.2.4 Silviculture treatment prescriptions

1 A silviculture treatment prescription, signed and sealed by a Registered Professional Forester, must be prepared for stand tending treatments including pruning, fertilization, and pre-commercial and commercial thinning. The silviculture treatment prescription must be retained on the major licence holder or Small Business Forest Enterprise Program files, must outline how the Stand Tending Prescription or Pre-harvest Silviculture Prescription objectives will be met, and must be made available for review upon request by the District Manager.

12.3 Species selection and diversity

Maintaining suitable tree species

1 Tree species that are ecologically adapted to the site and that meet the stand management objectives must be maintained during stand tending treatments.

Mixed stands

2 Stand tending treatments must promote mixed species stands, where it is ecologically appropriate to do so, if they are required to meet the objectives of integrated resource management.

Non-crop species

3 Stand tending operations must retain all non-crop species that are not significantly competing with final crop trees.

12.4 Forest health

1 Tree species susceptibility and resistance to damaging agents must be evaluated and, where relevant, any treatments must be incorporated in treatment prescriptions and specifications.

12.5 Pre-commercial and commercial thinning

1 Silviculture treatment prescriptions for pre-commercial thinning and Pre-harvest Silviculture Prescriptions for commercial thinning must ensure that an acceptable level of growing stock remains after treatment to meet the approved objectives of integrated resource management.

Acceptable level of growing stock

2 Thinning treatments must be carried out in a manner that is consistent with the objectives of integrated resource management and with higher level plans (for example, wildlife trees may be prescribed to be left in order to meet integrated resource management needs).

Consistency with higher level plans

3 All thinning treatments must comply with the Rules governing slash disposal under Section 13.2.2, "Hazard abatement."

Slash disposal

4 All thinning treatments using mechanized equipment must comply with the Rules under Section 5, "Soil conservation," and Section 10, "Timber harvesting."

Use of mechanized equipment

5 Forest pesticide use must comply with the Rules under Section 11.17, "Forest pesticides."

Pesticide use

12.6 Fertilization

1 Fertilization treatments must be carried out in a manner that is consistent with the objectives of integrated resource management.

Consistency with other resource management objectives

2 Forest fertilizers must be handled, stored, and applied in a manner that helps protect other forest values and forest users.

Handling, storage, and application

12.7 Pruning

1 Pruning treatments must be carried out in a manner that is consistent with the objectives of integrated resource management.

Consistency with other resource management objectives

2 All pruning treatments must comply with the Rules governing slash disposal, under Section 13.2.2, "Hazard abatement."

Compliance with other Rules

12.8 Information reporting

Annual status report

1 On an annual basis, all completed stand tending treatments, as well as the status of silviculture obligations on Crown land, where applicable, must be reported to the District Manager.

Five-year silviculture plan

2 The holder of a major licence or Woodlot Licence must submit to the District Manager a five-year silviculture plan, signed and sealed by a Registered Professional Forester, outlining proposed incremental silviculture activities.

13 Forest protection

Guiding Principles

- All persons in the forest are responsible for protecting forest resources from wildfire and should:
  - comply with regulations governing fire prevention, forest use restrictions, and closures;
  - on discovering a wildfire, report it immediately to a Peace Officer or Forest Officer; and,
  - use their best effort to control and extinguish an unattended wildfire immediately.
- All persons conducting an industrial operation in the forest during fire season should be adequately prepared to suppress fires occurring within or entering onto the work site.
- The threat of fire to all identified forest resources and to the public resulting from forest practices that have created increased fire hazards such as concentrations of woody debris or slash should be mitigated to an acceptable level.
- The use of fire on forest lands to achieve resource management objectives such as reduction of the natural fire hazard, reforestation, control of plant species that compete with crop trees, enhancement of habitat and forage production for domestic stock and wildlife, and control of forest pests and maintenance of biodiversity, should be carried out in a manner that is both safe and consistent with higher level plans and ecological and environmental values.
- Fire control actions should be implemented in a manner that is cost-effective and consistent with the values at risk and the land and resource management objectives established for the area. They should also be based on sound tactical plans.
- Since emergency control actions can damage the forest environment and its resource values, as well as increase the risk of injury to fireline personnel, care should be taken to ensure that fire control actions adequately protect identified resources without risking worker safety or environmental values. Where negative impacts are caused by fire control actions, reasonable rehabilitation measures should be taken to mitigate them.

13.1 Planning for protection operations

13.1.1 Smoke Management Plans

General requirements

1 Each Forest District must submit a Smoke Management Plan to the Regional Manager on or before March 15 annually. The Regional Manager must review and approve all district Smoke Management Plans annually. All Smoke Management Plans must be designed to meet national, provincial, and local standards for visibility and health.

Contents

2 Smoke Management Plans must identify:
- standards of acceptable air quality;
- smoke-sensitive areas;
- modified burning zones;
- strategies and techniques to minimize smoke emissions;
- standards and procedures for predicting smoke transport and smoke levels; and,
- public notification procedures, where necessary.

Compliance of all open burning with

3 All open burning carried out for resource management must be conducted according to the requirements specified in Forest District Smoke Management Plans.

13.1.2 Preparedness (Preorganization) Plans

1 Every industrial operator employing more than 10 people for more than 30 days within the fire season, and undertaking work in Risk Classifications "A" and "B" of the Forest Fire Prevention Regulation, must prepare and submit a Preparedness Plan to the District Manager at least 30 days before the anticipated date of the start of operations. Operations must not proceed until the plan has been approved in writing by the District Manager. A District Manager may require a Preparedness Plan for operations not meeting these criteria, where unusual circumstances or high-risk operations require it.

13.2 Fire hazard

13.2.1 Fuel management

1 Forest operations must comply with the fuel management requirements established in Forest Development Plans.

13.2.2 Hazard abatement

1 During planning of forest harvesting operations, adequate consideration must be given to fuel management or fuel modification activities.

Planning for

2 Fire hazards created during industrial operations must be assessed within timeframes established by the Standards.

During industrial operations

3 When any forest practice creates a fire hazard, the person responsible must take action to reduce the hazard to a level set in the Standards.

Responsibility for

13.3 Use of fire

13.3.1 Fire use planning

1 The application of fire to forest or range land must be consistent with the objectives identified in approved higher level plans, and must comply with the Rules under Section 5.5, "Prescribed fire activities."

Compliance with other Rules

2 Burning Plans must be submitted to the District Manager for review and approval at least 60 days before the anticipated burn date. Burning must not begin without an approved Burning Plan and a valid burning permit.

Burning Plan: general requirements

3 Every person who intends to carry out broadcast burning or, where required in the Standards, the burning of slash accumulations or windrows, must prepare a Burning Plan that specifies:

- the desired objectives;
- the conditions required to meet those objectives;
- the procedures to be followed to complete the burn;
- measures required to safeguard adjacent values; and,
- the measures to be taken to comply with local Smoke Management Plans.

Burning Plan: contents

4 All broadcast burns must be directed in the field by a Certified Burn Boss.

Direction by Certified Burn Boss

13.3.2 Operations

1 All open burning must be conducted according to the approved Burning Plan and, if carried out during fire season, in full compliance with the terms of a burning permit issued by the B.C. Ministry of Forests.

13.4 Fire control activities

13.4.1 Firefighter safety

1 Every employer must ensure that people hired or directed to work on the fireline are trained and physically capable of performing their duties safely and effectively before they are permitted to take on those duties.

13.4.2 Protection of environmental values

Protection of watercourses

1 Every care must be taken that fire control operations do not create or aggravate sediment discharge into streams in a way that harms water quality.

2 Permanent changes must not be made to natural watercourses by the filling, removal, or relocation of the channel.

Protection of terrain

3 Fire trails and fireguards and other fire suppression related works must be stabilized, within the time periods specified in the Standards, so that natural drainage patterns are maintained and surface runoff and soil erosion are minimized.

Glossary

Abiotic factors: The non-living component of the environment, such as air, rocks, soil, water, peat, and plant litter.

Alienation: Any land that has had its "right-to-use" transferred from the Crown through grant, lease, or permit or has a special interest noted, as in reserves. Land so designated may be permanent or temporary.

Allowable annual cut (AAC): The average volume of wood that may be harvested annually under sustained yield management. It equals roughly the amount of new growth produced by the forest each year, including a proportion of the mature volume minus deductions for losses due to fire, insects, and disease.

Avoidable waste: The volume of timber left on the harvested area that should have been removed in accordance with the utilization standards in the cutting authority. It does not include the volume of timber that could not be removed because of physical impediments, safety considerations, or other reasons beyond the control of the licensee. Avoidable waste volumes are billed monetarily, as well as for cut control.

Backlog NSR: Areas denuded before October 1, 1987 (for major licensees) or before January 1, 1988 (for the Small Business Forest Enterprise Program), which are not satisfactorily restocked.

Backlog treatment: Any silviculture activity applied to areas harvested before October 1, 1987 (for major licensees) or before January 1, 1988 (for the Small Business Forest Enterprise Program).

Backspar trail: A bladed or non-bladed pathway over which mobile backspar equipment travels.

Basal area per hectare: The area of the cross-section of tree stems near their base, generally at breast height and including bark, measured over 1 ha of land.

Basic silviculture: The harvesting methods and silviculture operations, including seed collecting, site preparation, artificial and natural regeneration, brushing, spacing and stand tending, and other operations, prescribed for the purpose of establishing a free-growing crop of trees of a commercially valuable species.

Biodiversity (biological diversity): The diversity of plants, animals, and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them.

Biogeoclimatic Ecosystem Classification System: A hierarchical classification scheme having three levels of integration—regional, local, and chronological—and combining three classifications—climatic, vegetation, and site.

Biological control: The use of biotic agents such as insects, nematodes, fungi, and viruses for the control of weeds and other forest pests.

Blowdown (windthrow): Uprooting by the wind. Also refers to a tree or trees so uprooted.

Broadcast burning: A controlled burn, in which the fire is intentionally ignited and allowed to burn over a designated area with well-defined boundaries; used for fuel hazard reduction or for site preparation.

Brushing: A silviculture activity done by chemical, manual, grazing, or mechanical means to control competing forest vegetation and reduce competition for space, light, moisture, and nutrients with crop trees or seedlings.

Bucking: Cutting a felled tree into specified log lengths for yarding and hauling; also, making any bucking cut on logs.

Buffer zone: See Pesticide buffer zone.

Burning permit: A permit required under Section 110 of the *Forest Act*, municipal bylaw, or letter-patent for authorizing open burning within 1 km of a forest during fire season, other than for the purposes of cooking or obtaining warmth.

Cable logging: A yarding system employing winches, blocks, and cables.

Campfire: A fire, not bigger than 1 m in height and 1 m in diameter, built for the purpose of cooking or providing warmth.

Carrying capacity: The average number of livestock and/or wildlife that can be sustained on a

management unit, compatible with management objectives for the unit. It is a function of site characteristics, management goals, and management intensity.

Catchment basin: A hole dug adjacent to a culvert inlet to allow coarser particles to settle out.

Certified Pesticide Applicator: An individual certified (through examination) by the Pesticide Management Branch to use or supervise the use of pesticides in a specific management category.

Characteristic landscape: The naturally established landscape.

Christmas Tree Permit: A legal document that authorizes the holder to harvest, or grow and harvest, Christmas trees on Crown land.

Clearcut with reserves: A variation of the clearcut silvicultural system that uses green tree retention and/or wildlife trees in a dispersed or aggregated form to meet integrated resource management objectives, such as habitat protection and visual quality. The intention is not to provide seed or shelter for regeneration purposes.

Clearcutting silvicultural system: A system in which the crop is cleared from an area at one time and an even-aged, replacement stand is established. It does not include clearcutting with reserves. Clearcutting is designed so that most of the opening has full light exposure and is not dominated by the canopy of adjacent trees (this produces an open area climate). The minimum size of a clearcut opening is generally considered to be 1 ha.

Clinometer: An instrument for measuring angles of slope or other vertical angles in either degrees or percentage slope.

Coarse woody debris: Sound and rotting logs and stumps that provide cover for plants, animals, and their predators.

Coast: That geographic area west of the Cascade Mountains, as officially delineated by the Cascade Mountains Administrative Line through British Columbia from Washington state to Alaska, including the lower Fraser River area south of Hell's Gate (south of Boston Bar), taking in the Coquihalla, Silverhope, and Skagit River drainages lying east of the line, but excluding the portions of the Kalum Forest District and Cariboo Forest Region lying west of the line.

Commercial thinning: A partial cut in older immature stands where trees have reached merchantable size and value, carried out to provide an interim harvest while maintaining or restoring a high rate of growth on well-spaced final crop trees.

Community watersheds: Those watersheds designated by the B.C. Ministry of Environment, Lands and Parks for domestic water production.

Competing vegetation: Vegetation that seeks and uses the limited common resources (space, light, water, and nutrients) of a forest site needed by preferred trees for survival and growth.

Consequences, potential: A component of risk rating. Potential consequences are the detrimental events that could result from a hazard event.

Conventional ground skidding: Any combination of rubber-tired or tracked skidding equipment.

Conventional logging: Any combination of mechanical or hand felling and rubber-tired or tracked skidding equipment. In the interior, cable logging is not considered conventional; on the coast, it is.

Corduroy: Logs placed transversely along a road, usually with branches intact, and covered with fill material, to "float" the road over soft subsoils.

Critical wildlife habitat: Part or all of a specific place occupied by a wildlife species or a population of such species, recognized as essential for the maintenance of the population.

Crop tree: A tree in a young stand or plantation selected to be carried through to maturity until an interim or final harvest.

Cross-ditch: A ditch excavated across the road at an angle and at a sufficient depth, with armoring as appropriate, to divert both road surface water and ditch water off or across the road.

Cross-drain culvert: A pipe or log structure covered with soil and lying below the road surface, used to carry ditch water from one side of the road to the other.

Culvert: A pipe, pipe arch, or log structure covered with soil and lying below the road surface, used to carry water from one side of the road to the other.

Cut: The excavation required to lower the natural ground line to the desired road profile.

Cut control: A set of rules and actions, as specified in the *Forest Act* for replaceable agreements and by the Regional Manager for non-replaceable agreements, that applies when a licensee does not cut the authorized allowable annual cut (AAC) set in the applicable harvesting agreement, or that describes the action to be taken when the licensee does not cut the AAC.

Cutblock: A specific area, with defined boundaries, authorized for harvest.

Cutting cycles: The planned, recurring interval of time between successive cuttings in a crop or stand.

Cutting Permit: A legal document that authorizes the holder to harvest trees under a licence issued under the *Forest Act*.

Damaged timber: Timber that has been affected by injurious agents such as wind (as in the case of blowdown), fire, insects, or disease.

Deactivation: Measures taken to stabilize roads and logging trails during periods of inactivity, including the control of drainage, the removal of sidecast where necessary, and the reestablishment of vegetation for permanent deactivation.

Deferred area: An area in which a restriction of activity order is put into effect for a specific period of time.

Deleterious substance: Any substance that, if added to water, would degrade or alter the quality of that water so that it becomes deleterious to fish or fish habitat, or becomes unsuitable for human consumption or any other purpose for which it is legally licensed (such as irrigation and livestock watering).

Designated heritage trail: A heritage trail designated under the *Heritage Conservation Act*.

Designated skid road/skid trail: A pre-planned network of skid roads or skid trails, designed to reduce soil disturbance and planned for use in subsequent forestry operations in the same area. Multiple passes by tracked or rubber-tired skidders or other equipment are anticipated.

Designated wilderness: A part of the provincial forest designated as a Wilderness Area by Order-in-Council under authority of the *Forest Act*.

Designated area: An identifiable geographic unit of the forest land base that requires a specific combination of forest practices to adequately protect important resource values.

Desired future stand condition: A description of the characteristics of the future stand; a "photograph of the future."

Desired plant community: Of the several plant communities that may occupy a site, the one that has been identified through a management plan to best meet the plan's objectives for the site.

Detrimental soil disturbance: Changes caused by forest practices in the physical, chemical, or biological properties of the soil, including the organic forest floor and the mineral soil extending from the surface to the depth at which the unweathered parent material is encountered. Such changes may result in a loss of productive growing site, reduced site productivity, or adverse impacts on resource values.

Difficult site: Forest sites with biological limiting factors for tree growth, including but not limited to very dry, very wet, or unstable sites.

Direct seeding: The application of tree seed to a denuded area to regenerate it with commercially valuable species.

District Manager: The Manager of a Forest Service District Office, with responsibilities as outlined in the *Forest Act*, *Ministry of Forests Act*, and *Range Act*.

Ditch block: A physical blockage of the ditchline, lower than road surface and directly down-grade of the cross-drain, designed to deflect water flow into the cross-drain.

Down-rated bridges: Bridges whose carrying capacity has been reduced.

Drainage structures: Includes metal and wooden culverts, open-faced culverts, bridges, and ditches.

Drainage system: A culvert, cross-ditch, swale, or outslope/inslope to move water from one side of the road to the other.

Dust palliatives: Chemicals or compounds applied to road surfaces to reduce dust created by traffic.

Ecological units: Areas of land with similar biological, geological, and climatic environments.

Ecologically suitable species: Coniferous or deciduous tree species that are naturally adapted to a site's growing conditions.

Ecosystem: A functional unit consisting of all the living organisms (plants, animals, and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size—a log, pond, field, forest, or the earth's biosphere—but it always functions as a whole unit. Ecosystems are commonly described according to the major type of vegetation, for example, forest ecosystem, old-growth ecosystem, or range ecosystem.

Edge/area ratio: Amount of forest edge area per cutblock size.

Edge effect: Habitat conditions (such as degree of humidity and exposure to light or wind) created at or near the more-or-less well-defined boundary between ecosystems, as, for example, between open areas and adjacent forest.

End hauling: Removal of excess materials from one section of road to another or to a designated waste area, instead of sidecasting.

Endangered species: See Threatened/endangered species.

Environmentally Sensitive Areas (ESAs): Areas identified as having a high resource value so that the contribution of the area to timber harvest is severely limited. ESAs for forestry include potentially fragile, unstable soils that may deteriorate unacceptably after forest harvesting, and areas of high value to non-timber resources such as fisheries, wildlife, water, and recreation.

Felling and bucking: The process of cutting down standing timber and then cutting it into specific lengths for yarding and hauling.

Fertilization: The application of fertilizer to promote tree growth on sites deficient in one or more soil nutrients.

Fill: The height of material required to raise the desired road profile above the natural ground line.

Fire danger: An assessment of both fixed and variable factors of the fire environment, which determine the ease of ignition, rate of spread, difficulty of control, and the fire impact.

Fire hazard: The potential fire behavior for a fuel type, regardless of the fuel type's weather-influenced fuel moisture content or its resistance to fireguard construction. Assessment is based on physical fuel characteristics, such as fuel arrangement, fuel load, condition of herbaceous vegetation, and presence of elevated fuels.

Fire impact: The amount of forest fuel consumption that occurs as a result of a wildfire or prescribed fire. Fire impact is generally measured as the degree of reduction of the original woody fuels and forest floor materials, and/or the degree of mineral soil exposure on the forest floor.

Fire retardant: A substance that by chemical or physical action reduces the flammability of combustibles.

Fire risk: The probability or chance of fire starting, determined by the presence and activities of causative agents such as the potential number of ignition sources.

Fire season: The period of the year beginning April 15 and ending October 15, or any other period ordered by the Lieutenant-Governor-in-Council for any particular period.

Fire suppressant: An agent directly applied to burning fuels to extinguish the flaming and smouldering or glowing stages of combustion.

Fire trail: A cleared lane, broad enough to permit single-lane vehicle access in remote areas. May be used in fire control, but not designed to serve as a fireguard.

Fire Weather Index: An estimate of the potential intensity of a spreading fire for a given day, expressed as energy output rate per unit length of fire front. The Fire Weather Index is a component of the Canadian Forest Fire Danger Rating System.

Fireguard: A strategically planned barrier, either manually or mechanically constructed, intended to stop a fire or retard its rate of spread, and from which suppression action is carried out to control a fire; the constructed portion of a control line.

First pass: The initial entry of a multiple entry plan to harvest timber.

Fish-bearing waters: Lakes, streams, and ponds that have resident fish populations.

Fisheries-sensitive zones: Aquatic environments important for the life history of fish, including areas that may not be defined as streams. May include side and flood channels, swamps, seasonally flooded depressions, lake spawning areas, or estuaries.

Flood discharge criteria: The volume of flood that a bridge or culvert must be designed to accommodate.

Flyrock: Rock displaced by blasting and propelled beyond recoverable limits.

Foliar analysis: Chemical evaluation of the status of plant nutrients or the plant-nutrient requirements of a soil by the analysis of leaves or needles.

Forage: Available browse and herbage that may provide food for grazing and browsing animals.

Ford: A dip constructed in the roadbed at a stream crossing, instead of a culvert or bridge. The streambed must be of erosion-resistant material, or such material must be placed in contact with the streambed.

Forest cover: Forest stands or cover types consisting of a plant community made up of trees and other woody vegetation, growing more or less closely together.

Forest cover map: A map showing relatively homogeneous forest stands or cover types, produced from the interpretation of aerial photos and information collected in field surveys. Commonly includes information on species, age class, height class, site, and stocking level.

Forest Development Plan: An operational plan guided by the principles of integrated resource management (the consideration of timber and non-timber values), which details the logistics of timber development over a period of usually five years. Methods, schedules, and responsibilities for accessing, harvesting, renewing, and protecting the resource are set out to enable site-specific operations to proceed.

Forest Development Review Committee: The group made up of government organizations, stakeholders, licensees, and the general public that is responsible for reviewing development plans.

Forest floor depth: Combined depth of fresh litter, moderately decomposed organic residue, and humus or well-decomposed organic residue.

Forest floor displacement hazard: A ranking of the potential adverse impacts on forest productivity resulting from removal of the accumulated organic matter that constitutes the forest floor.

Forest health: A forest condition that is naturally resilient to damage; characterized by biodiversity, it contains sustained habitat for timber, fish, wildlife, and humans, and meets present and future resource management objectives.

Forest health agents: Biotic and abiotic influences on the forest that are usually a naturally occurring component of forest ecosystems. Biotic influences include fungi, insects, plants, animals, bacteria, and nematodes. Abiotic influences include frost, snow, fire, wind, sun, drought, nutrients, and human-caused injury.

Forest health treatments: The application of techniques to influence pest or beneficial organism populations, mitigate damage, or reduce the risk of future damage to forest stands. Treatments can be either proactive (for example, spacing trees to reduce risk of attack by bark beetles) or reactive (for example, spraying insecticides to treat outbreaks of gypsy moth).

Forest land: Land containing, or capable of supporting, forest vegetation or forest ecosystems.

Forest landscape: A portion of the land that the eye can see in one glance and in which the forest is the most dominant element.

Forest Officer: A person employed by the B.C. Ministry of Forests who is designated by the Minister, Chief Forester, or Regional Manager to be a Forest Officer, through name or title.

Forest practice: Any activity that is carried out on forest land to facilitate uses of forest resources, including but not limited to timber harvesting, road construction, silviculture, grazing, recreation, pest control, and wildfire suppression.

Forest Practices Code: A package of legislation, regulations, and standards that govern forest practices in British Columbia.

Forest profile: The composition of the timber harvest in terms of timber species, or of stands in terms of leading species and site classes.

Forest resources: Resources or values associated with forest land, including but not limited to water, wildlife, fisheries, recreation, timber, range, and heritage.

Forester: See Registered Professional Forester.

Free-growing assessment: The determination of whether young trees have attained free-growing status.

Free-growing crop: A crop of healthy trees with growth unimpeded by competition from plants, shrubs, or other trees.

Free Use Permits: An agreement entered into under Part 3, Division 8 of the *Forest Act*, which provides for the cutting and utilization of Crown timber for very specific purposes, free of stumpage assessment.

Fuel management: The planned manipulation or reduction of forest fuels for forest management and other land use objectives by: prescribed fire; mechanical, chemical, or biological means; or, alteration of the stand structure and species composition.

Full bench cut: Forming the roadway entirely in cut.

Genetic diversity: Variation among and within species that is attributable to differences in hereditary material.

Genetically improved seed: Seed that originates from a tree breeding program designed specifically to improve some attribute of seedlings or trees by selection.

Genotype: The entire genetic constitution, or the sum total of genes of an organism, in contrast to the phenotype.

Geotextile filter fabric: A synthetic material placed on the flat, under road fill, with the primary functions of layer separation, aggregate confinement, and distribution of load.

Grazing schedule: Describes the number and class of livestock, the period of use, and the area to be used.

Green tree retention: The reservation of live trees of a specific species and size from harvesting, to achieve a site-specific objective.

Green-up: The process of reestablishing vegetation following logging to achieve specific management objectives. The two common types of green-up are:

- Green-up for multi-pass logging: Usually expressed as a minimum height and stocking standard for commercial tree species, acceptable to the site, before an adjacent stand of timber may be harvested. Green-up criteria are usually based on commercial tree species ecologically suited to a site, wildlife requirements, and hydrological considerations.
- Visual green-up: The mix of herbaceous growth and deciduous and coniferous trees which acts to blend the cutblock into the surrounding forested landscape, making the cutblock less visually obvious.

Grubbing and retention: Removal of stumps, roots, embedded logs, organics, and unsuitable soils before or concurrently with subgrade construction.

Guideline: An optional practice or new practice not currently in the Code. Although guidelines are generally voluntary, the implication is that practitioners will use these concepts and principles in meeting their resource objectives.

Harvest pattern: The spatial distribution of cutblocks and reserve areas across the forested landscape.

Harvest rate: The rate at which timber is harvested, commonly expressed as an allowable annual cut (AAC).

Harvesting (logging): Forest harvesting activities including felling, yarding (skidding), hauling, and road building; the cutting and removal of trees from a forested area.

Harvesting method: The mix of felling, bucking, and yarding (skidding) systems used in logging a stand of timber.

Harvesting prescription: Detailed plan on how, when, and where timber will be harvested from an area.

Hauling: A general term for the transport of logs from one point to another, usually from a landing to the mill or shipping point.

Hazards, potential: A component of risk rating. Potential hazards are the detrimental events that could result from inappropriate harvesting practices.

Hazardous or danger tree: A tree or any component of a tree that has sufficient structural infirmity to be identified as having a high risk of falling and causing personal or property damage.

Heritage areas: Sites of historical, architectural, archaeological, paleontological, or scenic significance to the province.

Heritage trail: A trail having cultural significance by reason of established aboriginal use or use by early immigrants.

High grading: The removal of only the best trees from a stand, often resulting in a residual stand of poor quality trees.

High Sensitivity Areas: Areas having special concerns, issues, or the potential for negative impacts on forest values, including any soils with high hazard of compaction, erosion, mass wasting, or displacement.

Higher level plans: Strategic or operational plans that provide direction to lower level plans, prescriptions, or forest practices.

Immature timber: Stands of timber where the age of the leading species in a stand is less than a specific cutting age. Cutting ages are established to meet forest management objectives. Usually stands with lodgepole pine and whitebark pine or a deciduous species as the leading species are considered as immature timber when the stand age is less than 81 years. Otherwise, all stands having conifers other than lodgepole pine and whitebark pine as the leading species are immature when the stand age is less than 121 years.

Impact assessment: A study of the effect of resource development on other resources.

Incremental silviculture: Treatments carried out to maintain or increase the yield and value of forest stands, including spacing, pruning, and fertilization.

Inoperable lands: Lands that are unsuited for timber production now and in the foreseeable future by virtue of their: elevation; topography; inaccessible location; low value of timber; small size of timber stands; steep or unstable soils that cannot be harvested without serious and irreversible damage to the soil or water resources; or designation as parks, wilderness areas, or other uses incompatible with timber production.

Insloping: Shaping the road surface to direct water onto the cut side of the road.

Integrated resource management: The identification and consideration of all resource values, including social, economic, and environmental needs, in land use and development decision-making. It focuses on resource use and land use and management, and is based on a good knowledge of ecological systems, the capability of the land, and the mixture of possible benefits.

Interior: That geographic area east of the Cascade Mountains, as officially delineated by the Cascade Mountains Administrative Line through British Columbia from Washington state to Alaska, including the portions of the Kalum Forest District and Cariboo Forest Region lying west of the line, but excluding the lower Fraser River area south of Hell's Gate (south of Boston Bar), taking in the Coquihalla, Silverhope, and Skagit River drainages lying east of the line.

Interpretive forest site: A designated forest site and ancillary facilities developed by the Minister of Forests to interpret, demonstrate, or facilitate the discussion of the natural environment, forest practices, and integrated resource management.

Key area: A relatively small area selected because of its location, use, or grazing value as a monitoring

point for grazing use. It is assumed that key areas, if properly selected, will reflect the overall acceptability of current grazing management.

Key species: Forage species that must, because of their high degree of use, be considered in the management program.

Land and Resource Management Plan (LRMP): A strategic, multi-agency, integrated resource plan at the subregional level. It is based on the principles of enhanced public involvement, consideration of all resource values, consensus-based decision-making, and resource sustainability.

Landform: A landscape unit that denotes origin and shape, such as a floodplain, river terrace, or till plain.

Landing: The area to which logs are yarded or skidded to be loaded out.

Landing pile or cull pile: An area of piled slash, logging residue, and stumps, created as a result of harvesting operations and the construction of roads and landings.

Landscape inventory: The identification, classification, and recording of the location and quality of visual resources and values.

Landscape level: A watershed, or series of interacting watersheds or other natural biophysical (ecological) units, within the larger Land and Resource Management Planning areas. This term is used for conservation planning and is not associated with visual landscape management and viewscape management.

Landscape sensitivity: A component of the landscape inventory that estimates the sensitivity of the landscape based on: the visual prominence or importance of features; conditions that affect visual perception; and social factors that contribute to viewer perceptions.

Landscape unit: Ecologically determined planning units that are defined within management units (Tree Farm Licences, Timber Supply Areas) and that are made up of a series of smaller stand level units.

Large Organic Debris (LOD): Entire trees or large pieces of trees that provide channel stability or create fish habitat diversity in a stream channel.

Leader: The length of tree stem from the top of the tree down to the first set of branches, representing one year of growth and reflecting the tree's vigor and the site's growing potential.

Leave trees: All trees, regardless of species, age, or size, remaining on a harvested area as a result of a predetermined silviculture prescription to address a possible range of silviculture or resource needs.

Licence to cut: An agreement under the *Forest Act* allowing a person who purchases or occupies land, who does not otherwise have the right to harvest Crown timber from the land, to cut and/or remove timber on the land.

Linear development: Straight line industrial development that is typical of power lines, highways, gas lines, and seismic activities.

Local Resource Plan (LRP): A plan for a portion of a Timber Supply Area or Tree Farm Licence that provides management guidelines for resource use integration in the area.

Logging: See Harvesting.

Logging (Cutting) Plan: A map, along with a written plan, describing the road building, harvesting, and other related operations that are submitted for a Forest Officer's approval to ensure that the applicable standards and obligations stated in the Pre-harvest Silviculture Prescription and the harvesting agreement are met.

Logging trail: A narrow, temporary trail used by harvesting equipment within a cutblock.

Low ground pressure (LGP) machines: Machines that exert a total ground pressure of less than 43.4 KPa (6.3 pounds per square inch).

Mass wasting: Movement of soil and surficial materials by gravity.

Mature-sized timber: Timber that exhibits the size characteristics of naturally mature forests. In general, mature size refers to trees greater than 20 m tall in the interior and greater than 30 m tall on the coast. Height may vary according to higher elevation and site quality. For example, height may be less on poor sites and on sites at higher elevations.

Maximum density: The maximum allowable stand density above which stands must be spaced to a target density of well-spaced acceptable stems to achieve free-growing status.

Mechanical site treatment: Any activity that involves the use of mechanical machinery.

Mechanized stand tending treatment: Any stand tending activity that involves the use of mechanical machinery to treat a stand.

Minimum utilization standard: Included in every licence authorizing the harvesting of timber, a standard which is expressed as a minimum stump height, diameter at stump height, and top diameter and which can vary by species and Timber Supply Area (and supply blocks within TSAs).

Mixed species stands: Any stand composed of two or more tree species.

Modified Burning Zones: An area of land, designated by a District Manager of the B.C. Ministry of Forests, within which special measures will be taken to maintain the density of smoke below specified limits, to address a specific health or safety concern.

Natural regeneration: The renewal of a forest stand by natural rather than human means, such as seed on site from adjacent stands or deposited by wind, birds, or animals.

Naturally resistant seed sources: Tree species or provenances that have been shown to exhibit increased resistance to some specific pest, over that of the species or provenance that would normally be used in artificial regeneration in a particular situation.

Non-designated wilderness: Areas within the provincial forest that have been zoned as wilderness through approved integrated resource management plans.

Non-timber resource values: Values within the forest other than timber which include but are not limited to biological diversity, fisheries, wildlife, minerals, water quality and quantity, recreation and tourism, cultural and heritage values, and wilderness and aesthetic values.

Not satisfactorily restocked (NSR): Productive forest land that has been denuded and has failed, partially or completely, to regenerate either naturally or artificially.

Noxious weeds: Any weed designated by the Weed Control Regulations and identified on a Regional District Noxious Weed Control List.

Old growth: Old growth is a forest that contains live and dead trees of various sizes, species, composition, and age class structure. Old-growth forests, as part of a slowly changing but dynamic ecosystem, include climax forests but not sub-climax or mid-seral forests. The age and structure of old growth varies significantly by forest type and from one biogeoclimatic zone to another.

Old-growth management areas: Areas that contain specific structural old-growth attributes, and which are mapped out and treated as special management areas.

Operable land: All lands that are not considered inoperable lands (see Inoperable lands).

Operability line: A line drawn on a map to differentiate between areas that are operable and those that are not, given status quo harvesting and reforestation technology. Inoperable areas are not economically viable to harvest without seriously impairing the site or other resource values. The operability line is used to determine the operable land base in long-run, sustained yield calculations.

Operating area: Geographic sub-units of Timber Supply Areas that have been assigned to individual major licensees for the purposes of long-term planning. The boundaries are subject to change as the timber profile within a TSA changes over time.

Operational plans: Within the context of area-specific management guidelines, operational plans detail the logistics for development. Methods, schedules, and responsibilities for accessing, harvesting, renewing, and protecting the resource are set out to enable site-specific operations to proceed.

Outsloping: Shaping the road surface to direct water away from the cut side of the road.

Partial cutting: A general term for tree removal other than clearcutting, in which selected trees are harvested.

Peace Officer: A person employed for the preservation and maintenance of public peace, typically a police officer, police constable, mayor, sheriff or sheriff officer, warden, corrections officer, or any other permanent employee of a penitentiary, prison, or correctional centre.

Permanent bridge: A bridge having all of its major components constructed of steel, concrete, or pressure-treated timber.

Pest: Any forest health agent designated as detrimental to effective resource management.

Pest incidence: A measurement of the presence and magnitude of pests within a given area.

Pesticide: Any substance or mixture of substances (other than a device) intended for killing, controlling, or managing insects, rodents, fungi, weeds, and other forms of plant or animal life that are considered to be pests as defined under the B.C. *Pesticide Control Act.*

Pesticide buffer zone: A strip of land between the 10 m pesticide-free zone and the pesticide treatment area for preventing entry of pesticides or pesticide residues by drift, runoff, or leachate into the pesticide-free zone.

Pesticide-free zone (PFZ): A strip of land, usually 10 m in width, adjacent to waterbodies; pesticides may not be directly applied to, or allowed to reach the zone via drift, runoff, or leachate. Specific authorization is needed if the pesticide-free zone is to be less than 10 m.

Phenotype: An organism as observed by its visible characteristics, resulting from the interaction of its genotype with the environment.

Plant community: An assemblage of plants occurring together at any point in time, thus designating no particular ecological status.

Potentially unstable soil area: Any area where there is a moderate to high likelihood of slope failure following conventional road construction or timber harvesting.

Pre-commercial thinning: See Spacing.

Pre-harvest Silviculture Prescription (PHSP): A documented process for collecting site-specific field data, establishing site-specific management objectives and standards for basic silviculture, and prescribing a series of treatments necessary to achieve these objectives and standards.

Prescribed burning: The knowledgeable application of fire to a specific unit of land to meet predetermined resource management objectives.

Prescription: Refers to a Pre-harvest Silviculture Prescription and silviculture prescriptions.

Procedure: A particular way of accomplishing an objective; generally refers to the method rather than the result. Procedures are usually developed to describe the methods for implementing policy.

Productive forest land: Forest land that is capable of producing a merchantable stand within a defined period of time.

Professional Engineer, Professional Geoscientist: A member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia.

Professional Forester: See Registered Professional Forester.

Protected areas: Areas such as provincial parks, federal parks, wilderness areas, ecological reserves, and recreation areas that have protected designations according to federal and provincial statutes. Protected areas are land and freshwater or marine areas set aside to protect the province's diverse natural and cultural heritage.

Provenance: The geographical area and environment to which the parent trees and other vegetation are native, and within which their genetic constitution has been developed through natural selection.

Pruning: The manual removal, close to or flush with the stem, of side branches, live or dead, and of multiple leaders from standing, generally plantation-grown trees. Pruning is carried out to improve the market value of the final wood product by producing knot-free wood for the improvement of the tree or its timber.

Public: The entire population of British Columbia, including all organizations, companies and groups. See also Section 3.6, "First Nations."

Public highway: A highway for which public money has been spent and which is dedicated to public

use by a plan deposited in the Land Titles Office for the District in which the road is situated.

Range enhancement: Any treatment, development, or structure designed to achieve or maintain the desired plant community.

Range improvement: See Range enhancement.

Range readiness: The stage of plant growth at which grazing may begin under a specific management plan without permanent damage to vegetation or soil.

Range type: A defined area with specific physical characteristics, which differs from other areas in its ability to produce distinctive kinds and amounts of vegetation and in its response to management.

Rangelands: A broad category of land characterized by native plant communities that are often associated with grazing. Rangelands are managed by ecological rather than agronomic methods.

Reconnaissance: The field examination of a proposed road location to determine its feasibility and possible impact on other resources, and to lay out the proposed centerline.

Recreation: Any physical or psychological revitalization through the voluntary pursuit of leisure time. Forest recreation includes the use and enjoyment of a forest or wildland setting, including heritage landmarks, developed facilities, and other biophysical features.

Recreation feature: Biological, physical, cultural, or visual features that have an ability to attract and sustain recreational use.

Recreation feature significance: The quality, uniqueness, and availability of a recreation feature as classified in the recreation inventory.

Recreation inventory: The identification, classification, and recording of the types and locations of recreation features.

Recreation Opportunity Spectrum: A mix of outdoor settings based on remoteness, area size, and evidence of humans, which allows for a variety of recreation activities and experiences. The descriptions used to classify the settings are on a continuum and are described as: rural, roaded resource, semi-primitive motorized, semi-primitive non-motorized, and primitive.

Recreation Opportunity Spectrum objectives: Resource management objectives in approved integrated resource management plans, reflecting the desired Recreation Opportunity Spectrum setting to provide for specific types of recreation opportunities and experiences.

Recreation resource: Any biological, physical, cultural, historical, scenic, or wilderness feature that has recreational significance or value, or any recreational facility.

Recreation site: A site and its ancillary facilities developed by the B.C. Ministry of Forests for recreation or to protect a recreation resource.

Recreation trail: A trail and its ancillary facilities developed by the B.C. Ministry of Forests for recreation or to protect a recreation resource.

Recreation value: See Recreation resource.

Referral: The process by which applications for permits, licences, leases, etc., made to one government agency by an individual or industry, are given to another agency for review and comment.

Regeneration: The renewal of a tree crop through either natural means (seeded on-site from adjacent stands or deposited by wind, birds, or animals) or artificial means (by planting seedlings or direct seeding).

Regeneration delay: The maximum time allowed in a prescription between the start of harvesting in the area to which the prescription applies, and the earliest date by which the prescription requires a minimum number of acceptable well-spaced trees per hectare to be growing in that area.

Registered Professional Forester (RPF): A person registered under the *Foresters Act*, who performs or directs works, services, or undertakings that require specialized knowledge, training, and experience in forestry.

Reportable erosion event: A natural or man-made disturbance to the forest land base which is causing or will likely cause substantial environmental impacts, or which is a threat to life or property.

Reserved trees: Trees specifically reserved from harvesting and often referenced in Pre-harvest Silviculture Prescriptions or cutting authorities or by map notations.

Residual basal area: The basal area per hectare of acceptable trees left standing after harvest.

Residual stand structure: The age class or height structure of the stand or remaining trees after harvesting.

Residuals (residual trees): Trees left standing after harvesting.

Residue: The volume of timber left on the harvested area which meets or exceeds the size requirements but is below the log grade requirements of the minimum utilization standards in the cutting authority. It is part of the AAC for cut control.

Resource values: Products or commodities associated with forest lands and largely dependent on ecological processes. These include, but are not limited to, water quality and quantity, forage, fish, wildlife, timber, recreation, energy, minerals, and cultural and heritage resources.

Retention: Retaining or saving a portion of the original stand in a cluster or clump.

Retention Visual Quality Objective: A visual landscape strategy derived from landscape analysis which applies to areas of high landscape value (for example, continuously forested or steep slopes facing important viewpoints or recreation use areas, foreground areas adjacent to important viewpoints or recreation use areas, and certain shorelines). Forest management activities may be present, but should not be noticed by the average viewer. Some visual change may be discernible, but should not be recognized as being different from existing natural features in the landscape.

Riparian area: The land adjacent to the normal high water line in a stream, river, lake, or pond and extending to the portion of land that is influenced by the presence of the adjacent ponded or channelled water. Riparian areas typically exemplify a rich and diverse vegetative mosaic reflecting the influence of available surface water.

Riparian management zone: The area within and adjacent to riparian and other wetlands required to meet the structural and functional attributes of riparian ecosystems.

Risk rating (assessment): The process of identifying the degree of risk that timber harvesting imposes on adjacent and downslope social, economic, and forest resource values. The severity of each potential hazard and the magnitude of the potential consequences that correspond to each hazard provide the overall risk associated with harvesting a site.

Road location line: The marked location of proposed roads.

Road Permit: An agreement entered into under Part 8 of the *Forest Act* to allow for the construction or modification of a forest road to facilitate access to timber planned for harvest.

Road prism: The area of the ground containing the roadway, cut, and fill slopes.

Rotation: The planned number of years between the formation or regeneration of a tree crop or stand and its final cutting at a specified stage of maturity.

Salvage harvesting: Logging operations specifically designed to recover damaged timber (dead or in poor condition) but still yield a wood product. Often carried out following fire or insect attack.

Second pass: The next entry to harvest timber after green-up (or other recovery objective) occurs.

Sedimentation: The process of subsidence and deposition by gravity of suspended matter carried in water; usually the result of the reduction of water velocity below the point at which it can transport the material in suspended form.

Seed bed: The soil or forest floor on which seed falls for natural regeneration.

Seed orchard: A plantation of specially selected trees that is managed for the production of genetically improved seed.

Seed trees: Trees selected to be left standing to provide seed sources for natural regeneration. Selection is usually on the basis of good form and

vigor, the absence of serious damage by disease, evidence of the ability to produce seed, and wind firmness.

Seed tree silvicultural system: An even-aged silvicultural system that leaves selected standing trees scattered throughout the cutblock to provide seed sources for natural regeneration. The number of seed trees to be left depends on the desired number of seedlings per hectare, the seed crop frequency, seed dissemination distance, and the length of time that the seedbed remains receptive.

Seedlots: Seed from a particular collection event, either from a single tree collection or a pooling of seed from many trees.

Seismic line: A constructed trail used for seismographic exploration.

Selection silvicultural system: A silvicultural system that removes mature timber either as single scattered individuals or in small groups at relatively short intervals, repeated indefinitely, where the continual establishment of regeneration is encouraged and an uneven-aged stand is maintained.

Selective logging: Removal of certain trees in a stand as defined by specific criteria (species, diameter at breast height, or height and form). It is analogous to high grading. Not to be confused with the selection silvicultural system.

Semi-permanent bridge: A bridge having a substantial proportion of its components constructed of steel, concrete, or timber that has been pressure-treated with a suitable preservative.

Sensitive slopes: Any slope identified as prone to mass wasting.

Sensitive soils: Forest land areas that have a moderate to high likelihood of an increase in landslide frequency due to logging or road building activities.

Sensitive/vulnerable species: Species identified as "blue listed" by the B.C. Ministry of Environment, Lands and Parks, these are indigenous species that are not threatened but are particularly at risk.

Sensitive watershed: Watershed that is used for domestic purposes or that has significant downstream fisheries values, and in which the quality of the water resource is highly responsive to changes in the environment. Typically, such watersheds lack settlement ponds, are relatively small, are located on steep slopes, and have special concerns such as extreme risk of erosion.

Settlement pond: Larger than a catchment basin and preferably with lower velocity waterflows that enable suspended sedimentation to settle before the flow is discharged into a creek.

Shelterwood silvicultural system: A silvicultural system that removes the old stand in a series of cuttings to promote the establishment of an essentially even-aged new stand under the overhead or side shelter of the old one.

Sidecasting: Moving excavated material onto the downslope side during construction.

Sills: A single structural member used as a foundation to transfer the loads from the bridge superstructure to the supporting soil.

Silvicultural system: A process that applies silviculture practices, including the tending, harvesting, and replacing of a stand, to produce a crop of timber and other forest products. The system is named by the cutting method with which regeneration is established. The four classical systems are seed tree, shelterwood, selection, and clearcut.

Silviculture: The art of producing and tending a forest, and the application of the knowledge of silvics in the treatment of a forest; the theory and practice of controlling forest establishment, composition, and growth.

Silviculture prescription: A site-specific integrated plan to carry out one or a series of silviculture treatments.

Silviculture regime: A series of site-specific silviculture treatments planned over time.

Silviculture treatment: Any silviculture activity on forest stands to meet stand-specific objectives.

Site: An area described or defined by its biotic, climatic, and soil conditions in relation to its capacity to produce vegetation; the smallest planning unit.

Site preparation: The treatment of the soil and ground vegetation to prepare the soil surface as a favorable seedbed for either naturally or artificially disseminated seed or for planted seedlings.

Site productivity: The inherent site capabilities for which the area will be managed in accordance with Section 4 of the *Ministry of Forests Act*, that is, timber, forage, recreation, fisheries, wildlife, and water.

Site sensitivity: An assessment of the inherent susceptibility of a site to productivity reduction by forest management activities.

Site-specific: Pertaining to a specific planning unit.

Skid road: A bladed or backhoe-constructed pathway where stumps are removed within the running surface as necessary. Skid roads are suitable only for tracked or rubber-tired skidders bringing trees or logs from the felling site to a landing.

Skid trail: A random pathway travelled by ground skidding equipment while moving trees or logs to a landing. A skid trail differs from a skid road in that stumps are cut very low and the ground surface is mainly untouched by the blades of earth moving machines.

Skidder: A wheeled or tracked vehicle used for sliding and dragging logs from the stump to a landing.

Skidding: The process of sliding and dragging logs from the stump to a landing, usually applied to ground-based operations.

Slash: The tree residue left on the ground as a result of forest and other vegetation being altered by forest practices or other land use activities. Slash includes material such as logs, splinters or chips, tree branches and tops, uprooted stumps, and broken or uprooted trees and shrubs.

Slash loading: See Slash.

Slide: A mass movement process in which slope failure occurs along one or more slip surfaces and in which the unit generally disintegrates into a jumbled mass en route to its depositional site. A debris flow or torrent flow may occur if enough water is present in the mass.

Slope failure: See Slide.

Slump: A mass movement process in which slope failure occurs on a usually curved slip surface and the unit moves downslope as an intact block, frequently rotating outward. Slumps appear as discrete block movements, often in place, whereas slides usually break up and travel downslope.

Small Business Forest Enterprise Program (SBFEP): This program permits the B.C. Ministry of Forests to sell Crown timber competitively to individuals and corporations who are registered in the SBFEP. Approximately 10 per cent of the province's timber allocation is directed towards this program.

Smoke management: The scheduling and conducting of a prescribed burning program under predetermined burning prescriptions and firing techniques that will minimize the adverse effects of the resulting smoke production in smoke-sensitive areas.

Smoke-sensitive area: An area of land, designated by a Regional Manager of the B.C. Ministry of Forests, within which special measures will be taken to maintain the density of smoke below specified limits to address a variety of social objectives.

Snag: A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

Soil: The naturally occurring, unconsolidated mineral or organic material at the surface of the earth that is capable of supporting plant growth. It extends from the surface to 15 cm below the depth at which properties produced by soil-forming processes can be detected. The soil-forming processes are an interaction between climate, living organisms, and relief acting on soil and soil parent material. Unconsolidated material includes material cemented or compacted by soil-forming processes. Soil may have water covering its surface to a depth of 60 cm or less in the driest part of the year.

Soil disturbance hazard: An assessment of the susceptibility of a soil to adverse impacts on its productive capability due to soil compaction, soil puddling, surface erosion, mineral soil displacement, mass wasting, or forest floor displacement.

Soil erosion: The wearing away of the earth's surface by water, gravity, wind, and ice.

Soil pit: An excavation into the mineral soil of sufficient depth to allow assessment of variability in soil physical properties within a defined area of land.

Soil productivity: The capacity of a soil, in its normal environment, to support plant growth.

Soil verification pit: An excavation into the mineral soil of sufficient depth to allow assessment of the soil properties used to evaluate soil productivity and sensitivity to forest management-related disturbances. This generally requires an excavation 90 cm deep unless a watertable, compact soil, or bedrock is encountered closer to the soil surface, in which case the depth to one of these layers is the minimum depth of pit required.

Spacing: The removal of undesirable trees within a young stand to control stocking, to maintain or improve growth, to increase wood quality and value, or to achieve other resource management objectives.

Special forest products: As defined under Section 1 of the *Forest Act* and B.C. Regulation 355/87, these are: poles; posts; pilings; shakes; shingle bolts; Christmas trees; building logs; mining timbers, props, and caps; cribbing; firewood and fuel logs; hop poles; orchard props; car stakes; round stakes, sticks, and pickets; split stakes, pickets, palings, and lagging; and shake bolts, blocks, and blanks.

Stabilized road width: The travelled portion width of the road that has been surfaced with material of sufficient strength and quantity to support the intended traffic.

Stand: A community of trees sufficiently uniform in species composition, age, arrangement, and condition to be distinguishable as a group from the forest or other growth on the adjoining area, and thus forming a silviculture or management entity.

Stand composition: The nature of a stand's species mix or physical structure.

Stand development: The part of stand dynamics concerned with changes in stand structure over time.

Stand dynamics: The study of changes in forest stand structure with time, including stand behavior during and after disturbances.

Stand level: The level of forest management at which a relatively homogeneous land unit can be managed under a single prescription, or set of treatments, to meet well-defined objectives.

Stand strategy: A documented plan of stand treatments to achieve management objectives during the life of a particular stand.

Stand structure: The distribution of trees in a stand, which can be described by species, vertical or horizontal spatial patterns, size of trees or tree parts, age, or a combination of these.

Stand tending: A variety of forest management treatments, including spacing, fertilization, pruning, and commercial thinning, carried out at different stages during a stand's development.

Stand types: See Stand, Stand structure.

Standard: The required level or measure of practice established by authority of the Forest Practices Code and referenced in legislation.

Standards: The standards of practice at the site-specific level where local conditions may require a certain amount of interpretation to implement.

Stocking: A measure of the area occupied by trees, usually measured in terms of well-spaced trees per hectare, or basal area per hectare, relative to an optimum or desired level.

Stocking standard: The required range of healthy, well-spaced, acceptable trees.

Stocking survey: The determination of the stocking of an area of both well-spaced and total trees; also used to generate an inventory label.

Strategic plan: A plan that provides objectives and strategies for land allocation and/or resource management, including regional plans, subregional plans, and local resource plans.

Stream: The watercourse formed when water flows between the continuous definable channel boundaries. Flow in the stream channel may be perennial or intermittent.

Stream bank: The rising ground bordering a stream channel.

Stream channel: The streambed and banks formed by fluvial processes, including deposited organic debris.

Streambed: The bottom of the stream below the usual water surface.

Streamside Management Zone (SMZ): The land, together with the vegetation that supports it, immediately in contact with the stream and sufficiently close to have a major influence on the total ecological character and functional processes of the stream.

Stumpage (assessment): The price paid to the provincial government for timber harvested on Crown land. The market value of timber on an area of Crown land scheduled for harvesting is assessed, and the difference between the timber's market value and the operating costs necessary to get it to an acceptable market condition is determined. This difference is the stumpage value.

Subgrade: The material movement necessary to construct the roadway, excluding surfacing.

Substructure: The part of a bridge that supports the superstructure and carries all the applied lateral and vertical loads; includes caps, sills, piles, and posts, each comprising elements known as abutments and piers.

Superstructure: The part of a bridge found above or supported by the caps or sills, including the deck, girders, stringers, and curbs.

Surface erosion: See Soil erosion.

Sustainability: The concept of producing a biological resource under management practices that ensure replacement of the part harvested, by regrowth or reproduction, before another harvest occurs.

Switchback: A horizontal road curve used for surmounting the grade of a steep hill, usually with a small radius (15-10 m) and curving 180 degrees.

Target stocking standards: The number of well-spaced acceptable trees per hectare that will, in normal circumstances, produce an optimum free-growing crop; the standards at which silviculture treatments are aimed.

Temporary bridge: A bridge having most of its major components constructed of untreated wood.

Tenure holder: An individual, group, or company that holds a licence agreement as defined in Section 10 of the *Forest Act* or Section 3 of the *Range Act*.

Terrain: The physical features of a tract of land.

Terrain hazard assessment: An assessment or characterization of unstable or potentially unstable slopes on forested lands. A determination of the relative potential of landslide initiation and the type of landslide that may occur on different types of terrain, based on the data obtained from the review of available maps, photos, site data, and field observations.

Terrain stability risk: A combined assessment of both the likelihood of landslide initiation and an order of magnitude estimate of the amount of landslide debris that might enter a stream or of the potential lengths of scour of a stream by a landslide.

Thinning: See Commercial thinning, Spacing.

Threatened/endangered species: Species identified as "red listed" by the B.C. Ministry of Environment, Lands and Parks, these are indigenous species that are either threatened or endangered.

Timber Sale Licence: An agreement entered into under Part 3, Division (3) of the *Forest Act*. A Timber Sale Licence usually defines a specific volume of timber to be harvested from a specific area. In special circumstances, an annual allowable cut (AAC) is specified.

Timber Supply Area: An area defined by an established pattern of wood flow from management units to the primary timber-using industries.

Timber utilization: The dimensions and quality of timber that is actually cut and removed from an area.

Topographic break: A distinct change in the slope of the land.

Topography: The physical features of a geographic area, such as those represented on a map, taken collectively; especially, the relief and contours of the land.

Treatment prescription: Operational details required for carrying out individual silviculture activities such as site preparation and planting.

Treatment season: The season or year the planned treatment activity will be carried out.

Treatment unit: The geographic unit of productive forest land area designated in a prescription for a specific silviculture activity or series of treatments.

Tree Farm Licence: An agreement entered into under Part 3, Division 5 of the *Forest Act*. A Tree Farm Licence provides for the establishment, management, and harvesting of timber in a described area (Crown and private land) on a sustained or perpetual yield basis.

Turnout: A widening in the roadway where a vehicle may pull in or park to allow other vehicles to pass safely.

Understory: Any plants growing under the canopy formed by others, particularly herbaceous and shrub vegetation under a tree canopy.

Unrecovered volume: Timber that is within the cutting specifications of the minimum utilization standards of the cutting authority and is therefore not removed from the area.

Utilization (of forage and browse): The level of forage and browse use on a site. For herbaceous species, it is measured as the per cent of the current year's growth removed; for browse species, it is measured as the percent of stem ends removed.

Utilization standards: The dimensions (stump height, top diameter, base diameter, and length) and quality of trees that must be cut and removed from Crown land during harvesting operations.

Vegetative propagules: Plants that originate from propagation methods using plant cuttings or other tissue.

Vehicle side-tracking: The lateral displacement of vehicles on a curve due to the length of the vehicle maneuvering through the turn; the wider path that the rear of a vehicle takes when negotiating a curve.

Very unstable terrain: Terrain units classified as being in Terrain Class V in the coastal terrain stability classification, or as having a very high mass wasting hazard according to the Mass Wasting Hazard Assessment Key for interior sites. For these areas there is a high likelihood that slope failures will follow harvesting or conventional road building.

Visual quality: The character, condition, and quality of a scenic landscape or other visual resource and how it is perceived, preferred, or otherwise valued by the public.

Visual landscape management: The identification, assessment, design, and manipulation of the visual features or values of a landscape, and the consideration of these values in the integrated management of provincial forest lands.

Visual Quality Objective (VQO): An approved resource management objective that reflects a desired level of visual quality based on the physical and sociological characteristics of the area; refers to the degree of acceptable human alteration to the characteristic landscape.

Vulnerable species: See Sensitive/vulnerable species.

Waste: The volume of timber left on the harvested area that should have been removed in accordance with the minimum utilization standards in the cutting authority. It forms part of the allowable annual cut (AAC) for cut-control purposes.

Waste area: A pre-approved site for disposal of excavations. Primarily hauled from sections of full bench construction to the disposal site.

Waterbars: A shallow ditch excavated across a road at an angle to prevent excess surface flow down the road surface and subsequent erosion of road surface materials. A small excavation across a road to collect and divert roadway surface water flow.

Watercourse: A natural stream or source or supply of water, whether usually containing water or not, such as a lake, river, creek, spring, ravine swamp, and gulch.

Watershed Assessment Procedure: Evaluates the present state of watersheds and the cumulative impact of proposed development on peak flows, suspended sediment, bedload, and stream channel stability.

Weed: Any plant out of place.

Wilderness: An area of land generally greater than 1000 ha that predominantly retains its natural character and on which the impact of man is transitory and, in the long run, substantially unnoticeable.

Wildfire: An unplanned or unwanted natural or human-caused fire, or a prescribed fire that threatens to escape its bounds.

Wildlife: Raptors, threatened species, endangered species, game, and other species of vertebrates prescribed as wildlife by regulation.

Wildlife trees: Dead, decaying, deteriorating, or other designated trees that provide present or future critical habitat for the maintenance or enhancement of wildlife.

Windrows: An accumulation of road fill or surfacing material left on the road shoulders as a result of poor grading practices.

Winter range: A range, usually at lower elevation, used by migratory deer, elk, caribou, moose, etc., during the winter months, typically better defined and smaller than summer ranges.

Woodlot Licence: An agreement entered into under Part 3, Division 5 of the *Forest Act*. It is similar to a Tree Farm Licence but on a smaller scale, and allows for small-scale forestry to be practised in a described area (Crown and private) on a sustained or perpetual yield basis.

Yarding (yarding systems): In logging, the hauling of felled timber to the landing or temporary storage site from where trucks (usually) transport them to the mill site. Yarding methods include cable yarding, ground skidding, and aerial methods such as helicopter and balloon yarding.

Appendix 1. Examples of subjects to be covered in the Standards and field guides

2 General recommendations

- resource agencies to be contacted for various environmental assessments;
- responsibility for determining serious damage;
- definition of "serious damage";
- enforcement procedures;
- the resource agencies to be contacted for various environmental assessments;
- licensee or operator responsibilities for carrying out rehabilitative and preventative measures;
- procedures for laying out and constructing fire trails and fireguards within sensitive or steep areas;
- techniques for restoring natural surface drainage patterns;
- appropriate fireguard location and construction techniques;
- procedures for outsloping and insloping the surface of logging trails, if required;
- methods for re-establishing vegetation; and,
- time periods for stabilizing fire trails and fireguards.

3 Planning

3.3 Designated areas

- responsibility;
- standards of classification for community watersheds, streams, and lakes;
- management objectives and operational standards for designated areas and each class of watershed, stream, and lake;
- mapping standards for designated areas;
- requirements for a Watershed Assessment Procedure;
- standards for riparian areas in community watersheds;
- widths of designated areas for each class of lake and stream;
- types of wildlife habitat areas (for example, winter ranges and fawning grounds);
- habitat requirements in wildlife habitat areas, including amount and type of forest cover for shelter, security, and forage; and,
- linkage requirements for wildlife habitat areas.

3.4 Watershed Assessment Procedure

- responsibilities for the Watershed Assessment Procedure;
- required levels of Watershed Assessment Procedure; and,
- standards for each level of Watershed Assessment Procedure.

3.7.1 General public participation

- requirements for defining public involvement opportunities;
- the process of public involvement for each planning level;
- definitions of "reasonable" and "opportunity"; and,
- opportunities for input from the public.

3.7.3 Public viewing

- conditions under which the District Manager considers that Forest Development Plans for all licensees or a group of licensees can be consolidated for referrals, public viewing, and input;
- procedures for coordinating and arranging the public viewing of plans;

- hours of viewing;
- the process for directing comments from the referral or public viewing process to the appropriate licensees;
- licensee responsibility for the accuracy of the licensee portion of the consolidated Forest Development Plan, maps, and tables;
- minimum size of advertisement;
- duration of advertising in media; and,
- process for handling written comments.

3.8 Amendments
- procedures for processing short-form Pre-harvest Silviculture Prescriptions within the context of the Forest Development Plan process;
- options for exemption;
- amendment referral standards; and,
- significant amendments.

3.9 Contingency plans
- provincial Land and Resource Management Plans and Local Resource Use Plan procedures (under review) that address the following details:
- public involvement process;
- unforeseen event risk assessment;
- exigency plans;
- impact assessments for all resources affected by the unforeseen event and any proposed management strategies;
- Land and Resource Management Plan and Local Resource Use Plan updates and amendments and direction to lower level plans;
- Land and Resource Management Plan and Local Resource Use Plan formats and contents;
- referrals to other agencies;
- time periods for expedient salvage;
- map scales and detail;
- definition of "assessment";
- time periods;
- public involvement process;
- map scale and detail;
- referrals to other agencies;
- the status of the Forest Development Review Committee;
- the process for submittals to the Forest Development Review Committee; and,
- the time period for the review process.

4 Forest health
- aerial and ground forest health survey techniques;
- forest health evaluation and management strategies including economic assessment;
- integrated pest management techniques;
- damage appraisal standards, methods, and responsibilities;
- means for accommodating non-timber resource values;
- forecasting and prediction methods; and,
- forest health treatments to address multiple pests.

5 Soil conservation

5.1 Site and soil data collection and mapping
- all ecological, site, soil, and treatment unit data that must be collected for Forest Development Plans and Pre-harvest Silviculture Prescriptions;
- the number of detailed sample plots and soil verification pits needed for each treatment unit;
- the level of accuracy needed for all map delineations and data collected at detailed sample plots;

- the minimum depth of soil pits for detailed sample plots;
- the requirement for detailed sample plots to be marked on maps for audit purposes; and,
- map scale, survey intensity level, and survey, mapping, and reporting procedures for all levels of forest planning.

5.2 Terrain hazard assessment and mapping

- a terrain hazard assessment procedure, specifications for survey intensity level, survey procedures, and mapping and reporting requirements for areas with proposed forestry activities that have significant terrain stability risks;
- definitions of reportable erosion events;
- primary responsibilities for the prevention, surveillance, and reporting of erosion events; and,
- primary responsibilities for establishing and maintaining an up-to-date map inventory of reportable erosion events, and for undertaking rehabilitative or mitigating measures.

5.3 Harvesting activities

- methods for determining soil disturbance hazards;
- the maximum allowed area for permanent access;
- the method for calculating the proportion of area for permanent access and recording it in the Pre-harvest Silviculture Prescription;
- the structures to be considered part of the permanent access network;
- the flexibility available for establishing the maximum allowance for permanent access;
- all disturbances considered to be site degradation;
- the classes and definitions of potentially detrimental soil disturbance;
- a definition of the net area to be reforested within a treatment unit;
- a method for determining the maximum allowable harvesting-related detrimental soil disturbance for the net area to be reforested within each treatment unit; and,
- planning, construction, and rehabilitation requirements for any planned and pre-approved detrimental soil disturbance above the maximum allowed on areas that are intended to be restored to a fully productive condition.

5.4 Mechanical site preparation activities

- a method for determining the forest floor displacement hazard;
- definitions for detrimental disturbance classes associated with mechanical site preparation activities;
- specifications for the maximum soil disturbance allowed, including planned soil disturbance, for the full range of soil disturbance hazard ratings;
- specifications of the information required in a silviculture prescription;
- appropriate resource agencies;
- a definition of what constitutes environmental damage;
- enforcement procedures to stop operations that are causing, or may imminently cause, environmental damage; and,
- primary responsibilities and procedures for reporting environmental damage, notifying appropriate agencies, and undertaking rehabilitative measures.

5.5 Prescribed fire activities

- procedures for pre-treatment impact assessment;
- procedures for post-treatment impact assessment;
- appropriate rehabilitation measures; and,
- all detrimental soil disturbances that may require rehabilitation.

5.6 Rehabilitation and revegetation requirements

- erosion control measures considered to be appropriate for use on all sites of detrimental soil disturbance and site degradation;
- direction on appropriate revegetation techniques for all detrimental soil disturbances; and,
- required treatments for restoring forest or range productivity to roads, landings, backspar trails, and skid roads that are temporarily or permanently deactivated.

6 **Recreation management**

- procedures for developing and maintaining a recreation inventory, including visual landscape, wilderness, and recreation facility inventories;
- procedures for assessing recreation resource values, including visual landscapes, wilderness, and recreation facilities;
- procedures for establishing recreation resource objectives, including visual landscapes, wilderness, and recreation facilities;
- procedures for managing recreation resource values, including visual landscapes, wilderness, and recreation facilities;
- procedures for assessing the impacts of forest operations on recreation resources, including visual landscapes, wilderness, and recreation facilities;
- procedures for monitoring forest operations to ensure that recreation resource objectives, including visual landscapes, wilderness, and recreation facilities, are met;
- procedures and standards for planning, developing and maintaining recreation sites, recreation trails, interpretive forest sites, and wilderness areas;
- standards for facilities at recreation sites, recreation trails, interpretive forest sites, and wilderness areas; and,
- rules and regulations for managing public use of recreation sites, recreation trails, interpretive forest sites, and wilderness areas.

6.1 Planning for recreation operations

- procedures and standards for planning, developing and maintaining recreation sites, recreation trails, interpretive forest sites, and wilderness areas; and,
- standards for facilities at recreation sites, recreation trails, interpretive forest sites, and wilderness areas.

7 **Range management**

7.1.1 Grazing Management Plans

- responsibility for preparing plans;
- procedures for classifying range types;
- grazing schedule format;
- procedures for identifying other values;
- procedures for selecting key species; and,
- referral agencies.

7.1.2 Weed Control Plans

- procedures for evaluating effects on other resource values;
- public review process;
- procedures for setting priorities by area and control method;
- standards for inventory maintenance; and,
- referrals to other agencies.

7.2 Use

- indices used to determine range readiness, including soil moisture and stage of plant development;
- procedures for measuring level of use; and,
- procedures for establishing maximum levels of use.

7.3 Range enhancement

7.3.1 Planning

- responsibility for preparing plans; and,
- mapping standards.

7.3.2 Design
- line of site and sign requirements for cattleguard placement;
- soil test standards;
- methods to control vehicle access on stock trails;
- procedures for assessing suitability of seed mixes and rates by ecological unit; and,
- fence specifications.

7.3.3 Construction
- specifications;
- revegetation standards; and,
- slash disposal requirements.

7.3.4 Maintenance and deactivation
- standards for monitoring maintenance requirements;
- procedures for updating enhancement inventories; and,
- rehabilitation standards.

7.4 Weed control
- monitoring standards for each control method;
- procedures for assessing environmental damage;
- the information requirements of the B.C. Ministry of Environment, Lands and Parks and Ministry of Agriculture, Fisheries and Food; and,
- the process for public review.

8 Silvicultural systems
- appropriate silvicultural systems and their variations for specific ecological units, stand types, site and stand conditions, forest health, and integrated resource management objectives;
- the role of silvicultural systems in managing for biological diversity;
- identification of sites that are difficult to manage and their appropriate management options;
- selection of leave trees (prevention of highgrading);
- types of silvicultural systems (definitions and terminology);
- landscape management objectives;
- decision-making profile for silvicultural systems; and,
- partial cutting stand structure standards.

9 Forest road engineering
- layout and mapping standards;
- setbacks, buffer strips, and other designated zone standards;
- survey output standards;
- hazard levels for slope stability;
- cross-drain culvert spacing;
- minimum culvert sizing;
- flood discharge criteria for bridge and stream culvert design;
- design and drawing documentation;
- standard configurations and details;
- treatment of trees that fall into a stream;
- disposal methods appropriate for site conditions;
- standards of visual acceptability for slash and debris;
- winter road standards;
- standards of visual acceptability for pits and other sites;
- standards for stream protection;
- selection of suitable types of vegetation for specified objectives;
- road Maintenance Plan standards; and,
- relationships of slopes and terrain types to deactivation techniques.

10 Timber harvesting

10.1.1 Harvest priority

- minimum levels of infested or damaged timber which harvesting must address;
- harvesting priorities, in order of importance (consistent with objectives for other resource values), such as:
- insect-infested stands and other damaged timber;
- stands declining in merchantable volume and economic value on productive sites;
- stands highly susceptible to forest health agents such as insects and disease; and,
- the forest profile as described in higher level plans;
- harvesting options (silvicultural systems and harvesting methods) for different levels of infestation or damage;
- cutting priority ages by species;
- priority ranking of stands for planning purposes; and,
- procedures for identifying and reporting on the forest profile harvested.

10.1.2 Green-up requirements

- definition of green-up.

10.1.3 Planning for harvest patterns and cutblock design

- procedures for minimizing windthrow (edge feathering, wind-firm boundaries, etc.);
- habitat requirements for plants and animals at the landscape level;
- harvesting constraints within upland areas;
- attributes for timber networks and when they can be logged;
- specific measures for maintaining and protecting water quality and quantity, minimize blowdown, integrate fish and wildlife values, and accommodate post-logging site preparation, forest health concerns, and other values such as recreation and aesthetics; and,
- appropriate cutblock sizes, shapes, and patterns for different stand and landscape conditions or objectives.

10.1.4 Forest Development Plans

- responsibility for conducting the Forest Development Plan process;
- detailed information required in the plan (map standards, colors, map information, schedules, standards for the first two years and the middle and end years of the plan, Pre-harvest Silviculture Prescription submissions, boundary locations, etc.);
- method and procedures for plan production;
- format for Maintenance and Deactivation plans for all access roads;
- second and third pass guidelines for stands adjacent to harvested blocks that may be scheduled for harvest (including green-up criteria, wildlife hiding cover, etc.);
- procedures for processing short-form Pre-harvest Silviculture Prescriptions within the context of the Forest Development Plan process;
- Forest Development Plan and Pre-harvest Silviculture Prescription amendment referral standards which identify when amendments can be exempted from referral to the general public, other licensed users, and other resource users;
- standards and procedures for making referrals to other government agencies;
- standards and procedures for obtaining input from the general public, other licensed users, and other resource users;
- digitized map information as required; and,
- identification of important resources and sensitive areas including cultural and heritage resources; planned subsurface mineral development; recreational sites and trails; threatened, rare, vulnerable, and sensitive elements of biological diversity; and resources in Environmentally Sensitive Areas;
- requirements and responsibilities for the collection, documentation, and analysis of archaeological, heritage, and cultural information; and,
- methods and procedures for dealing with threatened, rare, vulnerable, and sensitive species.

10.1.5 Logging (Cutting) Plans
- further regional requirements and formats;
- where required by the District Manager, on-site pre-work conferences; and,
- on-site supervisor or contact for operator.

10.2.1 General practices
- criteria for establishing machine exclusion reserves;
- procedures for approving harvesting equipment within the mean annual high water mark of a stream;
- criteria and guidelines for ensuring harvesting equipment is appropriate for the site;
- criteria for defining low ground pressure equipment;
- prescriptions that contain special provisions to prevent impacts to fish habitat where erosion hazards exist in steep and unstable or sensitive terrain;
- risk rating;
- protocol agreements between the B.C. Ministry of Forests and the B.C. Ministry of Environment, Lands and Parks (*Water Act*);
- procedures to protect fish habitat where erosion hazards exist in steep, unstable, and sensitive terrain;
- procedures to follow when in-stream operations are proposed;
- procedures describing the processing of requests to make stream channel changes;
- discharge tolerances for various stream classes;
- stream classifications;
- buffers restricting equipment operation;
- responsibility for allowing operations to resume when conditions permit;
- acceptable levels and values of sediment discharge for various stream classes; and,
- stabilization measures to be undertaken where acceptable tolerance levels are exceeded.

10.2.2 Felling and bucking
- procedures governing operations adjacent to waterbodies to minimize introduction of slash, sawdust, and debris;
- levels of acceptable damage to reserved trees and understory; and,
- felling and yarding procedures in and around streams.

10.2.3 Yarding/skidding and logging trails
- topography and slopes suitable for cable harvesting systems;
- selection of appropriate harvesting systems;
- yarding procedures in and around streams.
- procedures for logging trail layout;
- procedures for determining the type of skidding;
- procedures for layout and construction on sensitive or steep cutblocks;
- construction techniques;
- guidelines for matching equipment to site and ground conditions;
- waterbar construction and spacing standards;
- fireguard options and standards; and,
- rehabilitation procedures and standards.

10.2.4 Protection of reserved trees and designated understory
- procedures for determining residual tree selection and distribution;
- measures for protecting residuals and regeneration; and,
- acceptable standards for damage to residuals and regeneration.

10.2.5 Seasonal timing considerations
- procedures governing in-stream operations.

10.2.6 Marking of features before harvesting
- procedures for acceptable marking and defining "clearly visible"; and,
- creeks, roads, or trails to be marked before snowfall, and procedures for doing so.

10.2.7 Boundary marking
- standards and procedures for traversing cutblocks.

10.2.8 Landings
- procedures for determining landing location;
- procedures for debris pile establishment and disposal;
- landing sizes standards;
- landing construction procedures;
- procedures for locating landings within small blocks;
- debris disposal;
- requirements for topsoil piling;
- procedures for piling and respreading topsoil;
- definition of steep slope;
- procedures and standards for debris pile disposal;
- procedures for fireguard construction;
- required rehabilitation levels;
- hazard abatement goals and acceptable hazard abatement measures;
- drainage structure and waterbar specifications;
- decompaction specifications; and,
- procedures for determining and applying suitable fertilizers and grass and legume mixtures.

10.3 Harvesting damaged timber
- minimum levels of infestation or damaged timber which salvage operations must address; and,
- appropriate time periods for taking action.

10.4 Utilization, residue, and waste
- procedures and standards to ensure the objectives of silviculture and integrated resource management are not compromised;
- procedures for conducting waste assessments;
- procedures to accommodate biological diversity;
- unacceptable volumes of unrecovered usable timber; and,
- the minimum utilization requirements for the coast and interior (see tables).

Coastal timber utilization standards

Description	Mature*	Immature
i. Stumps**		
• No higher than	30.0 cm	30.0 cm
ii. Top diameter (inside bark)		
• All timber that meets or exceeds 15.0 cm	10.0 cm	
iii. Slab thickness (cedar only)		
• All slabs that meet or exceed	15.0 cm	10.0 cm
iv. Minimum length		
• Log or slab	3.0 m	3.0 m

* For these purposes, "mature" means timber that has an average age of 121 years or older and "immature" means timber that has an average age of less than 121 years.

** Measured on the high side, adjacent to the highest ground.

Interior timber utilization standards	
Description	
i. Stumps*	
• No higher than	30.0 cm
ii. Diameter (outside bark) at stump height	
• All timber that meets or exceeds	
• lodgepole pine	20.0 cm
iii. Top diameter (inside bark or slab thickness)	
• For cedar 141 years or older only, and all other species, all timber that meets or exceeds	10.0 cm
iv. Top diameter (inside bark or slab thickness)	
• For cedar less than 141 years, and all other species, all timber that meets or exceeds	10.0 cm
v. Minimum length	
• Log or slab	3.0 m

* Measured on the high side adjacent to the highest ground.

10.5 Designated areas

- designated areas where harvesting may proceed, and procedures governing operations adjacent to these areas;
- designated areas where harvesting is prohibited, and procedures governing operations adjacent to these areas;
- descriptions of attributes to be maintained;
- procedures for the safe retention of existing and future wildlife trees and coarse woody debris, with due regard for operational safety;
- definitions of what constitutes adequate numbers and size of trees to provide large organic debris to streams; and,
- guidelines and procedures for the maintenance of understory vegetation to provide long-term production of insects and bank stability.

10.7 Protection of range improvements and values

- methods of protecting identified range improvements; and,
- procedures for remedial action.

10.7.2 Natural barriers

- acceptable agreements that can be reached between forest companies, the Small Business Forest Enterprise Program, and ranchers; and,
- mitigating measures to be taken when natural barriers to cattle movement are breached.

10.8.1 Forest operations adjacent to permanent experimental projects, research installations, growth and yield plots, operational trials, and snow courses

- procedures for marking, mapping, and protecting these features; and,
- procedures for protecting these features from adjacent forestry operations.

10.8.2 Forest operations adjacent to or within utility rights-of-way

- procedures governing operations adjacent to or within utility rights-of-way; and,
- protocol agreements between utility corporations and the B.C. Ministry of Forests.

10.9.1 Servicing of logging equipment, portable sawmills, and portable chippers
- procedures describing acceptable locations or actions for cleaning or repairing equipment; and,
- procedures governing disposal of material in conformance with the *Waste Management Act.*

10.9.2 Compliance with the *Waste Management Act*
- procedures describing acceptable methods of disposal in conformance with the *Waste Management Act;* and,
- procedures for obtaining a disposal permit under the *Waste Management Act.*

10.9.3 Fuel storage
- procedures for dike construction and drainage design in conformance with the National Fire Code of Canada; and,
- storage tank definitions.

10.10 Slope instability or erosion after logging operations are completed
- stabilization measures;
- designation of a licensee's responsibilities for minimizing site productivity losses; and,
- time periods of licensee responsibility for minimizing site productivity losses until the stand is free-growing.

11 Regenerating the forest
- movement of seed and vegetative propagules;
- practices for identifying and ensuring the use of resistant families;
- cone collection standards and procedures;
- seedling and propagule registration procedures;
- procedures for determining site and environmental sensitivity to various silviculture practices;
- measures to protect soil and avoid site degradation;
- strategies for managing forest health agents;
- means for accommodating non-timber resource values;
- site-specific silviculture treatment options and objectives;
- site-specific selection of site preparation methods;
- site sensitivity to mechanical site treatments and prescribed fire;
- practices for mitigating limiting site factors;
- selection of brushing method;
- evaluation and documentation requirements for decisions on brushing treatment and forest pesticide use;
- techniques for minimizing the effect of domestic sheep on wildlife values;
- maximum density spacing guidelines;
- density control guidelines for wildlife habitat;
- procedures for maintaining forest health during spacing;
- nutritional problems requiring fertilization;
- pruning standards for managing white pine blister rust;
- pruning standards to meet the objectives of integrated resource management;
- monitoring and inspection standards for silviculture treatments;
- site-specific stocking standards and tree species selection to meet the objectives of integrated resource management and forest health for recently harvested and backlog areas;
- site-specific practices required to achieve partial cutting stand management objectives;
- silviculture survey standards and procedures;
- method of evaluating natural regeneration potential on a site-specific basis;
- silviculture regimes and treatment scheduling;
- survey and inspection standards for determining free-growing status;
- characteristics of difficult sites and appropriate management options;
- monitoring and inspection standards for silviculture treatments;
- procedures for reporting planned and completed silviculture treatments and the status of silviculture obligations;
- direct seeding standards;

- procedures for maintaining genetic diversity;
- planting quality standards; and,
- contents of a silviculture treatment prescription.

11.2 (and 12.2) Planning for silviculture operations

- requirements for stand tending prescriptions before treatment begins;
- means for accommodating non-timber resource values;
- site-specific stocking standards and tree species selection to meet integrated resource management and forest health objectives;
- actions necessary to protect and enhance fish and wildlife habitat and maintain and promote wildlife diversity;
- requirements for Streamside and Riparian Management Zones;
- density control guidelines for wildlife habitat;
- pruning standards to meet integrated resource management objectives;
- requirements for a continual long-term supply of large organic debris (LOD);
- streambank stabilization measures;
- procedures for maintaining streamside tree and brush species that contribute leaf litter and shading to the stream;
- biogeoclimatic unit classification;
- procedures for identifying site and environmental sensitivity to various silviculture practices;
- measures to protect soil and avoid site degradation;
- site-specific silviculture treatment options and objectives;
- limiting site factors and practices for mitigating them;
- difficult sites and appropriate management options;
- methods for ensuring that higher level plans are consulted in the preparation of Pre-harvest Silviculture Prescriptions;
- prescription and report mapping standards;
- strategies for managing forest health agents;
- site-specific practices required to achieve partial cutting stand management objectives;
- evaluation of natural regeneration potential on a site-specific basis;
- acceptable alternative species to meet forest health objectives;
- site-specific selection of site preparation method;
- site sensitivity to mechanical site treatments and prescribed fire;
- pre-harvest brush management strategies;
- silviculture regimes and treatment scheduling aimed at targets;
- selection of brushing method;
- maximum density spacing guidelines;
- density control guidelines for wildlife habitat;
- maintenance of forest health during stand tending treatments;
- nutritional problems requiring fertilization;
- pruning standards for managing white pine blister rust;
- pruning standards to meet integrated resource management objectives;
- partial cutting stand structure standards;
- requirements for a continual long-term supply of large organic debris (LOD);
- difficult sites and appropriate management options;
- procedures for amending Pre-harvest Silviculture Prescriptions;
- direct seeding standards;
- procedures for maintaining genetic diversity;
- movement of seed and vegetative propagules;
- evaluation and documentation requirements for choice of brushing treatments and forest pesticide use;
- decision-making profile for silvicultural systems; and,
- five-year silviculture plan requirements.

11.17 Forest pesticides

- strategies for managing forest health agents;
- means for accommodating non-timber resource values;

- actions necessary to protect or enhance fish and wildlife habitat, and to maintain or promote wildlife diversity;
- requirements for riparian areas and Streamside and Riparian Management Zones;
- evaluation and documentation requirements for decisions on brushing treatment and forest pesticide use;
- requirements for public notification of pesticide use;
- safe handling, use, and storage of forest pesticides;
- requirements for pesticide-free zones and buffer zones depending on treatment methods;
- optimization of forest pesticide efficacy and minimization of the rate and amount used;
- worker training and safety during pesticide application;
- standards for safety equipment and clothing for pesticide applicators;
- sign posting requirements for pesticide treatment areas;
- standards for worker notification of pesticides on seedlings; and,
- methods for minimizing amount of pesticide applied to a treatment area while achieving the desired efficacy for the application method selected.

12 Tending the forest

- the incremental silviculture approval process;
- means for accommodating non-timber resource values;
- site-specific stocking standards and tree species selection to meet the objectives of integrated resource management and forest health;
- procedures for maintaining genetic diversity;
- acceptable alternative species to meet forest health objectives;
- density control guidelines for wildlife habitat;
- procedures for maintaining forest health during stand tending treatments;
- survey and inspection standards for stand tending treatments;
- partial cutting stand structure standards;
- criteria for stand selection and treatment prioritization;
- treatment guidelines for pruning, thinning, and fertilizing;
- slash management procedures;
- nutritional problems requiring fertilization;
- procedures for conducting fertilizer screening trials;
- procedures for foliar analysis;
- safe handling, use, and storage of fertilizers;
- strategies for managing forest health agents;
- means for accommodating non-timber resource values;
- silviculture regimes and treatment scheduling;
- procedures for maintaining forest health during stand tending treatments;
- silviculture information systems procedures; and,
- monitoring and inspection standards for stand tending treatments.

13 Forest protection

13.2.1 Fuel management

- forest operations location and timing;
- fire hazard assessment for those operations;
- fire risk assessment for the operations and area; and,
- fire danger assessment for the plan area.

13.2.2 Hazard abatement

- procedures for slash hazard assessment;
- seismic line slash disposal;
- soil conservation; and,
- landing slash disposal requirements.

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4 Pages

British Columbia's First Practices Code

Discussion Paper

British Columbia's First Forest Practices Code
Discussion Paper

Reader Response

1. Are there other forest management activities that should be regulated by the Code?

2. Are there any types of incentives that could be used to encourage good forest practices?

3. How best can government agencies strengthen their monitoring and enforcement efforts, to help ensure compliance with the Code?