



Kalum Sustainable Resource Management Plan

April 2006



**Integrated Land
Management
Bureau**

Foreword

The Kalum Sustainable Resource Management Plan (SRMP) will guide land use and resource management within the plan area to help provide long-term sustainability of natural resources, jobs, and communities in the Kalum plan area. This plan implements objectives and strategies of the Kalum Land and Resource Management Plan (LRMP) that relate to forestry development and the *Forest and Range Practices Act (FRPA)*.

In keeping with the *Governance Principles for Sustainability*¹, the plan provides the following:

- *Certainty*, by providing clear management direction to resource users;
- *Efficiency* in the allocation, development and use of natural resources, by clarifying the timing and nature of activities that can occur in the area;
- *Flexibility*, by presenting results-based standards that will allow resource users to use their innovation and professional skills in developing implementation strategies;
- *Transparency*, by creating the plan in a spirit of openness of information and in consultation with First Nations, stakeholders, and the general public; and
- *Accountability*, by setting measurable objectives that can be tracked over time.

The Kalum SRMP is consistent with the *Sustainable Resource Management Planning, Standards for Creating, Implementing and Administering Sustainable Resource Management Plans*, March 2004. The plan was developed in collaboration with the Ministry of Forests and Range (MOFR) and the Ministry of Environment (MOE), and in consultation with plan area stakeholders, First Nations, and the public.

The plan is intended to maintain a balance of social, cultural, economic and environmental values consistent with the Kalum LRMP.

¹ *Governance Principles for Sustainability – Application Guideline*. March 2004, Ministry of Sustainable Resource Management (now called Integrated Land Management Bureau).



Order establishing Land Use Objectives in the Kalum SRMP Area

- I. Pursuant to Section 93.4 (1) of the *Land Act*, objectives listed in the Kalum Sustainable Resource Management Plan (SRMP) are established as Land Use Objectives. Any footnote referenced in the objective is an integral part of the objective. Maps 2 through 9 of the Kalum SRMP provide the geographic location to which the land use objectives apply.
- II. Pursuant to Section 8 (2) (b) of the *Forest and Range Practices Act* the holder of a forest stewardship plan (FSP) must propose and submit for approval amendment to FSP within nine (9) months of the effective date of this order.
- III. Pursuant to Section 16 (2) of the *Forest and Range Practices Act* the objectives established by this order apply despite that subsection.
- IV. Old growth objectives established under the “order establishing provincial non-spatial old growth objectives”¹ will, on the effective date of this order, cease to have an effect for the area in this new order.
- V. The order takes effect on the date of notice.

James McGregor
Regional Executive Director
Ministry of Agriculture and Lands
Integrated Land Management Bureau

April 28, 2006
Date

¹ “Order establishing provincial non-spatial old growth objectives” came into effect on June 30, 2004.

Order Establishing Community Watersheds

- I. Pursuant to Section 8(1) of the *Forest and Range Practices Act Government Actions Regulation*, Rosswood (Clear Creek), Usk (Skovens Brook), Kleanza (Singlehurst Creek), Gossen (Gossen Creek), and Hatchery Creek drainages, as indicated on Map 10¹ (attached) of the Kalum Sustainable Resource Management Plan (SRMP), are established as community watersheds.
- II. The Order applies to a minor tenure entered into before the Order.
- III. The Order takes effect on the date a notice of the Order is posted on the Ministry of Agriculture and Lands website.



Honourable Pat Bell
Minister of Agriculture and Lands

¹ The drainages being established as community watersheds in this Order are referred to as newly established community watersheds on Map 10 of the Kalum SRMP.

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List of Acronyms

AAC	Allowable annual cut
AST	Approval Support Team
BEC	Biogeoclimatic ecosystem classification
CDC	Conservation Data Centre
CWH	Coastal Western Hemlock zone
DFO	Department of Fisheries and Oceans (now Fisheries and Oceans Canada)
ECA	Equivalent clearcut area
ESSF	Engelmann Spruce Sub-alpine Fir zone
FDP	Forest Development Plan
FRPA	Forest and Range Practices Act
FPPR	Forest Planning and Practices Regulation
FSP	Forest Stewardship Plan
GBPU	Grizzly bear population unit
GIS	Geographic information system
ICH	Interior Cedar Hemlock zone
ILMB	Integrated Land Management Bureau ²
IPT	Interagency Planning Team
IWMS	Identified wildlife management strategy
LU	Landscape unit
LRMP	Land and resource management plan
MAL	Ministry of Agriculture and Lands ³
MELP	Ministry of Environment, Lands and Parks ⁴
MH	Mountain Hemlock zone
MOE	Ministry of Environment ⁴
MOF	Ministry of Forests ⁵
MOFR	Ministry of Forests and Range
MSRM	Ministry of Sustainable Resource Management ⁶
ND	Natural disturbance
NDT	Natural disturbance type
OGMA	Old Growth Management Area
PEM	Predictive ecosystem mapping
PIC	Plan Implementation Committee
SRMZ	Special resource management zone
SRMP	Sustainable Resource Management Plan
TFL	Tree Farm Licence
THLB	Timber harvesting land base
TSA	Timber supply area

² Prior to 2005 it was called the Ministry of Sustainable Resource Management (MSRM).

³ In 2005 the Ministry of Agriculture, Food, and Fisheries was renamed the Ministry of Agriculture and Lands.

⁴ In June of 2001 the Ministry of Environment, Lands and Parks was replaced by the Ministry of Water, Land and Air Protection and the Ministry of Sustainable Resource Management. In 2005 it was renamed the Ministry of Environment.

⁵ In 2005 the ministry name has changed to the Ministry of Forests and Range.

⁶ In 2005 the Ministry was eliminated and the planning function has moved to the Ministry of Agriculture and Lands, Integrated Land Management Bureau.

TSR	Timber supply review
UWR	Ungulate Winter Range
VL I	Visual Landscape Inventory
VQO	Visual Quality Objective
WHA	Wildlife Habitat Area
WLAP	Ministry of Water, Land, and Air Protection ⁷
WTP	Wildlife tree patch
WTR	Wildlife tree retention

Glossary

Adaptive management	An approach to managing uncertainty that emphasizes learning by trial. Management policies, practices, and plans are adopted based on best available information, and monitored to assess effects. Adoptions of policies, practices, and plans are made periodically, on the basis of research and monitoring information to incorporate “lessons learned”.
Allowable annual cut (AAC)	The rate of timber harvest permitted each year from a specified area of land, usually expressed as cubic metres of wood per year. The chief forester sets AACs for timber supply areas (TSA) and tree farm licences (TFLs) in accordance with Section 7 and/or Section 170 of the <i>Forest Act</i> . The district manager sets AACs for woodlot licences.
Biodiversity	The diversity of plants, animals and other living organisms in all their forms and levels of organization, including the diversity of genes, species, and ecosystems, as well as the functional processes that link them.
Biogeoclimatic (BEC) zones	A system of ecological classification based primarily on climate, soils, and vegetation that divide the province into large geographic areas with broadly homogeneous climate and similar dominant tree species. Zones are further broken down into subzones (based on characteristic plant communities occurring on zonal sites) and variants (based on climatic variation within a subzone).

⁷ In 2005 it was renamed to the Ministry of Environment.

Blue-listed species	Sensitive or vulnerable species as identified by the Ministry of Environment. Blue-listed species are considered to be vulnerable and “at risk” but not yet endangered or threatened. Populations of these species may not be declining but their habitat or other requirements are such that they are sensitive to disturbance. The blue list also includes species that are generally suspected of being vulnerable, but for which information is too limited to allow designation in another category.
Community watershed	A drainage basin that is managed to provide a domestic water supply to a particular community of users.
Connectivity	A qualitative term describing the degree to which late-successional ecosystems are linked to one another to form an interconnected network. The degree of interconnectedness and the characteristics of the linkages vary in natural landscapes based on topography and natural disturbance regime. Breaking of these linkages may result in fragmentation. Connectivity also refers to degree to which the condition of a landscape facilitates or impedes wildlife movement.
Conserve	Keep in a safe or sound state; to avoid wasteful or destructive use.
Consistency	Where resource objectives do not materially conflict with other objectives that have been established (either in policy-based land use plans, or legally by Order).
Equivalent Clearcut Area (ECA)	The area of a cut block weighted as the area of a clear-cut, unregenerated block to estimate the equivalent effect on snow hydrology. For example, a 10 ha clear-cut, unregenerated block has an ECA of 10 ha; if a fully stocked stand has regenerated to a height of 6 metres, the block now has an ECA of 5 ha. If, instead of being clear-cut, the block was selection logged with 30 per cent volume removal, the ECA is estimated to be 3 ha.
Forest Stewardship Plan (FSP)	An operational plan that details 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.

Forested land base	For the purpose of biodiversity analysis, the total forested land base was determined by using the direction in Chapter 2 of the Landscape Unit Planning Guide (1999). It includes crown owned forested land (excluding woodlots). This includes TFL land and any private land associated with TFL. The forested portions of provincial parks, protected areas, and ecological reserves were also included.
Goal	Broad statement that describes a general, desirable future end-state with respect to a particular subject (environmental, social or economic).
Legal objective	A land or resource management objective that has been established by Cabinet or an authorized minister (or minister's delegate) for the purpose of guiding subsequent resource management planning and decision making. Making land use plan objectives "legal" (by Cabinet or ministerial Order) is the primary means in British Columbia of ensuring that the plan objectives are implemented consistently over time.
Maintain	Preserve from failure or decline; to cause to continue.
Mitigation	Resource management practices targeted at improving the compatibility between resource uses. Mitigation strategies include efforts to avoid, minimize, rectify, reduce or compensate for the impacts of one resource use on another.
Monitoring	Ongoing assessment of how well the management objectives of the SRMP are being implemented. Effectiveness monitoring will assess how well the management objectives are meeting the goals or intent of the SRMP.
Natural Disturbance Type (NDT1/NDT2)	Forest cover types resulting from a particular natural disturbance regime. Natural disturbance type 1 includes ecosystems with rare stand-initiating events. Natural disturbance type 2 includes ecosystems with infrequent stand-initiating events.
Objective	A concise, measurable statement of a desired future condition for a resource or resource use that is attainable through management action.
Old Growth Management Areas (OGMAs)	Areas that contain or are managed to replace specific structural old-growth attributes and that are mapped out and treated as special management areas (no harvest areas).

Operational plans	Plans that specify the detailed method, schedules, and responsibilities for developing and managing resources. Operational plans are typically developed by resource tenure holders and are approved by the agency with regulatory responsibility for the resource sector. Operational plans for forest management in British Columbia include, but are not limited to, “forest stewardship plans” and “range stewardship plans”.
Planning hierarchy	A continuum of interdependent planning levels ranging from broad land and resource management principals and policies, to strategic level land and resource use plans, to sustainable resource management plans, to operational-level planning.
Policy based plans	Land use plans that are formally approved by government, but are not implemented by legal means.
Preserve	Keep safe from injury, harm or distraction; to keep alive, intact or free from decay; synonym for protect.
Protect	Keep safe, defend or guard.
Range of natural variability (RONV)	In the absence of human development activities, the range within which fluctuations in the environment occur, for example, water temperature or flow cycles as influenced by time of year or rainfall.
Red-listed species	Taxa being considered for or already designated Extirpated, Endangered or Threatened. Extirpated taxa no longer exist in the wild in British Columbia, but occur elsewhere. Endangered taxa are facing imminent extirpation or extinction. Threatened taxa are likely to become endangered if limiting factors are not reversed.
Results-based	A management strategy that focuses on on-the-ground results (vs. specific methods or strategies), providing flexibility in meeting the clear environmental standards set by the <i>Forest and Range Practices Act</i> .
Scenic area	Any visually sensitive area of scenic landscape identified through a visual landscape inventory or planning process carried out or approved by a district manager.

Seral (forest or stage)	Sequential stages in the development of plant communities (e.g. from young stage (early seral) to old stage (old seral)) that successively occupy a site and replace each other over time.
Strategy	A means of achieving resource objective.
Sustainable	A state or process that can be maintained indefinitely. The principles of sustainability integrate three closely interlinked elements – the environment, the economy and the social system – into a system that can be maintained in a healthy state indefinitely.
Sustainable Resource Management Plan (SRMP)	A landscape-level plan that identifies spatially specific and measurable land/resource objectives for the planning area, and strategies for achieving the objectives. SRMP Planning integrates and replaces the province’s former array of landscape and local planning processes under one umbrella (including local resource planning, coastal planning, pre-tenure planning, and recreation management planning).
Timber supply area (TSA)	An integrated resource management unit established in accordance with Section 6 of the <i>Forest Act</i> . TSAs were originally defined by an established pattern of wood flow from management units to the primary timber-using industries. They are the primary unit for allowable annual cut determinations.
Visual Landscape Inventory (VLI)	An inventory that identifies visible areas that have known or potential scenic value as seen from selected viewpoints, such as towns, parks, recreation sites and highway and river corridors. This province-wide inventory undertaken by the Ministry of Forests and Range is designed to provide information on visual quality for planning including strategic planning (e.g. LRMPs) and operational planning (forest development plans). One of the components of a VLI is Recommended Visual Quality Objectives (VQOs).
Visual Quality Objectives (VQO)	A resource management objective established by the district manager or contained in a higher level plan that reflects the desired level of visual quality based on the physical characteristics and social concern for the area. Five categories of VQO are commonly used: preservation; retention; partial retention; modification and, maximum modification.
Watershed	An area of land that collects and discharges water into a single main stream through a series of smaller tributaries.

1.0 Planning Context

1.1 Introduction

The Kalum Land and Resource Management Plan (LRMP) recommendations were finalized and approved by Cabinet in March of 2001. In June of 2001 a new government was appointed and the Ministry of Sustainable Resource Management (MSRM) was formed as the primary agency responsible for land-use planning. In May of 2002, the Minister of MSRM gave the final approval for the LRMP and conveyed it to all participating ministries for implementation.

Upon the completion of the Kalum LRMP recommendations, the Kalum LRMP Approval Support Team (AST) and Interagency Planning Team (IPT) identified objectives and strategies for inclusion in a higher level plan; however, due to changes in government, the higher level plan was never finalized or approved. For the most part, the LRMP is not legally binding and it remains as government policy.

Since the completion of the Kalum LRMP, the *Forest and Range Practices Act* (FRPA, 2003) has been enacted to govern forestry activities. Under the Forest Practices Code (FPC), the District Manager has discretionary power to identify LRMP zones, and objectives and strategies as ‘known information’. Licensees are required to consider this ‘known information’ in their operational plans even though the information itself had not been designated as legal objectives. Under FRPA, licensees are required to only consider objectives that are legally established. The FPC still applies to any activity carried out under a forest development plan (FDP), while FRPA will apply to those activities carried out under a forest stewardship plan (FSP).

The Skeena Region Inter-agency Management Committee identified the Kalum LRMP area as a high priority for the establishing legal objectives. The Kalum SRMP is a landscape level plan that allows government to implement some of the Kalum LRMP objectives and strategies by making them legally binding. The Kalum SRMP maintains the balance of social, cultural, economic and environmental values as determined by the LRMP. The objectives in the SRMP are established, through an Order, as legally binding land use objectives. Any footnote that is referenced in the objective is considered to be a part of the objective and will be legally binding as well.

Mineral exploration and mining will be addressed through use of the “two-zone model”. This model ensures that mining applications are considered, subject to all applicable laws, anywhere but in parks, ecological reserves, protected heritage property, or an area under the *Environment and Land Use Act*. This plan is consistent with the Kalum LRMP objectives regarding development of mineral and energy resources.

The Kalum SRMP recognizes that the Nisga’a Final Agreement establishes a number of joint Nisga’a/Provincial/Federal committees to facilitate the planning of certain activities in areas including that part of the Kalum SRMP that is within the southern boundary of the Nass Area and Nass Wildlife Area. Such committees include:

- *Joint Fisheries Management Committee, mandated to facilitate cooperative planning and conduct of Nisga'a fisheries and enhancement initiatives in the Nass Area, and*
- *Nass Wildlife Committee, mandated to facilitate wildlife management within the Nass Area.*

1.1.1 Plan Goals

The goal of the Kalum SRMP is to provide a landscape level plan that allows the government to implement the Kalum LRMP objectives and strategies as they pertain to forestry activities. This plan provides clear direction, using the best available knowledge, data, and analysis, to ensure the long-term sustainability of natural resources and the environment. The plan will create accountability by setting measurable standards for the management of resources. Additional goals are to:

- establish legal land use objectives to support the implementation of the FRPA;
- provide certainty to forest licensees in the development of FSP as required under FRPA;
- spatially locate the direction or values given in the Kalum LRMP, and to identify measurable targets related to the geographic area.

1.1.2 SRMP Process Overview

The interagency team responsible for the completion of the SRMP included representatives from ILMB, MOFR and MOE. The following key phases in the planning process guided development of the SRMP:

Phase 1: Process Initiation: Assembly of planning team, development and approval of project Terms of Reference and completion of a detailed work plan.

Phase 2: Information Gathering: Complete review of relevant information and compile all existing inventories.

Phase 3: Plan Development: Draft resource objectives for biodiversity, wildlife, visual quality, and water quality and develop implementation, monitoring and reporting methodology.

Phase 4: First Nations and Licensees Consultation: Present or provide the draft plan to the licensees and affected First Nations.

Phase 5: Public Review: Present the revised draft plan to the Kalum LRMP Plan Implementation Committee (PIC) and incorporate comments as appropriate. Enter into a 60 day public review period and incorporate comments as appropriate.

Phase 6: Plan Approval: Review and approval of the final draft plan by the Regional Director, and filing the Order.

Phase 7: Data Warehousing: Data sets used for plan development and analysis will be warehoused.

1.2 Plan Area

The Kalum SRMP area (Map 1) encompasses Crown land within the Kalum LRMP area with the exclusion of the Kowesas Landscape Unit (LU), which is covered by the Kowesas SRMP, and all parks/protected areas.

1.3 Plan Scope

1.3.1 Direction from Other Plans

Plan direction is complimentary to, and consistent with, the Kalum LRMP direction. The Kalum LRMP was developed through a public process involving people with a range of interests in the Kalum area: First Nations, foresters, miners, recreationists, tourism operators, environmentalists, and interested members of the local communities. LRMP objectives and strategies, which have not been given the weight of government legislation, still reflect social choices that have been approved by government for consideration in plans – these continue as government policy. Accountability for implementation of these “non-legal” components rests with resource professionals and their professional accounting bodies.

The LRMP directed that an ecosystem-based land management approach be piloted in key undeveloped watersheds (Jesse, Emsley, Wathlsto, Hugh, Brim, Wahoo, and Owyacumish). Old growth retention targets for these undeveloped watersheds are consistent with the approach that is applied in the Kowesas SRMP⁸.

1.3.2 Scope of the Plan

The Kalum SRMP was created to safeguard the public interests in the conservation and management of values and resources in the plan area, and to direct management of forestry activities occurring in the plan area. The values and issues addressed in the Kalum SRMP are identified by the Kalum LRMP.

The Kalum SRMP and associated legal Orders:

- establish Rosswood (Clear Creek), Usk (Skovens Brook), Kleanza (Singlehurst Creek), Gossen Creek and Hatchery Creek as Community Watersheds;
- establish land use objectives for maintaining water quality in the newly established Community Watersheds;
- establish land use objectives for biodiversity values including but not limited to: seral stage distribution, retention of old growth forest (through spatial Old Growth Management Areas (OGMAs)), stand structure (through wildlife tree retention), species composition, connectivity, and patch size distribution; and

⁸ The Kowesas SRMP was in draft form and not yet approved by government at the time this SRMP was completed.

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- establish land use objectives for grizzly bear to address the LRMP recommendations that will not be addressed by grizzly bear WHAs (forage supply).
- Establish land use objectives for important areas through area specific management

Management of wildlife values through the *Forest and Range Practices Act* and the *Government Actions Regulation* are the responsibility of MOE. General Wildlife Measures (GWMs) and associated Ungulate Winter Range (UWR) (mountain goat) or Wildlife Habitat Area (WHA) (tailed frog) designations are included for reference purposes in this plan (Appendix A). Future designations and GWMs will be added as they become available.

Scenic areas and visual quality objectives are established by the District Manager of the Ministry of Forests and Range either under the FPC or brought into force under the FRPA *Government Actions Regulation* (GAR) and *Forest Planning and Practices Regulation* (FPPR). These are included for reference purposes in this plan (Appendix B).

The plan may be amended from time to time to either address additional resource values or amend the existing objectives as appropriate. The amendment process is defined in a provincial policy “Keeping Land Use Plans Current, Policy on Reviewing & Amending Strategic Land Use Plans”.

2.0 Biodiversity

2.1 Management Direction for Biodiversity

Plan Goal for Biodiversity

- To maintain the natural biodiversity of the Kalum SRMP area, including the full range of functional and healthy ecosystems, over time and at all scales.

Biodiversity is addressed using two types of management: coarse filter and fine filter. “Coarse filter management” occurs throughout the land base and assumes that the habitat needs of most species will be addressed by managing forest in a way that reflects the natural disturbance patterns for the area. “Fine filter management” addresses the specialized habitat requirements of species whose needs are not met by the “broad-brush” of coarse filter management. The management direction for biodiversity is consistent with the principals of an ecosystem management approach.

The Kalum SRMP addresses the following elements of coarse filter biodiversity:

- Seral stage distribution;
- Retention of old growth forest through establishment of Old Growth Management Areas (OGMAs);
- Stand structure through wildlife tree retention;
- Species composition;
- Temporal and spatial distribution of cut blocks; and
- Connectivity.

Fine filter management for tailed frog and mountain goat is addressed by the Ministry of Environment through establishment of ungulate winter ranges (UWRs) and wildlife habitat areas (WHAs). For reference purposes these are included as Appendix A.

In addition the SRMP addresses rare ecosystems on Skeena River islands and area specific LRMP direction.

2.1.1 Seral Stage Distribution

The goal of the seral stage distribution objectives is to maintain the range of forest stand ages that were historically found within the various biogeoclimatic subzones and variants (Map 2) within each landscape unit (Map 3) in the Kalum SRMP area.

Objective 1: Maintain a range of forest seral stages by biogeoclimatic variant, within each landscape unit, consistent with Tables 1, 2, and 3.

Table 1. Seral stage definition by biogeoclimatic unit (based on the *Biodiversity Guidebook* 1995).

BEC Unit	NDT	Forest Stand Age (years)		
		Early	Mature	Old
CWHvh2, vm, vm1, vm2	1	<40	>80	>250
ESSFwv, MH mm1, mm2	1	<40	>120	>250
CWHws1, ws2	2	<40	>80	>250
ESSFmk	2	<40	>120	>250
ICHmc1, mc2	2	<40	>100	>250

Table 2. Target seral stage distribution (% of forested land base in each BEC unit).

Landscape Unit	BEO	BEC Variant	Seral Stage Distribution (% of forested land base)		
			Early	Mature + old	Old
Nass River (K'alii Aksim Lisims) Kalum	H	ICHmc1/mc2	<27	>46	>13
Skeena River Kalum	H	CWHvm CWHws1/ws2 ICHmc2 MHmm1/mm2	<23 <27 <27 <17	>54 >51 >46 >54	>19 >13 >13 >28
Beaver	I	CWHws1/ws2 MHmm2	<36 <22	>34 >36	>9 >19
Clore	I	CWHws1/ws2 ESSFmk ESSFwv, MHmm2	<36 <36 <22	>34 >28 >36	>9 >9 >19
Exstew	I	CWHws1/ws2 MHmm2	<36 <22	>34 >36	>9 >19
Hawkesbury Island West	I	CWHvh2 MHwh1	<30 <22	>36 >36	>13 >19
Hirsch ⁹	I	CWHvm CWHws1/ws2, MHmm1	<30 <36 <22	>36 >34 >36	>13 >9 >19
Ishkheenickh (Ksi Hlginx)	I	CWHvm, CWHws1/ws2 MHmm1	<30 <36 <22	>36 >34 >36	>13 >9 >19
Kalum	I	CWHws1/ws2 MHmm2	<36 <22	>34 >36	>9 >19
Kasiks	I	CWHvm MHmm1	<30 <22	>36 >36	>13 >19
Kemano ¹⁰	I	CWHvm/vm1/vm2	<30	>36	>13

⁹ The old seral targets do not apply to the Wathlsto watershed of this landscape unit (see Map 3). Old seral targets for this watershed are specified in Table 5.

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Landscape Unit	BEO	BEC Variant	Seral Stage Distribution (% of forested land base)		
			Early	Mature + old	Old
		CWHws2	<36	>34	>9
		ESSFmk	<36	>28	>9
		MHmm1/mm2	<22	>36	>19
Lakelse¹¹	I	CWHws1/ws2	<36	>34	>9
		MHmm2	<22	>36	>19
Tseax (Ksi Sii Aks)	I	CWHws1/ws2	<36	>34	>9
		ICHmc1/mc2	<36	>31	>9
		MHmm2	<22	>36	>19
Wedene	I	CWHvh2/vm	<30	>36	>13
		CWHws1/ws2	<36	>34	>9
		MHmm1/mm2	<22	>36	>19
Dala	L	CWHvm	n/a	>18	>13
		CWHws2	n/a	>17	>9
		MHmm1	n/a	>19	>19
Dasque	L	CWHws1/ws2	n/a	>17	>9
		MHmm2	n/a	>19	>19
Exchamsiks	L	CWHvm	n/a	>18	>13
		MHmm1	n/a	>19	>19
Falls¹²	L	CWHvm/vm1	n/a	>18	>13
		MHmm1	n/a	>19	>19
Hawkesbury Island East	L	CWHvh2	n/a	>18	>13
		MHwh1	n/a	>19	>19
Horetzky	L	CWHws2	n/a	>17	>9
		MHmm2	n/a	>19	>19
Hot Springs	L	CWHws1/ws2	n/a	>17	>9
		MHmm2	n/a	>19	>19
Jesse Bish¹³	L	CWHvm	n/a	>18	>13
		MHmm1	n/a	>19	>19
Kiteen (Ksi Gahlt'in)	L	CWHws2	n/a	>17	>9
		ICHmc1/mc2	n/a	>15	>9
		MHmm2	n/a	>19	>19
Kitimat	L	CWHvm	n/a	>18	>13
		CWHws1/ws2	n/a	>17	>9

¹⁰ The old seral targets do not apply to the Owyacumish, Brim, and Wahoo watersheds of this landscape unit (see Map 3). Old seral targets for these watersheds are specified in Table 5.

¹¹ The early seral targets do not apply to Lakelse River Special Resource Management Zone (SRMZ), Subzone 2 (Map 8). Targets for this area are specified in objective 12.

¹² The old seral targets do not apply to the Hugh watershed of this landscape unit (see Map 3). Old seral targets for this watershed are specified in Table 5.

¹³ The old seral targets do not apply to the Jesse and Emsley watersheds of this landscape unit (see Map 3). Old seral targets for these watersheds are specified in Table 5.

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Landscape Unit	BEO	BEC Variant	Seral Stage Distribution (% of forested land base)		
			Early	Mature + old	Old
		MHmm1/mm2	n/a	>19	>19
Kleanza Treasure	L	CWHws1/ws2	n/a	>17	>9
		ICHmc2	n/a	>15	>9
		MHmm2	n/a	>19	>19
Ksedin (Ksi Mat'in)	L	CWHws1/ws2	n/a	>19	>9
		MHmm2	n/a	>19	>19
Nelson Fiddler	L	CWHws1/ws2	n/a	>17	>9
		ICHmc2	n/a	>15	>9
		MHmm2	n/a	>19	>19

The Kalum LRMP included transitions measures for implementation of seral stage targets which are intended to minimize the impacts on timber supply as follows:

- Early, and mature + old seral stage targets will be achieved in the shortest time possible;
- In (BEC) variants within landscape units where current early seral stage forests are at or below the early seral stage target (Table 2) the early seral stage percent will not exceed the target by more than an additional 10% ;
- Where current early seral stage forests are above the targets the early seral stage percent will not exceed the target by more than an additional 15%.

For the purposes of applying specific landscape unit transition measures, assessment results (initiated in 2003) are included in the Appendix C. Table 3 identifies adjusted early seral stage targets that are consistent with the transition strategy.

Table 3. Allowable deviations from the early seral stage targets set in Table 2

Landscape Unit	BEC variant	Maximum Early Seral Forest (% of forested land base)
Nass River (K'alii Aksim Lisims) Kalum	ICHmc1	<42
	ICHmc2	<37
Skeena River Kalum	CWHvm	<33
	CWHws1	<42
	CWHws2, ICHmc2	<37
	MHmm1, MHmm2	<27
Beaver	CWHws1	<51
	CWHws2	<46
	MHmm2	<32
Clore	CWHws1	<51
	CWHws2, ESSFmk	<46
	ESSFwv, MHmm2	<32
Exstew	CWHws1	<51

Landscape Unit	BEC variant	Maximum Early Seral Forest (% of forested land base)
	CWHws2	<46
	MHmm2	<32
Hawkesbury Island West	CWHvh2	<40
	MHwh1	<32
Hirsch	CWHvm	<40
	CWHws1	<51
	CWHws2	<46
	MHmm1	<32
Ishkheenickh (Ksi Hlginx)	CWHvm	<40
	CWHws1, CWHws2	<46
	MHmm1	<32
Kalum	CWHws1	<51
	CWHws2	<46
	MHmm2	<32
Kasiks	CWHvm	<30
	MHmm1	<32
Kemano	CWHvm, CWHvm1, vm2	<40
	CWHws2, ESSFmk	<46
	MHmm1, MHmm2	<32
Lakelse ¹⁴	CWHws1	<51
	CWHws2	<46
	MHmm2	<32
Tseax (Ksi Sii Aks)	CWHws1	<51
	CWHws2, ICHmc1	<46
	ICHmc2	<51
	MHmm2	<32
Wedene	CWHvh2, CWHvm	<40
	CWHws1	<51
	CWHws2	<46
	MHmm1, MHmm2	<32

2.1.2 Old Forest Retention in Undeveloped Watersheds

The Kalum LRMP recommends to pilot an ecosystem-based management approach in undeveloped watersheds within TFL 41¹⁵. Ecosystem-based management aims to conserve biodiversity and ecological integrity while addressing social and economic objectives. The Kalum SRMP addresses management of old seral stage forest in the Jesse, Emsley, Wathlsto, Hugh, Brim, Wahoo and Owyacumish watersheds (Table 4). The established retention targets are consistent with the direction developed in the

¹⁴ The targets specified in this table do not apply to the Lakelse River SRMZ, Subzone 2 (Map 8). Targets for this area are set in objective 12.

¹⁵ TFL area prior to the timber re-allocation

Kowesas SRMP¹⁶. Old forest retention in undeveloped watersheds contributes to the landscape unit targets. The location of undeveloped watersheds are shown on Map 3.

Table 4. Undeveloped watersheds

Landscape Unit	Undeveloped Watersheds
Jesse Bish	Jesse Emsley
Hirsch	Wathlsto
Falls	Hugh
Kemano	Brim Wahoo Owyacumish

The old seral retention targets are set at 30 % of the old forest amount predicted by Natural Disturbance (ND) in Table 5. The representation of old forest will be at the site series level. Predictive Ecosystem Mapping (PEM) is considered to be the best available information for identifying the site series present and, subsequently, the amount of hectares to be retained.

Old seral forest within undeveloped watersheds will be managed through non-spatial targets over the short term; spatial OGMAs will be designated in the future. The decision to manage old seral forest through aspatial targets consider the following factors:

- New biogeoclimatic ecosystem classification mapping (often referred to as BIG BEC) has not been verified and approved; and
- PEM is based on the BIG BEC and has not been field verified.
- The risk to biodiversity of not establishing spatial OGMAs in these watersheds at this time is considered to be low. This assumption is based on the results of the analysis completed for these watersheds which indicates that the entire target can be met from the non-contributing land base (i.e., outside of the THLB).

Objective 2:
Maintain old seral stage forest within each undeveloped watershed listed in Table 4 and shown on Map 3 consistent with Table 5.

¹⁶ Draft at the time this plan was approved.

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Table 5. Target old seral stage forest within undeveloped watersheds (% forested land base in each BEC unit/site series)

Undeveloped Watershed	BEC Variant	Site Series	% of old forest predicted by natural disturbance	Old Seral Forest Target (% of forested land base)
Jesse Emsley	CWHvm1	01	89	27
		03	93	28
		05	73	22
		06	88	26
		08	73	22
		09	70	21
		12	93	28
		13	93	28
	14	78	23	
	CWHvm2	01	89	27
		03	93	28
		05	73	22
		06	88	26
		08	73	22
		09	70	21
		10	70	21
	MHmm1	01	86	26
		02	93	28
		03	86	26
04		93	28	
06		93	28	
Wathlsto	CWHvm1	01	89	27
		03	93	28
		05	73	22
		06	88	26
		08	73	22
		12	93	28
		13	93	28
Wathlsto	CWHws2	01	89	27
		03	93	28
		06	88	26
		10	70	21
		11	70	21
	MHmm1	01	86	26
		02	93	28
		03	86	26
		04	93	28
		06	93	28

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Undeveloped Watershed	BEC Variant	Site Series	% of old forest predicted by natural disturbance	Old Seral Forest Target (% of forested land base)	
Hugh	CWHvm1	01	89	27	
		03	93	28	
		05	73	22	
		06	88	26	
		08	73	22	
		09	70	21	
		12	93	28	
		13	93	28	
	CWHvm2	01	89	27	
		03	93	28	
		05	73	22	
		06	88	26	
		08	73	22	
		10	70	21	
	CWHws2	01	86	26	
		03	93	28	
		06	70	21	
		10	93	28	
	MHmm1	01	86	26	
		02	93	28	
03		86	26		
04		93	28		
06		93	28		
Wahoo	CWHvm1	01	89	27	
		03	93	28	
		05	73	22	
		06	88	26	
		08	73	22	
		13	98	29	
	CWHws2	01	86	26	
		03	93	28	
		CWHws2	06	70	21
			07	70	21
			10	93	28
	ESSFmk	11	78	23	
		01	70	21	
		02	70	21	
		03	70	21	
		04	70	21	
	MHmm1	08	70	21	
		01	86	26	
		02	93	28	

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Undeveloped Watershed	BEC Variant	Site Series	% of old forest predicted by natural disturbance	Old Seral Forest Target (% of forested land base)	
Brim	CWHvm1	01	89	27	
		03	93	28	
		05	73	22	
		06	88	26	
		08	73	22	
		09	70	21	
		12	93	28	
		14	78	23	
	CWHvm2	01	89	27	
		03	93	28	
		06	88	26	
		10	70	21	
		11	70	21	
	MHmm1	01	86	26	
		02	93	28	
03		86	26		
04		93	28		
06		93	28		
Owyacumish	CWHvm1	01	89	27	
		03	93	28	
		05	73	22	
		06	88	26	
		08	73	22	
		09	70	21	
		12	93	28	
		14	78	23	
	CWHws2	01	89	27	
		03	93	28	
		06	70	21	
		CWHws2	10	93	28
			11	78	23
		MHmm1	01	86	26
			02	93	28
03	86		26		
04	93		28		
06	93		28		

2.1.3 Retention of Old Forest Through Establishment of OGMA

The goal of the old growth management area (OGMA) objective is to manage the retention or recruitment of old growth forest. The definition of old forest is defined in Table 1. See Appendix C for OGMA's area analysis.

OGMAs will have no legal effect on subsurface resource users (mineral exploration and mining). The subsurface resource users are encouraged to proceed with exploration and development in a way that is sensitive to the old growth values and to minimize disturbance to OGMAs where practicable. Replacement of OGMAs will be considered if they are impacted to the extent that they are not functional.

Continuance of traditional uses within OGMAs by First Nations is allowed.

The establishment of legal objectives for an OGMA will not affect any of the following that are in effect at the beginning of the day the Order takes effect: cutting permit, a road permit, a timber sale licence that does not provide for cutting permits, an area described in section 7 (1) (b) or 196 (1) of the FRPA, and areas described in section 22 of the FPC.

Objective 3:

Maintain or recruit old seral stage forest, reflective of the full range of ecosystems, including some with interior forest conditions, throughout each rotation within the Old Growth Management Areas shown on Map 4. Forest harvesting activities in the OGMAs are limited to insect or disease control measures that are necessary to mitigate severe damage to the habitat attributes in the OGMAs, or other forest values in the landscape.

Operational flexibility within OGMAs:

Activities that are permissible in OGMAs are limited to the following:

- control of wildfire;
- tree topping and seed cone collection, provided trees are not felled;
- insect or disease control that is necessary to mitigate severe damage to the habitat attributes in the OGMAs, or other forest values in the landscape;
- hunting, fishing, trapping;
- recreation;
- collection of botanical forest products;
- First Nation cultural activities, provided trees are not felled for commercial purposes;
- range use; and,
- mining and exploration.

This objective provides direction for undertaking minor modification to OGMAs for operational flexibility, and the criteria for replacement of these impacted areas.

Objective 4:

Provide operational flexibility in managing OGMA's by allowing up to 10 hectares or 10% of the individual OGMA area, whichever is less, to be disturbed for one or more of the following purposes:

- allowing road development where no practicable alternative exist;
- to better reflect physical features that were intended to form the actual boundaries of the OGMA;
- to improve harvest boundary alignment in a way that will contribute to the maintenance of the OGMA;
- to address a compelling forest health issue; or,
- to shift the location of the contiguous area of the OGMA to improve the retention of old forest attributes as identified through field assessment.

The allowable disturbance described above is conditional upon a forest agreement holder identifying and reserving from harvesting an alternative area(s) within the same BEC variant within a landscape unit, provided the alternative area:

- is of equal or greater extent in total than the area to be disturbed; and,
- will result in equal or greater retention of key old forest attributes that are understood to be important for biodiversity conservation.

Replacement and modification to OGMA's beyond the scope addressed in Objective 4 will be guided by current government policy.

2.1.4 Stand Structure through Wildlife Tree Retention

The goal of retaining wildlife trees is to promote healthy functioning ecosystems that provide wildlife habitat elements at the forest stand level. This will be promoted by maintaining forest stand structural attributes¹⁷ of natural forests - within managed stands - through the retention of wildlife tree patches¹⁸ (WTP).

Objective 5:

Maintain structural diversity in managed stands by retaining wildlife tree patches in each cut block¹⁹, over the rotation, consistent with the targets in Table 6. Shift or vary targets shown in Table 6 among cut blocks within a cut block aggregate²⁰ based on risks to biodiversity.

Strategies:

¹⁷ Forest stand structural attributes include, but are not limited to; living and dead standing trees, coarse woody debris, large living trees, tree species diversity, a variety of layers and opening sizes in the forest canopy, and full range of above and belowground flora and fauna.

¹⁸ Wildlife Tree Patch: an area specifically identified for the retention and recruitment of suitable wildlife trees. It can contain a single tree or a group reserve.

¹⁹ The wildlife tree patches may be external or internal to the cut block.

²⁰ Cut block aggregate: A group of cut blocks which are within 10 kilometers radius of each other and where the site plan or cutting permit for these blocks refers to the fact that they are a cut block aggregate.

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- Wildlife tree retention should, as a first priority, protect trees with valuable wildlife tree attributes²¹;
- Distribute windfirm patches throughout the block with distances between patches (or to other suitable leave areas outside the block) not normally exceeding 500 meters. It is recognized that windfirmness can not be guaranteed; however, reasonable steps can be taken to minimize blowdown;
- Allow natural processes (insect, diseases, blowdown) to occur within wildlife tree patches unless infestation or infection in the WTP threaten to spread to the adjacent forested areas. Where intervention is required, treatment will retain a diversity of structural attributes consistent with Objective 5 or a suitable replacement WTP will be located;
- Where possible, place WTPs to include rare plant species and ecosystems (listed in the most updated version with the BC Conservation Data Center or otherwise determined as rare/uncommon)²².

Table 6. Wildlife tree patch retention targets

Landscape Unit	BEC Subzone	Target WTP retention ²³ (%)
Nass River (K'ali Aksim Lisims) Kalum	ICHmc	7
Skeena River Kalum	CWHvm	5
	CWHws	5
	ICHmc	4
	MHmm	0
Beaver	CWHws	8
	MHmm	0.5
Clore	CWHws	6
	ESSFmk	3
	ESSFwv	1
	MHmm	3
Exstew	CWHws	6
	MHmm	3
Hawkesbury Island West	CWHvh	0
	MHwh	0
Hirsch	CWHvm	5
	CWHws	11

²¹ High value wildlife tree attributes can include: internal decay, crevices (loose bark or cracks), large brooms, active or recent wildlife use, current insect infestation, tree structure suitable for wildlife use (e.g., large nest, hunting perch, bear den, etc.), largest trees on site (height and/or diameter) and/or veterans. Where there are a few trees suitable for wildlife trees, priority should be given to retaining large, stable trees that will likely develop two or more of the above characteristics.

²² Rarity analysis (based on draft PEM) has been completed for Hirsh, Jesse Bish, Kemano and Falls Landscape Units. The following site series have been identified as rare/uncommon: Hirsh LU: CWHvm1/13/14, CWHvm2/11, CWHws2/3/7/11; Jesse-Bish LU: CWHvm1/9/14, CWHvm2/10/11, MHmm1/4; Kemano LU: CWHvm1/12/13/14, CWHws2/2/7/11, MHmm1/4; Falls LU: CWHvm1/14, CWHvm2/8/9/11, CWHws2/7/11, MHmm1/4.

²³ % of cut block area

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Landscape Unit	BEC Subzone	Target WTP retention ²³ (%)
	MHmm	0
Ishkheenickh (Ksi Hlginx)	CWHvm	2
	CWHws	2
	MHmm	0
Kalum	CWHws	10
	MHmm	5
Kasiks	CWHvm	0
	MHmm	0
Kemano	CWHvm	0
	CWHws	1
	ESSFmk	0
	MHmm	0
Lakelse	CWHws	7
	MHmm	0
Tseax (Ksi Sii Aks)	CWHws	4
	ICHmc	8
	MHmm	0
Wedeene	CWHvm	3
	CWHvh	2
	CWHws	10
	MHmm	3
Dala	CWHvm	3
	CWHws	0.5
	MHmm	0
Dasque	CWHws	7
	MHmm	0
Exchamsiks	CWHvm	0
	MHmm	0
Falls	CWHvm	1
	MHmm	0
Hawkesbury Island East	CWHvh	1
	MHwh	0
Horetzky	CWHws	2
	MHmm	0
Hot Springs	CWHws	7
	MHmm	0.5
Jesse Bish	CWHvm	1
	MHmm	0
Kiteen (Ksi Gahl't'in)	CWHws	3
	ESSFwv	1
	ICHmc	7
	MHmm	1
Kitimat	CWHvm	5
	CWHws	7

Landscape Unit	BEC Subzone	Target WTP retention ²³ (%)
	MHmm	0
Kleanza Treasure	CWHws	7
	ICHmc	6
	MHmm	2
Ksedin (Ksi Mat'in)	CWHws	6
	MHmm	0
Nelson Fiddler	CWHws	8
	ICHmc	5
	MHmm	2

2.1.5 Species Composition

The goal of the species composition objective is to conserve the natural species abundance and diversity.

Objective 6:

Maintain the natural composition of dominant tree species across each landscape unit and throughout the rotation.

2.1.6 Temporal and Spatial Distribution of Cutblocks

This element of biodiversity is often referred to as “patch size distribution”. The goal of this objective is to create and maintain a pattern of forest seral stages distributed across the landscape that reflect the natural disturbance regime. The shape and pattern of cut blocks following timber harvesting should resemble an opening that would result from a natural disturbance.

The targets in Table 7 represent a vision of desired future conditions. They will not be immediately achieved in landscape units (it may take one rotation or more). In addition, due to high amount of non-contributing land base in the plan area, the targets may not be fully achievable in all LUs. The implementation of Objective 7 will be monitored through approval of FSPs and the FRPA Forest Resources Stewardship Monitoring Program. As a result of monitoring, the objective may be amended in the future.

Analysis of the current patch size distribution has been conducted for the plan area (2003); results are included in Appendix E.

Objective 7:

Attain a landscape pattern of patchiness that, over a long term, reflects the natural disturbance patterns as per Table 7.

Table 7. Patch size distribution targets (harvest units and leave areas)²⁴

Natural Disturbance Type	Patch Size (ha)	Patch Size Distribution Target (% forested area within landscape unit)
NDT1, NDT2	<40	30-40
	40-80	30-40
	80-250	20-40

2.1.7 Landscape Connectivity

Connectivity (in the context of Objectives 8 and 9) refers to the degree to which the condition of a landscape facilitates or impedes movement of wildlife and ecosystem process. One of the most useful approaches to maintain connectivity across the landscape, for as many organisms as possible, is to follow a coarse filter approach to forest management that reflects the natural pattern of change in forest cover over time. This plan sets legal objectives for coarse filter biodiversity as defined in Section 2.1, which collectively facilitate the maintenance of connectivity.

The Kalum LRMP recommends strategies to minimize potential problems of fragmentation of habitats and population. One such strategy is the establishment of connectivity corridors. Two corridors are legally established at this time.

Objective 8:

Maintain forest stand structure and function for continued wildlife movement through the level pass between the Kiteen (Ksi Gahl't'in) and Cedar drainages identified on Map 5.

- Within polygon “A”, retain 100 % of forested area.
- Within polygon “B”, timber harvesting will be limited to partial cutting systems.

Objective 9:

Maintain forest stand structure and function to facilitate wildlife movement, in the level pass between the Williams and Thomas/Clore watersheds identified on Map 5.

2.1.8 Rare Ecosystems

The Kalum LRMP recommends measures to conserve rare and endangered ecosystems and plant species. The LRMP anticipated that over time this will include refinement of the list of species and plant communities for the planning area to stay current with Conservation Data Center (CSD). The LRMP recommends that in the absence of an

²⁴ Patch size refers to a single cut block or an aggregation of cut blocks.

Identified Wildlife Management Strategy (IWMS) for species that are specific to the plan area, conservation measures may be implemented to provide for their perpetuation. Implementation of these conservation measures needs to consider impacts to other resource use industries and conservation priorities.

In a letter to the District Manger (2002), the Ministry of Environment, Lands and Parks (presently MOE) recommended that the Skeena Islands be made “*known*” as rare ecosystems under the Forest Practices Code, and that an ecosystem-wide inventory and management plan be completed to give context and direction prior to further development.

In 2004 the Kalum Forest District provided funding to map and describe the red and blue-listed plant communities on the Skeena Islands, and to gain better understanding of the natural processes that maintain them. During this project high bench Sitka Spruce-Salmonberry (CWHws1/07, CWHvm1/09) and middle bench Black Cottonwood-Red-osier Dogwood (CWHws1/08, CWHvm1/10) plant communities were identified as red-listed and blue-listed respectively, and MOE anticipates including them in the updated version of the IWMS.

The MOE has developed best management practices for the Skeena Islands rare ecosystems. Best management practices are included in Appendix F.

Objective 10:
Conserve rare plant communities²⁵ on the Skeena Islands identified on Map 6.

3.0 Wildlife

3.1 Management Direction for Wildlife

Plan Goals for Wildlife

- **To maintain the quantity and quality of wildlife populations and habitats, including plant communities, within the planning area.**

The responsibility for management of wildlife habitat through designation of Ungulate Winter Ranges (UWRs) and Wildlife Habitat Areas (WHAs) and establishment of General Wildlife Measures (GWMs) lies with the MoE. For reference purposes maps indicating the general location of UWR and WHA designations and GWMs are included in Appendix A..

LRMP recommendations that pertain to grizzly bear that cannot be addressed by MOE through WHAs are addressed in the following section.

²⁵ Rare plant communities include: high bench Sitka Spruce-Salmonberry (CWHws1/07, CWHvm1/09) and middle bench Black Cottonwood-Red-osier Dogwood (CWHws1/08, CWHvm1/10)

3.1.1 Grizzly Bear

The Kalum LRMP provides recommendations for the management of grizzly bear in the plan area by way of management intent/objectives, and strategies. Two strategies (mitigation measures) have been incorporated directly within Objective 11. Further to this, to meet the intent of the objective - to provide the natural levels of forage supply - forest tenure holders that operate in the area are committed to implementing all LRMP strategies (2.1 through 2.4) through their FSPs to ensure that this objective is met. In addition to the strategies/mitigation measures identified in the LRMP, forest tenure holders will have an opportunity to propose new strategies/ mitigation measures that may be appropriate to meet the objective.

Objective 11:

Maintain natural level of forage supply for grizzly bears in the watersheds identified on Map 7 by:

- a. providing an adequate supply of berry feeding;**
- b. maintaining natural levels of forage supply as present in old growth forests;**
- c. on the rich and wetter sites²⁶ implement regeneration and free to grow standards consistent with Table 8. Vary from these standards based on site-specific factor, provided parts a) and b) in this objective will be achieved; and,**
- d. within McKay-Davies and Copper watersheds, no more than 30% of the forested land base, excluding hardwood, will be between 25 and 100 years old.**

²⁶ The rich and wetter sites are defined in CWHws1&2 as site series 06, 07, 08, 09, and 11; in CWHvm1 as site series 07, 08, 09, 10, and 14; and in CWHvm2 as site series 08, and 11.

Table 8. Grizzly bear stocking standards

Site Association ²⁷	Subzone Variants	Free growing stocking standards (stems/ha) ²⁸		
		Target	Minimum	Maximum ²⁹
BaSs-Devil's club	vm1 and vm2	600	400	660
BaCw-Devil's club	ws1 and ws2	600	400	660
Cwss-Skunk cabbage	vm1 and vm2 ws1 and ws2	400	200	440
Ss-salmonberry and Act-Red-osier dogwood	vm1 and vm2 ws1 and ws2	500	200	550

4.0 Area Specific

4.1 Management Direction for Area Specific

The Kalum LRMP identifies the following for area specific management direction:

- Critical wildlife, fish habitat and biodiversity values in the Lakelse River, Upper Kitsumkalum and Miligit Valley special resource management zones;
- Class I angling waters in the upper Copper River and Limonite Creek area; and,
- Sensitive landscape visible from the Sue Channel/Hawkesberry protected area.

LRMP recommendations pertaining to these areas are addressed in the following objectives.

Objective 12:

Maintain wildlife habitat and biodiversity within the Lakelse River Special Resource Management Zone (Map 8).

- **In Subzone 1 - no harvesting of timber or blowdown salvage will occur.**
- **In Subzone 2 - early seral stage target is a maximum of 27%; the maximum opening size is 15 hectares; a minimum 15 % retention within the cut blocks is required to add structural diversity; and in any five year planning cycle³⁰ at least 50% of the volume harvested is to be harvested by using a selection silviculture system.**

²⁷ Stocking levels for low bench floodplain site associations are not listed; site-specific prescriptions for these associations should be developed that account for the naturally low density of microsites appropriate for crop tree growth and high shrub cover.

²⁸ The “well spaced” clause does not apply to forage gaps when stems are clustered as part of the site plan/ forest stewardship plan (FSP). Crop tree size vs. competing brush standards is unchanged from existing regional guidelines. When determining the number of crop trees, minimum inter-tree distances, as stated in the site plan/FSP, still apply to trees within the cluster.

²⁹ If stand exceeds maximum density set in the site plan/FSP at free-growing, these guidelines recommend spacing back to this stocking level.

³⁰ A five year planning cycle will start on the effective date of the “order establishing land use objectives”.

Objective 13:

Maintain biological diversity and ecosystem representation within the Upper Kitsumkalum Valley by not harvesting timber within the Upper Kitsumkalum SRMZ (Map 8). Road construction is acceptable to access the timber outside of SRMZ where there is no other practicable route alternative.

Objective 14:

Conserve uncommon reticulated fens (Map 8) within the Miligit Valley area.

Objective 15:

Maintain a feeling of remoteness and pristine viewscape on the Upper Copper River (Zymoetz River) above the Limonite Creek (within the Kalum SRMP area). The following are practice requirements:

- a) permit only one bridge crossing at any time; and,**
- b) retain a minimum of 100 meters no harvest reserve on both sides of the river. Less than 100 meters reserve is acceptable where this makes “best” operational/environmental practice, or for other site specific-reasons, provided the objective is met.**

For management of the Upper Copper River and implementation of Objective 15 the following rationale are provided:

- the intention of the LRMP is to limit crossing of the river to a single location, and preferably to have no bridges.
- the intent of the LRMP is to have a minimum of 100 m reserve; however, the table recognized that there may be areas, along the river, where less or more than 100 m reserve would be more appropriate (e.g., the boundary could be at the slope brake, or at the end of a flat).

Objective 16:

Maintain the visual quality of the area visible from the Sue Channel/Hawkesbury Island protected area (Map 8) by:

- **applying single tree or group selection silviculture system; and,**
- **limiting the maximum opening size to 1-2 tree lengths.**

5.0 Visual Resources

5.1 Management Direction for Visual Resources

Plan Goals for Visual Resources:

- **Maintain the aesthetic values of the forest landscape to provide a secure environment for tourism operators and ensure a quality natural environment experience for Tourism, local residents and First Nation communities; and,**
 - **Minimize visual impacts through appropriate landscape design of harvest openings and industrial development.**
-

Under the *Forest and Range Practices Act*, Section 180 and 181, scenic areas and objectives established or continued under the FPC are continued as visual quality objectives under FRPA. In addition, under the *Government Actions Regulation*, Section 17, existing scenic areas with recommended visual quality classes are continued under FRPA as visual quality objectives.

The following guidelines are currently being used in the Kalum Forest District for the management of visual resources:

- **Preservation (P):** Allows activities such as maintenance of minimal facilities (recreation sites and trails) that enhance natural visual unit, and do not exceed a 0-1 % denudation.
- **Retention (R):** The goal is to repeat the line, form, colour and texture of the visual unit and to not exceed a 1-5% denudation
- **Partial Retention (PR):** Repetition of the line, form, colours and texture is important to ensure a blending with the dominant elements, while not exceeding a 6-15% denudation of the visual unit.
- **Modification (M):** The alteration must borrow from natural line and form to such an extent and on such a scale that are comparable to natural occurrences or events while not exceeding a 16-25% denudation of the visual unit.
- **Maximum Modification (MM):** Alterations may be out of scale or show detail quite different from natural occurrences or events resulting in a 26-40% denudation of the visual unit.
- While the intent of forest management is to maintain the integrity of Scenic Areas, catastrophic events (e.g. fire, blowdown, and infestation) may compromise visual quality from time to time.

The Visual Quality Objectives and established scenic areas are included in Appendix B for reference purposes.

6.0 Community Watersheds

6.1 Management Direction for Community Watersheds

Plan goals for Community Watersheds:

- **To maintain water quantity and quality that meets Canadian Drinking Water Standards for purposes of human consumption and safety in areas of intensive community water use.**

6.1.1 Grandparented Community Watersheds

The plan area includes six existing community watersheds (Map 9): Deep Creek, Drake Creek, Gitzyon Creek, Wathl Creek, Eneeksagilaguaw Creek, and Ksa Miintl Am Hawak Creek. The legal objectives for these watersheds have been set in the Section 8.2 of the FRPA *Forest Planning and Practices Regulation*.

6.1.2 Community Watersheds Established Through This Plan Process

The following areas are established as Community Watersheds:

- Rosswood (Clear Creek): 1294 ha,
- Usk (Skovens Brook): 211 ha,
- Kleanza (Singlehurst Creek): 1483 ha,
- Gossen (Gossen Creek): 90 ha, and
- Hatchery Creek: 3289 ha.

Objective 17:

Maintain the quality, quantity, and natural flow regimes of water in watersheds identified on Map 9 as newly established Community Watersheds. Ensure a clear-cut equivalency of less than 20% of the watershed area in sub-basins larger than 250 hectares, unless a different threshold is determined as being more appropriate as a measure of maintenance of natural flow regimes.

7.0 Plan Implementation, Monitoring and Amendment

Following Government approval of the plan, the management objectives will be applied through a dual process of implementation and monitoring. Implementation and monitoring of the plan is a shared responsibility between government agencies and stakeholders.

7.1 Implementation

Implementation of the Kalum SRMP will occur through on the ground activities that are guided by approved Forest Stewardship Plans. Forest Stewardship plans are required to provide results and strategies for the legal objectives in this plan.

7.2 Monitoring

The monitoring phase of the plan involves ongoing assessment of (a) compliance with the plan during implementation; and (b) the effectiveness of plan direction in meeting SRMP goals and objectives. Individual government ministries and agencies will assume responsibility for monitoring those aspects of the plan relevant to their mandate. To the greatest extent possible, SRMP monitoring will take advantage of existing agency environmental and natural resource management monitoring and research programs.

Monitoring of this plan will be embedded in the procedures and monitoring reports used for the Kalum LRMP. Monitoring is hierarchical such that SRMP monitoring is directly linked to LRMP monitoring.

7.3 Adaptive Management

The Kalum SRMP was developed using the best available information and knowledge. We recognize that there is some amount of uncertainty to the ultimate effectiveness of management recommendations. To address this uncertainty an adaptive management approach is recommended that will provide continual improvement of management policies and practices. By monitoring key response indicators over time and incorporating new information and knowledge (such as BIG BEC), ILMB will be able to analyze the outcome of management practices in light of the original SRMP objectives and incorporate those results into the plan.

7.4 Plan Amendment

The SRMP may be subject to review at regular time periods in order to address issues that may arise. Final decisions on plan amendment are the responsibility of ILMB.

Any amendment to the SRMP will be consistent with the provincial policy “Keeping Land Use Plans Current, Policy on Reviewing & Amending Strategic Land Use Plans”.

Appendix A: Wildlife Objectives Established by MOE

Maps

Map 10 shows the general location of UWR for mountain goat and WHAs for tailed frog. Detailed maps can be obtained from the MoE.

Tailed Frogs

Wildlife Habitat Areas # 6-058 and 6-059

The Wildlife Habitat Areas indicated on Map 10 are established by order under the authority of sections 9(2) and 10(1) of the *Government Actions Regulation* (B.C. Reg. 582/04).

General Wildlife Measures

Access

- No road construction or stream crossings will be established within the core area. Where other options are not practicable, and roads or stream crossings are determined to be necessary for access, an exemption is required from the Minister of Environment or delegate.
- When roads are determined to be necessary, minimize their length and width to alleviate as much as practicable, site disturbance. Reduce groundwater interception in the cut-slope; use sediment-control measures in cut-and-fill slopes (e.g., grass-seeding, armouring ditch lines, and culvert outfalls); deactivate roads but minimize digging and disturbance to adjacent roadside habitat; and minimize site disturbance during road right-of-way clearing, especially in terrain polygons with high sediment transfer potential to natal streams.
- Where stream crossings are required, fall and yard away from, or bridging, all other stream channels (ephemeral or perennial) within the WHA, to reduce channel disturbance and slash loading; and ensure the type of crossing structure and any associated roads are designed and installed in a way that minimizes impacts to tailed frog in-stream and riparian habitats. Use temporary clear span bridges where practicable.

Harvesting and silviculture

- Do not harvest or salvage timber within the core area or special management zone.

Pesticides

- Do not use pesticides unless an exemption is approved by the Minister of Environment or delegate.

Appendix A: Wildlife Objectives Established by MOE

Wildlife Habitat Areas # 6-060 to 6-067

The Wildlife Habitat Areas indicated on Map 10 are established by order under the authority of sections 9(2) and 10(1) of the *Government Actions Regulation* (B.C. Reg. 582/04).

General Wildlife Measures

Access

- No road construction or stream crossings will be established within the core area. Where other options are not practicable, and roads or stream crossings are determined to be necessary for access, an exemption is required from the Minister of Environment or delegate.
- When roads are determined to be necessary, minimize their length and width to alleviate as much as practicable, site disturbance. Reduce groundwater interception in the cut-slope; use sediment-control measures in cut-and-fill slopes (e.g., grass-seeding, armouring ditch lines, and culvert outfalls); deactivate roads but minimize digging and disturbance to adjacent roadside habitat; and minimize site disturbance during road right-of-way clearing, especially in terrain polygons with high sediment transfer potential to natal streams.
- Where stream crossings are required, fall and yard away from, or bridging, all other stream channels (ephemeral or perennial) within the WHA, to reduce channel disturbance and slash loading; and ensure the type of crossing structure and any associated roads are designed and installed in a way that minimizes impacts to tailed frog in-stream and riparian habitats. Use temporary clear span bridges where practicable.

Harvesting and silviculture

- Do not harvest in the core area or within the gully where the gully extends beyond the core area.
- For the special management zone, develop a spatially explicit management plan for approval by the Minister of Environment or delegate, prior to development, which is consistent with the goals of the general wildlife measures. Use a silviculture system that maintains 70% residual stand volume and attributes of the natural stand structure profile, evenly dispersed, including:
 - 70% of all original diameter classes represented in proportion to the average stand profile for the site series.
 - Rare site series will be retained in greater proportion than they occur in the landscape unit.
 - At least 50% of area will have interior-forest conditions (2 tree lengths defines edge habitat along topographic features such as gullies and bluffs, or 4 tree lengths for clear-cut edges).
 - Connectivity of natural forest along and between streams, and over low heights of land.

Comment [AEH1]: More detail on 70% retention was requested, so this is excerpt from Biodiversity Guidelines and IFPA Morice FD CWD Guideline on web.

Appendix A: Wildlife Objectives Established by MOE

- 70% snags, large green trees, understory plant community, vertical and horizontal structure.
- coarse woody debris including large-diameter, long logs with horizontal and vertical structure.
- No timber salvage should be carried out.
- Avoid cross-stream yarding.
- Do not use chemical applications (e.g., dust palliative polymer stabilizers and soil binders that can be sprayed within ditch lines).

Pesticides

- Do not use pesticides unless an exemption is approved by the Minister of Environment or delegate.

Appendix A: Wildlife Objectives Established by MOE

Mountain Goat

The Ungulate Winter Ranges indicated on Map 10 are established by order under the authority of sections 9(2) and 12(1) of the *Government Actions Regulation* (B.C. Reg. 582/2004).

General Wildlife Measures

In this schedule:

- a) “primary forest activity” is defined as in the *Forest Planning and Practices Regulation*,
 - b) “mountain goat winter range” are those winter ranges established by way of this Order, and
 - c) “deactivate” or “deactivation” refers to either partial or complete treatment of roads and trails with the intent to prevent, as much as possible, motor vehicle access while taking into account site specific operating constraints; where practicable this activity will include right-of-way revegetation activities to manage long term access.
1. Primary forest activities, except where exempted, will result in retention of all forest and vegetative cover within a mountain goat winter range.
 2. Wherever feasible, operators should refrain from felling trees within mountain goat winter range. Felling of single trees, such as a danger, guy line anchor, or tail hold tree is permitted within a mountain goat winter range when it is required to address worker safety. Trees felled for the purposes of this Measure (2) will be left on site to provide course woody debris.
 3. Primary forest activities that occur within 500 meters horizontal distance of a mountain goat winter range will not result in material or adverse disturbance to goats. Operational activities that have not been exempted will take place during the period starting June 15 and ending October 31.
 4. Access roads and structures required for primary forest activities within 500 meters of mountain goat winter range will be constructed in a manner that will facilitate effective deactivation. All roads or structures that have not been exempted will be deactivated within one year following forest harvesting activities.
 5. All helicopter logging activities conducted within 2000 meters line of sight of a mountain goat winter range that have not been exempted will take place during the period starting June 15 and ending October 31.
 6. Sections 2(2)(c) and (d) of the *Government Actions Regulation* apply to this order and for the purposes of clarity, this order does not apply to any cutblock that is:

Appendix A: Wildlife Objectives Established by MOE

- a) wholly or partially within the boundaries of a ungulate winter range polygon established by this order, and
- b) is confirmed by the Ministry of Forests and Range to be a Category A cutblock within an approved Forest Development Plan that is:
 - i) pertinent to the area of land within which the ungulate winter range polygon is located, and
 - ii) held by the British Columbia Timber Sales program, or an existing *Forest Act* agreement holder with current timber harvesting rights in the area of land, and
 - iii) that was in effect prior to the effective date of this order.

Appendix B: Visual Quality Objectives Established by MOFR

In progress

Appendix C: Seral Stage Assessment

Landscape Unit (biodiversity emphasis)	BEC zone variant ¹	Total FLB (ha) ²	Early (ha) ³	Early (%FLB) ⁴	Early Target (%FLB) ⁵	Mid (ha) ⁶	Mid (%FLB) ⁷	Mature (ha) ⁸	Mature (%FLB) ⁹	Old (ha) ¹⁰	Old (%FLB) ¹¹	Old Target (%FLB) ¹²	Mature+ Old (ha) ¹³	Mature+ Old (%FLB) ¹⁴	Mature+ Old Target (%FLB) ¹⁵
Nass River (K'alii Aksim Lisims) Kalum (High)	ICHmc1	1615.4	552.4	34.2	<27	150.6	9.3	838.0	51.9	74.4	4.6	>13	912.4	56.5	>46
	ICHmc2	75.1		0.0	<27	0.1	0.2	75.0	99.8		0.0	>13	75.0	99.8	>46
	High Total	1690.6	552.4	32.7		150.7	8.9	913.0	54.0	74.4	4.4		987.4	58.4	
	ICHmc2	49.5	4.0	8.1		20.5	41.4	25.0	50.5		0.0		25.0	50.5	
	Protected Total	49.5	4.0	8.1		20.5	41.4	25.0	50.5		0.0		25.0	50.5	
Nass River (K'alii Aksim Lisims) Kalum Total		1740.1	556.4	32.0		171.2	9.8	938.0	53.9	74.4	4.3		1012.4	58.2	
Skeena River Kalum (High)	ATp	4.6		0.0	<15		0.0	4.6	100.0		0.0	n/a	4.6	100.0	>85
	CWHvm	2709.5	585.8	21.6	<23	706.6	26.1	754.8	27.9	662.4	24.4	>19	1417.1	52.3	>54
	CWHws1	19530.8	5417.8	27.7	<27	4103.3	21.0	4790.6	24.5	5219.1	26.7	>13	10009.8	51.3	>51
	CWHws2	5019.9	1013.8	20.2	<27	206.2	4.1	311.4	6.2	3488.5	69.5	>13	3799.9	75.7	>51
	ICHmc2	3462.9	811.6	23.4	<27	778.2	22.5	771.3	22.3	1101.9	31.8	>13	1873.1	54.1	>46
	MHmm1	24.5		0.0	<17		0.0	23.3	95.2	1.2	4.8	>28	24.5	100.0	>54
	MHmm2	1692.2	147.4	8.7	<17	87.1	5.1	152.3	9.0	1305.4	77.1	>28	1457.7	86.1	>54
	High Total	32444.4	7976.3	24.6		5881.4	18.1	6808.3	21.0	11778.4	36.3		18586.7	57.3	
	CWHvm	155.7	9.3	5.9		13.1	8.4	74.7	48.0	58.6	37.7		133.3	85.6	
CWHws1	139.7	0.2	0.1		105.7	75.7	32.0	22.9	1.8	1.3		33.8	24.2		
Protected Total	295.4	9.4	3.2		118.8	40.2	106.7	36.1	60.4	20.5		167.1	56.6		
Skeena River Kalum Total		32739.8	7985.7	24.4		6000.3	18.3	6914.9	21.1	11838.9	36.2		18753.8	57.3	
Beaver (Intermediate)	ATp	51.1		0.0	<15	6.6	13.0	0.9	1.7	43.6	85.3	n/a	44.5	87.0	>85
	CWHws1	16557.3	8611.5	52.0	<36	675.4	4.1	1400.9	8.5	5869.5	35.4	>9	7270.4	43.9	>34
	CWHws2	13775.8	2602.6	18.9	<36	531.7	3.9	1060.1	7.7	9581.4	69.6	>9	10641.5	77.2	>34
	MHmm2	11986.1	639.8	5.3	<22	699.3	5.8	578.6	4.8	10068.5	84.0	>19	10647.1	88.8	>36
	Intermediate Total	42370.3	11853.8	28.0		1913.0	4.5	3040.4	7.2	25563.0	60.3		28603.4	67.5	
	MHmm2	0.1		0.0			0.0		0.0	0.1	100.0		0.1	100.0	
Protected Total	0.1		0.0			0.0		0.0	0.1	100.0		0.1	100.0		
Beaver Total		42370.3	11853.8	28.0		1913.0	4.5	3040.4	7.2	25563.1	60.3		28603.5	67.5	
Clore (Intermediate)	ATp	2882.4		0.0	<15	2.6	0.1	1394.9	48.4	1484.9	51.5	n/a	2879.8	99.9	>85
	CWHws1	7420.8	3043.4	41.0	<36	112.0	1.5	595.9	8.0	3669.6	49.4	>9	4265.4	57.5	>34
	CWHws2	15199.4	2165.3	14.2	<36	1020.3	6.7	1066.8	7.0	10947.1	72.0	>9	12013.9	79.0	>34
	ESSFmk	707.1		0.0	<36		0.0	459.2	64.9	247.9	35.1	>9	707.1	100.0	>28
	ESSFvw	78.4		0.0	<22		0.0		0.0	78.4	100.0	>19	78.4	100.0	>36
	MHmm2	14192.9	540.5	3.8	<22	456.8	3.2	3789.6	26.7	9405.9	66.3	>19	13195.6	93.0	>36
Clore Total		40481.1	5749.1	14.2		1591.7	3.9	7306.3	18.0	25833.9	63.8		33140.3	81.9	

Appendix C: Seral Stage Assessment

Landscape Unit (biodiversity emphasis)	BEC zone variant ¹	Total FLB (ha) ²	Early (ha) ³	Early (%FLB) ⁴	Early Target (%FLB) ⁵	Mid (ha) ⁶	Mid (%FLB) ⁷	Mature (ha) ⁸	Mature (%FLB) ⁹	Old (ha) ¹⁰	Old (%FLB) ¹¹	Old Target (%FLB) ¹²	Mature+ Old (ha) ¹³	Mature+ Old (%FLB) ¹⁴	Mature+ Old Target (%FLB) ¹⁵
Exstew (Intermediate)	CWHws1	3684.7	1541.4	41.8	<36	213.1	5.8	547.0	14.8	1383.2	37.5	>9	1930.2	52.4	>34
	CWHws2	3854.4	1127.6	29.3	<36	23.0	0.6	505.8	13.1	2198.1	57.0	>9	2703.8	70.1	>34
	MHm2	1279.1	85.9	6.7	<22	14.1	1.1	53.2	4.2	1125.9	88.0	>19	1179.1	92.2	>36
Exstew Total		8818.2	2754.9	31.2		250.2	2.8	1105.9	12.5	4707.2	53.4		5813.1	65.9	
Hawkesbury Island West (Intermediate)	CWHvh2	8506.3	214.2	2.5	<30	90.9	1.1	420.8	4.9	7780.4	91.5	>13	8201.3	96.4	>36
	MHwh1	624.9	2.8	0.4	<22	45.3	7.3	62.0	9.9	514.9	82.4	>19	576.9	92.3	>36
	Intermediate Total		9131.3	216.9	2.4		136.2	1.5	482.8	5.3	8295.3	90.8		8778.1	96.1
Protected Total		80.1	10.6	13.3			0.0	11.8	14.7	57.7	72.0		69.5	86.7	
Hawkesbury Island West Total		9211.4	227.6	2.5		136.2	1.5	494.6	5.4	8353.0	90.7		8847.6	96.1	
Hirsch (Intermediate)	ATp	550.4		0.0	<15	150.3	27.3	42.8	7.8	357.3	64.9	n/a	400.1	72.7	>85
	CWHvm	26723.8	5236.4	19.6	<30	467.6	1.7	2151.8	8.1	18867.9	70.6	>13	21019.7	78.7	>36
	CWHws1	417.1	342.6	82.1	<36		0.0	3.1	0.7	71.4	17.1	>9	74.5	17.9	>34
	CWHws2	273.4	18.1	6.6	<36		0.0	41.7	15.2	213.6	78.1	>9	255.3	93.4	>34
	MHm1	9629.1	136.4	1.4	<22	495.9	5.1	652.8	6.8	8344.1	86.7	>19	8996.9	93.4	>36
	Intermediate Total		37593.8	5733.5	15.3		1113.8	3.0	2892.1	7.7	27854.4	74.1		30746.5	81.8
Protected Total		7.3		0.0		1.3	17.1		0.0	6.1	82.9		6.1	82.9	
Hirsch Total		37601.1	5733.5	15.2		1115.0	3.0	2892.1	7.7	27860.4	74.1		30752.6	81.8	
Ishkheennickh (Ksi Hlginx) (Intermediate)	ATp	65.1		0.0	<15		0.0		0.0	65.1	100.0	n/a	65.1	100.0	>85
	CWHvm	113.2		0.0	<30		0.0		0.0	113.2	100.0	>13	113.2	100.0	>36
	CWHws1	866.3	149.2	17.2	<36		0.0	343.1	39.6	374.0	43.2	>9	717.1	82.8	>34
	CWHws2	3887.2	126.4	3.3	<36	1.8	0.0	2057.6	52.9	1701.4	43.8	>9	3759.0	96.7	>34
	MHm1	2539.2		0.0	<22	53.2	2.1	1240.8	48.9	1245.2	49.0	>19	2486.0	97.9	>36
Ishkheennickh (Ksi Hlginx) Total		7470.9	275.6	3.7		55.0	0.7	3641.5	48.7	3498.8	46.8		7140.3	95.6	
Kalum (Intermediate)	ATp	13.6		0.0	<15		0.0		0.0	13.6	100.0	n/a	13.6	100.0	>85
	CWHws1	10613.1	4175.7	39.3	<36	3497.4	33.0	1171.6	11.0	1768.3	16.7	>9	2939.9	27.7	>34
	CWHws2	3468.3	1178.1	34.0	<36	6.8	0.2	63.9	1.8	2219.4	64.0	>9	2283.3	65.8	>34
	MHm2	1339.4	111.3	8.3	<22	23.6	1.8	27.0	2.0	1177.5	87.9	>19	1204.5	89.9	>36
	Intermediate Total		15434.3	5465.1	35.4		3527.9	22.9	1262.5	8.2	5178.8	33.6		6441.3	41.7
Protected Total		59.8	0.1	0.2		3.8	6.3	53.4	89.3	2.5	4.2		55.9	93.5	
Kalum Total		15494.1	5465.2	35.3		3531.6	22.8	1315.9	8.5	5181.3	33.4		6497.3	41.9	

Appendix C: Seral Stage Assessment

Landscape Unit (biodiversity emphasis)	BEC zone variant ¹	Total FLB (ha) ²	Early (ha) ³	Early (%FLB) ⁴	Early Target (%FLB) ⁵	Mid (ha) ⁶	Mid (%FLB) ⁷	Mature (ha) ⁸	Mature (%FLB) ⁹	Old (ha) ¹⁰	Old (%FLB) ¹¹	Old Target (%FLB) ¹²	Mature+ Old (ha) ¹³	Mature+ Old (%FLB) ¹⁴	Mature+ Old Target (%FLB) ¹⁵
Kasiks (Intermediate)	CWHvm	1092.0		0.0	<30	35.9	3.3	728.1	66.7	328.0	30.0	>13	1056.1	96.7	>36
	MHm1	167.6		0.0	<22		0.0	127.0	75.8	40.6	24.2	>19	167.6	100.0	>36
Kasiks Total		1259.6		0.0		35.9	2.8	855.1	67.9	368.6	29.3		1223.7	97.2	
Kemano (Intermediate)	ATp	140.1		0.0	<15	59.0	42.1	23.1	16.5	58.0	41.4	n/a	81.1	57.9	>85
	CWHvm	3660.9	404.8	11.1	<30	78.5	2.1	1806.6	49.3	1371.0	37.5	>13	3177.6	86.8	>36
	CWHvm1	2403.0	14.8	0.6	<30	86.6	3.6	920.7	38.3	1380.9	57.5	>13	2301.6	95.8	>36
	CWHvm2	1420.9		0.0	<30	55.1	3.9	653.8	46.0	712.1	50.1	>13	1365.8	96.1	>36
	CWHws2	10578.4	2075.4	19.6	<36	128.2	1.2	2290.4	21.7	6084.4	57.5	>9	8374.9	79.2	>34
	ESSFmk	187.3		0.0	<36	6.3	3.4	7.6	4.1	173.4	92.6	>9	181.0	96.6	>28
	MHm1	3123.9	10.4	0.3	<22	403.0	12.9	917.9	29.4	1792.6	57.4	>19	2710.5	86.8	>36
	MHm2	10261.3	88.3	0.9	<22	1102.9	10.7	2713.2	26.4	6356.9	62.0	>19	9070.1	88.4	>36
	Intermediate Total		31775.9	2593.7	8.2		1919.6	6.0	9333.3	29.4	17929.3	56.4		27262.6	85.8
Protected Total		532.6	6.2	1.2		55.4	10.4	86.7	16.3	384.3	72.2		471.0	88.4	
Kemano Total		32308.5	2599.9	8.0		1975.1	6.1	9420.0	29.2	18313.6	56.7		27733.6	85.8	
Lakelse (Intermediate)	ATp	132.6		0.0	<15	27.6	20.8	10.9	8.3	94.0	70.9	n/a	104.9	79.2	>85
	CWHws1	11868.5	6834.8	57.6	<36	631.2	5.3	1497.7	12.6	2904.9	24.5	>9	4402.6	37.1	>34
	CWHws2	7354.4	2086.4	28.4	<36	14.4	0.2	393.4	5.3	4860.1	66.1	>9	5253.6	71.4	>34
	MHm2	3198.1	166.2	5.2	<22	77.5	2.4	145.4	4.5	2808.9	87.8	>19	2954.4	92.4	>36
	Intermediate Total		22553.5	9087.4	40.3		750.7	3.3	2047.5	9.1	10667.9	47.3		12715.4	56.4
Protected Total		680.8	23.7	3.5			0.0	71.7	17.9	304.8	76.2		376.5	94.1	
Lakelse Total		23234.3	9111.1	39.2		750.7	3.2	2119.2	9.1	11253.4	48.4		13372.6	57.6	

Appendix C: Seral Stage Assessment

Landscape Unit (biodiversity emphasis)	BEC zone variant ¹	Total FLB (ha) ²	Early (ha) ³	Early (%FLB) ⁴	Early Target (%FLB) ⁵	Mid (ha) ⁶	Mid (%FLB) ⁷	Mature (ha) ⁸	Mature (%FLB) ⁹	Old (ha) ¹⁰	Old (%FLB) ¹¹	Old Target (%FLB) ¹²	Mature+ Old (ha) ¹³	Mature+ Old (%FLB) ¹⁴	Mature+ Old Target (%FLB) ¹⁵	
Tseax (Ksi Sii Aks) (Intermediate)	ATp	0.1		0.0	<15		0.0		0.0	0.1	100.0	n/a	0.1	100.0	>85	
	CWHws1	1952.6	828.1	42.4	<36	60.6	3.1	354.0	18.1	709.9	36.4	>9	1063.9	54.5	>34	
	CWHws2	9252.0	913.9	9.9	<36	8.8	0.1	750.9	8.1	7578.3	81.9	>9	8329.3	90.0	>34	
	ICHmc1	1244.0	273.9	22.0	<36	68.4	5.5	696.9	56.0	204.8	16.5	>9	901.7	72.5	>31	
	ICHmc2	11617.1	5230.8	45.0	<36	621.5	5.3	1962.9	16.9	3801.9	32.7	>9	5764.8	49.6	>31	
	MHmm2	3666.3	71.8	2.0	<22		0.0	240.9	6.6	3353.7	91.5	>19	3594.6	98.0	>36	
	Intermediate Total		27732.1	7318.5	26.4		759.3	2.7	4005.6	14.4	15648.6	56.4		19654.3	70.9	
		CWHws2	1513.1		0.0			0.0	777.9	51.4	735.2	48.6		1513.1	100.0	
		ICHmc2	1977.0	186.0	9.4		332.6	16.8	823.1	41.6	635.3	32.1		1458.4	73.8	
		MHmm2	747.1		0.0		9.4	1.3	305.4	40.9	432.2	57.9		737.6	98.7	
Protected Total		4237.1	186.0	4.4		342.0	8.1	1906.4	45.0	1802.7	42.5		3709.1	87.5		
Tseax (Ksi Sii Aks) Total		31969.2	7504.5	23.5		1101.3	3.4	5912.1	18.5	17451.3	54.6		23363.4	73.1		
Wedeeene (Intermediate)	ATp	134.9		0.0	<15	21.6	16.0	2.5	1.9	110.9	82.2	n/a	113.4	84.0	>85	
	CWHvh2	310.9	20.6	6.6	<30	39.8	12.8	29.8	9.6	220.8	71.0	>13	250.6	80.6	>36	
	CWHvm	12916.6	3240.1	25.1	<30	540.3	4.2	919.8	7.1	8216.5	63.6	>13	9136.3	70.7	>36	
	CWHvm1	5.3		0.0	<30	3.6	69.0	1.4	27.4	0.2	3.6	>13	1.6	31.0	>36	
	CWHws1	6410.1	4633.8	72.3	<36	129.8	2.0	264.4	4.1	1382.2	21.6	>9	1646.6	25.7	>34	
	CWHws2	5532.6	1744.4	31.5	<36	43.8	0.8	566.6	10.2	3177.8	57.4	>9	3744.4	67.7	>34	
	MHmm1	4001.4	33.2	0.8	<22	549.6	13.7	341.5	8.5	3077.1	76.9	>19	3418.6	85.4	>36	
	MHmm2	3990.6	185.3	4.6	<22	322.9	8.1	520.5	13.0	2961.9	74.2	>19	3482.4	87.3	>36	
	Intermediate Total		33302.4	9857.3	29.6		1651.3	5.0	2646.4	7.9	19147.3	57.5		21793.8	65.4	
		CWHvm	12.3		0.0			0.0	9.4	77.0	2.8	23.0		12.3	100.0	
	MHmm1	10.8		0.0			0.0	10.8	100.0		0.0		10.8	100.0		
Protected Total		23.1		0.0			0.0	20.3	87.8	2.8	12.2		23.1	100.0		
Wedeeene Total		33325.4	9857.3	29.6		1651.3	5.0	2666.7	8.0	19150.1	57.5		21816.8	65.5		
Dala (Low)	ATp	349.0		0.0	<15	217.1	62.2	28.7	8.2	103.2	29.6	n/a	131.9	37.8	>85	
	CWHvm	9944.6	2323.4	23.4	n/a	492.5	5.0	1113.8	11.2	6014.8	60.5	>13	7128.6	71.7	>18	
	CWHws2	8566.9	799.6	9.3	n/a	108.8	1.3	1831.3	21.4	5827.2	68.0	>9	7658.5	89.4	>17	
	MHmm1	11238.7	259.9	2.3	n/a	1549.3	13.8	2452.5	21.8	6977.0	62.1	>19	9429.5	83.9	>19	
	Low Total		30099.2	3382.9	11.2		2367.8	7.9	5426.3	18.0	18922.2	62.9		24348.5	80.9	
	CWHvm	35.4		0.0		1.5	4.2	29.7	83.8	4.3	12.0		33.9	95.8		
Protected Total		35.4		0.0		1.5	4.2	29.7	83.8	4.3	12.0		33.9	95.8		
Dala Total		30134.6	3382.9	11.2		2369.3	7.9	5456.0	18.1	18926.4	62.8		24382.4	80.9		

Appendix C: Seral Stage Assessment

Landscape Unit (biodiversity emphasis)	BEC zone variant ¹	Total FLB (ha) ²	Early (ha) ³	Early (%FLB) ⁴	Early Target (%FLB) ⁵	Mid (ha) ⁶	Mid (%FLB) ⁷	Mature (ha) ⁸	Mature (%FLB) ⁹	Old (ha) ¹⁰	Old (%FLB) ¹¹	Old Target (%FLB) ¹²	Mature+ Old (ha) ¹³	Mature+ Old (%FLB) ¹⁴	Mature+ Old Target (%FLB) ¹⁵
Dasque (Low)	ATp	0.9		0.0	<15		0.0		0.0	0.9	100.0	n/a	0.9	100.0	>85
	CWHws1	1568.3	654.3	41.7	n/a	236.4	15.1	26.3	1.7	651.3	41.5	>9	677.6	43.2	>17
	CWHws2	1611.9	335.2	20.8	n/a		0.0	16.6	1.0	1260.1	78.2	>9	1276.8	79.2	>17
	MHm2	684.4	29.9	4.4	n/a		0.0	4.9	0.7	649.6	94.9	>19	654.5	95.6	>19
Dasque Total		3865.4	1019.4	26.4		236.4	6.1	47.9	1.2	2561.8	66.3		2609.7	67.5	
Exchamsiks (Low)	CWHvm	3637.5		0.0	n/a	101.3	2.8	1190.2	32.7	2346.1	64.5	>13	3536.3	97.2	>18
	MHm1	417.3		0.0	n/a	8.8	2.1	80.6	19.3	327.8	78.6	>19	408.4	97.9	>19
	Low Total		4054.8	0.0		110.1	2.7	1270.8	31.3	2673.9	65.9		3944.7	97.3	
	CWHvm	777.6		0.0		64.3	8.3	393.6	50.6	319.8	41.1		713.4	91.7	
Protected Total		780.0	0.0	0.0		64.3	8.2	393.6	50.5	322.2	41.3		715.8	91.8	
Exchamsiks Total		4834.8	0.0	0.0		174.3	3.6	1664.4	34.4	2996.1	62.0		4660.4	96.4	
Falls (Low)	ATp	134.1	1.6	1.2	<15	42.9	32.0	2.6	2.0	86.9	64.8	n/a	89.5	66.8	>85
	CWHvm	24557.6	2517.1	10.2	n/a	833.7	3.4	3218.5	13.1	17988.3	73.2	>13	21206.8	86.4	>18
	CWHvm1	204.9	92.1	45.0	n/a	24.0	11.7	0.8	0.4	88.0	43.0	>13	88.8	43.3	>18
	CWHvm2	14.3		0.0	n/a		0.0		0.0	14.3	100.0	>13	14.3	100.0	>18
	MHm1	7546.9	87.7	1.2	n/a	948.1	12.6	932.8	12.4	5578.4	73.9	>19	6511.2	86.3	>19
	Low Total		32457.8	2698.6	8.3		1848.7	5.7	4154.7	12.8	23755.9	73.2		27910.6	86.0
Protected Total		205.5	0.4	0.2		17.4	8.5	6.6	3.2	181.0	88.1		187.6	91.3	
Falls Total		32663.3	2699.0	8.3		1866.1	5.7	4161.3	12.7	23936.9	73.3		28098.2	86.0	
Hawkesbury Island East (Low)	CWHvh2	4178.9	185.9	4.4	n/a	294.8	7.1	207.9	5.0	3490.3	83.5	>13	3698.2	88.5	>18
	CWHvm	0.5		0.0	n/a		0.0		0.0	0.5	100.0	>13	0.5	100.0	>18
	MHwh1	253.3		0.0	n/a		0.0	0.4	0.2	252.9	99.8	>19	253.3	100.0	>19
Hawkesbury Island East Total		4432.7	185.9	4.2		294.8	6.7	208.3	4.7	3743.7	84.5		3952.0	89.2	
Horetzky (Low)	ATp	74.8		0.0	<15	59.5	79.5	0.2	0.3	15.1	20.2	n/a	15.3	20.5	>85
	CWHvm	11.1		0.0	n/a		0.0	5.7	51.1	5.4	48.9	>13	11.1	100.0	>18
	CWHws2	1972.2	506.6	25.7	n/a	82.6	4.2	243.3	12.3	1139.7	57.8	>9	1383.0	70.1	>17
	MHm2	4157.0	50.8	1.2	n/a	460.6	11.1	1037.3	25.0	2608.3	62.7	>19	3645.6	87.7	>19
Horetzky Total		6215.1	557.4	9.0		602.6	9.7	1286.5	20.7	3768.6	60.6		5055.1	81.3	

Appendix C: Seral Stage Assessment

Landscape Unit (biodiversity emphasis)	BEC zone variant ¹	Total FLB (ha) ²	Early (ha) ³	Early (%FLB) ⁴	Early Target (%FLB) ⁵	Mid (ha) ⁶	Mid (%FLB) ⁷	Mature (ha) ⁸	Mature (%FLB) ⁹	Old (ha) ¹⁰	Old (%FLB) ¹¹	Old Target (%FLB) ¹²	Mature+ Old (ha) ¹³	Mature+ Old (%FLB) ¹⁴	Mature+ Old Target (%FLB) ¹⁵
Hot Springs (Low)	CWHws1	6862.4	3496.5	51.0	n/a	155.3	2.3	1003.1	14.6	2207.5	32.2	>9	3210.6	46.8	>17
	CWHws2	1437.6	29.6	2.1	n/a	9.4	0.7	264.8	18.4	1133.8	78.9	>9	1398.6	97.3	>17
	MHm2	816.6		0.0	n/a	46.3	5.7	269.3	33.0	501.1	61.4	>19	770.4	94.3	>19
	Low Total		9116.6	3526.1	38.7		210.9	2.3	1537.1	16.9	3842.4	42.1		5379.6	59.0
Protected Total	CWHws1	933.8	488.4	52.3		32.2	3.4	277.1	29.7	136.1	14.6		413.1	44.2	
		933.8	488.4	52.3		32.2	3.4	277.1	29.7	136.1	14.6		413.1	44.2	
Hot Springs Total		10050.4	4014.6	39.9		243.1	2.4	1814.2	18.1	3978.5	39.6		5792.7	57.6	
Jesse Bish (Low)	ATp	24.7		0.0	<15	23.4	94.9		0.0	1.3	5.1	n/a	1.3	5.1	>85
	CWHvm	15525.6	663.7	4.3	n/a	276.5	1.8	1921.8	12.4	12663.6	81.6	>13	14585.4	93.9	>18
	MHm1	4027.4	11.6	0.3	n/a	786.4	19.5	701.1	17.4	2528.3	62.8	>19	3229.4	80.2	>19
	Low Total		19577.7	675.3	3.4		1086.4	5.5	2622.9	13.4	15193.1	77.6		17816.1	91.0
	ATp	7.4		0.0			0.0		0.0	7.4	100.0		7.4	100.0	
	CWHvh2	0.3		0.0			0.0		0.0	0.3	100.0		0.3	100.0	
	CWHvm	995.3	45.7	4.6		5.5	0.6	71.4	7.2	872.6	87.7		944.1	94.9	
	MHm1	212.6		0.0		18.5	8.7	9.3	4.4	184.8	86.9		194.1	91.3	
Protected Total		1215.4	45.7	3.8		24.0	2.0	80.7	6.6	1065.1	87.6		1145.8	94.3	
Jesse Bish Total		20793.1	720.9	3.5		1110.4	5.3	2703.6	13.0	16258.2	78.2		18961.8	91.2	
Kiteen (Ksi Gahl't'in) (Low)	ATp	9.3		0.0	<15	0.3	3.4	0.6	6.8	8.3	89.9	n/a	8.9	96.6	>85
	CWHws2	15996.7	1858.8	11.6	n/a	1129.8	7.1	1985.1	12.4	11023.1	68.9	>9	13008.1	81.3	>17
	ESSFwv	6.2		0.0	n/a		0.0		0.0	6.2	100.0	>19	6.2	100.0	>19
	ICHmc1	253.6	3.6	1.4	n/a	9.4	3.7	217.6	85.8	23.0	9.1	>9	240.6	94.9	>15
	ICHmc2	3072.5	1466.1	47.7	n/a	160.3	5.2	794.8	25.9	651.4	21.2	>9	1446.1	47.1	>15
	MHm2	18193.3	739.5	4.1	n/a	515.3	2.8	872.7	4.8	16065.9	88.3	>19	16938.6	93.1	>19
Kiteen (Ksi Gahl't'in) Total		37531.6	4067.9	10.8		1815.1	4.8	3870.8	10.3	27777.8	74.0		31648.6	84.3	

Appendix C: Seral Stage Assessment

Landscape Unit (biodiversity emphasis)	BEC zone variant ¹	Total FLB (ha) ²	Early (ha) ³	Early (%FLB) ⁴	Early Target (%FLB) ⁵	Mid (ha) ⁶	Mid (%FLB) ⁷	Mature (ha) ⁸	Mature (%FLB) ⁹	Old (ha) ¹⁰	Old (%FLB) ¹¹	Old Target (%FLB) ¹²	Mature+ Old (ha) ¹³	Mature+ Old (%FLB) ¹⁴	Mature+ Old Target (%FLB) ¹⁵	
Kitimat (Low)	ATp	333.9		0.0	<15	69.4	20.8	112.5	33.7	152.0	45.5	n/a	264.5	79.2	>85	
	CWHvm	753.8	293.8	39.0	n/a	42.4	5.6	143.2	19.0	274.4	36.4	>13	417.6	55.4	>18	
	CWHws1	25540.7	17151.5	67.2	n/a	495.1	1.9	1368.1	5.4	6526.0	25.6	>9	7894.1	30.9	>17	
	CWHws2	21966.4	4211.7	19.2	n/a	87.1	0.4	2059.3	9.4	15608.3	71.1	>9	17667.6	80.4	>17	
	MHm1	8248.1	56.7	0.7	n/a	489.0	5.9	1678.3	20.3	6024.1	73.0	>19	7702.4	93.4	>19	
	MHm2	5522.9	238.6	4.3	n/a	208.9	3.8	1246.4	22.6	3829.1	69.3	>19	5075.4	91.9	>19	
	Low Total		62365.8	21952.3	35.2		1391.9	2.2	6607.8	10.6	32413.8	52.0		39021.6	62.6	
	CWHvm	30.9	3.1	10.1			0.0		0.0	27.8	89.9		27.8	89.9		
	CWHws1	125.6	96.5	76.8		13.1	10.4	12.8	10.1	3.3	2.6		16.0	12.7		
	Protected Total		156.6	99.6	63.6		13.1	8.4	12.8	8.1	31.1	19.8		43.8	28.0	
Kitimat Total		62522.3	22051.9	35.3		1405.0	2.2	6620.6	10.6	32444.9	51.9		39065.4	62.5		
Kleanza Treasure (Low)	ATp	378.8		0.0	<15		0.0	143.1	37.8	235.6	62.2	n/a	378.8	100.0	>85	
	CWHws1	15483.9	6576.3	42.5	n/a	541.9	3.5	3853.3	24.9	4512.4	29.1	>9	8365.8	54.0	>17	
	CWHws2	28023.3	6518.8	23.3	n/a	143.4	0.5	2051.5	7.3	19309.6	68.9	>9	21361.1	76.2	>17	
	ICHmc2	815.8	267.6	32.8	n/a	254.6	31.2	194.6	23.9	99.0	12.1	>9	293.6	36.0	>15	
	MHm2	18849.9	2127.8	11.3	n/a	78.9	0.4	2040.9	10.8	14602.4	77.5	>19	16643.3	88.3	>19	
	Low Total		63551.6	15490.4	24.4		1018.8	1.6	8283.4	13.0	38759.1	61.0		47042.5	74.0	
	CWHws1	234.7	17.9	7.6		17.6	7.5	101.3	43.1	97.9	41.7		199.1	84.8		
	CWHws2	66.0		0.0			0.0		0.0	66.0	100.0		66.0	100.0		
	MHm2	18.8		0.0			0.0		0.0	18.8	100.0		18.8	100.0		
	Protected Total		319.4	17.9	5.6		17.6	5.5	101.3	31.7	182.6	57.2		283.9	88.9	
Kleanza Treasure Total		63871.1	15508.3	24.3		1036.4	1.6	8384.7	13.1	38941.7	61.0		47326.4	74.1		
Ksedin (Ksi Mat'in) (Low)	ATp	80.1		0.0	<15	1.3	1.6	0.7	0.9	78.1	97.5	n/a	78.8	98.4	>85	
	CWHws1	977.3	452.9	46.3	n/a	20.9	2.1	15.6	1.6	487.9	49.9	>9	503.5	51.5	>17	
	CWHws2	3262.8	392.1	12.0	n/a		0.0	206.0	6.3	2664.8	81.7	>9	2870.8	88.0	>17	
	MHm2	3560.2	5.2	0.1	n/a	129.3	3.6	251.4	7.1	3174.3	89.2	>19	3425.7	96.2	>19	
	Ksedin (Ksi Mat'in) Total		7880.4	850.1	10.8		151.5	1.9	473.6	6.0	6405.1	81.3		6878.8	87.3	

Appendix C: Seral Stage Assessment

Landscape Unit (biodiversity emphasis)	BEC zone variant ¹	Total FLB (ha) ²	Early (ha) ³	Early (%FLB) ⁴	Early Target (%FLB) ⁵	Mid (ha) ⁶	Mid (%FLB) ⁷	Mature (ha) ⁸	Mature (%FLB) ⁹	Old (ha) ¹⁰	Old (%FLB) ¹¹	Old Target (%FLB) ¹²	Mature+ Old (ha) ¹³	Mature+ Old (%FLB) ¹⁴	Mature+ Old Target (%FLB) ¹⁵
Nelson Fiddler (Low)	ATp	126.5		0.0	<15	11.9	9.4	12.3	9.7	102.3	80.9	n/a	114.6	90.6	>85
	CWHws1	19749.3	9510.4	48.2	n/a	3658.4	18.5	2253.7	11.4	4326.8	21.9	>9	6580.5	33.3	>17
	CWHws2	16428.8	3751.7	22.8	n/a	211.8	1.3	1792.4	10.9	10672.9	65.0	>9	12465.4	75.9	>17
	ICHmc2	437.4	46.3	10.6	n/a	192.5	44.0	11.8	2.7	186.9	42.7	>9	198.6	45.4	>15
	MHmm2	13806.2	1126.2	8.2	n/a	444.5	3.2	1236.3	9.0	10999.2	79.7	>19	12235.5	88.6	>19
Low Total		50548.1	14434.5	28.6		4519.1	8.9	5306.4	10.5	26288.1	52.0		31594.6	62.5	
Protected Total	CWHws1	127.7	81.9	64.2			0.0	45.0	35.2	0.8	0.6		45.8	35.8	
	CWHws2	9.4		0.0			0.0		0.0	9.4	100.0		9.4	100.0	
	MHmm2	55.2		0.0			0.0		0.0	55.2	100.0		55.2	100.0	
Nelson Fiddler Total		50548.1	14434.5	28.6		4519.1	8.9	5306.4	10.5	26288.1	52.0		31594.6	62.5	
Grand Total		653366.6	139167.4	21.3		36102.4	5.5	90621.1	13.9	387475.8	59.3		478096.9	73.2	

1. Biogeoclimatic Ecosystem Classification (BEC) zone variant.
2. Total forested land base (FLB).
3. Area of forested land base in early seral stage.
4. Forested land base in early seral stage as a percent of total forested land base.
5. Early seral stage target as a percent of forested land base (from the *Biodiversity Guidebook* 1995).
6. Area of forested land base in mid seral stage.
7. Forested land base in mid seral stage as a percent of total forested land base.
8. Area of forested land base in mature seral stage.
9. Forested land base in mature seral stage as a percent of total forested land base.
10. Area of forested land base in old seral stage.
11. Forested land base in old seral stage as a percent of total forested land base.
12. Old seral stage target as a percent of forested land base (from the *Biodiversity Guidebook* 1995). These targets apply only to the portion of a landscape unit that is outside of undeveloped watersheds.
13. Area of forested land base in mature and old seral stages.
14. Forested land base in mature and old seral stages as a percent of total forested land base.
15. Mature and old seral stages target as a percent of forested land base (from the *Biodiversity Guidebook* 1995).

Appendix D: OGMAs Area Analysis

Landscape Unit (biodiversity emphasis)	BEC zone Variant ¹	Total FLB (ha) ²	Old age (years) ³	Old Target ⁴		Draft OGMAs ⁵		Old Forest in other established or proposed designations ⁶		Sum of Draft OGMAs and Old Forest in other designations ⁷	
				%	Ha	% of target	Ha	% of target	Ha	% of target	Ha
Beaver (intermediate)	CWHws1	16,557	>250	9	1,490	82	1,225	14	215	97	1,440
	CWHws2	13,776	>250	9	1,240	0	0	147	1,820	147	1,820
	MHm2	11,986	>250	19	2,277	1	22	143	3,267	144	3,289
LU total		42,319			5,007		1,247		5,302		6,549
Clore (intermediate)	CWHws1	7,421	>250	9	668	75	499	10	64	84	562
	CWHws2	15,199	>250	9	1,368	26	358	70	960	96	1,317
	ESSFmk	707	>250	9	64	94	60	0	0	94	60
	ESSFwv	78	>250	19	15	0	0	262	39	262	39
	MHm2	14,193	>250	19	2,697	78	2,092	19	505	96	2,597
LU total		37,599			4,811		3,008		1,567		4,575
Dala (low)	CWHvm	9,980	>250	13	1,293	93	1,208	3	36	96	1,244
	CWHws2	8,567	>250	9	771	68	522	29	225	97	747
	MHm1	11,239	>250	19	2,135	69	1,484	27	580	97	2,064
LU total		29,786			4,199		3,225		829		4,055
Dasque (low)	CWHws1	1,568	>250	9	141	92	130	4	5	96	135
	CWHws2	1,612	>250	9	145	6	8	91	133	97	141
	MHm2	684	>250	19	130	94	122	2	2	95	124
LU total		3,865			416		260		140		399
Exchamsiks (low)	CWHvm	4,415	>250	13	574	20	113	78	446	97	559
	MHm1	420	>250	19	80	0	0	87	69	87	69
LU total		4,835			654		113		515		628
Exstew (intermediate)	CWHws1	3,685	>250	9	332	81	270	15	49	96	319
	CWHws2	3,854	>250	9	347	35	120	63	219	98	339
	MHm2	1,279	>250	19	243	63	153	35	85	98	238
LU total		8,818			922		543		353		896

Appendix D: OGMAs Area Analysis

Landscape Unit (biodiversity emphasis)	BEC zone Variant ¹	Total FLB (ha) ²	Old age (years) ³	Old Target ⁴		Draft OGMAs ⁵		Old Forest in other established or proposed designations ⁶		Sum of Draft OGMAs and Old Forest in other designations ⁷	
				%	Ha	% of target	Ha	% of target	Ha	% of target	Ha
Falls (low)	CWHvm	22,358	>250	13	2,906	73	2,129	23	673	96	2,802
	CWHvm1	205	>250	13	27	77	21	0	0	77	21
	CWHvm2	14	>250	13	2	0	0	0	0	0	0
	MHmm1	6,678	>250	19	1,269	70	884	27	338	96	1,222
LU total		29,255			4,204		3,033		1,011		4,045
Hawkesbury Island East (low)	CWHvh2	4,179	>250	13	543	96	521	0	0	96	521
	CWHvm	1	>250	13	0	0	0	0	0	0	0
	MHwh1	253	>250	19	48	100	48	0	0	100	48
LU total		4,433			591		569		0		569
Hawkesbury Island West (intermediate)	CWHvh2	8,586	>250	13	1,116	91	1,021	5	57	97	1,078
	MHwh1	625	>250	19	119	99	118	0	0	99	118
LU total		9,211			1,235		1,139		57		1,196
Hirsch (intermediate)	CWHvm	24,692	>250	13	3,210	93	2,975	4	122	96	3,096
	CWHws1	417	>250	9	38	77	29	0	0	77	29
	CWHws2	273	>250	9	25	75	18	0	0	75	18
	MHmm1	8,864	>250	19	1,684	83	1,406	13	216	96	1,621
LU total		34,247			4,956		4,428		337		4,765
Horetzky (low)	CWHvm	11	>250	13	1	0	0	0	0	0	0
	CWHws2	1,972	>250	9	177	33	59	61	108	94	167
	MHmm2	4,157	>250	19	790	80	630	16	129	96	759
LU total		6,140			969		689		237		926
Hot Springs (low)	CWHws1	7,796	>250	9	702	59	412	37	263	96	675
	CWHws2	1,438	>250	9	129	90	117	4	6	95	123
	MHmm2	817	>250	19	155	96	148	1	1	96	149
LU total		10,050			986		677		270		946

Appendix D: OGMAs Area Analysis

Landscape Unit (biodiversity emphasis)	BEC zone Variant ¹	Total FLB (ha) ²	Old age (years) ³	Old Target ⁴		Draft OGMAs ⁵		Old Forest in other established or proposed designations ⁶		Sum of Draft OGMAs and Old Forest in other designations ⁷	
				%	Ha	% of target	Ha	% of target	Ha	% of target	Ha
Ishkheenickh (Ksi Hlginx) (intermediate)	CWHvm	113	>250	13	15	107	16	0	0	107	16
	CWHws1	866	>250	9	78	92	72	7	5	99	77
	CWHws2	3,887	>250	9	350	55	194	40	140	95	334
	MHmm1	2,539	>250	19	482	81	390	15	72	96	463
LU total		7,406			925	672	218		889		
Jesse Bish (low)	CWHvh2	0	>250	13	0	0	0	923	0	923	0
	CWHvm	10,304	>250	13	1,340	25	334	72	967	97	1,301
	MHmm1	2,406	>250	19	457	19	88	84	382	103	470
LU total		12,711			1,797	422	1,349		1,771		
Kalum (intermediate)	CWHws1	10,673	>250	9	961	93	895	3	28	96	922
	CWHws2	3,468	>250	9	312	24	74	73	227	97	302
	MHmm2	1,339	>250	19	254	1	3	171	434	172	437
LU total		15,481			1,527	972	689		1,661		
Kasiks (intermediate)	CWHvm	1,092	>250	13	142	52	75	41	58	93	132
	MHmm1	168	>250	19	32	0	0	85	27	85	27
LU total		1,260			174	75	85		160		
Kemano (intermediate)	CWHvm	2,402	>250	13	312	45	142	51	159	96	300
	CWHvm1	754	>250	13	98	43	43	53	52	96	94
	CWHvm2	347	>250	13	45	0	0	104	47	104	47
	CWHws2	9,057	>250	9	815	1	10	96	786	98	795
	ESSFmk	187	>250	9	17	97	16	0	0	97	16
	MHmm1	464	>250	19	88	62	55	32	28	94	83
	MHmm2	10,261	>250	19	1,950	69	1,345	28	542	97	1,887
LU total		23,472			3,325	1,610	1,613		3,223		

Appendix D: OGMAs Area Analysis

Landscape Unit (biodiversity emphasis)	BEC zone Variant ¹	Total FLB (ha) ²	Old age (years) ³	Old Target ⁴		Draft OGMAs ⁵		Old Forest in other established or proposed designations ⁶		Sum of Draft OGMAs and Old Forest in other designations ⁷	
				%	Ha	% of target	Ha	% of target	Ha	% of target	Ha
Kiteen (Ksi Gahlt'in) (low)	CWHws2	15,997	>250	9	1,440	41	588	56	813	97	1,401
	ESSFwv	6	>250	19	1	0	0	0	0	0	0
	ICHmc1	254	>250	9	23	34	8	0	0	34	8
	ICHmc2	3,073	>250	9	277	88	243	7	19	95	262
	MHmm2	18,193	>250	19	3,457	70	2,411	27	931	97	3,343
LU total		37,522			5,197		3,250		1,763		5,013
Kitimat (low)	CWHvm	785	>250	13	102	52	54	43	44	96	98
	CWHws1	25,666	>250	9	2,310	96	2,210	0	6	96	2,216
	CWHws2	21,966	>250	9	1,977	77	1,515	20	395	97	1,910
	MHmm1	8,248	>250	19	1,567	87	1,360	11	166	97	1,526
	MHmm2	5,523	>250	19	1,049	53	557	44	460	97	1,017
LU total		62,188			7,005		5,696		1,070		6,766
Kleanza Treasure (low)	CWHws1	15,719	>250	9	1,415	88	1,240	8	114	96	1,353
	CWHws2	28,089	>250	9	2,528	71	1,804	25	624	96	2,428
	MHmm2	18,869	>250	19	3,585	70	2,512	27	961	97	3,473
	ICHmc2	816	>250	9	73	101	74	0	0	101	74
LU total		63,492			7,601		5,630		1,699		7,329
Ksedin (Ksi Mat'in) (low)	CWHws1	977	>250	9	88	24	21	74	65	98	86
	CWHws2	3,263	>250	9	294	0	0	109	321	109	321
	MHmm2	3,560	>250	19	676	76	515	20	136	96	651
LU total		7,800			1,058		536		522		1,058
Lakelse (intermediate)	CWHws1	12,269	>250	9	1,104	49	546	47	522	97	1,068
	CWHws2	7,622	>250	9	686	33	228	63	434	96	662
	MHmm2	3,211	>250	19	610	54	327	43	261	96	588
LU total		23,102			2,400		1,101		1,217		2,318

Appendix D: OGMAs Area Analysis

Landscape Unit (biodiversity emphasis)	BEC zone Variant ¹	Total FLB (ha) ²	Old age (years) ³	Old Target ⁴		Draft OGMAs ⁵		Old Forest in other established or proposed designations ⁶		Sum of Draft OGMAs and Old Forest in other designations ⁷	
				%	Ha	% of target	Ha	% of target	Ha	% of target	Ha
Nelson Fiddler (low)	CWHws1	19,877	>250	9	1,789	84	1,509	3	50	87	1,559
	CWHws2	16,438	>250	9	1,479	48	714	49	725	97	1,439
	ICHmc2	437	>250	9	39	98	39	0	0	98	39
	MHmm2	13,861	>250	19	2,634	51	1,348	46	1,219	97	2,566
LU total		50,614			5,941		3,609		1,993		5,602
Skeena River Kalum (high)	CWHvm	2,865	>250	19	544	77	421	20	109	97	530
	CWHws1	19,671	>250	13	2,557	95	2,439	1	31	97	2,470
	CWHws2	5,020	>250	13	653	75	489	22	146	97	635
	ICHmc2	3,463	>250	13	450	96	433	0	0	96	433
	MHmm1	25	>250	28	7	17	1	0	0	17	1
	MHmm2	1,692	>250	28	474	69	328	27	128	96	456
LU total		32,735			4,685		4,111		414		4,524
Tseax (Ksi Sii Aks) (intermediate)	CWHws1	1,953	>250	9	176	69	122	25	43	94	165
	CWHws2	10,765	>250	9	969	0	1	111	1,074	111	1,075
	ICHmc1	1,244	>250	9	112	95	106	0	0	95	106
	ICHmc2	13,594	>250	9	1,223	37	448	60	737	97	1,185
	MHmm2	4,413	>250	19	839	12	98	86	719	97	817
LU total		31,969			3,319		774		2,574		3,348

Appendix D: OGMAs Area Analysis

Landscape Unit (biodiversity emphasis)	BEC zone Variant ¹	Total FLB (ha) ²	Old age (years) ³	Old Target ⁴		Draft OGMAs ⁵		Old Forest in other established or proposed designations ⁶		Sum of Draft OGMAs and Old Forest in other designations ⁷	
				%	Ha	% of target	Ha	% of target	Ha	% of target	Ha
Wedene (intermediate)	CWHvh2	311	>250	13	40	55	22	0	0	55	22
	CWHvm	12,929	>250	13	1,681	89	1,488	8	141	97	1,629
	CWHvm1	5	>250	13	1	0	0	0	0	0	0
	CWHws1	6,410	>250	9	577	95	550	0	0	95	550
	CWHws2	5,533	>250	9	498	98	489	0	0	98	489
	MHmm1	4,012	>250	19	762	0	0	98	746	98	746
	MHmm2	3,991	>250	19	758	38	289	59	445	97	734
LU total		33,191			4,317		2,838		1,332		4,170
GRAND TOTAL		619,635			77,806		49,825		27,156		76,981

1. Biogeoclimatic Ecosystem Classification (BEC) zone variant.
2. Total forested land base (FLB).
3. Age at which a stand is considered old seral ("old growth") as defined in the *Biodiversity Guidebook* (1995).
4. Old seral stage target as a percent of forested land base (from the *Biodiversity Guidebook* 1995), and in hectares. This applies only to those portions of a landscape unit outside of undeveloped watersheds. In undeveloped watersheds, old growth targets will be accounted for non-spatially.
5. Draft Old Growth Management Areas (OGMAs) as a percent of Old Target, and in hectares. The OGMA that covers the Ascapus WHA (as identified by the Ministry of Environment) includes recruitment of stands <250 years old (295.7 Ha) and stands which are approved cut blocks (98.3 Ha; proposed cutting will not be affected). This is consistent with the Landscape Unit Planning Guide (the target amount of old growth will be in place by the end of the third rotation (240 years)).
6. Old growth in this column contributes to the Old Target, but will not become Old Growth Management Areas. These designations are: parks, Protected Areas, ecological reserves, Kalum LRMP Upper Kitsumkalum SRMZ and Lakelse River SRMZ (Subzone 1), proposed tailed frog Wildlife Habitat Areas, and proposed goat Ungulate Winter Range.
7. The amount of the old growth target not represented in this column will be accounted for non-spatially.

Appendix E: Patch Size Distribution Assessment

I – All Management Units, NDT 1

Landscape Unit (LU)	Data	Patch Size Class				Grand Total
		< 40 Ha	40 – 80 Ha	80 – 250 Ha	250+ Ha	
Beaver	Area (ha)	2816.2	1513.6	1698	5958.4	11986.1
	% of LU	23.50%	12.60%	14.20%	49.70%	100.00%
Clore	Area (ha)	1591.3	817	1286.3	10576.8	14271.3
	% of LU	11.20%	5.70%	9.00%	74.10%	100.00%
Dala	Area (ha)	7056.3	1851.6	1757.1	10553.8	21218.8
	% of LU	33.30%	8.70%	8.30%	49.70%	100.00%
Dasque	Area (ha)	567.1	85	7.4	24.8	684.4
	% of LU	82.90%	12.40%	1.10%	3.60%	100.00%
Exchamsiks	Area (ha)	1910.5	956.8	1344.6	622.8	4834.8
	% of LU	39.50%	19.80%	27.80%	12.90%	100.00%
Exstew	Area (ha)	284.4	106.3	499.2	389.2	1279.1
	% of LU	22.20%	8.30%	39.00%	30.40%	100.00%
Falls	Area (ha)	7633.8	2442.1	2501.2	19952.2	32529.3
	% of LU	23.50%	7.50%	7.70%	61.30%	100.00%
Hawkesbury Island East	Area (ha)	639.5	209.9	223.6	3359.7	4432.7
	% of LU	14.40%	4.70%	5.00%	75.80%	100.00%
Hawkesbury Island West	Area (ha)	865.7	117.3	258	7970.4	9211.4
	% of LU	9.40%	1.30%	2.80%	86.50%	100.00%
Hirsch	Area (ha)	4330.2	2184.1	3292.7	26553.3	36360.2
	% of LU	11.90%	6.00%	9.10%	73.00%	100.00%
Horetzky	Area (ha)	1221	489.2	291.5	2166.4	4168.1
	% of LU	29.30%	11.70%	7.00%	52.00%	100.00%
Hot Springs	Area (ha)	145	141	6.3	524.3	816.6
	% of LU	17.80%	17.30%	0.80%	64.20%	100.00%
Ishkheenickh (Ksi Higinx)	Area (ha)	847.8	242.4	300.9	1261.3	2652.4
	% of LU	32.00%	9.10%	11.30%	47.60%	100.00%

Appendix E: Patch Size Distribution Assessment

Landscape Unit (LU)	Data	Patch Size Class				Grand Total
		< 40 Ha	40 – 80 Ha	80 – 250 Ha	250+ Ha	
Jesse Bish	Area (ha)	4020.8	1130.9	849.5	14759.9	20761.1
	% of LU	19.40%	5.40%	4.10%	71.10%	100.00%
Kalum	Area (ha)	408.8	167.2	402.6	360.8	1339.4
	% of LU	30.50%	12.50%	30.10%	26.90%	100.00%
Kasiks	Area (ha)	646.2	304.1	309.3		1259.6
	% of LU	51.30%	24.10%	24.60%	0.00%	100.00%
Kemano	Area (ha)	10052.6	2835.4	4019.9	4494.8	21402.6
	% of LU	47.00%	13.20%	18.80%	21.00%	100.00%
Kiteen (Ksi Gahl't'in)	Area (ha)	2239.3	1247.9	1615.3	13097.1	18199.5
	% of LU	12.30%	6.90%	8.90%	72.00%	100.00%
Kitimat	Area (ha)	3244.5	1400	1272.8	8638.4	14555.7
	% of LU	22.30%	9.60%	8.70%	59.30%	100.00%
Kleanza Treasure	Area (ha)	3382.6	1486.3	2675.1	11324.8	18868.7
	% of LU	17.90%	7.90%	14.20%	60.00%	100.00%
Ksedin (Ksi Mat'in)	Area (ha)	652.8	138.4	29.2	2739.8	3560.2
	% of LU	18.30%	3.90%	0.80%	77.00%	100.00%
Lakelse	Area (ha)	652.6	455.3	152.6	1950.5	3211
	% of LU	20.30%	14.20%	4.80%	60.70%	100.00%
Nelson Fiddler	Area (ha)	3631.3	1824.6	2793.9	5611.5	13861.4
	% of LU	26.20%	13.20%	20.20%	40.50%	100.00%
Skeena River Kalum	Area (ha)	1574.6	974.4	1323.1	709.8	4581.9
	% of LU	34.40%	21.30%	28.90%	15.50%	100.00%
Tseax (Ksi Sii Aks)	Area (ha)	734.6	316.2	273.4	3089.2	4413.4
	% of LU	16.60%	7.20%	6.20%	70.00%	100.00%
Wedeeene	Area (ha)	5063.3	1718	1929.1	12537.6	21248
	% of LU	23.80%	8.10%	9.10%	59.00%	100.00%
Total Area (ha)		85475.2	31757.6	40457.7	178299.3	335989.8
% of Total Area		25.40%	9.50%	12.00%	53.10%	100.00%

Appendix E: Patch Size Distribution Assessment

II – All Management Units, NDT 2

Landscape Unit (LU)	Data	Patch Size Class				Grand Total
		< 40 Ha	40 – 80 Ha	80 – 250 Ha	250+ Ha	
Beaver	Area (ha)	4168.4	4524.5	5003.9	16636.3	30333.1
	% of LU	13.70%	14.90%	16.50%	54.80%	100.00%
Clore	Area (ha)	2458	1825.4	2107.4	16936.6	23327.4
	% of LU	10.50%	7.80%	9.00%	72.60%	100.00%
Dala	Area (ha)	1627.5	1366.3	1203.5	4369.7	8566.9
	% of LU	19.00%	15.90%	14.00%	51.00%	100.00%
Dasque	Area (ha)	931.3	551.4	1237.8	459.7	3180.2
	% of LU	29.30%	17.30%	38.90%	14.50%	100.00%
Exstew	Area (ha)	1927.1	1326.8	2854.2	1431	7539.1
	% of LU	25.60%	17.60%	37.90%	19.00%	100.00%
Hirsch	Area (ha)	42.2	41.6	72.9	533.8	690.5
	% of LU	6.10%	6.00%	10.60%	77.30%	100.00%
Horetzky	Area (ha)	580.8	328.6	183.1	879.7	1972.2
	% of LU	29.50%	16.70%	9.30%	44.60%	100.00%
Hot Springs	Area (ha)	1604.5	968.8	998.4	5662.1	9233.8
	% of LU	17.40%	10.50%	10.80%	61.30%	100.00%
Ishkheenickh (Ksi Hlginx)	Area (ha)	885.4	812.8	879.2	2176.1	4753.4
	% of LU	18.60%	17.10%	18.50%	45.80%	100.00%
Kalum	Area (ha)	3035	1879.1	2234.8	6992.3	14141.1
	% of LU	21.50%	13.30%	15.80%	49.40%	100.00%
Kemano	Area (ha)	3621.4	1093.5	2548.9	3502	10765.8
	% of LU	33.60%	10.20%	23.70%	32.50%	100.00%
Kiteen (Ksi Gahl't'in)	Area (ha)	2030.8	1855.9	2293.6	13142.6	19322.8
	% of LU	10.50%	9.60%	11.90%	68.00%	100.00%
Kitimat	Area (ha)	5212.6	3025.1	6658.9	32736.1	47632.7
	% of LU	10.90%	6.40%	14.00%	68.70%	100.00%
Kleanza Treasure	Area (ha)	6697.1	4359.2	6247.1	27320.3	44623.6
	% of LU	15.00%	9.80%	14.00%	61.20%	100.00%

Appendix E: Patch Size Distribution Assessment

Landscape Unit (LU)	Data	Patch Size Class				Grand Total
		< 40 Ha	40 – 80 Ha	80 – 250 Ha	250+ Ha	
Ksedin (Ksi Mat'in)	Area (ha)	452.4	600.5	340.5	2846.7	4240.1
	% of LU	10.70%	14.20%	8.00%	67.10%	100.00%
Lakelse	Area (ha)	3983.6	1957.7	3717.7	10231.9	19890.9
	% of LU	20.00%	9.80%	18.70%	51.40%	100.00%
Nass River (K'alii Aksim Lisims) Kalum	Area (ha)	434.3	170.9	705.1	429.8	1740.1
	% of LU	25.00%	9.80%	40.50%	24.70%	100.00%
Nelson Fiddler	Area (ha)	7672.1	4354	6238.6	18487.8	36752.6
	% of LU	20.90%	11.80%	17.00%	50.30%	100.00%
Skeena River Kalum	Area (ha)	8028.9	4360.8	6040.8	9722.9	28153.4
	% of LU	28.50%	15.50%	21.50%	34.50%	100.00%
Tseax (Ksi Sii Aks)	Area (ha)	3649.6	2508.3	4839.3	16558.6	27555.8
	% of LU	13.20%	9.10%	17.60%	60.10%	100.00%
Wedene	Area (ha)	2000.7	1275.9	2223.8	6442.3	11942.6
	% of LU	16.80%	10.70%	18.60%	53.90%	100.00%
Total Area (ha)		61043.6	39186.9	58629.4	197498	356357.9
% of Total Area		17.10%	11.00%	16.50%	55.40%	100.00%

Appendix F: Best Management Practices for rare and Endangered Ecosystems

BMPs for Skeena Islands Rare and Endangered Ecosystems