
**Appendix IV: The Interim SmartWood Guidelines for British Columbia for the
Assessment of Forest Management**

Interim SmartWood Certification Guidelines for BCⁱ

PRINCIPLE #1: COMPLIANCE WITH LAWS AND FSC PRINCIPLES

Forest management respects all applicable laws of the country in which they occur and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.

1.1 Forest management shall respect all national, and local laws and administrative requirements.

- a) Field observations, interviews with public officials, and records of Forest Practice Board audits indicate compliance with laws and government administrative requirements.
- b) Copies of laws and relevant regulations are available to field staff and contractors.
- c) A monitoring system is in place (e.g. staff are present on site, regular patrols are conducted) that is adequate to protect against illegal harvesting or other unauthorised activities.

1.2 All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid.

- a) Fees, royalties and taxes applicable to the management unit shall be paid in a timely manner and in accordance with federal, provincial and municipal laws.
- b) Interviews with local officials indicate that appropriate payments are made on a timely basis.
- c) Written records of payments are available.

1.3 In signatory countries, the provisions of all binding international agreements such as CITES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.

- a) For large operations, the forest management operation is aware of applicable international conventions and provides guidance so that field operations meet the intent of such conventions including CITES, Convention on Biological Diversity and ILO 87 & 98. (Local standard will identify international agreements to which the country is a signatory, or SmartWood headquarters will provide a list of applicable international agreements).
- b) For small and medium sized operations, the forest management operation becomes aware of applicable international conventions either prior to or during the certification assessment, and agrees to provide guidance to staff and contractors so that field operations meet the intent of applicable agreements.
- c) Forest management operation demonstrates willingness to meet requirement, intent and spirit of applicable agreements.

1.4 Conflicts between laws, regulations and the FSC Principles and Criteria shall be evaluated for the purposes of certification, on a case by case basis, by the certifiers and the involved or affected parties.

- a) Perceived conflicts between laws, the FSC P&C and international treaties or conventions are identified.
- b) Conflicts between FSC requirements and laws are resolved through consultation between FSC national contact person (if available), the FSC certifier, or forest management operation, as needed.

1.5 Forest management areas should be protected from illegal harvesting, settlement and other unauthorised activities.

- a) The management plan must contain provisions to ensure that surveillance is performed periodically and must identify the individuals, agencies or communities assigned responsibility for carrying out the surveillance. The plan should also identify the individuals responsible for enacting protective or mitigating measures.
- b) Procedures shall be established to ensure that unauthorised activities are duly reported to the manager or any public agency responsible for enacting protective or mitigating measures. The procedures shall also include follow-up provisions to ensure that the required protective actions have, in fact, been taken.

1.6 Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria.

- a) Forest management operations clearly demonstrate long-term support for the FSC P&C (e.g. through public presentations, verbal commitment by senior management, or other actions).
- b) For large operations, forest management commitment is in writing. This is also encouraged for other sizes of operations. The management plan must be based on an ecological time frame sufficient to demonstrate that the manager is committed to long-term management.
- c) Forest management operations agree that it will not implement activities that blatantly conflict with the FSC P&C on forest areas outside of the forest area under current assessment.
- d) If managers of large-scale forestry operations choose to apply for certification of forest management practised on only a portion of the total land area they manage, such operations illustrate commitment over time to manage larger areas according to certification standards.

PRINCIPLE #2: TENURE AND USE RIGHTS AND RESPONSIBILITIES

Long-term tenure and use rights to the land and forest resources are clearly defined, documented and legally established.

2.1 Clear evidence of long-term tenure and forest use rights to the land (e.g. land title, customary rights, or lease agreements) shall be demonstrated.

- a) Documentation is available indicating land title, forest license, management contracts.
- b) There is a written commitment to long-term management by the owner and/or manager responsible (e.g. government agreement, conservation easement, long-term management plan).

- c) If the land is publicly owned, the government agency responsible for forest management has provided written documentation where necessary to ensure long-term commitment to following procedures and practices consistent with FSC certification.
- d) The forest operations are contained in a clearly defined geographic area (sometimes referred to as an “operating area” or “chart area”) in which tenure and forest use rights are held by a single licensee or, if not exclusively held, all other licensees in the area are also a party to the certification process.

2.2 Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.

- a) Local communities who have legal tenure or other use rights (e.g. treaty lands, community watersheds, traditional hunting or gathering, mining, etc.) are documented.
- b) Interviews and written documentation indicate that individuals or communities with legally established customary, or traditional use rights within the forest area have given free and informed consent for forest management activities affecting those rights.
- c) Written documentation and interviews indicate that uses of the forest (by local people or the wider public) are sustained on public land except in cases where such use is environmentally damaging and/or poses a threat to the safety of the public and/or forest workers. Public use and access is given due consideration on private land.

2.3 Appropriate mechanisms are employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified.

- a) Records are kept of previous and ongoing consultation and disputes over aboriginal title, or other tenure and use rights.
- b) There is evidence that ongoing efforts are made to resolve disputes in a manner acceptable to affected parties.
- c) Interviews and documentation indicate that resource conflicts with adjoining landowners and licensees are resolved or appropriately addressed.
- d) For large operations, large-scale harvesting or other similar scale forest management activities are described to affected communities in public meetings, mailings or other types of communication, in advance.
- e) Large-scale operations are begun only after conflicts have been resolved or after all reasonable attempts to resolve issues have been made.

PRINCIPLE #3: INDIGENOUS PEOPLES’ RIGHTS

The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognised and respected.

3.1 Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.

- a) First Nations who hold customary or legal title or who claim aboriginal title to land and resources are documented.
- b) First Nations have granted free and informed consent for management activities affecting customary and legal use rights. Consent may be demonstrated in writing or in some other way deemed appropriate by all parties concerned (meeting minutes, ceremony, partnership, etc.).
- c) Where rights and use issues involving First Nations are in dispute, an appropriate process for addressing and resolving grievances is in place.
- d) Where a Treaty or Interim Measures Agreement sets forth a structure and process for the participation of a First Nation in forestry management, those provisions are followed.

3.2 Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.

- a) First Nations with ancestral claims to the forest management area have been given adequate opportunity to participate in planning, research, monitoring and inventories for forest management.
- b) Openness and a spirit of co-operation are demonstrated in the planning and implementation of forestry activities in areas of importance to First Nations.
- c) First Nations with aboriginal claim to the forest area have been provided opportunities to build capacity through training, employment, and joint venture initiatives.
- d) Managers should demonstrate respect for First Nations by halting forestry activities if a previously unknown culturally important area or environmental value is discovered and appears to be at risk. This suspension should last until the culturally important area or environmental value has been evaluated and protected to the satisfaction of the First Nations.

3.3 Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in co-operation with such peoples, and recognised and protected by forest managers.

- a) Before the completion of forest planning, the First Nations within whose traditional territories the planning is undertaken have been given the opportunity to identify, locate and evaluate sites of aboriginal interests to First Nations. Where definitive identification is difficult, diligent efforts are being made by the forest management operation to identify special sites.
- b) Sites of significance to First Nations are protected to a level satisfactory to the concerned First Nations.
- c) Where permitted by the affected First Nations, there are maps indicating the First Nations sites to be protected.

3.4 Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest

operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.

- a) First Nations shall receive fair compensation, agreed to in advance of forestry operations, for their contribution of traditional ecological knowledge or any other intellectual property rights. Such compensation shall include an equitable return on any goods or services produced as a result of the First Nations' contribution of traditional ecological knowledge or any other intellectual property rights.

PRINCIPLE #4: COMMUNITY RELATIONS AND WORKERS' RIGHTS

Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.

4.1 The communities within, or adjacent to, the forest management area should be given opportunities for employment, training and other services.

- a) Local communities and businesses are targeted for employment, recreation, and other benefits related to forest management activities. Local services are utilised where feasible.
- b) At a level appropriate to the scale of the organization, training initiatives for local people to build capacity and meet long-term staffing requirements are developed and supported.
- c) Social impacts are assessed and considered in designing operations.
- d) Appropriate to the scale of the operation, management plans include social and community goals such as providing local employment and increasing local business capacity. Goals are identified in consultation with local communities.

4.2 Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.

Policies are in place that make worker safety a priority and working conditions meet or exceed provincial standards. An active safety program that includes education, review, and continuous improvement of conditions and practices is in place.

- a) Appropriate to the scale of the operation, workplace health and safety requirements are written and implemented and staff members are assigned responsibility to implement safety policies.
- b) Managers will provide appropriate safety equipment for all workers.
- c) Equipment is periodically tested and maintained to ensure safe operation.
- d) If documented (i.e. for larger operations), there is a not higher than normal accident rate.

4.3 The rights of workers to organise and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labour Organization (ILO).

- a) Managers will fully respect the right of their worker to freely form and/or join trade unions of their choice and to engage in free collective bargaining as provided under the laws of Canada and British Columbia and as provided under Conventions 87 and 98 of the International Labour Organization

- b) Official complaints by workers' organisations are adequately addressed.

4.4 Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups directly affected by management operations.

- a) Local organisations, neighbouring landowners and residents directly affected by forestry activities are notified of management activities and summaries of forest management activities are available to local communities upon request.
- b) The public, including representatives of all key interest groups, is given sufficient opportunity for involvement in management decision-making processes. Effort is made to arrive at consensus. Unresolved concerns are recorded and plans are in place to address those concerns. (Assessors' expectations for public involvement will be greatest on crown land.)
- c) Management plans will include social and community goals such as improving local forest-based employment, and shall identify appropriate measures and indicators to determine the manager's success in meeting such goals. The identification of appropriate social and community goals and indicators will be carried out in consultation with local communities.
- d) Forest management plans will reflect community goals for natural resource use and protection as identified in local and regional planning processes, such as LRMPs, LRUPs, LUPs and Official Community Plans.
- e) Employees and their unions will be given ample and appropriate opportunity to participate in and give feedback on forest management plans as well as other management decisions, policies and practices that impact their interests.

4.5 Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihoods of local peoples. Measures shall be taken to avoid such loss or damage.

- a) Local people and institutions generally perceive the forest management operation as fair and effective in avoiding losses and damages affecting local peoples, and in resolving grievances related to legal rights, damage compensation and negative impacts, if any.
- b) Where written procedures exist for resolving grievances and determining compensation for loss or damage (especially encouraged for large operations), these procedures are followed.
- c) Reasonable efforts shall be made to resolve any conflicts that arise as a direct result of forest management planning decisions or forest operations.
- d) At a level appropriate to the scale of the forest operation, staff members are appointed responsibility for liaison with local communities and resolution of grievances.
- e) Compensation is provided to local communities for direct damage to personal health, property or infringement of use rights for which the operation is responsible as determined through negotiation between the operation and community or through legal process.
- f) Impacts to the identified and known visual resources of the forest are considered when planning and implementing management activities.

PRINCIPLE #5: ECONOMIC BENEFITS FROM THE FOREST

Forest management operations efficiently use forest products and services to ensure economic viability and a wide range of environmental and social benefits.

5.1 Forest management should strive toward economic viability, while taking into account the full environmental, social and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.

- a) Based on local experience and markets, stumpage or other rents for uses or products derived from the forest are at or above the norm, and perceived by landowners to be a positive incentive for long-term forest management.
- b) Economic viability is to be interpreted consistent with long-term sustainability, and all of the principles, criteria and standards. Thus, the forestry operation is financially viable within that scope.
- c) Long-term financial planning of the forestry operation has been conducted and is periodically updated.

5.2 Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.

- a) Logs and lumber are handled to minimise waste and/or potential loss in value.
- b) Managers seek the "highest and best use" for individual tree and timber species, which includes ecological uses.
- c) Local value-added manufacturing is promoted as much as possible.
- d) Where appropriate, non-traditional markets are sought for products such as speciality woods, small diameter logs, or non-timber forest products.

5.3 Forest management should minimise waste associated with harvesting and on-site processing operations and avoid damage to other forest resources.

- a) Waste generated through harvesting and on-site processing operations is identified and minimised. For example: harvesting techniques are designed to avoid breakage in felling and yarding; harvested wood and products processed on-site are transported from the forest before any deterioration occurs.
- b) This criterion is to be interpreted consistent with coarse woody debris requirements and objectives. Environmental assessments, forest management plans and silviculture prescriptions identify the coarse woody debris to be left on operational sites, consistent with the historic levels of variation in natural forests (including size class, species and decay class).
- c) Post-harvest waste assessments are routinely conducted and the results are fed back to management planning.
- d) Options shall be explored to use wood waste to maintain or improve ecosystem health by maintaining on-site organic matter capital or exploring markets to utilise the waste. Wood waste which cannot be recycled or converted into a marketable product is disposed of in a manner which has the least environmental impact, and utilises the best available technology.

5.4 Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.

- a) Forest management activities strengthen and diversify the local economy by maintaining a sustainable supply of forest resources and values.
- b) Local value-added manufacturing is promoted as much as possible.
- c) Forest management plans and operations ensure that existing and potential recreational and tourism opportunities are maintained or enhanced.
- d) The rate of harvest of forest products does not exceed levels which can be permanently sustained.

5.5 Forest management operations shall recognise, maintain, and where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.

- a) Forest management plans shall identify the range of forest services and resources in the applicant's operating areas. The plans must identify the management objectives and actions that will be taken to accommodate non-timber values, and describe the results to be achieved with sufficient clarity to ensure meaningful evaluation (see also Principles 6 and 9).
- b) Interviews with fishing and recreational groups indicate positive or neutral impact on fisheries and other recreational resources.
- c) Field observations indicate normal, natural levels of siltation and sedimentation in or near watercourses.

5.6 The rate of harvest of forest products shall not exceed levels which can be permanently sustained.

- a) The annual allowable cut is based on conservative and well-documented estimates of growth and yield. The harvest rate is set below the growth rate to increase inventory of growing stock and habitat structures over time. The growth rate should be calculated based on areas not required for set-asides to protect other values such as riparian, sensitive terrain, or habitat needs.
- b) The landowner is making an effort to increase forest health and product quality by harvesting at an appropriate rate, conducting timber stand improvement, and planting.
- c) Growth rates, stocking, and regeneration are monitored by a suitable continuous forest inventory system.
- d) AAC or other harvest calculations are being followed in the forest.
- e) Silvicultural prescriptions (pre-, during-, and post- harvest) are being adhered to.

PRINCIPLE #6: ENVIRONMENTAL IMPACTS

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and by so doing, maintain the ecological functions and the integrity of the forest.

6.1 Assessment of environmental impacts shall be completed -- appropriate to the scale, intensity of forest management, and the uniqueness of the affected resources -- and adequately integrated into management systems. Assessments shall include landscape level considerations as well as the impact of on-site processing facilities.

Environmental impacts shall be assessed prior to commencement of site-disturbing operations.

- a) As background for environmental impact assessment, the regional and landscape context for the management unit should be established. For large, complex operations and/or tenures on Crown land, the forest manager shall assemble and be familiar with relevant and available inventory information, including but not limited to determinations of the following:
 - Biogeoclimatic Ecological Classification for the management unit, including: Ecosection(s), BEC variant(s), Natural Disturbance Type (NDT) and disturbance regimes, and Site Series.
 - Protected Area Status: by BEC variant for the relevant Ecosection(s) with the best available estimate of the representation of the various ecosystems present (e.g. Site Series, habitats, structural stages).
 - Watershed Status: present and projected ECA, channel stability for relevant stream reaches, degree of human-caused riparian disturbance, road density, trends in flow regimes and water quality (applied to basins of a stream order sufficiently large to contain the management unit – management units located on valley bottoms or face units of major river systems may use area between two major tributaries).
 - Management regimes of surrounding lands and predicted trends in other relevant environmental indicators and their adequacy for maintaining biodiversity (e.g. seral stage distribution, human-caused disturbances, fragmentation, interior habitat, red, blue and yellow-listed species).
- b) The information in subsection 6.1.a will be included with additional inventories (i.e., terrain and soils, forest stands, terrestrial habitat features, cultural resources, hydrologic features and aquatic habitats, etc.) to conduct an assessment of the environmental impacts of the proposed operations. This assessment will be incorporated into the management planning process.
- c) Environmental assessments consistently occur prior to forest management activities or other site disturbances, and adverse impacts are avoided.

6.2 Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled.

- a) Habitats of red, blue or yellow-listed species (as defined by the BC Conservation Data Centre) within a management unit, identified by field surveys or from other sources, is managed at a level sufficient to minimise any contribution of risk to the species' survival from habitat alteration on the management unit. Appropriate management may include habitat reserves, habitat management areas, site-specific practices (e.g. partial cutting) and access controls where appropriate.
- b) Buffer areas around critical habitat areas are delineated and managed in such a way as to ensure that the critical habitat feature is not damaged. Width of the buffer, and management practices, is appropriate to the size and sensitivity of the habitat feature.

- c) If habitat required by a red or blue-listed species occurs on a management unit, the landowner participates in any existing recovery plan.
- d) Where there is existing or proposed use of rare, threatened or endangered species, or critical elements of their habitat within the management unit, management guidelines and a monitoring system, appropriate to the scale and intensity of the disturbance, is in place to ensure that the use does not increase risk to the species' recovery and/or maintenance of viable population levels.
- e) Timber species on either local and/or international endangered or threatened species lists (e.g. CITES Appendix 1, national lists) are not being harvested.
- f) Conservation zones are preferably a contiguous block, though it may be a series of smaller blocks linked by corridors as wide as the average height of forest canopy in a mature forest in the region.
- g) Conservation zones are demarcated on maps and in the field, and operations are carefully controlled in these areas.
- h) Hunting, fishing, trapping and collection of Non Timber Forest Products is controlled in the forest.

6.3 Ecological functions and values shall be maintained intact, enhanced, or restored, including:

- a) Forest regeneration and succession.**
- b) Genetic, species, and ecosystem diversity.**
- c) Natural cycles that affect the productivity of the forest ecosystem.**

a) Regeneration and succession

- Ecological and silvicultural rationale behind management prescriptions is well-documented, i.e. based on site-specific field data or published analyses of local forest ecology (e.g. regeneration and succession) or silviculture, and government regulations.
- Management prescriptions maintain, enhance or restore forest composition (i.e. species numbers and diversity) and structure.
- Natural regeneration should be a planned component of all regeneration projects, even when planting is the major regeneration method. Harvesting and silvicultural systems should be planned to maintain high quality seed sources and encourage natural regeneration of desired species composition, stocking density and genetic makeup.
- Planting should be used as a tool to augment natural regeneration, where other objectives cannot be fully met by natural regeneration. Specific examples include: increasing species diversity, where potential soil degradation costs from site preparation to encourage natural regeneration are prohibitive or where rapid stand development is desirable to improve seral stage distribution (i.e. to decrease the area of early seral).
- Site preparation treatments should be planned to result in minimal soil degradation.
- Early seral stages, (i.e. herb and shrub stages) should be maintained on the landscape in extent and for time periods consistent with the historic range of variability.

b) Genetic, species, and ecosystem diversity

- Appropriate to seral stages, size and context of the management unit, representative species mixes, seral stages and structural types are maintained. Medium and small management units (< 2500 ha.) consider analysis of trends in the surrounding landscape to determine appropriate levels.
- Non-forested habitats, such as rock outcrops, alpine, snow avalanche tracks, wetlands and riparian fringes, along with forested margins surrounding these areas are managed to ensure that the ecosystem functions of these special habitats are maintained.
- Appropriate to the size and context of the management unit, measures are taken to maintain or restore all naturally occurring species.
- Appropriate to the size and context of the management unit, landscape connectivity between various landscape components, stand types and key habitats are maintained or restored, as required to maintain the distribution and abundance of viable populations of naturally occurring species.
- Diversity and relative abundance of individual tree species are maintained, including deciduous and non-commercial species. Tree species diversity should be maintained within historic ranges at both the stand and landscape levels.
- Snags, living wildlife trees and coarse woody debris are maintained, or recruited, to achieve levels of abundance and distribution within the range of historic variability.
- Silvicultural systems should be designed with specific considerations for maintaining species, genetic, and structural diversity of resulting stands, including snags, living wildlife trees and coarse woody debris.
- Natural regeneration, in combination with careful selection of seed trees, should be used as a tool for ensuring maintenance of genetic and species diversity among tree species.
- Where planting is used to augment natural regeneration, the planting stock should be of a local provenance, to ensure that local genetic strains and natural variability are not lost.

c) Natural cycles that affect the productivity of the forest ecosystem.

- To maintain natural cycles, forest harvesting and other disturbances are planned with consideration for the types, sizes and frequency of natural disturbances associated with the landscapes, sites and stands in the area. When wood fibre and other forest products are being extracted, the full complement of composition, structure, processes and functions of ecosystems are maintained appropriate to the size and context of the management unit.
- Forest management activities maintain soil fertility, including soil structure, soil organic matter levels and nutrient levels.

6.4 Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.

- a) A network of protected reserves are established within the management unit, appropriate to maintaining or restoring the biodiversity values present and the size of the unit.
- For large operations, representative samples of existing ecosystems are being protected in their natural state, based on the identification of key biological areas and/or consultation with environmental stakeholders, local government and scientific authorities.
- For small and medium sized operations, representative samples of existing ecosystems are being protected in their natural state either within the forest under evaluation or in nearby forests, based on the identification of key biological areas and/or consultation with local government or other scientific authorities.
- Landscape scale conservation considerations are evident in field activities, staff/contractor actions and/or in co-ordination with adjoining landowners, conservation organisations or government conservation agencies.
- b) Reserves include rare ecosystems and critical habitats. Reserves complement existing protected areas and contribute to habitat corridors, ecosystem connectivity, riparian reserves, unstable terrain and/or visual management zones.
- c) Protected reserves may include areas reserved to fulfil other objectives, such as riparian reserves, unstable terrain or visual management zones.
- d) Protected reserves are managed to restore or maintain identified biodiversity values within the management unit. Protected reserves should be monitored to ensure they are fulfilling their prescribed roles.
- e) Timber harvesting and road building are prohibited in the reserve network, except where these activities are part of a habitat restoration or mitigation plan.
- f) Low impact use, such as First Nations cultural activities, wildcrafting, backcountry recreation, eco-tourism, hunting, trapping or fishing may be acceptable activities in protected reserves, when they are fully compatible with the protected reserve objectives.

6.5 Written guidelines shall be prepared and implemented to: control erosion; minimise forest damage during harvesting, road construction, and all other mechanical disturbances; and protect water resources.

- Maps and work plans are produced at adequate scale to be useful for supervision of soil and water resource management and protection activities and to facilitate on-site monitoring thereof.
- Topographic maps specify areas suitable for all-weather harvesting or dry-weather only; and indicate locations for extraction (or haul) roads, loading ramps (or log yards), main skid (or snig) trails, drainage structures, streamside and/or roadside buffer zones, and conservation areas.
- Topographic maps have been prepared before logging or road construction occurs.
- Clear guidance is given to field staff and contractors in the form of written manuals, policies and training so that they understand and can implement the forest management plan.
- Guidance covers silvicultural operations, biological conservation, technical specifications for skid trail (location, width and density), road design and conservation structures, handling of chemicals, etc.

- Road construction, maintenance and closure standards are followed in the field.
- Road surfaces are well drained, culverts are large enough to avoid ponding, and water bars installed and effective.

a) Silviculture

- a) Where forest management objectives and ecological conditions are favourable, the silvicultural prescription maintains or restores a multi-species, multi-aged forest structure.
- b) The quantity and distribution of snags and down woody debris mimics that of similar forest types undisturbed by human harvest activities.
- c) A representative number of trees of all indigenous species are permanently reserved to provide living old growth trees, snags and downed logs as habitat for wildlife.
- d) Reserve trees are well distributed, including both individual trees and patches.
- e) Canopy openings provide conditions necessary to regenerate the stand, but are as small as possible to minimise disturbance to the structure, diversity, and ecological functions of the forest.
- f) Retention of forest structure (including both live and dead trees in different stages of growth and decay) is left throughout larger canopy openings.

b) Harvest Practices

- A pre-harvest inventory and sale area reconnaissance is implemented.
- An operating/harvesting plan is written, available, and used in the field that includes silvicultural objectives, volume and basal area targets, residual species composition, and transportation and access issues.
- The rationale behind tree selection on any proposed harvest area is transferred to the logger either through clearly marking the stand prior to harvest or through adequate training and supervision.
- Skid trail layout and yarding systems minimise the potential for soil erosion and compaction and damage to the residual stand or other forest resources.
- Timber harvesting does not occur in high-risk areas such as on highly erosive or permanently saturated soils, in critical riparian zones, etc. unless justified by ecological restoration purposes.
- Areas that are not to be disturbed by logging are clearly identified and shown to the logger.
- Directional felling techniques are being employed so as to minimise damage to the surrounding forest.
- Skid trail distances and landing sizes are minimised, with a target of less than 10% of the forest management unit being used for roads, skid trails and landings.
- Yarding and skidding routes are designed and located prior to operations.
- Ground based skidding operations are limited to stable terrain and are excluded from riparian zones.
- Skid trails and landings are treated after harvest to minimise environmental damage.
- Operations do not occur when wet ground or soil conditions cause severe rutting, compaction or other soil disturbance problems.
- Full suspension aerial yarding systems are used across riparian areas where feasible.

- Cable yarding corridors are kept small and logs are fully suspended as much as possible.
 - Log landing areas are as small as possible, determined by ecological and site impacts as well as considerations of logger safety. Upslope landings and natural benches are favoured and landings are not perched against unstable slope breaks.
 - If non-timber forest products will be commercially harvested, there is an inventory and plan which ensures the resource is not depleted and considers the relationship between management for wood products and management for non-timber resources.
 - Unutilized material, including branches and tree tops are left on the forest floor.
 - Logging slash is treated to reduce fire hazard and improve soil conditions.
- c) Supervision**
- The forester is regularly on site during harvest operations to guarantee compliance with marking and to ensure that impacts to the residual stand are minimised.
 - Clear guidance is given to field staff and contractors (in the form of written plans, manuals, and/or maps and clear policy directives and/or training) so that they understand and implement the forest management plan.
- d) Road Design and Maintenance**
- Road and skid trail network is kept to the minimum density necessary to provide adequate access for management, is laid out with topographic features, and uses existing old roads as much as possible.
 - Road drainage is designed to minimise surface erosion and avoid diversion of streams at crossings. Road drainage network is disconnected from stream channels as much as possible and a sufficient amount of cross drains are installed so as not to erode ditches.
 - Culverts allow fish passage during both low and high flows and are designed to accommodate 100 year floods and woody debris. If possible, spanning bridges, oversize culvert bridges or temporary crossings are used for all new stream crossings. Culverts are maintained regularly and inspected during storms to check sizing and blockage.
 - Roads are monitored and maintained to minimise deposition of sediment into riparian areas and watercourses, and minimise the likelihood of causing landslides.
 - Road closure includes pulling culverts, installing no-maintenance drainage structures, blocking the road entrance, stabilising old fills and crossings, banking materials against unstable cut slopes, and outsloping surfaces where appropriate.
- e) Mass Wasting, Snow Avalanching, Erosion and Sedimentation**
- Terrain and soil mapping are completed on areas planned for forest harvesting, road construction or other activities that have significant potential for soil disturbance or hydrologic impacts, and areas down slope of areas planned for these types of activities.
 - Maps and work plans are produced at adequate scale to be useful for supervision of soil and water resource management and protection activities and to facilitate on-site monitoring.

- Road construction or forest harvesting does not occur on areas with a high likelihood of landslide initiation, or areas of moderate likelihood of landslide initiation and very high landslide induced sedimentation hazard. Harvesting in adjacent areas shall strive to ensure that windthrow hazards in areas of high likelihood of landslide initiation is not increased.
- Road construction in areas with a moderate likelihood of landslide initiation should be avoided except for where alternative routes pose increased environmental risk and specific road construction measures have been taken to ensure the road does not increase the likelihood of landslide initiation.
- Road construction and forest harvesting upslope of areas with a high or moderate likelihood of landslide initiation includes a drainage plan that demonstrates that water moving downslope from the proposed development will not increase the likelihood of landslide initiation below. The drainage measures are effectively implemented and maintained.
- Road construction in areas of high or very high road/ditch erosion hazard and high or very high sediment delivery are avoided, except at stream crossings or where alternative routes pose increased environmental risk. Road construction in these areas include a detailed erosion prevention and sediment control plan. The erosion prevention and sediment control measures are effectively implemented and maintained, during and after management activities are completed.
- Forest harvesting in areas with a very high potential for snow avalanche initiation is avoided, and harvesting in areas with high potential is limited to partial cutting compatible with the prevention of snow avalanche initiation.

f) Detrimental Soil Disturbance

- Soil disturbance should be avoided in areas of high to very high surface erosion hazard and high or very high sediment delivery, and areas with high or very high surface soil displacement hazard. Where soil disturbance has occurred in these areas, immediate erosion control and revegetation measures should be undertaken (with emphasis on native species).
- Detrimental soil disturbance, including permanent road systems, should be minimised, with a target of less than 5% of the harvesting landbase (excluding permanent reserves). Unplanned detrimental soil disturbance is rehabilitated promptly.

g) Hydrologic Features and Aquatic Habitats

- Maps of streams, lakes and wetlands are completed on areas planned for forest harvesting or road construction. These maps show seepage areas with hygric and wetter moisture regimes, springs and other surface water features, as identified on terrain and soil or ecosystem maps. Channel assessments should be completed in any watersheds or sub-basins with significant levels of development or other indicators of potential channel sensitivity.
- Road locations are planned to minimise stream crossings and locations within riparian management areas. Landing construction does not occur within riparian management areas or other areas that will detrimentally impact other hydrologic features. Stream

crossings are planned and constructed to minimise disturbance to riparian areas, stream banks and stream channels.

- Roads, landings, backspars trails and ground skidding trails (including non-mechanical) are located on well drained sites and avoid seepage areas. A machine reserve zone should be established for all streams, lakes and wetlands. The machine reserve, and streams, lakes or wetlands themselves should not be entered by machinery, except where required for construction of crossings, and then only when authorised by local fisheries agencies and co-ordinated with affected water users.
- Drainage systems for roads and landings are planned and constructed to avoid diversion of surface waters. Locations and standards for construction of roads and landings minimise interception of subsurface water. Road widths are minimised.

h) Riparian Areas

- All community watersheds and other designated watersheds, streams, lakes and wetlands in forest operating areas are identified, classified and mapped on site maps according to the provincial FPC standards at a minimum.
- Riparian areas are protected and enhanced to maintain water quality and temperature, bank stability, clean spawning gravel and the integrity of stream structure (i.e. stream structure controls sediment flows and provides habitat for indigenous aquatic life) for all fish-bearing streams.
- Stream canopy closure is maintained to protect temperature sensitive streams.
- Where historically present, conifers are maintained along stream banks to provide the stream with shade and woody debris.
- Roads and ground disturbing equipment are excluded from riparian zones unless there are no practical alternatives for stream crossings and other legally approved operations.
- Wetland areas are protected and restored to maintain ecosystem functions as described in the FPC at a minimum. Such functions include providing wildlife habitat, moderating stream flow, controlling water quality and flooding, recharging groundwater and trapping sediment.
- Riparian habitat for anadromous and non-anadromous fish is restored in streams that have been severely degraded by past management activities. Management aimed at restoring the riparian zone is conducted with careful monitoring, taking an adaptive management approach.
- Where harvesting is planned for riparian management zones, specific objectives and stand management targets shall be established, as a minimum specifying retention targets for cover and stand structural attributes.
- Tree retention and cover targets in RMZs For S5 and S6 streams should be established that are sufficient, to meet requirements for channel stability, stream temperature regulation, LOD inputs and litter fall inputs. These areas should be subject to “best practices” such as: partial cutting; feathering; topping; retention of non-merchantable vegetation, saplings, polewood , windfirm veterans, or any combination of canopy classes; machine free zones; fall away/yard away; full suspension yarding; no disturbance of embedded coarse woody debris; etc. .]

i) Flow Regimes

- Management activities, including harvest and road construction, prevent surface erosion and landslides, and minimise increases in peak water flow.

j) Forest Damage

- Forest harvesting, road construction and other activities shall be planned and implemented in a manner that minimises damage to the remaining forest and other identified forest values.

6.6 Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organisation Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimise health and environmental risks.

- Synthetic pesticides, fungicides, and herbicides are not used except as part of an integrated pest management system that carefully identifies threats, analyses chemical and non-chemical alternatives, and balances the economic, environmental and social aspects of such use.
- If chemicals are used:
 - A complete inventory of chemicals is provided by the FMO and detailed inspections of storage areas or other facilities validate that inventory is complete and accurate;
 - Careful handling, application and storage procedures are followed; and,
 - Staff and contractors receive training in handling, application and storage procedures.
- Chemicals banned in Europe, U.S. and target country, or World Health Organization Type 1A or 1B and chlorinated hydrocarbon pesticides are not used. The only exception is when alternative control strategies do not address the threat that has been identified (e.g. feral or exotic species proliferation). In such cases a consensus must be reached and documented through discussions with government agencies, environmental, other stakeholder groups and the FSC, and extremely careful use procedures and training must be in place.
- A constant effort is made to reduce or eliminate the use of chemicals in the forest and wood processing.
- Employees are trained in the proper handling, storage and disposal of chemicals, apply chemicals according to manufacturer direction, and use protective equipment when appropriate.

6.7 Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.

- Chemical, container, liquid and solid waste is disposed of in an environmentally sound and legal manner, whether from forest operations or processing facilities.

6.8 Use of biological control agents shall be documented, minimised, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.

- a) Use of biological control agents is documented, minimised, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Genetically modified organisms are not used.

6.9 The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.

- a) Invasive exotic plants are not used on the management unit and steps are taken to manage invasive exotic species which may have become established. Exotic control agents may be introduced for extreme circumstances (i.e. as part of an integrated pest management strategy subject to local, state, and federal safeguards when other pest management approaches have failed) to control invasive exotic species that are well established.
- b) Use of exotic species is discouraged and carefully controlled, i.e. when used it is for well-justified and specific purposes (e.g. environmental benefit) and monitored for environmental impact.
- c) Species selected for reforestation are well suited to the site and management objectives.
- d) Emphasis is placed on planting, and/or applied research on, forest species native to the region.
- e) Where exotic species are planted, measures occur to prevent spontaneous regeneration outside plantation areas, unusual mortality, disease, insect outbreaks or other adverse environmental impacts.

6.10 Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion:

- a) **Entails a very limited portion of the forest management unit; and**
 - b) **Does not occur on high conservation value forest areas; and**
 - c) **Will enable clear, substantial, additional, secure, long-term conservation benefits across the forest management unit.**
- a) Primary, degraded primary and mature secondary forests are not cleared by current forest managers to create tree plantations.
 - b) Plantations do not replace ecologically classified wetlands.
 - c) If plantations are established in early successional forest areas or natural grasslands, clear verbal, written or visual guidelines are given to field staff for identifying acceptable areas.
 - d) The forest management operation takes aggressive measures to restore, conserve or manage natural forest or grasslands in surrounding or adjoining areas equal to or exceeding the area disturbed; and support for such actions exists amongst environmental stakeholders.

PRINCIPLE #7: MANAGEMENT PLANNING

A management plan - appropriate to the scale and intensity of the operations - shall be written, implemented, and kept up to date. The long term objectives of management, and the means of fulfilling them, are clearly stated.

7.1 The management plan and supporting documents shall provide:

- a) Management objectives.**
 - b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands.**
 - c) Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories.**
 - d) Rationale for rate of annual harvest and species selection.**
 - e) Provisions for monitoring of forest growth and dynamics.**
 - f) Environmental safeguards based on environmental assessments.**
 - g) Plans for the identification and protection of rare, threatened and endangered species.**
 - h) Maps describing the forest resource base including protected areas, planned management activities and land ownership.**
 - i) Description and justification of harvesting techniques and equipment to be used.**
- a) A multi-year forest management plan is written that includes:
- i. Management objectives.
 - ii. Property description including tenure, ancestral land claims, size, location within watershed, adjacent land use, topography, access and roads, land use history and ecosystem changes, and inventory of targeted harvest species.
 - iii. Description of management systems, including natural disturbance regimes, silvicultural prescriptions, resource inventories, and the desired future condition of the forest.
 - iv. Planned harvest levels.
 - v. A description of forest health (resiliency and vigour of forest resources as affected by natural or human caused agents) and a plan for forest restoration where needed.
 - vi. A description of socio-economic conditions in the surrounding communities and the social objectives of forest management.
 - vii. A system for fire management, including description of fire access roads and fuel breaks.
 - viii. Description of environmental resources including soil types, stream types, wetland types, wildlife habitat, cultural resources and measures for their protection.
 - ix. Maps at adequate scale (i.e. 1:5000 scale for harvest/site plan and 1:20,000 scale for management plan) depicting harvest areas, other management units, conservation and/or buffer zones, streams, lakes and wetlands, other critical areas, logging roads, log landings, and primary skid trails.
 - x. Description and justification of harvesting techniques and equipment to be used.

- b) For crown tenures, management objectives have been determined through public participation and First Nations consultation.
- c) Forest management plans are consistent with higher level plans and are technically sound and sufficiently detailed, given the size, complexity and intensity of forest operations.
- d) Areas of ecological limits are mapped, described, and protected. These include very steep or unstable slopes (equal to or greater than 60% or otherwise identified by soil type, watershed analyses, or other appropriate methodology), riparian ecosystems, wetland areas, snow dominated forests, and other sensitive areas.
- e) Rationale behind silvicultural prescriptions is documented and based on site history, owners objectives, forest condition, ecology, management needs, and other relevant factors.
- f) Maps and work plans are produced at adequate scale and provide operational guidance for management activities and facilitate onsite monitoring.
- g) Technical specifications for road design and conservation structures have been written.
- h) Where there are plans for harvesting non-timber forest products, they are inventoried and their management is explicitly incorporated into the planning process.
- i) The management plan is periodically revised to incorporate the results of monitoring and/or new information, as well as to respond to changing environmental, social and economic circumstances.
- j) Forest managers make publicly available a summary of the primary elements of the management plan.
- k) Management decisions incorporate conditions on neighbouring properties that influence ecosystem functions at the landscape level. This involves activities such as co-ordinating restoration efforts and providing continuous wildlife corridors.

7.2 The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.

- a) A technically sound and financially realistic timeframe exists for revision/adjustment of the management plan.
- b) Management plan (and/or annual operating plan) revision or adjustments occur on timely and consistent basis.
- c) Management plan revisions incorporate changing silvicultural, environmental, social and economic conditions.

7.3 Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plan.

- a) The forest management plan is implemented in the field as written. The objectives stated in the management plan are being met.
- b) Forest workers have received adequate training and supervision to ensure proper implementation of the management plan. For large operations, a formal training plan should exist.

7.4 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.

- a) The forest management operation is willing to make available a public certification summary of forest management operation, including a summary of the management plan, as per SmartWood and FSC requirements.

PRINCIPLE #8: MONITORING AND ASSESSMENT

Monitoring shall be conducted -- appropriate to the scale and intensity of forest management -- to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

8.1 The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations as well as the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.

- a) Monitoring reports provide sufficient timely, accurate and technically sound information, given the size and complexity of the operation.
- b) Monitoring reports indicate how management prescriptions should be changed, based on new ecological, silvicultural, or market information.
- c) Monitoring reports facilitate efficient and effective auditing and certification by third parties.

8.2 Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators:

- a) **Yield of all forest products harvested.**
 - b) **Growth rates, regeneration and condition of the forest.**
 - c) **Composition and observed changes in the flora and fauna.**
 - d) **Environmental and social impacts of harvesting and other operations.**
 - e) **Costs, productivity, and efficiency of forest management.**
- a) A monitoring program is in place to update resource data over time (e.g., timber, wildlife and plant inventory data, social impacts). Frequency and intensity of monitoring is determined by the scale and intensity of forest management operations and the fragility and complexity of the affected resources. Data is collected for the following indicators:
 - i. Yield of forest products harvested.
 - ii. Growth rates, regeneration, and forest condition.
 - iii. General composition and observed changes of forest vegetation.
 - iv. Forest structure (including snags and downed wood).
 - v. Condition of riparian areas and soils.
 - vi. Populations of threatened or endangered wildlife species.
 - vii. Non timber forest products harvested from the forest.
 - viii. Costs and benefits of forest management.
 - ix. Social impacts of forest management.
 - b) Monitoring plan is technically sound and identifies/describes observed changes in conditions in terms of:

- Silviculture (growth rates, regeneration and forest condition, typically as part of a suitable continuous forest inventory system);
- Environment (environmental changes affecting flora, fauna, soil and water resources); and,
- Socio-economic aspects (forest management costs, yields of all products, and changes in community and worker relations or conditions).

8.3 Documentation shall be provided by the forest manager to enable monitoring and certifying organisations to trace each forest product from its origin, a process known as the "chain of custody."

- a) Volume and source data is available for logs that leave the forest (i.e. scaled, inventoried, measured).
- b) Certified forest products are clearly distinguished from non-certified products at all stages of processing and distribution up to the point of sale to a third party. Identification may include marks or labels, separate documented storage, or accompanying invoices or bills of lading.
- c) Invoices, bills of lading, certificates of origin (e.g. GATT Form A) and other applicable documentation related to shipping or transport of forest products are kept in a central location and/or easily available for inspection.
- d) All public representation of certified forest products is consistent with SmartWood and FSC policy.

8.4 The results of monitoring shall be incorporated into the implementation and revision of the management plan.

- a) Review of management plan (either plan or appendices) demonstrates that monitoring results are incorporated into planning on a regular basis.
- b) There is evidence that information from monitoring is used to improve management.

8.5 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in Criterion 8.2.

- a) Results of monitoring are incorporated into public summaries and other documents (also See Section 1.3).

PRINCIPLE #9: MAINTENANCE OF HIGH CONSERVATION VALUE FORESTS

Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

9.1 Assessment to determine the presence of attributes consistent with High Conservation Value Forests will be completed, appropriate to the scale and intensity of forest management.

- a) For large operations, the forest management operation has conducted an internal assessment to determine whether they are managing HCVF. If HCVF values are present, the operation has an explicit written strategy for HCVF conservation and a

process of stakeholder consultation that contributes towards maintaining or restoring such values.

- b) For small and medium sized operations, consultations have occurred with environmental stakeholders, government or other scientific authorities to determine whether forest areas that should be considered HC VF. This may occur during actual certification assessment. If HC VF values are present, the operation takes all reasonable steps to protect these values.
- c) Appropriate to the scale of the forest operation, management plans include information on the following:
 - gap analysis to determine the adequacy of protected areas and other forms of conservation-based low risk management;
 - presence or absence of red, yellow or blue-listed species, or habitats that may assist with their recovery
 - an assessment of the presence of roadless/undeveloped/wilderness areas sufficiently large to contain all or major portions of individual ranges of most terrestrial vertebrates naturally occurring in the area, and/or large enough to maintain fully functioning ecosystems on a landscape scale, that are within, or that include the management unit, and
 - consultation with local indigenous peoples, other local communities, scientists, conservation groups and/or appropriate government agencies to determine the significance of the forest management unit or portions thereof, with respect to:
 - cultural and/or spiritual values;
 - subsistence or other critical community-based forest uses;
 - conservation priorities
 - water issues (e.g. human consumption, irrigation, flooding, channel stability, etc.); and
 - other critical local or downstream regional issues that may be significantly impacted by management practices on the management unit.

9.2 The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.

- a) Stakeholder consultations indicate that the forest management operation consistently considers and protects HC VF values.
- b) For large operations, the stakeholder consultation strategy must be in writing.
- c) For small and medium sized operations, see Criterion 9.1.

9.3 The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.

- a) Where HC V forests are identified, the management planning process and the certification process ensure adequate notification and opportunities for participation and/or review by:

- all parties directly affected by any changes to the valued resources,
 - appropriate technical authorities with specialities in the valued resources, and/or
 - concerned local community groups.
- b) The management plan includes specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes. These measures are included in the publicly available management plan summary.

9.4 Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.

- a) A system for monitoring the maintenance of HCVF values is incorporated into the forest management operation's planning, monitoring and reporting procedures.
- b) Annual HCVF monitoring occurs as written in plans and in a technically sound and timely fashion.

PRINCIPLE # 10: PLANTATIONS

Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

10.1 The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.

- a) Management objectives should be consistent with landscape level objectives for the management unit and the relevant Landscape Unit within which it is located.
- b) Management objectives should complement objectives for natural forest conservation and restoration, and objectives for other non-timber forest uses.
- c) Objectives of tree planting are explicit in the management plan, with clear statements regarding the relationship between tree planting and the silvicultural, socio-economic and environmental (i.e. forest conservation and restoration) realities in the region.
- d) Balance of management objectives is demonstrated in actual field implementation.

10.2 The design and layout of plantations should promote the protection, restoration and conservation of natural forests, and not increase pressures on natural forests. Wildlife corridors, streamside zones and a mosaic of stands of different ages and rotation periods, shall be used in the layout of the plantation, consistent with the scale of the operation. The scale and layout of plantation blocks shall be consistent with the patterns of forest stands found within the natural landscape.

- a) Reforestation supplements natural regeneration, establishes or protects corridors and buffer zones, fills gaps, and contributes to natural forest restoration and/or conservation.
- b) Wherever possible, plantation management mimics the scale and intensity of natural patterns of disturbance in planting and harvest regimes.

10.3 Diversity in the composition of plantations is preferred, so as to enhance economic, ecological and social stability. Such diversity may include the size and spatial distribution of management units within the landscape, number and genetic composition of species, age classes and structures.

- a) Plantation management enhances landscape diversity by varying block size and configuration, species, genetic diversity, age class and structure.
- b) Emphasis is placed on planting and/or applied research on forest species native to the region.
- c) Also see Criteria 6.4 and 6.10.

10.4 The selection of species for planting shall be based on their overall suitability for the site and their appropriateness to the management objectives. In order to enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems. Exotic species, which shall be used only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.

- a) Species selected for reforestation are technically sound choices, given the site and management objectives.
- b) Where exotic or invasive species are planted, measures occur to prevent spontaneous regeneration outside plantation areas, unusual mortality, disease, insect outbreaks or other adverse environmental impacts.
- c) Also see Criterion 10.3.

10.5 A proportion of the overall forest management area, appropriate to the scale of the plantation and to be determined in regional standards, shall be managed so as to restore the site to a natural forest cover.

- a) Representative samples of existing natural ecosystems are being protected or restored in their natural state, based on the identification of key biological areas and/or consultation with environmental stakeholders, local government and scientific authorities (a 10% target figure is encouraged by not mandatory). Also see Criterion 6.4.
- b) Conservation zones are demarcated on maps and in the field.
- c) Forest operations carefully controlled in conservation zones.

10.6 Measures shall be taken to maintain or improve soil structure, fertility, and biological activity. The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long-term soil degradation or adverse impacts on water quality, quantity or substantial deviation from stream course drainage patterns.

- a) Explicit measures are taken to assess the soil in terms of structure, fertility and biological activity.
- b) Explicit measures are taken to maintain or enhance the soil in terms of structure, fertility and biological activity.

- c) Soil erosion control is implemented, including no tractor plowing on areas over 5% slope, planting or site preparation measures are done on contour, and specifications on buffer zones are strictly followed.
- d) No road fill or waste material (e.g. rocks, brush) from site preparation or other activities are in stream courses.

10.7 Measures shall be taken to prevent and minimise outbreaks of pests, diseases, fire and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilisers. Plantation management should make every effort to move away from chemical pesticides and fertilisers, including their use in nurseries. The use of chemicals is also covered in Criteria 6.6 and 6.7.

- a) A plan exists for forest protection against encroachment, uncontrolled fires, etc.
- b) An integrated pest management plan is in place that identifies pests and alternative methods of addressing threats, and a systematic procedure is in place that reduces the threats whilst minimising financial and environmental costs.

10.8 Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessment of potential on-site and off-site ecological and social impacts, (e.g. natural regeneration, effects on water resources and soil fertility, and impacts on local welfare and social well-being), in addition to those elements addressed in principles 8, 6 and 4. No species should be planted on a large scale until local trials and/or experience have shown that they are ecologically well-adapted to the site, are not invasive, and do not have significant negative ecological impacts on other ecosystems. Special attention will be paid to social issues of land acquisition for plantations, especially the protection of local rights of ownership, use or access.

- a) Monitoring incorporates ecological and social impacts of plantation activities, where significant (according to assessor judgement and stakeholder observations).
- b) For exotic or invasive species issues, see Criterion 10.4.
- c) The purchase of lands, or land leases, for plantation establishment does not adversely impact the community and/or resource use by local people.

10.9 Plantations established in areas converted from natural forests after November 1994 normally shall not qualify for certification. Certification may be allowed in circumstances where sufficient evidence is submitted to the certification body that the manager/owner is not responsible directly or indirectly of such conversion.

- a) Primary, degraded primary and mature secondary forests are not cleared by current forest managers to create tree plantations.

ⁱ <http://www.smartwood.org> : *Interim SmartWood Guidelines for British Columbia for the Assessment of Natural Forest Management*. April, 2000.