

Draft for IAMC/RRC Review

Cariboo-Chilcotin Land-Use Plan

Horsefly Sustainable Resource Management Plan

January 24, 2003

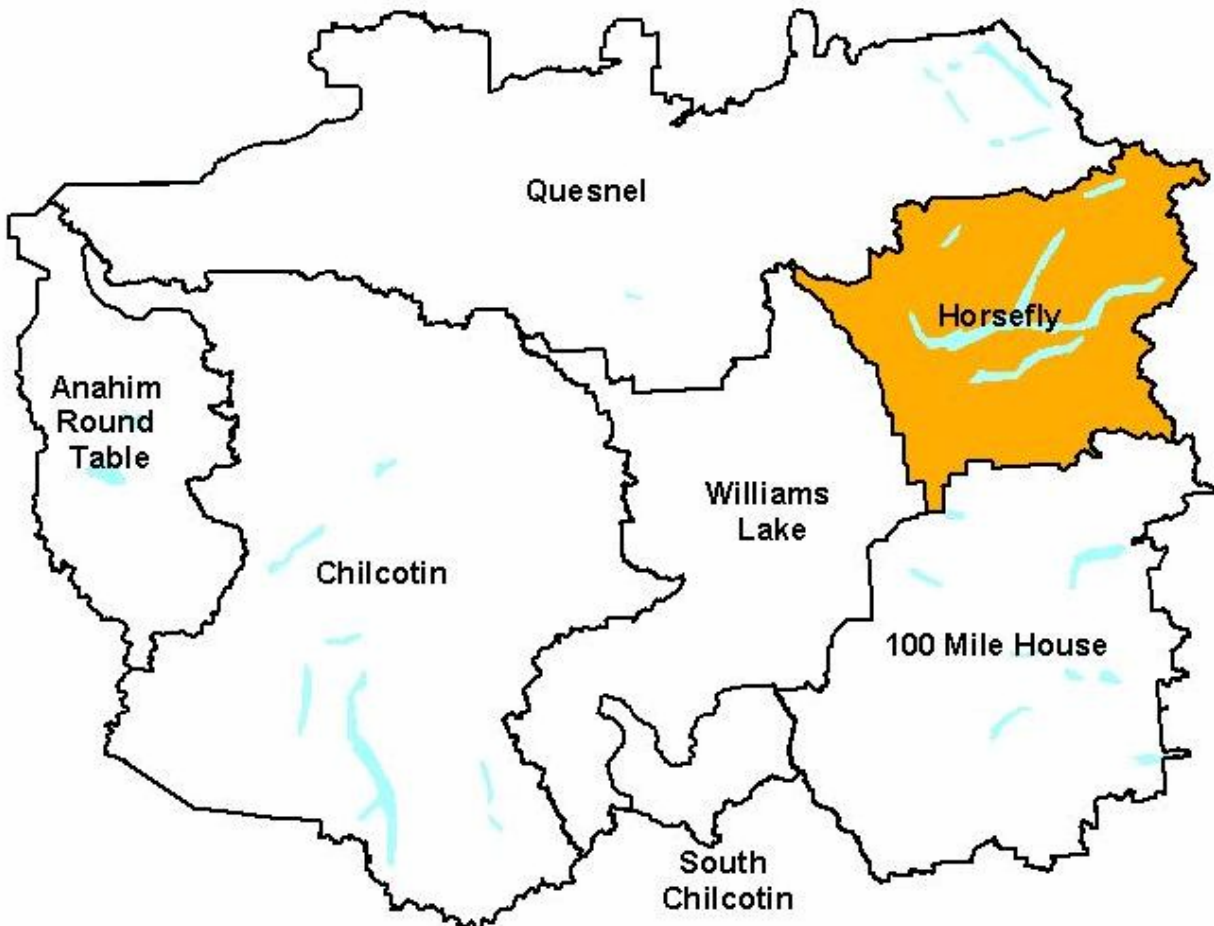


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1 EXECUTIVE SUMMARY

[summary of key results]

2 INTRODUCTION

The Horsefly Sustainable Resource Management Plan (HSRMP) is one of seven SRMPs underway or completed for the region. All seven SRMPs will be completed by March 31, 2004. These plans are important elements of *Cariboo-Chilcotin Land Use Plan (CCLUP)*¹ implementation; they provide the detailed objectives needed to implement the land use plan over the long term.

The process leading up to preparation of the HSRMP began with the original CCLUP which was announced on October 24, 1994. That plan addressed long-term concerns around sustaining the region's economy and environment at a very strategic level. It was followed by the 90 Day Implementation Process Final Report, released in 1995, which provided detailed area-based resource targets and strategies for timber, range, mining, fish, wildlife, biodiversity conservation, water management, tourism, recreation, agriculture and wildcraft/agro-forestry. The increased security of access to resources resulting from this work has provided increased opportunity for growth and investment throughout the region.

Under the *Forest Practices Code of British Columbia Act*, the CCLUP, including the 90 Day Implementation Report, was declared a higher level plan in 1996², and amended in 1999³. As a higher level plan, the CCLUP guided application of the Forest Practices Code and other resource management activities. Following declaration of the CCLUP, in 1998, the *Integration Report*⁴ was released. This report provided a strategic scenario which showed how all the targets could be achieved and served to further guide planning at the sub-regional level.

Sub-regional planning began in 1996, when the Regional Resource Committee (RRC) and the Interagency Management Committee (IAMC) completed the *Sub Regional Planning Strategy*⁵. The need for more detailed implementation at the sub-regional level had been recognized and through this strategy direction was provided to guide it. The emphasis of the sub-regional plans has been explicit spatial representation of the CCLUP values.

More recently, Sub-Regional Plans have become Sustainable Resource Management Plans (SRMPs). As well, with the establishment of the Ministry of Sustainable Resource Management (MSRM), authority for approval of strategic land use plans has shifted to the Regional Director of MSRM.

¹ Cariboo-Chilcotin Land-Use Plan 90-Day Implementation Process Final Report, February 15, 1995 (207 pages). Cariboo-Chilcotin Land-Use Plan Addendum to the Ninety-Day Implementation Process: Final Report, April 20, 1995 (6 pages).

² Order Declaring the Cariboo-Chilcotin Land-Use Plan to be a Higher Level Plan Pursuant to Section 1(1) of the Forest Practices Code of British Columbia Act, January 23, 1996 (2 pages).

³ Order Varying the *Cariboo-Chilcotin Land-Use Plan* 90-Day Implementation Process Final Report, February 1995 Resource Management Zone Objectives Pursuant to Section 3(2) of the Forest Practices Code of British Columbia Act, June 22, 1999 (2 pages).

⁴ Cariboo-Chilcotin Land-Use Plan Integration Report, April 6, 1998 (59 pages).

⁵ RRB-IAMC Sub-regional Planning Strategy, April 12, 1996 (24 pages).

When the HSRMP is completed, it will be forwarded to the IAMC for consideration. Once accepted by IAMC, the plan will represent the best advice to statutory decision-makers on management of resources consistent with achievement of CCLUP objectives.

Upon completion of all the SRMPs, they will be “rolled up” to ensure that all of the regional and zonal targets of the CCLUP are met. The CCLUP has a goal to provide economic, social and environmental security for the Cariboo-Chilcotin. The roll-up of all the SRMPs may result in the need to make adjustments to one or more of the SRMPs in order to ensure that this goal and all of the CCLUP objectives can be met within reasonable and balanced levels of risk.

Following this assessment, where needed, legal objectives will be established based on the SRMPs. It is important to note that these objectives will be developed under the regulations of the *Forest and Range Stewardship Act*. Currently the list of candidate objectives in the HSRMP is comprehensive due to uncertainty about the final content of the regulations. Further assessment of the objectives will be required in order to ensure compatibility with the regulations once they are declared.

It should be noted that objectives provided by the CCLUP are not necessarily repeated in the HSRMP in the interests of brevity. Nevertheless, the CCLUP objectives still represent legal requirements that must be met as compliance with a higher level plan.

The strategies associated with some objectives represent recommended methods of achieving those objectives. Alternative strategies are possible that also achieve the objective. In all cases the proponent is responsible for meeting the objective regardless of whether strategies are provided or not.

Within each section the text provides context for the objectives and strategies. References to the CCLUP are documented, and footnotes provide additional information. References to other documents are often paraphrased and brief. Readers should consult original documents where more comprehensive understanding is required.

The plan area of the HSRMP coincides with the Horsefly Forest District. The CCLUP Resource Development Zones within the HSRMP area are shown on Map 2. The SRMP does not apply to private land or protected areas; there is a separate process for development of Park Management Plans by the Ministry of Water, Land and Air Protection.

The terms of reference for the HSRMP are presented in Appendix A, and the analysis methods are described in Section 7. Appendix C provides a list of the stakeholders who were consulted during the development of the plan.

The HSRMP conforms with the Province's two-zone approach to mineral resource management. Consistent with Section 14 of the *Mineral Tenure Act*, the objectives and strategies in this plan are not intended to unduly delay, restrict, or prohibit responsible mining exploration or development activities.

The maps in the printed plan are for general information purposes only. Planners should contact the Ministry of Sustainable Resource Management for appropriate scale maps and digital files when doing operational planning.

3 Economic Security

SRMPs are the key mechanism for providing investment certainty and reducing conflict over land and resource use through science-based, balanced decision-making and management of land and resources. The objectives and strategies contained in Section 6 provide specific, area based commitments to the resource based industries that drive the economy of the Cariboo Region, and clear strategic management direction to statutory decision makers. Establishment of objectives for non-market resources such as biodiversity also allow the forest industry to more easily address forest certification needs and will greatly facilitate implementation of the Results Based Code (*Forest and Range Practices Act*) in the region.

3.1 Forest Industry

The timber access targets achieved in the HSRMP provide assurance that the forest industry will continue as a major economic driver in the Cariboo Region. The HSRMP is one of five sustainable resource management plan areas that contribute to the Williams Lake Timber Supply Area (TSA), which in turn is one of three TSAs in the region. The HSRMP area currently represents approximately 26 per cent of the timber harvest within the Williams Lake TSA.

Between 1998 and 2000, the timber harvest in the entire Williams Lake TSA contributed about \$51 million in stumpage and rent payments annually to the provincial government. When other taxes on the forest industry are factored in, the contribution to provincial government revenues for the Williams Lake TSA as a whole is about \$103.13 million.⁶

While the Cariboo forest industry's manufacturing facilities are concentrated within the communities of Clinton, 100 Mile House, Williams Lake, Anahim Lake, and Quesnel, these facilities rely upon a fibre supply accessed across the entire Cariboo area. The forest industry within the Cariboo is diverse. Facilities include:

- 12 sawmills
- 4 plywood/veneer plants
- 1 oriented strand board plant
- 1 medium density fibreboard plant
- 2 pulp mills
- numerous value-added manufacturing facilities
- associated logging operations

⁶ Williams Lake Timber Supply Review – (TSA) Analysis – September 2001

The capital employed in these facilities totals \$946 million. During 2001, a total of \$78 million in capital expenditures was made in maintaining and improving these facilities.

In 2001, these facilities produced 1,820 million foot board measure of structural lumber, 1.1 billion square feet of panel products and 500,000 tonnes of pulp. The production of these products required the consumption of 8, 815,000 m³ of logs. The accumulated sales value of these lumber, panel, pulp, and value-added products amounted to \$1,530 million dollars. The total value of the logs used to create these products totalled \$505 million.

For the region as a whole, the forest industry provided 8,470 full time jobs in 2001. While the area covered within the Horsefly sustainable resource management plan represents only a portion of the entire area included within the Cariboo-Chilcotin Land Use Plan, it nonetheless has made a significant contribution to the fibre supply required to maintain the industry here in the Cariboo. Over the last number of years, the volume of timber removed annually from the HSRMP area has been in the range of one million cubic meters or approximately 12 per cent of the total volume of timber utilized by the industry in 2001.

Although no large processing facilities are located within the HSRMP area, many local people are active in forestry. The continued viability of communities like Horsefly and Likely is closely linked to the availability of harvesting opportunities for residents. Strategies to accomplish this include: establishment of woodlots or community forests and access to small scale salvage and value added enterprises.

Map 1 identifies the area of the plan that addresses the timber access targets providing secure harvesting opportunities for the forest industry over the long term. The map includes two broad categories; conventional harvesting areas where the primary focus is timber management, and modified harvesting areas, that support a range of values and uses, including harvesting.

The completion of the Short Term Timber Availability assessment (STTA) will, in combination with assessments to be completed for the remainder of the Cariboo Region, identify a 20 year timber supply to meet the needs of the timber industry while ensuring appropriate levels of management for other values. Consistent with the Timber Supply Review II (TSR II) forecast, some reduction in the historic volume of timber harvested from the HSRMP area could result in the short term. Resolution of the CCLUP timber targets will take place at a regional level once all SRMPs are complete.

3.2 Mining

The HSRMP ensures access to 100 per cent of the plan area for mineral and aggregate exploration and potential development, excluding protected areas and

Goal 2 areas (see Map 9). This is consistent with government's two-zone approach to mineral exploration and development. The comprehensive nature of the HSRMP objectives will assist the mineral sector in meeting the sustainability expectations of the marketplace. Mine development is addressed under the Environmental Assessment Process. In general developed mines are a very small part of any strategic planning area; they are however an important economic driver for the province.

The HSRMP area is host to world-class deposits of copper, gold and fluorite as well as building materials essential to the economic development of the area such as aggregate and dimensional stone. Since 1965 over \$48 million dollars has been invested in exploration in the plan area. The construction of the Mount Polley mine was completed in the plan area in 1997 at a capital cost of \$115 million. The mine produced gold, copper and silver worth an estimated \$350 million as of September 2001. Mining activity is currently suspended at the Mount Polley mine until market conditions are again favourable. The reserves have an estimated gross metal value of over \$440 million. The historical Boss Mountain mine produced over \$140 million of molybdenum between 1965 and 1983. The dramatic Bullion Pit hydraulic placer mine produced at least \$55 million of placer gold (current prices) in its long period of operation. It now forms part of the rich mining heritage of the Horsefly area. The Redgold property provided the aggregate for the new Vancouver Library giving the striking building's facade its pink tone. Other notable mining opportunities in the Horsefly SRMP area are:

- Spanish Mountain developed prospect – unclassified resource containing 52,628 ounces of gold (gross metal value of over \$21 million)
- Frasergold developed prospect – indicated resource of 714,840 ounces of gold (gross metal value of almost \$300 million)
- Woodjam developed prospect – unclassified resource containing 61,000 ounces of gold (gross metal value of over \$25 million)
- Lloyd-Nordik developed prospect – future contributor of ore grade feed to the Mount Polley mine
- Maybe developed prospect – unclassified resource of zinc and lead with a gross metal value of over \$20 million
- Eaglet developed prospect – indicated resource of 24 million tonnes of 11.5% fluorite
- Horsefly developed prospect – measured resource of 27,000,000 tonnes of silica
- Buxton Creek, Murder Gulch and Hobson's Horsefly – modern day placer projects with documented gold resource.

All mining projects must pass through several stages of exploration and development, assessment and permitting, and coincide with favourable economic conditions for their successful exploitation to occur. As such, some of the prospects note here might never advance or other prospects in the area may

arise. Exploration continues in the area and new discoveries are being made every year.

A significant amount of inventory information related to mineral and geothermal potential currently exists but has yet to be consolidated into a single package. In order to better illustrate the subsurface potential and to encourage investment, MSRM will consolidate existing inventory information including:

- Mapped and potential geothermal resources
- Metallic mineral potential
- Industrial mineral potential, including aggregates
- Oil and Gas potential
- Mineral, placer, oil and gas tenures
- Location of protected areas
- Existing infrastructure, including roads, rail lines, power lines, and pipelines

3.3 Tourism and Recreation.

Tourism, which includes portions of several service sectors including accommodation, retail trade, and transportation, has demonstrated significant growth and investment in recent years. Within the Horsefly, Williams Lake, and Chilcotin SRMP areas, nearly 2,000 persons are employed in the tourism sector, catering to both tourist and business travellers. More than 500 businesses in the three SRMP areas service visitors' needs, including outdoor recreation facilities, guided hunting and fishing, tours and attractions, retail and service businesses, food and beverage facilities, and accommodations.⁷ Access to crown land for the development of new tourism, commercial recreation, and backcountry opportunities and to provide for the expansion of existing operations is essential for the encouragement of economic development of the area.

In March of 2000, the Ministry of Small Business, Tourism and Culture released a Tourism Opportunity Study (TOS) for the Horsefly and 100 Mile House areas. The study outlines a number of opportunities for tourism development throughout the HSRMP area. These opportunities were identified and prioritized based on their potential to maximize social and economic benefits, while minimizing the negative social and environmental impacts.

3.3.1 Trails

One tourism opportunity providing significant potential benefits for the study area is the continued development and management of an integrated, year-round, world class, multi-use trails system. The HSRMP protects the value of the

⁷ Williams Lake Timber Supply Review – (TSA) Analysis – September 2001

commercial product by providing buffers to maintain viability of key trail corridors and managing visuals from identified viewpoints.

3.3.2 Gold Rush Snowmobile Trail

At the Premier's Summit in May 1999 and a subsequent conference on economic development organized by the Cariboo Economic Action Forum in October 1999, snowmobiling was realized as a key recreation and tourism priority for the area. Since that time, considerable funding support has been provided through Forest Renewal British Columbia and the Community Enterprise Program which has catalyzed trails expansion to a network of about 700 kilometres in the Cariboo. MSRM is currently leading a process for the designation of the Gold Rush Snowmobile Trail. This snowmobile trail, linking the communities of Clinton and Wells, has the potential to generate significant revenue for tourism operators in what has traditionally been their slow season.

3.3.3 Fishing

The Horsefly River watershed provides some of the most important fish habitat in the Fraser River drainage. The fisheries resources are comprised in part by a unique race of trophy size rainbow trout, kokanee, a prolific race of sockeye salmon, chinook, and coho salmon. The rainbow trout, a biologically unique wild stock of body size probably second largest in the world, rely heavily on the Horsefly for spawning and juvenile rearing. It has been estimated that the Horsefly River produces 75 per cent of the total rainbow trout production to Quesnel Lake⁸. The world renowned Quesnel Lake sport fishery, the second largest sport fishery in the region, is solely dependant on maintenance of the rainbow trout population.

The dominant cycle sockeye run in 1993 comprised 50.6 per cent of Fraser River sockeye production, 36 per cent of the total salmon catch for the provinces coastal waters and yielded a catch worth 68 million dollars⁹. It is estimated that Horsefly fish stocks generate in excess of 30 million dollars of average annual revenue to the regional and provincial economy¹⁰.

The TOS identifies the recreational fishery as another key tourism development opportunity. The HSRMP supports both existing tourism operators and development opportunities through:

- Protection of habitat adjacent to identified critical fish habitat

⁸ Ministry of Water, Land and Air Protection (WLAP) formerly Ministry of Environment, Lands and Parks (MELP) file data, 1990.

⁹ Department of Fisheries and Oceans (DFO) file data.

¹⁰ Ministry of Water, Land and Air Protection (WLAP) formerly Ministry of Environment, Lands and Parks (MELP) file data, 1989 to 1993.

- Implementation of Lakeshore Harvesting Guidelines and Lake Management Objectives
- Identification of visual management objectives in viewsheds surrounding existing operators
- In partnership with Land and Water BC Inc. (LWBC) and other agencies, MSRM will lead a process to assess lakes for their development potential for both recreational sales and commercial development.

3.4 Agriculture

The beef industry represents 50 per cent of the agriculture sector within the Cariboo Region, and accounts for 20 per cent of the provincial beef cattle population. The value of the cattle marketed through the Williams Lake Stockyards is in excess of \$23.5 million annually. The HSRMP supports the regional agriculture sector through commitments to maintain or enhance livestock grazing opportunities on Crown range. In addition, the SRMP recognizes the industries need to enhance their access to Crown land and water in support of agriculture economic development opportunities. MSRM, in conjunction with LWBC and Ministry of Agriculture, Food and Fisheries (MAFF), will review existing constraints to land availability for the expansion of the agriculture industry and assess possible solutions, consistent with CCLUP direction and the HSRMP objectives.

Table 1 Summary of Economic Development Initiatives: Horsefly Sustainable Resource Management Plan

Initiative	Description	Completion Date	Responsibility	Outcomes
STTA	Spatial assessment of 20 year timber supply	March 2003	MSRM/CLMA	Completes part of the regional short term timber supply analysis Provides assessment of the compatibility of non-timber objectives with timber supply
Consolidated Mineral Database	GIS database that combines relevant mineral inventories, tenures and SRMP objectives	March 2003	MSRM	Consolidated information package for potential investors and regulatory agencies
Gold Rush Snowmobile Trail	Designated snowmobile trail from Clinton to Wells	February 2003	MSRM/MoF/BC Snowmobile Federation	Expansion of winter tourism opportunities Increased off season revenue for existing tourism operators
Lakeshore Development	Identification of lakes suitable for lakeshore development	March 2003	MSRM/LWBC	Provide to LWBC a list of lakes where development is consistent with CCLUP and HSRMP Assist in meeting LWBC revenue targets
Agriculture Expansion	Develop process to identify lands that are suitable for agriculture expansion, consistent with the CCLUP	March 2003	MSRM/LWBC	Improved access to Crown land for expansion of agriculture industry
Crown Land Allocation	Identify Crown lands suitable for expansion and new	March 2003	MSRM/LWBC	Improved access to Crown land and water for economic development opportunities. Assist in meeting LWBC

Initiative	Description	Completion Date	Responsibility	Outcomes
	opportunities for residential, industrial, recreational, community and institutional.			revenue targets
Access Management Strategy	Completion of access management strategy for HSRMP area	September 2004	MSRM	Detailed access management strategy that addresses access issues identified in HSRMP Basis for meeting long term Backcountry targets

4 FIRST NATIONS (Section to be reviewed by First Nations)

The province is committed to working with First Nations on a government-to-government basis without prejudicing aboriginal rights or treaty negotiations. The province has a policy of sharing information and of offering First Nations opportunities to be involved in the planning process. The CCLUP (p. 41) encourages First Nations to play a direct role in the implementation of the plan. Some formal government-to-government discussions have recently taken place.

The HSRMP area overlaps with the following seven Secwepemc and Carrier bands' asserted traditional territories: (i) Williams Lake Band, (ii) Soda Creek Band, (iii) Canim Lake Band, (iv) Lhtako First Nation, (v) Esketemc First Nation, (vi) North Thompson Band, and (vii) Lheidli T'enneh First Nation. There are no Indian Reserves in this area.

Williams Lake Band, Soda Creek Band, and Canim Lake Band are affiliated with the Northern Secwepemc te Qelmucw (Cariboo Tribal Council). Lhtako First Nation is affiliated with the Carrier-Chilcotin Tribal Council. North Thompson Band is affiliated with the Shuswap Tribal Council. The Esketemc First Nation and Lheidli T'enneh First Nation have no tribal council affiliation.

The HSRMP planning team reviewed the Soda Creek, Canoe Creek, and Williams Lake Indian Bands' Traditional Use Studies, as well as an archaeological overview assessment, and a cultural heritage overview. Since the Traditional Use Studies have information sharing agreements and statements indicating the need for formal consultation, the content of the studies could not be reported.

Additionally, the Cultural Heritage Overview of the Cariboo Forest Region (completed by Diana Alexander in 1997), and Archaeological Overview Assessment (AOA) (completed for the Horsefly Forest District in 1998) was reviewed. The Cultural Heritage Overview extensively covers, among other things, the historical patterns of band membership, subsistence and settlement patterns and cultural practices of native groups in the area. The AOA defines areas of archaeological potential and lists all recorded archaeological sites. The AOA is used to help determine where archaeological impact assessments are required for forest development planning. The AOA was not used as a replacement to consultation.

In light of this review, further attempts were made to involve members of the local First Nations. The intention was to encourage government-to-government discussions, and to enable a mechanism to include First Nations' knowledge in the Horsefly Sustainable Resource Management Plan.

Government has collaborated with the Northern Secwepemc te Qelmucw (NStQ) communities in a project that facilitated NStQ's involvement in sustainable resource management planning. NStQ values identified from their Land Use Plan were overlaid with other values in the HSRMP. Where values overlapped, efforts were made to integrate and consider NStQ's interests. Where they did not, NStQ will seek other venues to have their interests addressed. The NStQ are in the final stages of completing their comprehensive Land Use Plan.

The HSRMP does not place any limits upon aboriginal rights or treaty negotiations.

Historically First Nations used the HSRMP area for hunting, fishing, and berry-picking, as well as the collection of medicinal plants, chert for tool-making, and birch for basket-

making (baskets used for food storage, retrieval, and cooking). The majority of activities occurred in close proximity to rivers and waterbodies. Pithouses are located within the plan area.

Objective 1. Conserve First Nations' cultural and heritage features as defined in Table 2 from physical disturbance associated with industrial and commercial land development.

Note 1: First Nations have indicated that they prefer all cultural and heritage features be pesticide-free.

Note 2: Further consultation is needed to finalise the text and Table 2.

Table 2 First Nations Cultural and Heritage Features

Trails
Burial sites
Spiritual sites
Archaeological sites
Battle sites
Pithouses
Village sites
Chert collection sites
Culturally modified trees
Pictographs
Petroglyphs

Objective 2. Reserve from industrial and commercial harvest, birch stands in their current distribution, in the areas of Beaver Valley, Polley, Lower Cariboo River, and Cariboo Lake Landscape Unit as identified on Map x.

Objective 3. Reserve from harvest and silvicultural treatment, devil's club, in the areas of Beaver Valley, Polley, Lower Cariboo River, and Cariboo Lake Landscape Unit as identified on Map x.

Objective 4. Maintain major wildlife trails free of debris from industrial and commercial development.

Objective 5. Ensure continued First Nation access to their traditional cultural and heritage sites.

5 GOAL 2 PROTECTED AREAS

The CCLUP created 17 large new “Goal 1” parks and other protected areas. In the Horsefly area these include the Cariboo Mountains and Cariboo River Provincial Parks. The new protected areas, combined with existing parks, totalled 11.75 per cent of the Cariboo Region. As part of the government’s commitment to include 12 per cent of the land base of the Cariboo Region in protected areas, the remaining 0.25 per cent of the region (22,000 ha) was allocated for future designation as smaller “Goal 2” areas during sustainable resource management planning. The CCLUP (p. 23-24) requires that sub-regional plans recommend which Goal 2 protected areas should be established. The CCLUP (p. 154) requires sub-regional plans to establish small benchmark ecological reserves, within the 0.25 per cent land target for Goal 2 protected areas, within those ecosections that are not well represented in the Protected Areas, for the purpose of future research, preserving biodiversity, and preserving portions of rare ecosystems. The overall objectives of Goal 2 protected areas are protection of special natural, cultural heritage, and recreational features, including rare and endangered species and critical habitats, outstanding or unique botanical, zoological, geological, and paleontological features, outstanding or fragile cultural heritage features, and outstanding recreational features. Once established as parks or other protected areas, approved Goal 2 protected areas will be managed by the Ministry of Water, Land and Air Protection under the *Park Act* and other relevant Acts, through park management plans.

The CCLUP (p. 37, 39) specifies that logging and other resource extraction will be prohibited in protected areas. However, activities such as hunting, recreation, and backcountry tourism; as well as existing (1994) levels of cattle grazing will continue in all protected areas.

The regional Goal 2 allocation of the HSRMP is approximately 1,626 ha (see Appendix D). The interagency planning team evaluated and refined the 15 candidate areas, with a total area of nearly 7,000 hectares, which were suggested by members of the public, the Regional Protected Areas Team, and other government agencies. The HSRMP has identified 11 areas totalling 1,793 hectares, as summarised in Table 3 and shown on Map 2. A detailed description of each area is given in Appendix D. Once all the sustainable resource management plans are completed for the CCLUP area, a regional roll-up of proposed Goal 2 areas will be completed, to ensure that the regional target has been achieved. The Interagency Management Committee and the Regional Resource Committee will forward to cabinet those Goal 2 proposals with which they agree. Cabinet will then decide whether to approve each proposal with the recommended status. Once the objective of 12 per cent protected area has been achieved, the remaining proposed Goal 2 areas will be released for resource development.

Recommendation: Establish the Goal 2 protected areas listed in Table 3, according to the listed designations.
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Table 3 Candidate Goal 2 Protected Areas

Area	Designation	Approximate Size (hectares)
Long Creek Mineral Lick	Ecological Reserve	244
Beaver Valley / Rye Lake	Class "A" Provincial Park	400 in Horsefly Forest District (400 in Williams Lake Forest District)
Cedar Point addition	Class "C" Provincial Park	5
<i>Quesnel Lake Marine Parks:</i>		
Bouldery Creek	Class "A" Provincial Park	85
Cariboo and Twain Islands	Class "A" Provincial Park	90
Faux Bay	Class "A" Provincial Park	66
Horsefly Bay	Class "A" Provincial Park	335
Peninsula Bay	Class "A" Provincial Park	12
Roaring River	Class "A" Provincial Park	441
Watt Creek	Class "A" Provincial Park	100
Welcome Point	Class "A" Provincial Park	15
Total		1793

6 RESOURCE MANAGEMENT

6.1 Timber Resource

The forest industry is the largest industry in the Cariboo Region, and this is recognised in the CCLUP. Forest resource issues are discussed throughout the report. The community and economy of the HSRMP area are dominated by the forest industry. The Horsefly Forest District has an annual harvest of 1,000,000 m³, which is enough wood to build about 20,000 homes. Of this volume, about 30 per cent is spruce, 30 per cent is pine, 15 per cent is subalpine fir, 15 per cent is Douglas-fir, and 10 per cent is western red cedar and western hemlock¹¹.

6.1.1 Timber Access

The *Cariboo-Chilcotin Land-Use Plan* (CCLUP), including the amendment of June 22, 1999, provides long-term timber targets within the Special Resource Development Zone, the Enhanced Resource Development Zone, and the Integrated Resource Management Zone¹². The targets were expressed (p. 148-149) (a) as a percentage of the productive forest land base falling into conventional, modified and no harvest categories, and (b) as access to specified percentages of the forest land base. Timber targets are area-based, not volume-based. Long-term timber targets are to be achieved and are intended to guide long term resource planning (p. 149), which is defined as being by the end of the timber harvesting rotation (80 or 120 years, depending on tree species).

The *Integration Report* (p. 77) expressed these timber targets as *equivalent excluded area (EEA)* targets. The Interagency Management Committee, responsible for implementing the CCLUP, further refined the timber targets in 2000 in a regional analysis¹³ at both the CCLUP sub-unit level and the sustainable resource management plan level. The timber access targets (equivalent excluded area) result from identifying (for each Resource Development or Management Zone) where timber harvesting will *not* be conducted or will be constrained due to values other than timber management. When calculating the equivalent excluded area of modified harvest areas the principle of an extended rotation is used to meet specific non-timber management objectives. See Section 7, Analysis Methods, for additional information on calculating equivalent excluded area.

As required in the Biodiversity Strategy, the sustainable resource management plan analysis used overlaps of non-timber resource management values to maximise timber access. The overall sustainable resource management plan equivalent excluded area for the HSRMP is 0.02 (109 hectares) lower than that recommended by the Interagency Management Committee (Table 4).

¹¹ Source: TSR 2.

¹² There is no Integrated Resource Management Zone within the Horsefly Sustainable Resource Management Plan area.

¹³ Letter from the Cariboo Mid-Coast Inter-Agency Management Committee, dated July 18, 2000 (3 pages).

Table 4 Equivalent Excluded Area by Sub-unit

CCLUP Sub-Unit	PF Base in the HSRMP area (ha)	Proportion of Polygon in the HSRMP area (PF%)	EEA target		Difference	Weighted Difference
			from Inter-Agency Management Com. (July 18, 1998)	Total EEA Horsefly SRMP		
Boss/Deception SRDZ	32,174	63	39.00	37.98	-1.02	-0.06
Quesnel Highlands SRDZ	16,717	12	34.00	20.46	-13.54	-0.42
Quesnel Lake SRDZ	211,729	91	36.00	34.07	-1.93	-0.75
Beaver Valley ERDZ	157,925	47	14.00	18.27	4.27	1.24
Canim ERDZ	78,177	34	18.00	19.63	1.63	0.23
Cottonwood ERDZ	44,254	22	29.00	24.59	-4.41	-0.36
Quesnel ERDZ	3,954	2	20.00	33.39	13.39	0.10
Totals	544,929				-1.62	-0.02

Note: PF base = Productive forest landbase

For a complete summary in tabular form see Appendix I

The CCLUP (p. 149) directed that, to create certainty, a Timber Availability Plan be developed. The plan was directed to have 10 and 20 year horizons, to ensure short-term timber availability during the full implementation of the CCLUP. The study by the Cariboo Lumber Manufacturers Association (CLMA) was completed one year later. The 1996 20-Year Short Term Timber Availability Analysis determined that with the implementation of the CCLUP, the 1996 harvest levels could be maintained for at least the next 20 years within the regional context.

In 2002, the CLMA conducted another analysis (based on the next 20 years) of timber availability within the HSRMP area¹⁴, one of three districts within the Williams Lake Timber Supply Area. This analysis, based on the equivalent excluded area and other recommendations contained in this report, showed that the present rate of harvest within the HSRMP area cannot be maintained throughout the period. A decrease in volume in the Horsefly District was also forecast in the 2001 Timber Supply Review¹⁵ prior to completion of the HSRMP. The Chief Forester's determination¹⁶ decreased the annual harvestable level in the main TSA and increased the level in the three western supply blocks.

6.1.2 Short Term Timber Impacts

The HSRMP includes an analysis of timber availability over the next 20 year for the plan area (see Appendix J). The estimated timber availability assessment takes into consideration the requirements of the SRMP, the present state of the forest, and forestry constraints such as green-up and adjacency considerations. This estimated

¹⁴ Short-term Timber Assessment for the Horsefly Sustainable Resource Management Plan, July 2002 (under preparation).

¹⁵ Timber Supply Review: Williams Lake Timber Supply Area Analysis Report: September 2001 p. 27.

¹⁶ Williams Lake Timber Supply Area: Rationale for Allowable Annual Cut (AAC) Determination: January 2, 2003 p. 54.

availability is referenced against the recent “historic” harvest levels over the plan area. It is important to note that this is for reference purposes only and these historic harvest levels do not represent a plan objective nor do they represent AAC objectives under the TSR process.

The level of overall timber availability across the region will be an important consideration when the attainment of the social and economic security goal of the CCLUP is assessed. This regional STTA will be estimated under the SRMP roll-up.

6.1.3 Woodlot Licences and Community Forests

There are presently 16 Woodlot Licenses in the HSRMP area, with a total gross area of 9,336 hectares. They are located in the Beaver Valley, Lower Cariboo, Polley, Horsefly, and Likely Landscape Units, with the private land portion of one woodlot being in Black Creek Landscape Unit.

Woodlots contribute to meeting all CCLUP objectives. However, in recognition that woodlots are small area-based tenures, management for some non-timber resource values is focused outside woodlot boundaries. Permanent Old Growth Management Areas are not placed within woodlots, although areas constrained for other reasons can contribute to meeting the old seral objectives. Management and objectives for mule deer winter range within woodlots are to be consistent with the Mule Deer Winter Range Strategy and its update¹⁷, and with the individual Mule Deer Winter Range plans as they are completed.

A Community Forest “pilot” was recently established near Likely. Permanent OGMAs can be located in a Community Forest Agreement area.

6.1.4 Silviculture

The CCLUP does not specifically address post-harvest silviculture in most areas, although management for riparian areas, biodiversity, coarse woody debris, and specific wildlife species requires consideration when developing site preparation, planting, vegetation management, and stand tending prescriptions. The CCLUP (p. 179) does require, for Special Resource Development Zone (SRDZ), greater use of labour-intensive silviculture methods, where economically and environmentally appropriate, to maximise employment and minimise environmental impacts. Less dependence on the use of pesticides and prescribed fire in association with identified sensitive environmental, cultural and recreational values is also required in the SRDZ.

All harvested areas treated for vegetation management should retain a component of non-crop trees and shrubs on the site for nesting and wildlife forage. Plant species used for nesting include all deciduous trees and all shrubs. Forest licensees have legislated obligations to meet basic silviculture requirements, which are not repeated here.

¹⁷ Regional Mule Deer Winter Range Strategy for the Cariboo-Chilcotin Land-Use Plan, June 1996 (114 pages). Regional Mule Deer Winter Range Strategy Update: Recommended Interim Management Guidelines for Mule Deer Winter Range, November 14, 2000 (17 pages).

The CCLUP (p. 161) requires that enhancement for other resources, especially silviculture activities, is co-ordinated with biodiversity conservation. The CCLUP (p. 147) requires that a proportion of the forest within each resource management zone be identified for enhancing timber production.

Objective 6. Maintain the ecological attributes characteristic of each of the areas listed below following any post-harvest silvicultural treatments:

- old growth management areas,
- riparian management areas,
- wildlife tree patches,
- wildlife habitat areas,
- ungulate winter ranges,
- wildlife features including, but not limited to eagle, osprey, owl, hawk, and heron nest trees,
- rare ecosystems,
- site-specific locations supporting red or blue listed plant species,
- site-specific locations supporting species at risk

Strategy 6.1 Unless required for ecosystem restoration, or protection of the feature from significant pest damage, burning and application of pesticides should not occur within these areas.

Objective 7. Retain moderate and high value standing wildlife trees during vegetation management treatments.

Strategy 7.1 Use the criteria in Table 5, or a qualified wildlife/danger tree assessor to determine which trees are moderate or high value.

Strategy 7.2 To ensure worker safety, use either no-work zones or assess each tree of concern, using a qualified wildlife tree assessor.

Table 5 Wildlife tree characteristics¹⁸

Wildlife Tree Value	Characteristics
<p>HIGH</p> <p>A high-value wildlife tree has at least two of the characteristics listed in the adjacent column.</p>	<ul style="list-style-type: none"> • Internal decay (heart rot or natural/excavated cavities present). • Crevices present (loose bark or cracks suitable for bats). • Large brooms present. • 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. • Locally important wildlife tree species.
MEDIUM	<ul style="list-style-type: none"> • Large, stable trees that will likely develop two or more of the above attributes for High
LOW	<ul style="list-style-type: none"> • Trees not covered by High or Medium categories

Objective 8. Retain berry-producing shrubs in 40% or more of the area of cutblocks that are located within identified high and moderate grizzly habitat

6.2 Forest Health

Natural forest disturbance agents such as insect pests, tree diseases, windthrow and fire have a critical role in forest health and long-term forest productivity; however, they can also contribute to significant economic losses of timber. Forest disturbance agents contribute to diversity in forest structure, tree ages, and species composition. The disturbances create a landscape level mosaic of forest patches of various ages, densities, species composition and succession stages; at the stand level they create a complex mixture of living, dead, and damaged trees of various species. Ecosystem complexity is in large part created by such disturbances, and a wide range of natural forest resources depends on that complexity for their existence. The challenge in forest management is the maintenance of such processes without severe impacts resulting to timber values.

Objective 9. Suppress infectious outbreaks of forest pests and disease that are considered by a forest health specialist to be above endemic levels and where sanitation of infested trees is possible and compatible with objectives for other resource values.

¹⁸ Provincial Wildlife Tree Policy and Management Recommendations, February, 2000 (14 pp.).

- Strategy 9.1 Focus available harvesting capacity on trees hosting live insect pests or diseases.
- Strategy 9.2 Do not harvest trees or otherwise control pests or diseases that are at low levels and are not a threat to adjacent stands.
- Strategy 9.3 For bark beetles, procedures should be consistent with strategies outlined in the Bark Beetle Guidebook and the Integrated Mountain Pine Beetle – Biodiversity Conservation Strategy for the Cariboo Region¹⁹.
- Strategy 9.4 Utilise the full range of treatment options, including single tree harvest, fall and burn, patch cuts, and clearcuts, relative to the outbreak and ecological conditions of the site.

Objective 10. Maintain or enhance the characteristic structural attributes of each of the following areas when dead or damaged timber is harvested from them: old growth management areas, riparian reserves, lakeshore management zones of Class A lakes, wildlife tree patches, wildlife habitat areas, ungulate winter ranges, wildlife features, and rare ecosystems.

- Strategy 10.1 Integrate salvage proposals with ecological values and conditions according to the principles outlined in the Bark Beetle Management Guidebook and the Integrated Mountain Pine Beetle-Biodiversity Conservation Strategy for the Cariboo Region¹⁹.

6.3 Landscape Level Biodiversity

Biodiversity is the diversity of plants, animals and other living organisms in all their forms and levels of organisation and includes the diversity of genes, species, and ecosystems as well as the evolutionary and functional processes that link them. The CCLUP Biodiversity Conservation Strategy²⁰ of 1996, including its five updates²¹, provides the direction for biodiversity conservation in the Cariboo-Chilcotin Land Use Plan area. Additional updates are anticipated in the future to address specific issues. The Biodiversity Conservation Strategy is based on the principles of the Biodiversity Guidebook²².

¹⁹ Bark Beetle Management Guidebook & An Integrated Mountain Pine Beetle-Biodiversity Conservation Management Strategy for the Cariboo Region, approved May 9, 2002 (11 pages).

²⁰ Biodiversity Conservation Strategy for the Cariboo-Chilcotin Land-Use Plan, July 1996 (183 pages).

²¹ Regional Biodiversity Conservation Strategy Update Note #1: Key Assumptions and Recommendations For Use of the Inventory Adjustment Factor in the Cariboo Forest Region, January 2001 (4 pages). Note #2: Amalgamation of Small NDT-BEC Units in Relation to Assessment of Seral Objectives and Old Growth Management Area Planning, January 2001 (2 pages). Note #3: Definition of the Fir Group and Pine Group for Purposes of Seral Stage Assessments within NDT 4 of the Cariboo-Chilcotin, May 2001 (4 pages). Note #4: An Approach for Patch Size Assessments in the Cariboo Forest Region, July 2001 (14 pages). Note #5: An Integrated Mountain Pine Beetle Biodiversity Conservation Management Strategy, June 2002 (xx pages).

²² Forest Practices Code of British Columbia Biodiversity Guidebook, September 1995 (99 pages)

6.3.1 Landscape Unit Boundaries

The CCLUP (p. 153) required the development of Landscape Units, which were drafted contained in the Regional Biodiversity Conservation Strategy for the Cariboo Region. These Landscape Units were further refined through the *Regional Landscape Unit Planning Strategy*²³.

6.3.2 Seral Stage Distribution

The CCLUP (p. 153) requires that landscape level biodiversity be maintained by meeting or exceeding *mature+old* and *old* forest objectives by Landscape Unit. These were recommended in the Biodiversity Conservation Strategy. The mature portion of the mature+old forest target is not spatially fixed over time, because it is subject to harvesting and natural disturbances (insects, fire, windthrow and disease), and requires continuous recruitment from mid-seral forest. The seral objectives are derived from the Biodiversity Guidebook as modified by the Biodiversity Conservation Strategy²⁴.

Seral classes are currently defined by age consistent with the Biodiversity Guidebook and the Biodiversity Conservation Strategy. Work is underway to develop an attribute-based definition for Douglas-fir in the Interior Douglas-fir (IDF) zone. The age based definition may be replaced by the attribute-based definition of Fir in the IDF at such time as government deems it to be acceptable.

Definition: The following stands are deemed to contribute to meeting the old forest target in the order listed:

- 1. old forest as described in Table 6,**
- 2. mature forest as described in Table 6 within permanent old growth management areas, and no harvest areas,**
- 3. mature forest as described in Table 6 within transition old growth management areas,**
- 4. stands meeting attribute-based criteria for old forest once those criteria are approved by the Director of MSRM, Cariboo Region.**

Objective 11. Meet or exceed the objectives for old and mature + old forest, inclusive of old growth management areas, by biogeoclimatic subunit, within each landscape unit as specified in Table 6.

Strategy 11.1 Where forest conditions do not meet the minimum requirements for mature + old, the required areas of the oldest available forest within that biogeoclimatic variant, or group of variants will be deemed to be recruitment area.

²³ Regional Landscape Unit Planning Strategy.

²⁴ Biodiversity Guidebook p.9, 25, 35; Biodiversity Conservation Strategy p.40, Update #2.

Table 6 Interior Old (% of Old Forest Area Objective), Old and Mature+Old Forest Representation Objectives and Early Seral Forest Strategies (% Biodiversity Forest Landbase)

When assessing seral condition against the objectives and strategies listed in Table 6, amalgamate non-valley bottom BEC units <5000 ha. with adjacent units consistent with Table 7 and the procedures outlined in the Biodiversity Conservation Committee Update #2.

Beaver Valley Landscape Unit – Low Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ICHwk2	12,080	>17	>13	≥25	n/a
2-ICHmk3	165	>15	>9	≥10	n/a
3-SBSdw1	31,624	>11	>11	≥10	n/a
3-SBSmh (valley bottom)	2,793	>11	>11	≥10	n/a
3-SBSdw2	5,752	>11	>11	≥10	n/a
3-SBPSmk (small unit)	3,699	>8	>7	≥10	n/a
Black Creek Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	2,854	>36	>19	≥50	<22
1-ESSFwk1	10,184	>36	>19	≥50	<22
1-ICHwk2 (valley bottom)	3,549	>34	>13	≥50	<30
2-ICHmk3 (valley bottom)	2,257	>31	>9	≥25	<36
3-SBSdw1	17,539	>23	>11	≥25	<54
3-SBSmc1	3,092	>23	>11	≥25	<54
3-SBPSmk (small unit)	4,513	>17	>7	≥25	<66
Cariboo Lake Landscape Unit – Low Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	6,007	>19	>19	≥25	n/a
1-ESSFwk1	15,192	>19	>19	≥25	n/a
1-ICHwk4 (valley bottom)	3,371	>17	>13	≥25	n/a
3-SBSwk1 (plateau) (small unit)	2,997	>11	>11	≥10	n/a
5-AT	213	>19	>19	≥25	n/a
East Arm Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	6,046	>36	>19	≥50	<22
1-ESSFwk1	9,383	>36	>19	≥50	<22
1-ICHwk1	16	>34	>13	≥50	<30
1-ICHwk2	10,847	>34	>13	≥50	<30
5-AT	626	>36	>19	≥50	<22
Eastside Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	6,405	>36	>19	≥50	<22
1-ESSFwk1	6,204	>36	>19	≥50	<22
1-ICHwk2	8,144	>34	>13	≥50	<30
5-AT	734	>36	>19	≥50	<22
Horsefly Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	3,266	>36	>19	≥50	<22

1-ESSFwk1	6,526	>36	>19	≥50	<22
1-ICHwk2	28,466	>34	>13	≥50	<30
2-ICHmk3	19,251	>31	>9	≥25	<36
3-SBSdw1	4,988	>23	>11	≥25	<54
5-AT	227	>36	>19	≥50	<22
Likely Landscape Unit – Low Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	865	>19	>19	≥25	n/a
1-ESSFwk1	4,323	>19	>19	≥25	n/a
1-ICHwk2	17,816	>17	>13	≥25	n/a
2-ICHmk3	1,518	>15	>9	≥10	n/a
5-AT	165	>19	>19	≥25	n/a
Little River Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	9,198	>36	>19	≥50	<22
1-ESSFwk1	15,241	>36	>19	≥50	<22
1-ICHwk4	8,742	>34	>13	≥50	<30
5-AT	820	>36	>19	≥50	<22
Lower Caribou Landscape Unit – Low Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	5,820	>19	>19	≥25	n/a
1-ESSFwk1	10,586	>19	>19	≥25	n/a
1-ICHwk2	6,701	>17	>13	≥25	n/a
1-ICHwk4	2,633	>17	>13	≥25	n/a
2-ICHmk3	1,316	>15	>9	≥10	n/a
3-SBSwk1 (plateau)	8,039	>11	>11	≥10	n/a
3-SBSmw	4,513	>11	>11	≥10	n/a
5-AT	108	>19	>19	≥25	n/a
McKay Landscape Unit – Low Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	6,201	>19	>19	≥25	n/a
1-ESSFwk1	11,018	>19	>19	≥25	n/a
1-ICHwk2 (small unit)	1,465	>17	>13	≥25	n/a
5-AT	870	>19	>19	≥25	n/a
McKinley Landscape Unit – High Biodiversity Emphasis (the area of the variants apply to the portion of the area within the Horsefly plan area; refer to the 100 Mile House SRMP)					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	2,963	>54	>28	≥50	<17
1-ESSFwk1	6,634	>54	>28	≥50	<17
1-ICHwk2	4,856	>51	>19	≥50	<23
2-ICHmk3	14,126	>46	>13	≥25	<27
3-SBSdw1 (small unit)	1,692	>34	>16	≥25	<40
5-AT	68	>54	>28	≥50	<17
McKusky Landscape Unit – Low Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	6,203	>19	>19	≥25	n/a
1-ESSFwk1	5,784	>19	>19	≥25	n/a
1-ICHwk2	8,516	>17	>13	≥25	n/a
5-AT	971	>19	>19	≥25	n/a

Mitchell Lake Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	2,679	>36	>19	≥50	<22
1-ESSFwk1	4,628	>36	>19	≥50	<22
1-ICHwk2	7,081	>34	>13	≥50	<30
1-ICHwk4	118	>34	>13	≥50	<30
5-AT	256	>36	>19	≥50	<22
Moffat Landscape Unit – Low Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	3,953	>19	>19	≥25	n/a
1-ESSFwk1	9,963	>19	>19	≥25	n/a
3-SBSdw1	1,581	>11	>11	≥10	n/a
3-SBSdw2	95	>11	>11	≥10	n/a
3-SBSmc1	7,483	>11	>11	≥10	n/a
3-SBPSmk	31,480	>8	>7	≥10	n/a
Niagara Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	4,291	>36	>19	≥50	<22
1-ESSFwk1	5,066	>36	>19	≥50	<22
1-ICHwk2	5,660	>34	>13	≥50	<30
5-AT	270	>36	>19	≥50	<22
Penfold Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	2,477	>36	>19	≥50	<22
1-ESSFwk1	2,590	>36	>19	≥50	<22
1-ICHwk2	5,730	>34	>13	≥50	<30
5-AT	134	>36	>19	≥50	<22
Polley Landscape Unit – High Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ICHwk2	2,509	>51	>19	≥50	<23
2-ICHmk3	24,029	>46	>13	≥25	<27
3-SBSdw1	9,690	>34	>16	≥25	<40
3-SBSmh	2,515	>34	>16	≥25	<40
3-SBSmw (valley bottom)	465	>34	>16	≥25	<40
Wasko/Lynx Landscape Unit – Low Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	2,673	>19	>19	≥25	n/a
1-ESSFwk1	5,423	>19	>19	≥25	n/a
1-ICHwk2	10,724	>17	>13	≥25	n/a
5-AT	436	>19	>19	≥25	n/a
Westside Landscape Unit – Intermediate Biodiversity Emphasis					
Natural Disturbance Type – Biogeoclimatic Variant	Area (ha)	Mature+Old Forest	Old Forest	Interior Old Forest	Early Seral Forest
1-ESSFwc3	7,631	>36	>19	≥50	<22
1-ESSFwk1	6,022	>36	>19	≥50	<22
1-ICHwk2	5,560	>34	>13	≥50	<30
5-AT	380	>36	>19	≥50	<22

*The biodiversity land base represents the productive forest land area with the addition of parks and proposed Goal 2 areas.

Table 7 Amalgamation of Small NDT-BEC Units Used for Assessment of Seral Objectives in the HSRMP

Landscape Unit	Natural Disturbance Type – Biogeoclimatic Variant Amalgamations
Beaver Valley	1-ICHwk2 + 2-ICHmk3
Black Creek	1-ESSFwk1 + 1-ESSFwc3
Black Creek	3-SBSdw1 + 3-SBSmc1
East Arm	1-ICHwk1 + 1-ICHwk2
Horsefly	1-ESSFwk1 + 1-ESSFwc3
Likely	1-ESSFwk1 + 1-ESSFwc3
Likely	1-ICHwk2 + 2-ICHmk3
Lower Caribou	1-ICHwk4 + 1-ICHwk2 + 2-ICHmk3
Mitchell	1-ESSFwk1 + 1-ESSFwc3
Mitchell	1-ICHwk2 + 1-ICHwk4
Moffat	3-SBPSmk + 3-SBSdw1 + 3-SBSdw2
Polley	1-ICHwk2 + 2-ICHmk3
Polley	3-SBSmh + 3-SBSmw (valley bottom)
Wasko/Lynx	1-ESSFwc3 + 1-ESSFwk1

Table 8 Definitions of Early Seral, Mature, and Old Seral Forest²⁵

NDT	BEC Zone	Early Seral Forest	Mature Forest	Old Forest
1	ESSF	< 40 years	> 120 years	> 250 years
1	ICH	< 40 years	> 100 years	> 250 years
2	SBS	< 40 years	> 100 years	> 250 years
2	ICH	< 40 years	> 100 years	> 250 years
3	SBS	< 40 years	> 100 years	> 140 years
3	SBPS	< 40 years	> 100 years	> 140 years
5	AT	< 40 years	> 120 years	> 250 years

6.3.3 Old Growth Management Areas

Old forest objectives are achieved in the short and long term through a combination of permanent Old Growth Management Areas (OGMAs), transition OGMAs, and no-harvest areas. The contribution to old forest from extended rotation areas was located within old growth management areas. The no-harvest areas that contribute to meeting the old forest objectives, but are not designated as OGMAs, include protected areas, caribou no-harvest areas, riparian reserve zones, critical fish, Class A lake buffers, a portion of wildlife tree patches, and a portion of preservation and retention visual quality objective areas. Permanent OGMAs were first designated in already constrained areas, and then placed in areas unconstrained for timber access.

²⁵ Biodiversity Conservation Strategy for the Cariboo-Chilcotin Land-Use Plan, July 1996 (183 pages). p. 37; 155-159

Where insufficient old forest is currently present in the no-harvest areas, extended rotation areas, and permanent OGMAs to meet the short-term old forest objectives, transition OGMAs were designated that contained the available older forest to immediately meet the objectives. OGMAs were placed in each biogeoclimatic variant to meet the old forest objectives for that variant. Any grouping of biogeoclimatic variants was done according to the principles outlined in Update #2²⁶.

Objective 12. Maintain the permanent old growth management areas as shown on Map 3.

Objective 13. Maintain the transition old growth management areas as shown on Map 3 until recruitment areas in the permanent old growth management areas meet old forest condition, or at the end of the first rotation, whichever comes first.

Objective 14. Maintain the ecological value of old growth management areas by limiting harvest of forest resources within them to the following:

- insect or disease control that a forest health specialist, in consultation with a habitat biologist, deems essential to mitigate severe damage to the habitat attributes of that old growth management area or to other forest values at the landscape level.
- for control of wildfire,
- for seed cone collection, provided trees are not felled,
- for road construction, where there is no other practicable route for the road, or
- for First Nation cultural purposes, provided trees are not felled,
- thinning to enhance old forest attributes within OGMAs inside Mule Deer Winter Range consistent with the direction in Management Strategy for Mule Deer Winter Ranges in the Cariboo-Chilcotin: Part 1a: Management Plan for Shallow and Moderate Snowpack Zones.

Objective 15. Maintain or exceed the minimum, interior, old forest requirements as listed in Table 6, or to the limit imposed by the layout of the old growth management areas and no-harvest areas.

- Strategy 15.1 Retain mature forest adjacent to old forest patches to maximise the contribution of those patches to interior, old forest targets as per Table 6.

²⁶ CCLUP Biodiversity Conservation Strategy Update #2.

Table 9 Definition of Interior Forest

The minimum distance (meters) from the edge of a patch at which Interior Forest conditions occur.

Seral Stage of Forest Patch	Forest Age or Type of Adjacent Patch					
	Mature (> 120 years)	101-120 years	41-100 years	0-40 years	Non-Productive and Non-forested	Lakes and large (“double-line”) rivers and roads
Old	50	50	100	200	100	100
Mature		50	100	200	100	100

Objective 16. Designate new transition OGMA, when >10 per cent of the total area of OGMA or other area contributing to old seral in a biogeoclimatic subunit described in Table 6 is harvested or lost to natural disturbance.

There is insufficient existing old forest in some biogeoclimatic units in some landscape units to immediately meet the old forest objectives. Accordingly all the available old forest, other than that in no-harvest and extended rotation areas, was incorporated into permanent and transition OGMA, but a shortage of transition OGMA area still occurred in some areas. The shortages and excesses of OGMA area are summarised in Table 10, with the calculation details in Appendix K (both available by March 31/03). Where there is a shortage, the seral stage objectives must still be met, to the extent that the required additional old forest exists. Where there is a small surplus, that surplus should be reserved from harvest in the near-term to reduce the short-term reduction of OGMA area below the objectives due to natural events. It is expected that all such surpluses will be harvested prior to the end of the rotation, and generally within the next 40 years.

Table 10 Current Achievement of Old Growth Management Areas for each Landscape Unit – Biogeoclimatic Unit (% Productive Forest Landbase)

[additional refinement of the OGMA, to minimise shortages and excesses of OGMA areas, is occurring. This table will be completed once that process is finished] Total required OGMA area is the old forest required outside no-harvest and extended rotation areas.

6.3.4 Spatial and Temporal Distribution of Cut and Leave Areas

The CCLUP (p. 153) requires planning for temporal and spatial distribution of cutblocks. This means that some blocks should be larger than the default 60 ha maximum cutblock size provided for under the Operational Planning Regulation of the Forest Practices Code. Included in the principles for the establishment of large cutblocks is the retention of leave areas that will result, by the end of a rotation, in the appropriate range of patch sizes in all seral ages. Temporal distribution of cutblocks is also addressed through seral stage objectives. Early seral objectives are particularly important to continuous recruitment of mid-seral forest into mature forest. If early seral is not capped, future deficits in mid-seral and in turn mature forest classes may be created, thereby

compromising the temporal distribution objective and the long term integration assumptions of an equilibrium forest condition.

Consistent with Biodiversity Strategy Update #4, older (mature and/or old forest) patches are defined by seral stage, while younger patches, including harvest patches, are defined by 20-year forest cover age class. Patches cross natural disturbance type and biogeoclimatic unit boundaries but do not cross Landscape Unit boundaries. Patch size objectives need to specify the retention requirements for Old and Mature+Old patches as well as the distribution of openings.

Objective 17. Maintain medium sized patches (80-250ha) and large sized patches (>250 ha) of mature + old forest at all times within each biogeoclimatic subunit in each landscape unit, consistent with the natural disturbance types for each biogeoclimatic zone.

Strategy 17.1 Do not exceed early seral targets by biogeoclimatic subunit within each landscape unit, consistent with Table 6, to maintain the temporal distribution of old seral and mature + old seral stages.

Strategy 17.2 Establish a range of cutblock opening sizes using Table 11 as a general guide.

Table 11 Objectives for the Patch Size Distribution of Cutblocks

BEC Zone NDT 1 – ESSF; ICH NDT 2 – SBS; ICH		BEC Zone NDT 3 – SBS; SBPS With Fir		BEC Zone NDT 3 – SBS; SBPS Without Fir		BEC Zone NDT 5 – AT	
Harvest Patch Size (ha)	Patch Distri- bution ²⁷	Harvest Patch Size (ha)	Patch Distri- bution	Harvest Patch Size (ha)	Patch Distri- bution	Harvest Patch Size (ha)	Patch Distri- bution
< 40	30-40 %	< 40	20-30 %	< 40	10-20 %	< 40	30-40 %
41-80	30-40 %	41-80	25-40 %	41-250	10-20 %	41-80	30-40 %
81-250	20-40 %	81-250	30-50 %	251-1000	60-80 %	81-250	20-40 %

6.3.5 Landscape Connectivity

The CCLUP (p. 153, 180) requires planning for landscape connectivity. “Connectivity” is a qualitative term describing the degree to which late-succession ecosystems are linked to one another to form an interconnected network²⁸. Management to reduce fragmentation and maintain connectivity should be guided by the type and degree of connectivity found in each natural disturbance type. Where mature and old forest are unavailable for maintaining connectivity, older immature forest will provide some (but not all) of the connectivity characteristics of mature forest. Management consistent with Table 12 will assure some landscape level connectivity is maintained. Where specific wildlife corridors are identified, they should also be managed for according to their identified management principles.

²⁷ Productive Forest Landbase Area.

²⁸ Biodiversity Guidebook, p. 4, 19-20, 26-27, 35-36, 46-48, 52, 53-59, 74.

Table 12 Principles for Landscape Connectivity

The relative frequency with which connectivity characteristics of natural mature / old forest ecosystems occur for all biogeoclimatic sub-zones of each NDT.

NDT	Connectivity Characteristics	Frequency of Occurrence		
1	Upland to upland Upland to stream Upland to wetland Cross-elevational Wetland complex Stream riparian Island remnants	High High High High Low to moderate High Low		
2	Upland to upland Upland to stream Upland to wetland Cross-elevational Wetland complex Stream riparian Island remnants	High Moderate Moderate High Low High Low		
3	Upland to upland Upland to stream Upland to wetland Cross-elevational Wetland complex Stream riparian Island remnants	SBPS, SBSdk / mk / mc3 / wk1 / dw	MSxv	All other sub-zones
		Low	Mod to high	Low to mod.
		Low	Mod to high	Low to mod.
		Low	Mod to high	High
		Low	Low	Moderate
		High	High	Moderate
		Low	Low	High
High	Moderate	Moderate		
4	Upland to upland Upland to stream Upland to wetland Cross-elevational Wetland complex Stream riparian Island remnants		IDFdk	All other sub-zones
			Mod to High	High
			Mod to High	High
			Mod to High	High
			Low	High
			High	Low to Mod
			Low	High
	Moderate	Low		
5	All	Contiguous tracts of late seral to climax vegetation, with a few small early seral patches.		

Objective 18. Maintain landscape connectivity of mature + old forest at all times within each biogeoclimatic subunit in each landscape unit, consistent with the natural disturbance regimes for each Natural Disturbance Types – Biogeoclimatic Ecosystem Classification (NDT-BEC) zone.

6.4 Stand Level Biodiversity

6.4.1 Rare Ecosystems

The CCLUP (p. 153-154, 156) requires the protection and maintenance of rare ecosystems. An ecosystem is a functional unit consisting of all living organisms in a given area and all the non-living physical and chemical factors of their environment, linked together through energy flow. An ecosystem can be any size (e.g., a pond, a field, a forest, or the earth's biosphere) but it always functions as a unit. A rare ecosystem is defined as an ecosystem (site series or surrogate) that occupies less than two per cent of a biogeoclimatic subzone within a Landscape Unit, is not common in an adjacent Landscape Unit, and is rare within the Cariboo-Chilcotin Land Use Plan area²⁹.

Provincially rare ecosystems (provincially red and blue-listed plant communities) also require protection and maintenance. Sensitive, uncommon, and rare ecosystems in the sustainable resource management plan area may include, among others, old pine forest with low levels of endemic insects and / or disease. The Conservation Data Centre has identified a number of provincially rare ecosystems and site series, but most rare ecosystems have not yet been identified. Some rare ecosystems have been identified in the Biodiversity Conservation Strategy of 1996 (p. 48).

Objective 19. Ensure old and mature+old forest representation within rare site series, as identified by government, is above the levels specified in Table 6 for the biogeoclimatic unit as a whole.

- Strategy 19.1 Rare ecosystems may be temporarily protected through use of wildlife tree patches.
- Strategy 19.2 Government should complete identification of rare ecosystems in the Cariboo-Chilcotin.

6.4.2 Sensitive Habitats

The CCLUP (p. 153-154, 156) requires the protection and maintenance of sensitive habitats. Sensitive habitats include a number of types of wildlife habitat features that are used by one or more wildlife species. Specific examples of features are bear den sites, raptor nests, mineral licks, and heron rookeries. Some features are used only for a single year, and other features are less often encountered but used by wildlife for many years. These features require special management to protect and maintain their value to wildlife, because they are relatively persistent over a period of at least several years, the species involved may use a feature over several years, and they are commonly affected by forest harvesting. Usually these features are small and can be addressed through the placement of wildlife tree patches if the feature is forested or associated with forest.

Objective 20. Maintain natural mineral licks, including sufficient vegetation adjacent to the mineral lick to maintain existing levels of visual cover for ungulates.

²⁹ Biodiversity Guidebook, p. 76; CCLUP Biodiversity Conservation Strategy p. 47-48.

- Strategy 20.1 Do not harvest or build roads or skid trails within 100 meters of a mineral lick.
- Strategy 20.2 MSRM will record the mineral lick and buffer area as a permanent no-harvest area and show on all operational maps as a wildlife habitat feature. The adjacent forest can be included in a wildlife tree patch, or an aggregation of wildlife tree patches.
- Strategy 20.3 No machine activity should occur within 100 meters of a mineral lick from May 1 to November 30.
- Strategy 20.4 Wherever practicable, locate roads to provide visual barriers between the road and critical wildlife habitats, including wetlands, mineral licks, wildlife habitat areas and ungulate winter ranges.

Objective 21. Maintain the habitat suitability of nest sites of great blue herons, ospreys, eagles, hawks, and owls, and protect the nesting adult and immature birds from disturbance due to industrial activity.

- Strategy 21.1 Do not harvest or build roads or skid trails within 100 meters of a bald eagle, golden eagle, osprey, red-tailed hawk, Cooper's hawk, sharp-shinned hawk, northern goshawk, great grey owl, or great horned owl nest; or within 500 meters of a great blue heron nest.
- Strategy 21.2 The nest tree(s) may be included in a wildlife tree patch. An aggregation of wildlife tree patches may be required to protect an entire great blue heron nest colony.
- Strategy 21.3 No machine activity should occur within 400 meters of an occupied nest from February 1 to September 15, to avoid disturbance of the nesting birds.

6.4.3 Wildlife Tree Retention

The CCLUP (p. 153) requires that stand structure be managed for and that Wildlife Tree Retention (WTR) occurs. The primary mechanism of management for stand level biodiversity is through WTR, which can consist of single tree retention or Wildlife Tree Patches (WTPs). Some of the important WTR features contributing to wildlife values are:

- standing dead and dying trees;
- coarse woody debris;
- tree species diversity;
- understory vegetation;
- soil organisms;
- refugia for large and small species of plants, animals, bacteria and fungi; and
- representation of rare site series in mature and old seral stage.

Maintenance of stand level biodiversity is a critical component of overall biodiversity management by ensuring retention of some habitat structure associated with each cutblock or cutting permit. The calculation of the long-term and short-term WTR requirements is described in Section 7 with the calculations shown in Appendix I. The short-term WTR requirement is the present objective, which will be revised consistent with the Biodiversity Guidebook, when the relative proportion of the landscape harvested without wildlife tree patches decreases.

Objective 22. Meet or exceed the minimum wildlife tree objectives for each harvest area (cutblock or cutting permit), within each biogeoclimatic subzone in each landscape unit as given in Table 13, exclusive of selection harvesting areas where < 50 per cent basal area is removed in Douglas-fir stands and Caribou modified harvest areas.

Table 13 Wildlife Tree Retention Objectives

Landscape Unit – Biogeoclimatic Variant	Minimum Wildlife Tree Retention Objective (% gross harvest area)
Beaver Valley – 2-ICHmk3, 1-ICHwk2	8
Beaver Valley – 3-SBPSmk, 3-SBSdw2	8
Beaver Valley – 3-SBSdw1, 3-SBSmh	8
Black Creek – 1-ESSFwk1, 1-ESSFwc3	7
Black Creek – 1-ICHwk2	7
Black Creek – 2-ICHmk3	8
Black Creek – 3-SBPSmk, 3-SBSdw1, 3-SBSmc1	8
Cariboo Lake – 1-ESSFwc3	10
Cariboo Lake – 1-ESSFwk1	10
Cariboo Lake – 1-ICHwk4	11
Cariboo Lake – 3-SBSwk1	11
East Arm – 1-ESSFwc3	0
East Arm – 1-ESSFwk1	6
East Arm – 1-ICHwk1, 1-ICHwk2	9
Eastside – 1-ESSFwc3	6
Eastside – 1-ESSFwk1	6
Eastside – 1-ICHwk2	7
Horsefly – 1-ESSFwc3, 1-ESSFwk1	7
Horsefly – 1-ICHwk2	8
Horsefly – 2-ICHmk3	8
Horsefly – 3-SBSdw1	8
Likely – 1-ESSFwc3, 1-ESSFwk1	8
Likely – 2-ICHmk3, 1-ICHwk2	9
Little River – 1-ESSFwc3	0
Little River – 1-ESSFwk1	5
Little River – 1-ICHwk4	7

Landscape Unit – Biogeoclimatic Variant	Minimum Wildlife Tree Retention Objective (% gross harvest area)
Lower Cariboo – 1-ESSFwc3	3
Lower Cariboo – 1-ESSFwk1	9
Lower Cariboo – 1-ICHwk2, 1-ICHwk4, 2-ICHmk3	10
Lower Cariboo – 3-SBSmw, 3-SBSwk1	10
McKay – 1-ESSFwc3	9
McKay – 1-ESSFwk1	9
McKay – 1-ICHwk2	9
McKinley – 1-ESSFwc3, 1-ESSFwk1	7
McKinley – 1-ICHwk2, 2-ICHmk3	9
McKinley – 3-SBSdw1	8
McKusky – 1-ESSFwc3	3
McKusky – 1-ESSFwk1	7
McKusky – 1-ICHwk2	7
Mitchell Lake – 1-ESSFwc3, 1-ESSFwk1	4
Mitchell Lake – 1-ICHwk2, 1-ICHwk4	9
Moffat – 1-ESSFwc3	7
Moffat – 1-ESSFwk1	7
Moffat – 3-SBPSmk, 3-SBSdw1, 3-SBSdw2	8
Moffat – 3-SBSmc1	8
Niagara – 1-ESSFwc3, 1-ESSFwk1	7
Niagara – 1-ICHwk2	0
Penfold – 1-ESSFwc3	5
Penfold – 1-ESSFwk1	5
Penfold – 1-ICHwk2	6
Polley – 1-ICHwk2, 2-ICHmk3	8
Polley – 3-SBSdw1, 3-SBSmh, 3-SBSmw	7
Wasko/Lynx – 1-ESSFwc3, 1-ESSFwk1	5
Wasko/Lynx – 1-ICHwk2	6
Westside – 1-ESSFwc3	0
Westside – 1-ESSFwk1	3
Westside – 1-ICHwk2	7

Objective 23. Maintain existing wildlife tree structure, at or above the level specified for wildlife tree patch retention when harvesting using single-tree or group selection harvest in areas with >50% basal area retention.

Strategy 23.1 Wildlife tree structure is considered to be Wildlife Tree Classes two through eight in the Biodiversity Guidebook.

Strategy 23.2 Procedures for maintenance of wildlife tree structure in partial cutting areas include: establishment of no work zones around

the wildlife tree, retention of single wildlife trees assessed as safe with a basal area equivalency to the requirements of Table 13, and retention of wildlife tree patches

Objective 24. Maintain wildlife tree reserves that are representative of the cutblock prior to harvest, unless the reserve was established to maintain a rare ecosystem or sensitive habitat.

- Strategy 24.1 Most individual wildlife tree patches can be harvested and replaced over time consistent with the CCLUP Integration direction that 50 per cent of WTR would be available over one rotation. The portion of WTPs contributing to the old seral target are unavailable for harvest.
- Strategy 24.2 Wildlife tree and wildlife tree patches should contain species and stem diameters that are representative of the cutblock harvested, however rare ecosystems and tree types that are highly productive and valuable for wildlife, including large diameter deciduous, spruce in riparian areas and veteran trees, should be emphasised for inclusion.
- Strategy 24.3 Wildlife tree reserves should be located within the cutblock boundary and have an inter-patch distance not less than 500 meters.
- Strategy 24.4 Dead or dying trees should not be removed from wildlife tree reserves unless diseased trees pose a significant forest health threat to surrounding forest at the landscape level.
- Strategy 24.5 A portion of the wildlife tree retention for each harvest patch should be in the form of large-diameter stems scattered individually or in small groups of conifers, to retain large diameter coarse woody debris scattered across all openings, both in the short term and long term.
- Strategy 24.6 When a WTP, or a portion of a WTP, no longer includes sufficient WTP attributes to warrant retention, the WTP should be replaced with the oldest available nearby stand.

6.4.4 Species Composition

The CCLUP (p. 153) requires management for species composition. Many organisms have life requisites associated with particular plant species (trees, herbaceous plants, etc.). Maintenance of biodiversity requires that tree and other plant species composition be maintained as close to the natural condition as possible, recognising that some natural variation occurs in plant communities.

It is very important in the Interior Cedar-Hemlock Zone that significant cedar and hemlock representation be maintained in second growth stands.

6.4.5 Riparian Habitats

The CCLUP (p 153, 155, 158, 159, 162, 163, 164, 167, 168), including the sub-zone objectives (p. 61, 83, 85, 113, 115, 121) requires management for riparian habitats, for both grassland and forested areas. Riparian habitats include both the area dominated by continuous high moisture content, and the associated adjacent upland vegetation. They include both surrounding vegetation (including large woody debris) that influences the watercourse (including fish and fish habitat), and vegetation that is influenced by the watercourse. Riparian ecosystems, and the riparian features they are associated with, contain many of the highest value non-timber resources in the natural forest. The CCLUP (pages cited above) requires the use of the *Riparian Management Area Guidebook* of the Forest Practices Code to manage for non-timber riparian resources. Consistent with the Riparian Guidebook, shrub-carrs are included as wetlands.

Objective 25. Establish riparian reserve zones and riparian management zones consistent with the specifications in Table 14.

Table 14 Riparian Reserve Zone and Riparian Management Zone Specifications

Streams	Width (m)	Riparian Class	Riparian Reserve Zone Minimum Width* (m)	Riparian Management Zone Minimum Width ** (m)	Riparian Management Area Minimum Width (m)
All streams in community watersheds, and all fish streams	> 20	S1	50	20	70
	> 5 <= 20	S2	30	20	50
	1.5 <= 5	S3	20	20	40
	< 1.5	S4	0	30	30
Streams outside of community watersheds that are not fish streams	> 3	S5	0	30	30
	<=3	S6	0	20	20
Wetlands and shrub-carrs	Size (ha)				
Any location	> 5 ha	W1	10	40	50
Any location	> 1 <= 5	W3	0	30	30
2 or more individual wetlands and/or shrub-carrs with overlapping riparian management zones	Combined size of wetlands >= 5	W5	10	40	50
Lakes	Size (ha)				
Any location	> 5	L1	10	See Section 6.7 of this Plan	
Any location (applicable only if the lake has not been addressed in Section 6.7 Lakes)	> 1 <= 5	L3	0	30	30

***Reserve Zones:** The stream riparian reserve zone extends the specified minimum widths from the edge of the stream channel bank. The wetland or shrub-carr riparian reserve zone extends the specified minimum widths from the edge of the wetland or shrub-carr. The lake riparian reserve zone extends the specified minimum widths from the edge of (a) the natural boundary of the lake, or (b) the wetland or shrub-carr that is contiguous to the lake if the wetland or shrub-carr is up to 5 ha in size.

****Management Zones:**

- The stream riparian management zone extends from (a) the outer edge of the riparian reserve zone; or (b) if there is no riparian reserve zone, the edge of the stream channel bank. The stream riparian management zone extends to the top of the inner gorge of the stream or to the greater of (a) the specified minimum widths; and (b) the outer edge of any (i) active flood plain or (ii) wetland or shrub-carr that is less than 1 ha in size and is within the width of the specified riparian management area.
- The wetland or shrub-carr riparian management zone extends from (a) the outer edge of the riparian reserve zone; or (b) if there is no riparian reserve zone, the edge of the wetland or shrub-carr.
- The lakeshore management zone or lake riparian management zone extends the specified minimum widths from (a) the outer edge of the riparian reserve zone; or (b) if there is no riparian reserve zone from the edge of (i) the natural boundary of the lake, or (ii) a wetland or shrub-carr that is contiguous to the lake if the wetland or shrub-carr is up to 5 ha in size.

Objective 26. Maintain sufficient forest structure in the riparian management zone to minimise windthrow in the riparian reserve zone.

- Strategy 26.1 Retain deciduous species including large diameter cottonwood, aspen, and incorporate windthrow management strategies for preservation of conifers in riparian and lakeshore management zones.
- Strategy 26.2 Use no-work zones to retain high value wildlife trees within riparian and lakeshore management areas.
- Strategy 26.3 Do not construct roads in the riparian reserve zones and riparian management zones of streams, wetlands, and lakes, except for stream crossings or where there are no other practicable routes, and render roads impassable to 4-wheel drive vehicles upon completion of permitted activities.

Objective 27. Maintain a minimum of 70 per cent of the basal area of stands throughout the riparian management zone of all S4 streams.

Objective 28. Manage livestock to prevent damage to water quality, fish habitat, stream banks, riparian vegetation and soils.

6.4.6 Coarse Woody Debris

The CCLUP (p. 153) requires management for coarse woody debris. Coarse woody debris fulfils valuable ecological roles by providing habitat for many vertebrates and invertebrates, shade and moisture, carbon storage and additions to the soil of nutrients and organic matter. The quality (length, diameter, decay level, tree species) is as important as quantity of coarse woody debris. While retention of coarse woody debris is an important element of managing for biodiversity, quantitative objectives by ecosystem

are unavailable and there may be conflicts with timber utilisation standards. The intent is to retain as much coarse woody debris as possible, consistent with size, types and distribution present on site at the stand level prior to harvest.

Objective 29. Maintain coarse woody debris by leaving it well distributed across harvested areas with emphasis upon retention of large size (diameter and length) pieces, consistent with the pre-harvest condition of the ecosystem, and within the limitations resulting from utilisation standards.

Strategy 29.1 The quantity and quality of coarse woody debris retained on a harvest area can be enhanced by:

- retention of individual stubs or dead or living wildlife trees, especially those over 25 cm diameter of varying tree species;
- retention of wildlife tree patches;
- retention of stub tops or fallen danger trees on site;
- retention of expected cull trees (such as spiral grain) standing on site;
- stump side processing;
- leaving larger debris that is not utilizable out of roadside burn piles;
- focusing pile and burn activities on fines, except where very high coarse woody debris levels exist.
- leaving small patches of natural coarse woody debris accumulations or windthrow undisturbed;
- retaining longer debris that is not utilizable near riparian or understory/stub retention areas;
- keeping longer debris that is not utilizable out of roadside piles;
- retaining small unburned piles and other coarse woody debris adjacent to block boundaries and riparian features;
- moving longer pieces off skid trails to avoid breakage.

6.5 Wildlife

Although riparian and biodiversity requirements provide for the general requirements for a large number of species, management for the specific habitat requirements of selected species is also needed. Some species are of particular importance to First Nations, guide-outfitters, trappers, and hunters.

6.5.1 Fisher

The CCLUP (p. 156), including the sub-zone objectives (p. 61, 83, 85, 113, 115, 121), requires management for species at risk. Fisher are blue-listed in BC. They are identified wildlife under the Forest Practices Code, but have no mandatory management requirements under the *Managing Identified Wildlife Procedures and Measures*. Instead, fisher require landscape level objectives that address their habitat requirements, where they cannot be completely captured within discrete areas of limiting habitat. Fisher inhabit forested habitats, particularly those with mixed habitat

and structural classes, edges and riparian areas. They are primarily associated with mature and old forests. See the Identified Wildlife Strategy³⁰ for further information.

6.5.2 Grizzly Bear

The CCLUP sub-zone objectives (p. 61, 83, 85, 113, 121) require management for grizzly bear, as well as the general requirement to manage for species at risk (p. 156). Grizzly bear management is not included in the Beaver Valley ERDZ objectives (CCLUP p. 115). Grizzly bear are recognised as a species of special importance in the province of British Columbia. They are blue-listed and are designated as “Vulnerable” by the Committee on the Status of Endangered Wildlife in Canada. They are “Identified Wildlife” under the Forest Practices Code, but have no mandatory management requirements under the *Managing Identified Wildlife Procedures and Measures*. Instead, the grizzly bear is one of three species for which the *Identified Wildlife Management Strategy* provides for wildlife higher level plan objectives to address habitat needs that cannot be completely captured within discrete areas of limiting habitat. See the Identified Wildlife Strategy³¹ for further information. Plant species used for grizzly bear forage³² include *berry-producing shrub species* such as elderberry, blueberry, huckleberry, rose, saskatoon, bearberry, red-osier dogwood, hazelnut, crowberry, Oregon grape, devil’s club, currant, raspberry, mountain ash, and highbush cranberry; and *herbaceous and grass species* such as angelica, aster, milk-vetch, reedgrass, sedges, horsetail, fescue, hedysarum, cow parsnip, creamy peavine, wild parsley, lupine, twisted stalk, dandelion, clover, and Indian hellibore.

Objective 30. Minimize human-bear conflicts by:
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- | |
|--|
| <ul style="list-style-type: none"> • Locating commercial and industrial camp locations away from areas of known grizzly habitat, • Protection of bear den sites from disturbance during habitation, • Restriction from use of domestic sheep for vegetation management in areas of high grizzly concentration, |
|--|

Strategy 30.1 Maintain separation of domestic sheep used for forage control and grizzly bear in areas of high grizzly bear concentration or where conflicts have occurred within 2 years.

Strategy 30.2 Do not harvest or build roads or skid trails within 50 meters of a bear den.

Strategy 30.3 No machine activity should occur within 100 meters of an occupied bear den from November 1 – May 1. If the bear

³⁰ Species and Plant Community Accounts for Identified Wildlife Volume 1, June 1997 (p. 107-110); *Managing Identified Wildlife Volume 1: Procedures and Measures*, February 1999 (p. 91-92).

³¹ Species and Plant Community Accounts for Identified Wildlife Volume 1, June 1997 (p. 111-115); *Managing Identified Wildlife Volume 1: Procedures and Measures*, February 1999 (p. 93-102).

³²Fuhr, B. and D. A. Demarchi. 1990. A Methodology for Grizzly Bear Habitat Assessment in British Columbia. MELP Wildlife Bulletin No. B-67.

shows any level of disturbance during operations, then move activity back to at least 300 meters distance.

Objective 31. Retain existing security cover adjacent to critical grizzly bear foraging habitats, which include the salmon and trout spawning reaches or shoals identified on Map 6, and herb-dominated avalanche tracks and run-out zones on southerly and westerly aspects, in the areas identified as grizzly bear habitat on Map 4.

- Strategy 31.1 Where possible, establish Wildlife Habitat Areas for critical foraging areas.
- Strategy 31.2 Follow the management principles for grizzly bear outlined in the Higher Level Plan direction in the Managing Identified Wildlife Volume 1: Procedures and Measures (1999), p. 99-100.

6.5.3 Mule Deer

The CCLUP (p. 154-154) requires that mule deer winter range be maintained in a condition that will support the regional population during critical winter conditions. The logging method required to maintain mule deer winter habitat is light selective harvesting (CCLUP, p. 154). Mule deer are regionally important and are to be managed through the CCLUP *Mule Deer Strategy*³³, its updates³⁴, Cariboo Forest Region Extension Note #25A³⁵, and individual management plans for each winter range. There are 13 mule deer winter ranges entirely or partly within the sustainable resource management plan area.

Mule deer occur throughout the sustainable resource management plan area during the summer, but require low snow depth habitat in the winter. The winter habitat includes shrub forage in the early and late winter, but at peak snow depths litter fall from old Douglas-fir is required for food. Old Douglas-fir forests, with relatively low snow depths, need to be managed under silviculture systems that maintain or enhance the number of large old trees that provide snow interception or litter fall to maintain winter habitat. Use of silviculture systems such as clear-cut systems on normal rotations and selection systems with heavy, frequent stand entries reduces the number of old trees.

Objective 32. Manage Crown land within the boundaries shown on Map 5 as mule deer winter range.

Objective 33. Manage each mule deer winter range consistent with the comprehensive plan for that mule deer winter range, where such a plan has been completed.

³³ Regional Mule Deer Winter Range Strategy for the Cariboo-Chilcotin Land-Use Plan, June 1996 (114 pages).

³⁴ Regional Mule Deer Winter Range Strategy Update: Recommended Interim Management Guidelines for Mule Deer Winter Range, November 14, 2000 (17 pages).

³⁵ Structural Definitions for Management of Mule Deer Winter Range Habitat in the Interior Douglas-Fir Zone. Cariboo Forest Region Research Section Extension Note #25A. August 2000. (7 pages).

- Strategy 33.1 The comprehensive plan for each winter range has the following three components: 1) Management Plan for the appropriate snowpack zone(s), 2) Long-term Objectives Map, 3) Transition-period Harvest Opportunity Plan.

Objective 34. Maintain or recruit forest attributes on those mule deer winter ranges that do not have a comprehensive plan completed by managing each mule deer winter consistent with the “Regional Mule Deer Winter Range Strategy Update: Recommended Interim Management Guidelines for Mule Deer Winter Range (November 14, 2000)”.

6.5.4 Mountain Caribou

The CCLUP (p. 156) states that the overriding objective is to maintain habitat values for mountain caribou within the Cariboo-Chilcotin Land Use area. Mountain caribou occur in the mountainous parts of the eastern Cariboo-Chilcotin Land Use area and are provincially red-listed and federally listed as threatened. There are less than 2500 mountain caribou in the world, almost all of which live in British Columbia.

Suitable winter habitat is the key to the maintenance of the mountain caribou population. Important areas of early winter habitat are located in the Interior Cedar Hemlock biogeoclimatic zone in the vicinity of Quesnel Lake. As snow depths increase, caribou move up into the subalpine and alpine, where they feed on arboreal lichens. See the Caribou Strategy and its updates for details of the biology of caribou. Mountain caribou should be managed through the CCLUP *Mountain Caribou Strategy*, (October, 2000), and by other direction as accepted by the Interagency Management Committee and Regional Resource Committee.

Objective 35. Manage Crown land within the caribou no-harvest and caribou modified harvest areas, shown on Map 5, consistent with the Mountain Caribou Strategy (October, 2000).

6.5.5 Mountain Goat

The CCLUP (p. 156), including the sub-zone objectives (p. 61, 83, 85, 113, 115, 121), requires management for species at risk. Mountain goats are regionally important and are identified wildlife under the Forest Practices Code. Critical habitat areas such as natal areas and escape terrain should be designated as Wildlife Habitat Areas with mandatory management requirements under the *Managing Identified Wildlife Procedures and Measures* (p. 103-104). Winter range is critical for mountain goats. Maintaining connectivity of suitable habitat for movement between summer ranges and winter ranges is also important. See the Identified Wildlife Strategy³⁶ for further information.

³⁶ Species and Plant Community Accounts for Identified Wildlife Volume 1, June 1997 (p. 121-124); Managing Identified Wildlife Volume 1: Procedures and Measures, February 1999 (p. 103-104).

Mountain goats are vulnerable to loss of habitat for use as winter range, natal areas and escape terrain. Mountain goats generally avoid snow depths greater than 50 cm, although in deep snow areas they may be forced to winter in areas with 100 cm or more of snow. High elevation mature and old forests, especially on steep south slopes, have reduced snow depth and are frequently used for winter foraging and thermal cover. In the sustainable resource management plan area goats also utilise windblown ridge-lines where wind maintains low snow depths. Escape terrain such as steep, rocky slopes and cliffs is an essential habitat, including forest cover. Mountain goat natal area maps are planned.

Objective 36. Manage the Crown land within the boundaries shown on Map 5 as mountain goat winter range.

Strategy 36.1 Follow the management principles outlined in the general wildlife measures for mountain goat in the Managing Identified Wildlife Volume 1: Procedures and Measure (1999), p. 103-104.

Objective 37. Limit disturbance to mountain goat populations by not operating aircraft within a 2 kilometre line-of-sight of occupied mountain goat winter ranges or natal areas from December 1 to July 1, with the exception of approved mountain goat inventory flights.

Objective 38. Retain existing vegetation that provides security and thermal cover within 200 meters of escape terrain on mountain goat winter ranges.

Strategy 38.1 Ensure no more than 33 per cent of the forested habitat within the 200 meter escape terrain buffer is early seral at any time, and at least 50 per cent of the basal area consists of mature and old stems at all times.

Objective 39. Prevent disease transmission to mountain goats from domestic sheep used for vegetation management

Strategy 39.1 Maintain separation of domestic sheep used for vegetation management and areas used by mountain goats in the summer.

6.5.6 Moose

The CCLUP (p. 155-156), including the sub-zone objectives (p. 61, 83, 85, 113, 115, 121), requires management to maintain moose winter, calving and summer habitat. Enhancement for moose should only occur outside areas that the Caribou Strategy Committee have identified as important for caribou management, because the overriding objective is to maintain habitat values for mountain caribou (CCLUP, p. 156).

Moose winter and calving habitat should be managed to minimise human disturbance and maximise suitable shrub browse. Some mature forest cover needs to be maintained, for thermal cover, visual cover, and snow interception. At least part of the perimeter of each wetland or shrub-carr should be maintained as advanced immature or mature forest cover, for security and thermal cover. Permanent roads should be built as

far as possible from areas of important summer, natal and winter use, such as riparian areas, wet forest types, and areas of high shrub production. In winter and calving areas, densities of actively used roads should be minimised, to minimise disturbance. Some plant species used for moose forage include maple, red-osier dogwood, saskatoon, mountain ash, rose, willow, and hazelnut.

Objective 40. Retain sufficient forest and vegetative structure adjacent to all wetlands and shrub-carrs that have a riparian management area defined in Table 14, to provide security and thermal cover for wintering moose.

- Strategy 40.1 No more than 50 per cent of the riparian management area of any wetland over 5 hectares should be disturbed in one pass.
- Strategy 40.2 Habitat enhancement for moose in Management Unit 5-15 is discouraged because of the risks to mountain caribou from wolves that depend on moose as an alternate prey species.
- Strategy 40.3 Avoid broadcast herbicide treatments within the riparian management area of wetlands, or other areas where shrubs show obvious indications of repeated heavy browsing by ungulates.
- Strategy 40.4 Where practicable, locate roads at least 500m away from classified (W1-W5) wetlands, and render secondary and temporary roads within 500 m of these wetlands impassable to 4-wheel drive trucks.

Objective 41. Maintain habitat suitability of all areas identified by government as key wetlands or riparian habitats for moose.

6.5.7 Fur-bearers

The CCLUP (p. 156), including the sub-zone objectives (p. 61, 83, 85, 113, 115, 121), requires management to maintain fur-bearer habitat. Fur-bearers in the sustainable resource management plan area are an important resource for both native and non-native trappers. Management of coarse woody debris, wildlife trees, riparian areas, fish, other wildlife and biodiversity will account for many of the habitat requirements of fur-bearers.

6.5.8 Sandhill Crane

The CCLUP (p. 156), including the sub-zone objectives (p. 61, 83, 85, 113, 115, 121), requires management for species at risk. Sandhill cranes are provincially blue-listed, and are identified wildlife under the Forest Practices Code. They usually nest in wetlands, and prefer to locate nest sites between open water, for refuge from terrestrial predators, and forest, for refuge from aerial predators. See the Identified Wildlife

Strategy³⁷ for further information. Forest retained to maintain cover for sandhill crane nest sites may be included in a wildlife tree patch.

Objective 42. Maintain the suitability of sandhill crane nest sites by retaining existing vegetative cover and visual screening adjacent to the nest area.

Strategy 42.1 Follow the management principles outlined in the general wildlife measures for sandhill crane in the Managing Identified Wildlife Volume 1: Procedures and Measure (1999), p. 51-52, with special attention to riparian management around W3 wetlands.

Objective 43. Maintain nesting success of sandhill cranes by preventing commercial or industrial disturbance of nesting sandhill cranes between April 1 and August 31.

6.5.9 Species and Habitats at Risk

The CCLUP (p.156) requires that inventory be undertaken to identify species and habitats at risk and their management needs. Preparation and implementation of recovery plans is required, including establishment of wildlife habitat areas, sensitive areas, or other appropriate land designations for their management. Species and habitats at risk include (a) any wildlife species that in the opinion of government is threatened, endangered, sensitive, or vulnerable, (b) any threatened and endangered plants or plant communities identified by government as requiring protection, and (c) regionally important wildlife as determined by government³². First Nation cultural and environmental values also include concern for species and habitats at risk.

Wildlife Habitat Areas continue to be proposed, as new sites requiring protection are discovered. MSRM will monitor proposals to ensure consistency with the objectives in the CCLUP.

Objective 44. Maintain habitat requirements for all red and blue- listed species and communities, and all species listed by the Committee on the Status of Endangered Wildlife in Canada as nationally endangered, threatened, or of special concern.

Strategy 44.1 Follow procedures outlined in the Identified Wildlife Management Strategy, Volumes I and II.

Strategy 44.2 Obtain from the Conservation Data Centre a list of red and blue-listed species and communities, and their known locations and site series descriptions.

³⁷ Species and Plant Community Accounts for Identified Wildlife Volume 1, June 1997 (p. 32-35); Managing Identified Wildlife Volume 1: Procedures and Measures, February 1999 (p. 51-52).

6.6 Aquatic Resources

Management of aquatic biodiversity and fish habitat is largely addressed through the riparian habitat section combined with the specific issues addressed in this section. The CCLUP (page 164) expects general water quality to be conserved through application of the Forest Practices Code and the other objectives and strategies of the sustainable resource management plan.

Within the sustainable resource management plan area, the Quesnel and Horsefly River drainages are particularly important fisheries. The Horsefly River provides critical habitat for a unique strain of rainbow trout that contributes to one of the largest recreational fisheries in the region. In addition, the Horsefly River has one of the highest returns of sockeye salmon in the province. The Horsefly River sockeye provide significant economic and biological values to the province.

Quesnel Lake is a dynamic complex ecosystem that includes an immense diversity of fish species and sensitive habitats. The lake provides habitat for a unique species of rainbow trout that grows in excess of 10 kg, and critical habitat for one of the provinces' largest runs of sockeye salmon. Sensitive populations of Kokanee are present and are critical to the existence of the large rainbow trout, and other important fish species such as lake char, and bull trout.

6.6.1 Watershed Hydrology

The CCLUP (p. 61, 83, 85, 113) requires the Cariboo, Cottonwood, and Horsefly River watersheds to be managed for hydrologic stability through watershed assessment, restoration, and monitoring. More generally, the CCLUP (p. 160) recommends that watershed assessments be done when disturbance levels exceed 25 per cent, and that they be done in key watersheds to ensure the maintenance of critical fish and wildlife habitat and hydrological stability. The CCLUP (p. 179) identifies that it is especially important that development within watersheds in the Special Resource Development Zone is consistent with watershed assessment prescriptions. The CCLUP (p. 180) requires completion of watershed assessments for all watersheds, commencing with high-priority fisheries watersheds in the Special Resource Development Zone. Watershed assessments are normally conducted on watersheds of 500 ha to 50,000 hectares³⁸, however many of the important watersheds tributary to Quesnel Lake that are less than 500 ha may also require assessments to ensure that their salmon and trout habitat values are maintained. A fisheries target risk assessment³⁹ completed in 1996 indicated that the CCLUP fisheries targets were achievable while maintaining watershed hydrology. The CCLUP (p. 164) specifies that key or sensitive watersheds should be selected for intensive research/monitoring to assess hydrologic and water quality impacts of logging. Refer to Appendix E for additional information.

6.6.2 Fish

The area within the HSRMP has a diversity of fish populations inhabiting the rivers and lakes. Several fish species require specific management objectives, with other

³⁸ Interior Watershed Assessment Procedure Guidebook (IWAP) Second Edition, Version 2.1, April 1999: page 2.

³⁹ Fisheries Target Risk Assessment Prepared for the CCLUP Integration Process, August 15, 1996 (2 cover letters +19 pages + 1 map).

species being managed indirectly through the management of the highlighted species. The fish species of particular concern within the HSRMP are sockeye, chinook and coho salmon, kokanee, bull trout, lake trout, and rainbow trout.

Objective 45. Maintain or enhance fish passage, natural channel width, streambed substrate and water quality at all road crossings of fish streams.

- Strategy 45.1 Where suitable fish habitat occurs upstream of culverts that currently create barriers to fish passage, replace those culverts with appropriate structures that permit fish passage.
- Strategy 45.2 Watershed Assessment Procedures and Erosion Control Plans should be completed to ensure maintenance of water quality and areas of important fish habitat.
- Strategy 45.3 Screens should be used on all water intakes to prevent the destruction of fish.

Objective 46. Maintain natural stream channel structural characteristics, large woody debris supply hydrologic stability, water quality, water quantity, and water temperature for all fish streams and where licensed water use occurs.

- Strategy 46.1 Ensure water allocation retains sufficient water in the contributing system to sustain fish populations at all times.
- Strategy 46.2 When disturbance levels exceed 25 per cent, and in key watersheds, watershed assessments should be undertaken.

Objective 47. Reserve the areas shown as critical fish habitat on Map 6 from forest harvesting and other development.

Objective 48. Maintain water quality and natural patterns of surface and groundwater flow adjacent to critical fish habitat areas associated with Quesnel Lake (Map 6).

6.6.2.1 Salmon

The CCLUP requires that the Cariboo River, Horsefly River, Quesnel River (which includes Quesnel Lake), Beaver Creek, Hazeltine Creek, and Edney Creek watersheds be managed for salmon stocks through riparian area protection and controls on the rate of harvest (p. 61, 83, 85, 115, 121). The salmon species present are pink, chinook, coho, and sockeye. The CCLUP (p. 168-169) includes a list of specific objectives for salmon management.

6.6.2.2 Bull Trout

The CCLUP (p. 156), including the sub-zone objectives (p. 61, 83, 85, 113, 115, 121), requires management for species at risk. Bull trout are the only aquatic species at risk in the HSRMP area. Bull trout are a provincially blue-listed species because their regional population is particularly sensitive due to their restricted distribution, susceptibility to habitat degradation, disruption of migration patterns and over fishing. Bull trout are considered to be an indicator of ecosystem health and are extremely sensitive to reduced water quality, increased water temperatures, loss of riparian habitat and loss of stream channel integrity. The current known distribution of bull trout has been determined through stream inventories, but inventory has not been completed throughout the entire sustainable resource management plan area. Critical fish habitat has currently been identified for bull trout in Sellers Creek and “Tucket” Creek (Map 6). Additional critical fish habitat for bull trout is likely to exist within the sustainable resource management plan area. Critical habitats should be designated Wildlife Habitat Areas with mandatory management requirements under the *Managing Identified Wildlife Procedures and Measures*. See the Identified Wildlife Strategy⁴⁰ for further information regarding bull trout.

6.6.3 Water Resources

The CCLUP (p. 164) requires the completion of a comprehensive water management strategy for the Cariboo Region, to address the impacts on water resources from agriculture, residential development, roads, industrial activity, and forest harvesting. Government should initiate the strategy. The water management strategy will provide direction on how to balance various uses of the water resource. The CCLUP (p. 159) requires that the water management strategy include allocations of water for conservation purposes. The CCLUP (p. 85, 115) requires that the Lemon Creek watershed and the Beaver Valley Enhanced Resource Development Zone be managed to address fisheries flow issues and agricultural needs for competing water uses. The CCLUP (p. 113) requires water allocation planning in the Cottonwood Enhanced Resource Development Zone to address stream flow requirements in late summer and placer mining. Additional issues may be identified once a comprehensive water management strategy for the Cariboo Region has been completed. No reduction in timber access is expected to result from the water management strategy.

6.7 Lakes

The CCLUP (p. 61, 85, 115, 121) requires management of specified *approximate* numbers of lakes as quality lakes for wilderness fisheries, referenced herein as ‘wilderness fisheries lakes’. These lakes are identified in Table 15, with further details in Appendix F. The CCLUP (p. 141) requires management of scenic landscapes that contribute to a lake fishing experience. The CCLUP (p. 60, 84, 114, 120, 144) requires management of backcountry units adjacent to key lakes. The CCLUP (p. 160) requires the completion of Lake Management Plans for important lakes. The Ministry of Forests District Manager has completed some aspects related to lake management planning with consideration of CCLUP objectives, the Regional Draft Lakeshore Management

⁴⁰ Species and Plant Community Accounts for Identified Wildlife Volume 1, June 1997 (p. 3-6); Managing Identified Wildlife Volume 1: Procedures and Measures, February 1999 (p. 37-39).

Guidebook⁴¹, visual landscape inventories, existing recreational use, fisheries values, water quality, biodiversity and wildlife habitat attributes, existing use, and forest development pressures. The existing lake management direction provided by the District Manager and information supplied by government fisheries staff was considered when developing the objectives and strategies for lakes in this Sustainable Resource Management Plan. Changes to the management objectives of some lakes may occur as the result of future lake management planning processes if and when required.

Lakes important for tourism, recreational and/or fish and wildlife purposes have been accommodated; they have been designated into one of the four categories. Where required, a recommended visual quality objective associated with the lakes viewshed (section 6.8.4) and the recommendations applicable to the backcountry unit (section 6.8.2) are included.

Table 15 Wilderness Fisheries Lakes

CCLUP Resource Management Zone Sub Unit	Approximate Number of Lakes Required by CCLUP	Lakes Identified (details provided in Appendix F)
Boss/Deception Special Resource Development Zone*	7	<i>Banana # 2 Lake</i> ; Unnamed Lake
Beaver Valley Enhanced Resource Development Zone	2	Annette Lake; Edney Lake; Cossack Lake (<i>Crow Lake</i>); Freshette Lake
Canim Enhanced Resource Development Zone*	10	<i>Eureka Lake</i> ; McKee Lake; three Unnamed lakes
Cottonwood Enhanced Resource Development Zone	0	none
Quesnel Highlands Special Resource Development Zone	0	none
Quesnel Lake Special Resource Development Zone*	5	Buckingham Lake; <i>Little Tisdale Lake</i> ; Patenaude Lake (<i>Marten Lake</i>); Suey Lake (<i>Sam Suey Lake</i>); Wasko Lake (Lower); Wasko Lake (Upper) (<i>Obstacle Lake</i>); Wasko Lake (Little) (<i>Round Lake</i>)

*This CCLUP subunit is not entirely within the HSRMP; additional identified lakes are located outside the HSRMP area.

The Sustainable Resource Management Plan recognises four categories of lakes with specific objectives based on the predominant management goals.

1. **Refugium Lake:** These lakes are ecologically unique or important for ecosystem representation and contain rare or endangered species or habitats, have unique ecological or physiographic associations (e.g. karst formations) or maintain ecosystem integrity and representation. Opportunities for access and development are variable and must be consistent with ecosystem protection. Critical ecosystem attributes must remain unmodified. Fishing regulations must be consistent with the

⁴¹ Lake Classification and Lakeshore Management Guidebook, [Draft 5, June 24, 1998 \(29 pages\)](#).

refugium management intent, recognising site-specific ecological factors and/or the lake's associated rare or endangered species habitat requirements.

The objectives applying to a refugium lake are summarised as follows:

- General Objective – Maintain or enhance the lake, the riparian reserve zone, and the lakeshore management zone for the sensitive fish, wildlife or habitat value identified in Appendix F.
- Riparian Reserve Zone Objective – 10 meter width, manage as a no new development area (forestry, alienation as private land, recreation, etc.).
- Lakeshore Management Zone Objective – width as specified for each lake in Appendix F, lake-specific objectives specified in Appendix F.
- Access Objective – variable, as specified for each lake in Appendix F.

2. Wilderness Fisheries Lake: These lakes provide natural features in undisturbed areas generally having non-motorised access. Users must hike, canoe, kayak, or fly in. The setting is primitive with pristine surroundings and unmodified natural environment. There is limited or no commercial land development. Special fishing regulations and restricted guided fisheries use is recommended.

The objectives applying to a wilderness fisheries lake are summarised as follows:

- General Objective – Maintain or enhance the lake, the riparian reserve zone, the lakeshore management zone, and the surrounding area to provide a quality wilderness fishing experience.
- Riparian Reserve Zone Objective – 10 meter width, manage as a no new development area (forestry, alienation as private land, recreation, etc.).
- Lakeshore Management Zone Objective – width as specified for each lake in Appendix F, manage LMZ as a no new development area (forestry, alienation as private land, recreation, etc.).
- Access Objective – hike or fly-in only, no new motorised access within 2 km unless there is no other practicable option to access other resource values.

3. Quality Lake – These lakes provide quality natural features. Access may be limited. There are pristine surroundings and natural appearing environment. Commercial land development is limited or non-existent.

The following categories of objectives apply to a quality lake:

- General Objective – Maintain or enhance the lake, the riparian reserve zone, the lakeshore management zone, and the surrounding area to provide a quality fishing experience.
- Riparian Reserve Zone Objective – 10 meter width, manage as a no new development area (forestry, alienation as private land, recreation, etc.).
- Lakeshore Management Zone Objective – width and objectives as specified for each lake in Appendix F.
- Access Objective – as specified for each lake in Appendix F.

4. **General Lake** – These lakes provide public recreation in a predominantly rural or natural setting. Access is generally good (2 wheel drive). Land development may vary and the natural environment may be substantially modified.

The following categories of objectives apply to a general lake:

- General Objective – Maintain or enhance the lake, the riparian reserve zone, the lakeshore management zone, and the surrounding area for the specific lake value(s) identified in Appendix F.
- Riparian Reserve Zone Objective – 10 meter width, no harvest.
- Lakeshore Management Zone Objective – width and objectives as specified for each lake in Appendix F,
- Access Objective – as specified for each lake in Appendix F.

Objective 49. Manage each lake listed in Appendix F to meet the stated objectives.

Note: Refer to Table 20 in Appendix F for the lakeshore management zone strategies.

6.8 Tourism and Recreation

The CCLUP (p. 46) specifies that tourism and recreation will have full access to the Special Resource Development Zone, with the general objectives and strategies for tourism and recreation (p. 139-144) and the sub-zone objectives (p. 62, 82, 84, 112, 114, 120) providing direction on how that access is to be managed. Tourism and recreation, including hunting and fishing, are dependent on maintaining many of the same values, and hence the two are considered together in the sustainable resource management plan. Tourism and recreation includes use of the landbase by both the commercial industry and the non-commercial use by individuals.

First Nations may be interested in developing cultural and heritage sites for eco-cultural tourism.

6.8.1 Recreation Corridors

The CCLUP (p. 141) requires management for scenic landscapes associated with access corridors to key tourism activities or facilities, or leading to protected areas. The CCLUP (p. 144) directs that plans for river and trail corridors apply across sustainable resource management plan boundaries, to maintain consistency of management approach. The CCLUP *Recreation Corridor Management Strategy*⁴² was developed in 1996, and provides the basis for sustainable resource management planning. The locations of important trails came from public input (refer to Map 7), and have been incorporated into the plan. Snowmobile trails that follow forest development roads are not endorsed by the sustainable resource management plan, because of safety concerns and legal issues.

⁴² Recreation Corridor Management Strategy: Cariboo Chilcotin Land Use Plan, October 1, 1996 (54 pages).

Objective 50. Maintain a 50 meter management zone with a minimum 85 per cent basal area retention on each side of the trails shown on Map 7.

6.8.2 Backcountry

The CCLUP established targets for the amount of area to be managed in backcountry condition in each subzone (CCLUP p. 61, 83, 85, 113, 115, 121, 144). These areas are a mix of special features (river corridors, key lakes, significant trails, etc) and specific Recreation Opportunity Spectrum classes (semi-primitive motorised, semi-primitive non-motorised and primitive) to provide opportunities for a variety of public and commercial outdoor recreation activities that are dependent on a natural environment. The guide-outfitting industry is especially dependent on backcountry areas. The CCLUP (p. 144) specifies that sustainable resource management plans will determine the appropriate mix of Recreation Opportunity Spectrum classes in backcountry areas. The CCLUP (p. 144) specifies that tranquil settings, with forest operations conducted outside the peak tourism season, are required in backcountry areas.

The backcountry units identified by this sustainable resource management plan for each subzone are shown on Map 7. The backcountry areas are focused on relatively undisturbed viewsapes, forests, watercourses, lakes, and recreation features. In all backcountry units, the over-riding management consideration is that of the overlapping non-timber resource value within the backcountry unit. Harvesting will occur over time in these areas⁴³, and therefore backcountry characteristics will change over time.

Use of alternative silviculture systems may be necessary to achieve the visual and recreational objectives of backcountry areas. Industrial activities (road construction, harvesting, slash burning, etc.) may need to occur during the off peak periods for backcountry use. Where temporary roads are constructed, access management should be implemented for any period the road is not in use to discourage development of access use patterns that will ultimately be contrary to the long-term implementation of this Plan. To avoid direct impact on trails, strategies should be used such as falling away from trails, minimising or avoiding road crossings, skidding away from trail; grass and seeding disturbed areas.

Objective 51. Maintain or enhance existing backcountry areas identified on Map 7.

Strategy 51.1 The Ministry of Sustainable Resource Management, in consultation with stakeholders, will prepare access management plans for the HSRMP backcountry areas by September 30, 2004.

⁴³ Government Clarification of Key Components of the CCLUP (5 pages), September 27, 1996.

Table 16 Values for Backcountry Units

This table identifies specific recreation features and some activities that are dependent upon those features for a quality experience.

Back-country Unit	Backcountry Values
1	Snowmobile trails, 4x4 trails, mountain bike trails, heritage trails and dispersed backcountry skiing.
2	Quesnel River and the Cariboo River for kayaking, canoeing, rafting, fishing; Cariboo Lake for fishing, hiking and other lakeshore activities; the cultural and heritage values of sites at Quesnel Forks, French Snowshoe Creek Cemetary, and Murderer Creek; heritage trails; the motorised touring route to Barkerville; 4 x 4 trails; and snowmobile trails.
3	Alpine ski touring and hiking; alpine lakes; Maeford Lake; Browntop Forest Service Trail; Cameron Ridge Trail (Browntop Mountain); and Mount Brew.
4	Alpine hiking and skiing, and non-motorised use trails.
5	Wilderness setting and visual quality surrounding the Beaver Creek lake chain (Joan Lk., Chambers Lk. and Opheim Lk.) and the tourism loop road.
6	Hiking and cross-country skiing trails, other non-motorised use; Visual quality around Trio, Jacobie, and Gavin Lakes.
7	Wilderness setting for fishing and visual quality around Spanish Lake, Benny Lake, Freshette Lake, Annette Lake, and Spanish Mountain.
8	Visual quality around Quesnel Lake and adjacent fishing and wilderness lakes; hiking trails; informal campsites for motorised and non-motorised boating; and motorised touring of Ditch Road.
9	Kayaking on Grain Creek and wildlife viewing.
10	Access to recreational lakes and provincial parks.
11	Fishing lakes and streams; non-motorised use trails; snowmobiling trails / terrain; Viewland Trail; wildlife viewing; and guide / outfitter trails.
12	Visual Quality along Horsefly River (maintain as a Heritage River) and tributaries; maintain the wildlife viewing and recreational opportunities.
13	Lake and lakeshore for fishing and boating; motorised and non-motorised use trails; Suey Bay – Slate Bay Trail; and Archie Creek Falls.
14	Guide / outfitter trails; Class A lake; wildlife viewing; Horsefly Mountain; and non-motorised use trails.
15	Wildlife viewing and hunting; hiking, canoeing, kayaking, and other recreation associated with the Horsefly River and Horsefly Falls.
16	High elevation trails; backcountry skiing terrain and trails; guide / outfitter

Back-country Unit	Backcountry Values
	camps / trails; high elevation lakes; and Teapot Mountain. (aka Mount Elsey).
17	Visual quality and heritage value of Moffat Falls and the Chinese Oven.
18	Wilderness setting and visual quality around Cossack and McIntosh Lakes and trail; wildlife viewing; fishing, camping and other lakeshore activities.
19	Non-motorised use trails and semi-primitive dispersed use.
20	Wilderness setting of Fishing and quality wilderness lakes; camping and non-motorised use trails.
21	Non-motorised use trails; guide / outfitter operations; and wilderness setting and visual quality around fishing lakes.
22	Wilderness setting and visual quality around Moffat Lake chain (quality wilderness lakes); wildlife viewing.
23	Winter snowmobile trail and non-motorised dispersed winter use of alpine.
24	Wilderness setting and visual quality around Crooked Lake; wilderness lakes; trails and guide / outfitter camps; wildlife viewing; waterfall and trail associated with a tributary of McKlusky Creek; a wetland complex; and non-motorised horse trails.

6.8.3 High Elevation Visuals

High elevation viewpoints in the sustainable resource management plan are all located above tree line and encompass a panoramic viewing area. Management of high elevation visuals from the viewpoints are an essential component of meeting the recreation objectives. The high elevation viewpoints reflect current use and may be supplemented over time with increased tourism and recreation use, particularly in backcountry areas. Additions to this list will not impact on access to timber, because management for high elevation visuals is simply focused on using design principles to minimise visual impact.

Management for high elevation visuals occurs within a 16 kilometer radius from each viewpoint. Where a more distant disturbance would be visibly dominant, these objectives and strategies should also be applied. Development design considerations from low elevation viewpoints should take precedence over those from high elevation viewpoints, where they overlap. Where a viewshed from a high elevation viewpoint overlaps with an area managed for mountain caribou, management for mountain caribou takes precedence.

Objective 52. Maintain high elevation visual quality by designing harvest openings to reflect existing natural openings, vegetation patterns, and natural features when viewed from the following high elevation viewpoints as identified on Map 8:

- **Mount Timothy**
- **Snowshoe Plateau (Yanks Peak)**
- **Teapot**
- **Boss and Deception Mountains**
- **Eureka Peak**
- **Browntop Mountain**
- **Mount Stevenson**
- **Three Ladies**
- **Roaring Peaks – Ogden**

Strategy 52.1 Apply visual landscape design to cutblocks, main haul road rights-of-way, recreation corridors, and riparian management zones that are visible from high elevation viewpoints.

6.8.4 Visual Quality Areas

The CCLUP (p. 140) specifies that the management of scenery around lakes and rivers is very important, and specifies that forest operations should avoid or minimise impacts on scenic quality (including air visibility quality) in or near important tourism areas. Tranquil settings, scenic quality and air visibility (smoke) quality, setting diversity and access controls are important factors for meeting tourism objectives. The CCLUP Tourism and Recreation sub-zone targets (p. 60, 82, 84, 112, 114, 120) include direction for visual resource management. Forested and non-forested Crown land including grasslands, alpine areas, and wetlands are included in visual resource management.

Areas of high visual importance are managed as *visual quality areas*, which have *visual quality classes* that become *visual quality objectives* when legally established. Visual quality areas and objectives may be refined through future planning processes; however the overall effect on timber access will not increase over time. New public and commercial activities and development that are dependent on a managed viewshed should be directed to take advantage of sites that have viewsheds that are part of the visual quality areas defined through this process (CCLUP, p. 140). The viewsheds identified in this plan (Map 8) are generally where people spend periods of time in one place, or where commercial success is dependent on maintained viewshed quality. The viewsheds from existing tourism facilities and key tourism use areas are included in the visual quality areas, as are areas of high public recreation use.

The definitions used for visual quality objectives in this sustainable resource management plan are:

- **Preservation:** requires that management activities or alterations not be visible. The goal is to conceal all activities, when the forest is seen from the established viewpoint.
- **Retention:** requires that management activities or alterations not be visually apparent. The goal is to repeat the line, form, colour, and texture of the characteristic landscape.

- **Partial Retention:** requires that alterations remain visually subordinate to the characteristic landscape. Repetition of the line, form, colour, and texture is important to ensure a blending with the dominant elements.
- **Modification:** allows alterations to dominate the original characteristic landscape. However, alterations must borrow from natural line and form to such an extent and on such a scale that they are comparable to natural occurrence.

Objective 53. Maintain the visual quality objective of the areas shown on Map 8, from the designated viewpoints, consistent with Appendix G.

- | | |
|---------------|--|
| Strategy 53.1 | Design disturbances to mimic naturally occurring line, form, colour, and texture of the viewshed. |
| Strategy 53.2 | Design opening size to reflect the existing scale of natural openings, vegetation patterns, and natural features. |
| Strategy 53.3 | Consider visual rehabilitation (reshape, re-vegetate, etc.) in previously impacted areas to encourage visually effective green up, reduce re-entry delay, and increase short term area access. |
| Strategy 53.4 | Apply minimum visually effective green-up heights, based on site biogeoclimatic and biophysical conditions. |
| Strategy 53.5 | Maintain outdoor recreation and tourism values by minimizing prescribed burns and developing and implementing smoke management plans for the visual areas shown on Map 8 during the peak tourism season of May 15 to September 30. |

Refer to Appendix G for additional information concerning viewpoints, viewlines, and viewsheds.

6.9 Mining and Aggregate Resources

The CCLUP (p. 9, 135-139, 181), including the sub-zone objectives (p. 62, 82, 84, 112, 114, 120), specifies that mineral exploration and development is an appropriate land use throughout the sustainable resource management plan area, excluding parks and other protected areas, subject to the *Mineral Tenures Act* and *Land Act*. Mineral exploration and development includes placer mining and the exploration and development of geological resources for construction purposes, such as sand, gravel, shot rock, and rip rap. The CCLUP (p. 181) specifies a number of measures that may be implemented to minimise the adverse impacts of mineral and energy development in identified sensitive areas of the Special Resource Development Zone. Furthermore, mining exploration is expected to proceed with due consideration of other resource values whenever it occurs.

Geological resource development presents unique challenges. The resources are mostly hidden, not quantifiable (except at enormous cost) and fixed in place. They must be mined where found. Finding new mines requires knowledge, time, patience and considerable investment. Large areas of land and many mineral occurrences need to be evaluated through repeated extensive exploration campaigns, usually over a span of years or decades, before a commercially viable mineral deposit is delineated. As a

result, the mining sector needs security of tenure, security of access for exploration and development, and certainty with respect to other land uses in order to sustain the exploration and development process.

The HSRMP conforms with the Province's two-zone approach to mineral resource management. Consistent with Section 14 of the *Mineral Tenure Act*, the objectives and strategies in this plan are not intended to unduly delay, restrict or prohibit responsible mining exploration or development activities.

Recommendation: Government should review the need for all No-Staking Reserves, and amend or remove those that are obsolete.

6.10 Energy Resources

Energy resources were not addressed by the CCLUP, but, because of their importance in the province, are addressed in this sustainable resource management plan. They include both renewable (hydroelectricity, wind, solar, geothermal and biomass) and non-renewable resources (petroleum, natural gas, coal-bed methane), together with the infrastructure (pipelines, processing and production facilities, transmission lines) to deliver the energy resources to the end-user.

Energy resources require access to land outside of protected areas for exploration and development. Access to pipeline and electricity transmission corridors for maintenance and upgrading is also required. Opportunities for future energy resource development in the sustainable resource management plan area, and connection to the existing infrastructure may be required.

6.11 Range

The Cariboo Region accounts for approximately 20 per cent of British Columbia's beef cattle population. The beef industry is the backbone of the agriculture industry, with over 50 per cent of the regional agricultural enterprises being beef operations. The Region's extensive rangeland provides a seasonal supply of forage for beef production.

The CCLUP sub-zone objectives (p. 62, 82, 84, 112, 114, 120) require that the current authorised level of grazing, defined in Animal Unit Months, be maintained by subzone and by Range Unit. The CCLUP (p. 159) requires improved cattle management, particularly with respect to riparian and alpine habitats; and both haying and grazing of wetlands are to be managed to maintain environmental values. The Biodiversity Guidebook and Riparian Guidebook are to be used as sources of guidance for protecting environmental and conservation values. The CCLUP (p. 181) requires that proposals for grazing in currently (1994) unused areas be accompanied by a plan that recognises and addresses other values and uses. The CCLUP (p. 159) direction for all fences to be wildlife safe through the use of top rails has been amended to read "all range (and Highways) fences should be wildlife safe including top rails, where there is a recognised need to address wildlife safety concerns, and appropriate wire spacing."⁴⁴

⁴⁴ Amendment to the Cariboo Chilcotin Land Use Plan, May 31, 1996 (1 page).

Objective 54. Where there is a recognised need to address wildlife safety, all range and highways fences must be wildlife safe.

Strategy 54.1 Wildlife safe fencing should be no higher than 42 inches with 18 inches below the bottom wire and have either a wooden top rail or visibility marker.

Table 17 CCLUP and HSRMP Target Animal Unit Months in 1994 by CCLUP Resource Development Zone

Zone	Animal Unit Months	
	CCLUP Target (Entire Zones)	Sustainable Resource Management Plan (Prorated Target)
Quesnel ERDZ	15,432	0
Cottonwood ERDZ	84	0
Quesnel Highlands SRDZ	112	0
Beaver Valley ERDZ	40,076	8,682
Quesnel Lake SRDZ	4,883	5,995*
Canim ERDZ	3,055	835
Boss / Deception SRDZ	150	90
Total	63,792	15,602

*Existing Authorised Animal Unit Months were higher than CCLUP targets

Table 18 Target Animal Unit Months in 1994 by Range Unit

Range Unit	Animal Unit Months	Range Unit	Animal Unit Months
Eric	171	Woodjam	1775
McIntosh	515	McKinley	90
Moffat	835	Gavin	2288
Edney	1249	Jacobie	893
Ballon	462	Summit	1832
Jacques	0	Batten	774
Lemon	2565	Likely	498
Club	442	Total	15602
Niquidet	1213		

6.12 Agriculture

While the CCLUP does not establish numerical or percentage access targets for agriculture, the document (p.14) states that Agricultural strategies are to focus on the continued opportunity for expansion onto suitable agricultural lands. The CCLUP (p. 172) specifies that all lands within the plan area can be considered for the expansion of existing agricultural holdings, and includes a CCLUP objective of providing for the future growth and development of the agriculture, food and fisheries industries. Industry access and use of Crown resources for land, grazing, hay cutting and water should be maintained or enhanced. The CCLUP (p. 164) requires that water availability for current and future users be considered with respect to new agricultural developments. All other

resource values should be fully considered when land alienation is proposed for agricultural and other purposes. The needs of industry to enhance their access to Crown land and water in support of agricultural economic opportunities is recognised.

The *Agricultural Land Commission Act* of British Columbia (S.B.C. 2002, c. 36) purpose is to preserve private and Crown agriculture land and encourage the establishment and maintenance of farms, and the use of land in an agricultural land reserve compatible with agricultural purposes.

The Crown Agricultural Land Reserve (ALR) in the Cariboo Region represents an area of secure land base for future agricultural production. The CCLUP (p. 172) supports the purpose and intent of the ALR and the development of high capability agricultural land when required for expansion of holding under the existing agricultural lease policy.

Existing agricultural activity occurs primarily on private land, with the exception of hay cutting and grazing, and hence is mostly outside the scope of this plan. A provincial Agriculture Resources Access Strategy is under development.

Objective 55. Maintain or enhance soil productivity where agriculture occurs on Crown land.

Objective 56. Maintain or enhance water quality in streams, lakes and wetlands adjacent to agricultural activities on Crown land.

Strategy 56.1 Support the Code of Agricultural Practice for Waste Management and the *Farm Practices Protection (Right to Farm) Act*.

6.13 Land Allocation

Government recognises that communities require access to Crown land (including forest lands) and water resources for community infrastructure, settlement, and economic development and diversification purposes. New business opportunities and a diversified economy also demand greater access to Crown Land and water resources. Land and Water BC Inc. (LWBC) is responsible, on behalf of the public, for managing two unique and valuable provincial assets, our Crown lands and water. Commitments have been made to create economic growth in a sustainable, balanced manner that reflects sound economic and environmental principles. That will transform British Columbia into the leading provincial economy, attract high levels of private sector investment, increase a private sector economy that creates employment opportunities, and give local communities and governments greater influence over the uses of undeveloped Crown land. To encourage economic development and meet the challenges of today, the conditions, stipulations, and statutory responsibilities need to be attractive for entrepreneurs to invest in the Cariboo Region.

The SRMP recognises the need to enhance access to Crown land and water to encourage economic development opportunities. MSRM, in conjunction with LWBC, will review existing constraints to Crown land and water availability and assess possible

solutions, consistent with the CCLUP and HSRMP. Resource management objectives of the HSRMP will not preclude the use of Crown ALR lands for intensive agricultural use unless found to be infeasible in light of provincial level resource management strategies and socio-economic analysis. .

The CCLUP (p. 154) requires review of alienation of Crown land where this will negatively impact biodiversity conservation values. The CCLUP (p. 159) requires restrictions on land alienation in wetland areas, and improved water allocation and management where it affects wetlands. The CCLUP (p. 164) requires that water issues be addressed prior to land alienation. Access management planning will need to include planning for access to present and future private land. The CCLUP (p.205) refers to the development and completion of a planning process to address alienation (allocation) of crown land for settlement, industrial, commercial and recreational use.

Objective 57. Maintain opportunities for settlement as a priority within the areas designated on Map XX. (map under development in conjunction with LWBC)

6.14 Wildcraft (Botanical Forest Products)

The CCLUP (p. 146) requires the maintenance and enhancement of the present (1995) level of use of the wildcraft (botanical forest product) resource, which includes resources such as mushrooms, berries, floral and/or decorative materials, and medicinal plants. The CCLUP (p. 146) requires that key pine mushroom sites be maintained in a condition that promotes mushroom growth, but there are no such sites known in the sustainable resource management plan area at this time. Wildcraft sites should be mapped as they become known, and government agencies should manage them in accordance with the access targets set for each sub-unit. Government should identify the conditions that promote and or enhance growth of wildcraft resources.

The CCLUP (p. 146), through sub-zone objectives (p. 62, 82, 84, 112, 114, 120), requires the maintenance of specified levels of roaded access for the purpose of wildcraft harvesting.

6.15 Trapping

The CCLUP (p. 177, p. 49-50) requires management of the Special Resource Development Zones for trapping, and states that trapping will proceed in all zones. The CCLUP (p. 153) also specifies that all renewable resources will be managed for sustainable use, and that management for appropriate uses of fish and wildlife will be undertaken. The entire sustainable resource management plan area has trapping tenures. Trapping is linked to the maintenance of mature and old forest, and is primarily addressed in this sustainable resource management plan through the objectives and strategies for landscape level biodiversity, stand level biodiversity, riparian habitats, coarse woody debris, and specific wildlife species (especially fur-bearers).

6.16 Access

The CCLUP (p. 159) required the development of an access management strategy, with a requirement to address specific issues. The Regional Access Management Strategy⁴⁵ was completed in 1996 to provide direction for sub-regional access planning. The CCLUP (p. 159-160) specifies that access management is required to minimise conflicts between industrial, commercial and recreational user groups with respect to access, while minimising the negative impacts of access on fish, wildlife and the environment. The maintenance or restriction of access is required to address CCLUP resource targets for wildcraft, mining, recreation, timber and fish and wildlife. The CCLUP (p. 160) requirement for snowmobile access planning is being addressed separately outside the sustainable resource management planning process.

The public identified a variety of access concerns pertaining to both expansion and reduction within the HSRMP. Some specific issues regarding reduced access follow: i) preventing increased roaded access in backcountry, wildlife habitat, fisheries, and sensitive alpine areas; ii) preventing continued public access through deactivation or rehabilitation of existing or traditional access structures; iii) restriction of new permanent access structures; iv) location of access structures related to views and viewpoints; and v) restriction of access beyond an access management point or as a result of road deactivation activities. Access restrictions can occur through various levels of deactivation, as well as physical and regulatory methods.

“Access” means the ability to enter Crown land; the mode of travel may be motorised, which may include commercial vehicles, four or two wheel drive vehicles, all terrain vehicles, snowmobiles, aircraft and motorbikes, or may be non-motorised such as travel by foot, horse or mountain bike. The “roaded access” targets of the CCLUP (p. 60, 82, 84, 110, 112, 114, 120) are not intended as precise direction on exactly how much of the unit is to be maintained as roads or to have restrictions on permanent road access. The Regional Access Management Strategy specifies that these targets are designed to give general guidance and the relative importance of access restrictions in each sub-unit, rather than being fixed numbers. A portion of each access target will change its geographic location with time, as new roads are built and other roads are removed. A portion of the landbase will remain permanently without roads. The existing roaded access is shown on Map 10.

The *Snowmobile Access Working Group Report*⁴⁶ was presented to the IAMC by the “Snowmobile Access in Caribou Committee” in 1999. The *Mountain Caribou – Snowmobile Options Report* was then produced after consultation with snowmobile clubs and with consideration of the *Mountain Caribou Strategy*⁴⁷. Further discussions are on-going, and are outside the sustainable resource management plan process.

The timber, biodiversity, wildlife, mining, energy and tourism sections of this plan must be referred to for full sustainable resource management plan direction related to access. Further access planning, led by Government, should be completed for the sustainable resource management plan area to manage access in a manner that addresses both

⁴⁵ Cariboo Chilcotin Land Use Plan Regional Access Management Strategy, August 9, 1996 (28 pages).

⁴⁶ Snowmobile Access Working Group Report, May 18, 1999 (15 pages).

⁴⁷ Mountain Caribou Strategy, October 2000 (77 pages + 12 maps).

public concerns and all CCLUP objectives. See Table 20 in Appendix F for access management strategies in the lakeshore management zone of lakes over 5 hectares.

Recommendation: Unless approved by the Regional Director, MSRM, new, permanent roads, passable by 4 wheel drive vehicles, must not create circuits over one kilometre long with separate entry and exit points.

Objective 58. Maintain the ecological functions of old growth management areas and other no-harvest areas by not constructing roads in them, except where there are no other practicable routes.

Strategy 58.1 Any temporary roads that are built in OGMAs or other no harvest areas should be deactivated, rehabilitated and planted as soon as possible.

Objective 59. Locate new, permanent roads >2000m from wilderness fisheries lakes, unless no other practicable route exists.

7 Analysis Methods and Results

Spatial requirements for managing non-timber resources were mapped on separate layers during the sustainable resource management planning process. The layers were then overlaid in a Geographic Information System (GIS) to create a database which was then analysed. The analysis was designed to assess the scenario for consistency with the CCLUP numeric targets for timber and biodiversity, as well as to quantify scenario specifications for other CCLUP targets and strategies. A series of seven SRMP scenarios were developed and analysed in an iterative process during 1998 – 2002, during which the map layers and analysis of non-timber resources were modified to better achieve all CCLUP management objectives. The analysis assumptions for non-timber resources are provided in Table 21 in Appendix H.

ArcInfo GIS version 8.1 was used to perform GIS operations with map layers stored in “Coverage” format. ArcInfo was used to generate a digital overlay from the map layers (coverages) and the results of this overlay were exported into Microsoft Access 2000 for database analysis. GIS overlays and analysis were conducted by Richard Barry, formerly of Paragon Resource Mapping Inc. (Williams Lake), and later of Pacific GIS Consulting.

7.1 Timber and Non-Timber Objectives Analysis

The CCLUP contains timber access targets for the Special Resource Development Zone, Integrated Resource Management Zone and Enhanced Resource Development Zone that were refined through the CCLUP Integration Report⁴⁸ and later became higher

⁴⁸ Cariboo-Chilcotin Land Use Plan Integration Report, April 6, 1998 (59 pages).

level plan objectives⁴⁹. In addition the Interagency Management Committee (IAMC) has endorsed the prorated portions of the corresponding no-harvest targets, expressed at both the CCLUP sub-unit and sustainable resource management plan levels⁵⁰. The Horsefly Sustainable Resource Management Plan's prorated portion of the no-harvest targets is 27 per cent.

Timber harvesting access is defined⁵¹ as the portion of the "productive forest landbase" (PFLB) that is accessible for timber harvesting within or beyond what are considered normal timber harvesting rotation ages. The timber harvesting rotation age is defined as 80 years for pine or deciduous tree dominated stands, and 120 years for stands dominated by all other conifer species. All productive forest was classified into one of these two forest stand types.

A separate "overlap analysis table" was compiled to analyse the timber and non-timber values in each CCLUP sub-unit within the sustainable resource management plan area, and another was compiled for the sustainable resource management plan area as a whole. Using *equivalent excluded area* (EEA) as a common measure (See Appendix H for definition and detailed analysis procedures), the no-harvest and modified harvest constraints were arranged in a ranked order from the most constraining to the least constraining to timber access, and adjusted so that no area was counted twice. The percentage of the PFLB required for each constraint was then summed for the entire sub-unit, and compared to the IAMC-endorsed no-harvest targets. The non-timber resource map layers used in the analysis are summarised in Table 21 of Appendix H, which includes specifications regarding analysis assumptions, contributions to old seral targets and relevant background information.

The Timber Targets Analysis does not address short term timber supply issues, which are being examined separately by Industry and Government.

7.2 Biodiversity Objectives Analysis

7.2.1 Old Growth Management Areas

The biodiversity targets are based on the minimum old seral forest requirements by biogeoclimatic subzone variant portion of draft Landscape Units (see Table 6). Central to the Old Growth Management Areas planning process is the concept of overlapping old seral requirements where possible with areas that are already constrained by non-timber resource values. This reduces impacts to timber access by minimising the mapped Old Growth Management Areas in the "conventional landbase". The contributions made by the non-timber constraints toward the old seral targets, both over the long term and based on current seral condition of the landscape, are included in Table 22 of Appendix I.

In calculating the amount of Transition (temporary) OGMA required based on the current seral conditions, the Inventory Adjustment Factor (IAF) was *not* applied to the

⁴⁹ Order Varying the *Cariboo-Chilcotin Land-Use Plan* 90-Day Implementation Process Final Report, February 1995 Resource Management Zone Objectives Pursuant to Section 3(2) of the Forest Practices Code of British Columbia Act, June 22, 1999 (2 pages).

⁵⁰ Letter from the Cariboo Mid-Coast Inter-Agency Management Committee, dated July 18, 2000, that endorses revised no-harvest targets for Sub-regional Planning processes (3 pages).

⁵¹ Cariboo-Chilcotin Land Use Plan Integration Report, April 6, 1998 (pages 11 - 12).

contributing areas in individual LU/BEC units, consistent with the CCLUP Biodiversity Committee's *Update Note #1 – Key Assumptions and Recommendations For the Use of the Inventory Adjustment Factor in the Cariboo Forest Region*. Furthermore, mature forest within OGMAs was deemed to fully contribute to meeting the old forest target, where required. However, for calculating the overall amount of transition OGMA required across the SRMP area, the IAF was used in addition to forest cover inventory, to provide a range to the estimate for risk assessment purposes

7.2.2 Wildlife Tree Retention

Wildlife Tree Retention (WTR) analysis was conducted based on the extended Biodiversity Guidebook Table 20(a) provided in Table 29 of Appendix I (see notes on Tables 27 and 28 for detailed analysis steps). In this analysis, WTR per cent targets were calculated for both the long term and current condition of the landscape. In the long-term analysis, the proportion of the landscape unit harvested without wildlife tree retention becomes zero, but in the short-term some proportion of each landscape unit has been harvested without Forest Practices Code wildlife tree retention.

In addition to WTR percentage targets by Landscape Unit/Biogeoclimatic Ecosystem Classification (LU/BEC) unit, total resulting WTR hectares were estimated by LU/BEC for both the long term and the current rotation. This calculation involved applying the WTR percentage targets to the portion of the forest harvesting landbase that generates a WTR requirement. WTR requirements are defined as follows:

- all areas with no constraints, plus
- constrained land areas included in the productive forest landbase. These areas include:
 - stream, wetland, and shrub-carr riparian reserve zones
 - trail management zones
 - S1, S2, S3, S4, S5 and S6 (including that transferred from S4s) stream riparian management zones
 - wetland and shrub-carr riparian management zones
 - riparian reserve and management zones for lakes < 5 ha and > 5 ha

The resulting wildlife tree retention requirements are shown by LU/BEC in column K of Tables 28 in Appendix I. For the long term, the resulting total area was halved to account for overlaps between wildlife tree patches and the constraints. For the current rotation, factors were applied (notes at bottom of Table 29) to the total WTR hectares to estimate a reasonable amount of WTR that can contribute to Transition OGMA requirements, subject to tracking and ecological suitability criteria.

The resulting wildlife tree retention requirements were also calculated by CCLUP sub-unit, using the same steps, and transferred to the EEA overlap tables in Appendix I.

7.3 Analysis Results

7.3.1 Timber/Non-Timber Targets

The results of the Timber/Non-Timber Targets analysis are summarised in Appendix I, including:

- EEA analysis results

- calculation adjustments for Mule Deer Winter Range
- calculation adjustments for S4/S6 Riparian Reserves
- wildlife tree retention analysis and results; and
- transition OGMA harvest availability schedule.

These tables are referred to as Tables 22 through 30

The latest SRMP draft scenario has met HSRMP's pro-rated portion of the CCLUP no-harvest targets:

Horsefly CCLUP no-harvest target:	27%
Horsefly SRMP no-harvest impact:	27%

In summary, the HSRMP is consistent with CCLUP long term timber targets.

7.3.2 Biodiversity

The results of the OGMA analysis will be provided in a 22 inch x 22 inch plot file (Appendix K) and will summarise the achievement of the:

- permanent old growth management area targets
- transition (temporary) old growth management area targets; and
- interior old forest condition objectives.

This information should be available by March 31, 2003.

8 Implementation and Monitoring

8.1 Implementation

The HSRMP will be implemented by:

1. Integration of this sustainable resource management plan with the other CCLUP sustainable resource management plans, to determine whether the *regional CCLUP objectives* have been met.
2. Provision of the plan, once approved by IAMC, to statutory decision makers as best management for CCLUP implementation.
3. Establishment of the *Objectives*, where appropriate, as legal requirements to be met by proponents of future development activities.
4. Establishment of the proposed *Goal 2 Protected Areas*, subject to approval by the Interagency Management Committee, the Regional Resource Committee, and cabinet. This would be followed by the removal of all restrictions on access to the remaining proposed Goal 2 protected areas.
5. Interpretation and application of the plan to operational plans by industry and government.

8.2 Monitoring

A regional monitoring framework is presently under development by the Ministry of Sustainable Resource Management. Ultimately the sustainable resource management plan will need to be monitored, for both compliance with higher level plan objectives and for the achievability and effectiveness of those objectives.

8.3 Future Inventory

Inventory is incomplete for many of the resource values that are required to be managed under the CCLUP. In the short-term it is possible to manage for the objectives related to those resource values without complete inventories, but not over the mid- to long-term. The following inventories are some of those required to permit full achievement of the CCLUP and sustainable resource management plan objectives.

1. Inventory for *rare ecosystems and species*, so that they can effectively be managed.
2. Identification of *key wetlands and shrub-carrs for moose*.
3. Identification of additional *critical habitat for bull trout*.
4. Inventory and classify all existing *road and trail access*.
5. Identification of wildlife migration corridors.
6. Inventory fish and fish habitat, and stream classification.

8.4 Future Planning

The following additional planning is required to permit full achievement of the CCLUP and sustainable resource management plan objectives.

1. Lake management plans.

2. Revision of the backcountry portion of the plan, once clarification of backcountry objectives is completed by government, including a backcountry access management plan for each backcountry unit.
3. Completion of revised mule deer winter range boundaries and completion of plans for each individual winter range.
4. A water management strategy for the Cariboo Region (CCLUP p. 164), and/or sub-regional water allocation and management plans to address water quality and quantity (CCLUP p. 206).
5. Integration of new initiatives such as the proposed Clinton to Wells Gold Rush Snowmobile Trail into the context of the CCLUP.
6. Completion of the Regional snowmobile strategy.
7. Completion of the process to address alienation (allocation) of Crown land for settlement, industrial, commercial and recreational use (CCLUP p. 205).
8. Development of a regional management strategy to maintain the wood supply (CCLUP p. 204), development of an overall strategy for timber enhancement (CCLUP p. 205), and identification of a proportion of the forest in each resource management zone available for enhancement of timber production (CCLUP p. 147, 149).
9. Development of a regional strategy to address distribution of patch size of mature plus old forest.

9 APPENDICES

Appendix A: Terms of Reference

Horsefly Sub-Regional Plan Terms of Reference

1.0 PURPOSE AND OBJECTIVES

1.1 Purpose

The purpose of sub-regional planning is to coordinate the implementation of the strategies and targets on an area specific basis to provide information to landscape unit and/or operational planning.

The Horsefly Sub-Regional Plan (SRP) will address the resource targets and strategies outlined in the Cariboo-Chilcotin Land Use Plan (CCLUP), as refined by the Regional Integration Process, which are applicable to the planning area.

The SRP will establish direction for land use and provide broad resource management objectives and strategies. In so doing, the SRP will provide information to all licensees and government agencies including the decision makers identified in the FPC. The CCLUP, the Integration Report and other CCLUP implementation direction, are designed to give strategic direction to the sub-regional planning process, but not to restrict the ability of planning teams to develop innovative site specific solutions to integrated resource management issues in their attempts to meet those targets.

The Horsefly Sub-Regional planning process will not be re-visiting the land use designations, targets or strategies identified in the CCLUP. These decisions have already been made through a separate process and are signed off as a higher level plan.

The SRP will not determine allowable annual cut (AAC) for the plan area. The SRP is area-based and will be developing and refining resource strategies and targets as identified in the CCLUP. This will not include the determination of timber volume to be harvested from the plan area.

1.2 Objectives

- Integrate resource targets at the sub-regional level, using direction provided by and ensuring consistency with the CCLUP, as refined by the Regional Integration Process and any other related documents.
- Ensure the sub-regional planning process is consistent with the Regional Resource Board (RRB) and Inter-Agency Management Committee (IAMC) Sub-Regional Planning Strategy.

Objectives continued

- Provide the opportunity for local information to be identified and applied in the resource management strategies being developed for the Horsefly SRP area.
- To provide deliverables that will address the planning requirements identified in the CCLUP and the FPC (operational planning requirements); i.e. Biodiversity, forest ecosystem networks, lakes classification, wildlife habitat, access management, etc.
- Provide direction for integrated land use at the operational level.

1.3 Deliverables

The scale of the products will be done at a level appropriate for the targets being achieved, at the resource management zone level, as defined in the land use plan.

The following is a non-exhaustive list of area-specific strategies and deliverables to be developed for the Horsefly Sub-Regional Plan area, from the targets and objectives set out in the CCLUP as refined by the Regional Integration Process

Timber Harvesting Maps- Conventional, No-Harvest, and Modified
 Biodiversity, Wildlife, and Fisheries-e.g. Critical Habitat and Management, mule deer, caribou, OGMAs, riparian areas, listed species
 Recreation and Tourism-Scenic Areas and VQOs, Backcountry Recreation Areas
 Access Management Objectives and Strategies
 Goal 2 recommendations
 Range Management Objectives and Strategies

The process of achieving these deliverables will be undertaken by the IPT with input from the First Nations, stakeholders and interest groups.,

2.0 GUIDING PRINCIPLES

2.1 Higher Level Plans

The Horsefly SRP will establish direction for land use and provide local direction on resource management objectives and strategies, consistent with the CCLUP as refined by the Regional Integration Process. This plan was announced by the BC Government on October 24, 1994. The plan was declared a higher level plan under the FPC on January 31, 1996. The FPC requires that operational plans approved on, or after, this date are consistent with the higher level plan direction.

Upon endorsement by the IAMC and RRB, the sub-regional plan will provide information to the government agencies and licensees.

2.2 Allowable Annual Cut

The Horsefly Sub-Regional planning process will not determine an AAC for the planning area. The Chief Forester is responsible for the AAC determination under Section 7 of the Forest Act. Once completed, the sub-regional plan will be given to the Chief Forester for consideration during the next timber supply review which occurs at least every five years to incorporate new information, practices and government policies.

2.3 Confidentiality

It is understood that some of the information to be gathered is considered of a confidential nature. All efforts will be made to produce a report that handles this information in a sensitive manner. Notwithstanding, all information received during the sub-regional planning process is subject to the Freedom of Information and Protection of Privacy Act which provides the framework for the handling of confidential information.

2.4 First Nations Interests and Treaty Negotiations

The Horsefly SRP or any participation by First Nations in the planning process is without prejudice to treaty negotiations. First Nations will be encouraged to participate in the planning process to facilitate measures to address their interests in the land, but it is understood that this participation does not eliminate the necessity for meaningful consultation on specific proposals for government activities.

2.5 Linkages with other Planning Processes

Communication with other existing or proposed planning processes and committees is essential for successfully addressing the targets of the CCLUP as refined by the Regional Integration Process and the FPC. Coordination between adjacent sub-regional planning process will be established and provide consistency across district boundaries. The sharing of technical information and area knowledge between the Horsefly Sub-Regional Planning process and other planning or informational groups will be sought to avoid duplication of work and to increase positive communication.

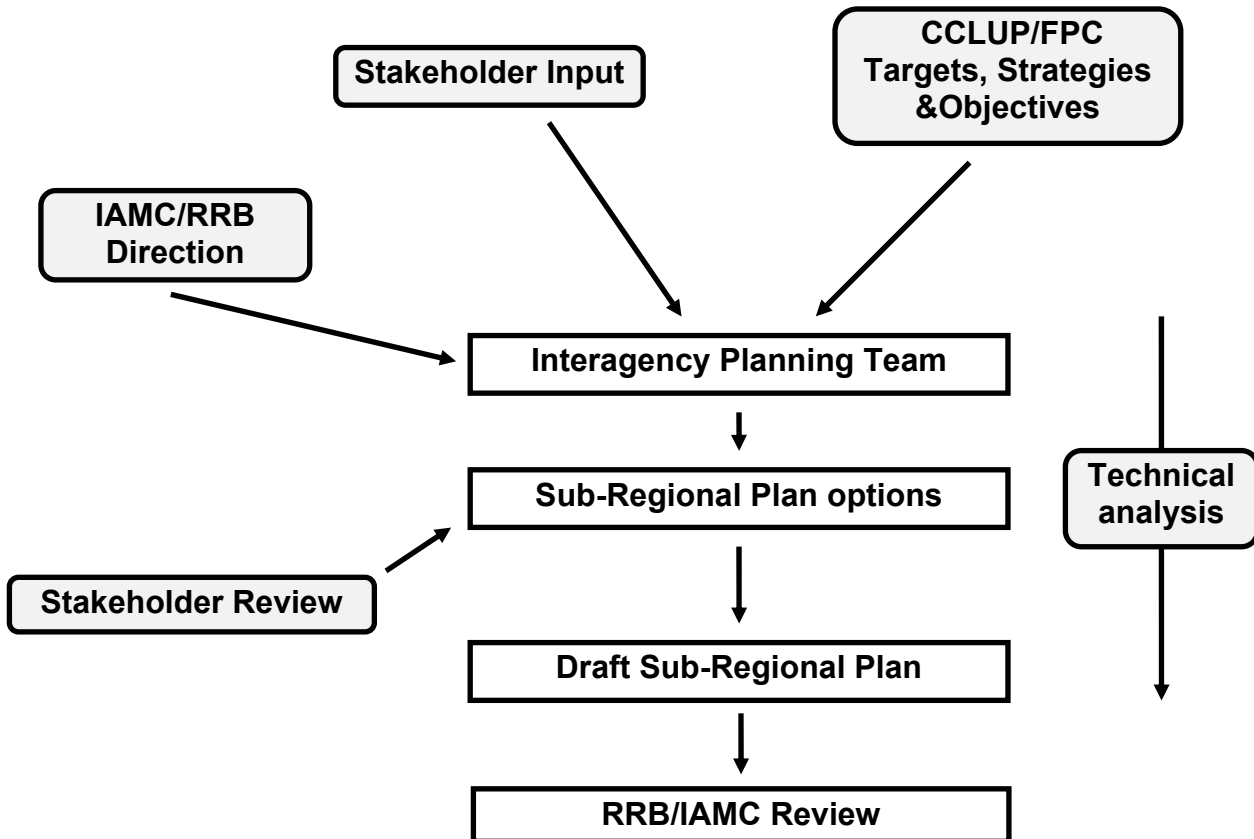
2.6 Forest Development Planning

Operational planning will continue during the development of the Horsefly Sub-Regional plan. The district manager and (where applicable) the designated environment official, will continue to review forest development plans for the Horsefly Forest District according to the process outlined in the FPC.

Other agency resource proposals will still be considered during the planning process through existing referral processes.

3.0 PLANNING PROCESS FRAMEWORK

Diagram 1. Sub-Regional Planning Process



3.1 Plan Boundary

Using the Regional Landscape Unit Planning Strategy and after discussion with other agencies and other district offices, it was decided that the Horsefly SRP would follow the Horsefly Forest District boundary. Map 1 is attached showing this boundary. The boundary contains resource management zones as described in the CCLUP as well as Provincial Parks and candidate Goal 2 Protected Areas. Landscape units boundaries and emphasis have been acquired from the Biodiversity Conservation Strategy. Landscape Unit boundaries which overlap into other districts have been refined, with approval by the Biodiversity Conservation Committee, to stay within district boundaries.

3.2 Participants

3.2.1 Stakeholder Involvement

The planning process will provide opportunity for stakeholder participation.

Workshops, information sessions, information centres, and a review process will be established to encourage stakeholder participation. Initial information sessions will provide an overview and create an awareness of the planning process. Information Centres will be set up in the local communities with maps showing resource information, such as roads, visual sensitivity areas, and past forest development. These maps will be a base for stakeholders to provide input. Input forms in combination with the maps will allow for details. The maps will be located at 4 community libraries and 3 agency offices. At the agency offices, staff will be available to assist stakeholders.

Stakeholder and base information will be collated, mapped and given to the Interagency Planning Team. This Team will develop sub-regional plan options based on the targets and objectives of the CCLUP, the Integration Report and the Forest Practices Code while incorporating stakeholder input. These options will be made available for stakeholder review through workshops and if needed, technical meetings to explain the analysis approach used to meet the targets.

A draft sub-regional plan will then be developed which will be available for review before being presented to the RRB and the IAMC for approval..

3.2.2 Interagency Management Committee/Regional Resource Board

Roles and responsibilities

- ◆ jointly implement the CCLUP
- ◆ provide direction to the sub-regional planning process
- ◆ approve the terms of reference for the planning process
- ◆ ensure that the sub-regional plan is consistent with the intent of the CCLUP and make recommendations

3.2.3 Interagency Planning Team

Roles and responsibilities of IPT Members

- ◆ pursue required resources to support the planning process
- ◆ advise on government programs and policies related to planning tasks
- ◆ supply technical and analytical support through agencies and contractors
- ◆ information collection, mapping, and analysis
- ◆ provide agency information to the planning process
- ◆ communication of the plan options to the public and the IAMC/RRB
- ◆ assist in the organization and implementation of the planning process
- ◆ develop and implement the terms of reference and work plan

Members of the IPT are expected to contribute to the development of the SRP as well as representing the positions of their agencies.

Representatives

Ministry of Energy and Mines

Department of Fisheries and Oceans

Ministry of Forests

Ministry of Environment, Lands, and Parks (Environment and Lands)

BC Parks

Ministry of Small Business, Tourism, and Culture (Tourism)

3.2.4 Technical Working Groups

Technical working groups may be established to develop the products for the sub-regional plan. These groups will consist of resource agency representatives and will act in a problem-solving technical capacity. The Technical Committees will report to and take direction from the Inter-Agency Planning Team. The data/information package used for analysis will be available to interested stakeholders. Stakeholders may be contacted to discuss ideas/options for specific areas/concerns.

3.2.5 1999/04/09 Statutory Designated Decision Makers

The Horsefly SRP will be reviewed by the RRB and the IAMC for compliance with the targets and objectives of the CCLUP as refined from the Regional Integration process. After it is endorsed by these two groups the plan becomes known information to the Statutory Designated Decision Makers. Under the FPC, the District Manager and the Designated Environment Official are the Statutory Designated Decision Makers.

3.3 Resolving Stakeholder Concerns

An internal review by a Technical Working Group will be the first step in resolving disputes that may arise from administrative decisions and it is intended to provide the opportunity for efficient reconsideration of a decision. This review procedure will also allow a concerned individual or group, to get information on and understand the basis for the original decision.

3.4 Schedule

The Horsefly Sub-Regional Plan is to be completed by December 31, 1999.

4.0 PLAN IMPLEMENTATION

Upon completion, the Horsefly SRP will be implemented through the approval process for operational plans as well as the establishment of Goal 2 Protected areas.

It is recognised that the timeline may not allow for the resolution of all issues pertaining to sub-regional planning. In light of this, it is recommended that a steering committee be formed to advise the RRB and IAMC of any outstanding issues upon completion. This committee could also be responsible for monitoring the implementation of the Horsefly SRP to ensure the objectives and targets are being met.

Appendix B: Maps

The following maps are provided for this plan:

- Map 1. CCLUP Timber Harvesting Access Levels
- Map 2. Resource Development Zones and Protected Areas
- Map 3. Old Growth Management Areas
- Map 4. Landscape Units and Grizzly Bear Distribution
- Map 5. Ungulate Habitat
- Map 6. Critical Fish and Stream Classification
- Map 7. Recreation
- Map 8. Visual Resource Management Areas
- Map 9. Mineral Access and Tenures
- Map 10. Existing Access

Appendix C: Stakeholder List

The following stakeholders were invited to meetings and to provide input to the Horsefly Sustainable Resource Management Plan:

Alex Fraser Research Forest	Cariboo Road Service
Alpha Psi and Xi Eta Sigma	Cariboo Sheep Breeders
Antypowich, Lloyd Frank	Cariboo Tourist Association
Art Williams Private Guide Service	Case, Richard
Baron, Frank	Chamber of Commerce
Bartley, Randall	Chappell, Dallas Stuart
BC Livestock Producers Co-op	Christian Women's Club
Beaman, Gary	Clarke, Gary
Best, Douglas Norman	Colebank Enterprises Ltd
Big Timothy Mtn Hunting - Emmelkamp, Ron	Crooked Lake Resort - Cromwell, Don & Marlene
Birch Bay Resort - Schaeffer, Stephan & Monika	Dave Barrett Construction
Blackwell, Paul	Daybreak Rotary Club
Bouelle, Charles	Deerhorn Outfitters - Englund, Brian
Bowden, Bradley	Dempster, Stephen James
Briscoe, Howard John	Doerksen, Alvin Ernie
Brown, John Edward	Donaldson, Bruce
Brown-John, Gillian	Downtown Business Association - Tots & Teens
Brown-John, James Douglas	Ecco-Tourism and Seminar Recr. - Strauch, Michael
Burghardt, Werner	Elks Lodge
Canim Lake Band - Archie, Antoine - Chief	Elliott, Gordon
Cariboo Archers - Gillette, Gordon - Crd	Elysia Resort - Carson, Pete & Susan
Cariboo-Chilcotin Conservation Society and Resource Centre - Akins, George	Emmelkamp, Ronald Bernard
Cariboo-Chilcotin Museum & Historical Society	Englund, Rainer
Cariboo-Chilcotin Teachers Association	Enyedy, Laszlo
Cariboo Chilcotin Voyageurs	Ferguson, Fred
Cariboo Communities Coalition - Goodrich, Brian	Flunkert, Chris
Cariboo Custom Grading Limited	Gainer & Son Contracting Ltd
Cariboo Library Network - Swift, Colleen - Director	Gardner, Hazel Laura
Cariboo Lumber Manufacturers Association	Gavin Lake Forestry Ed Centre
Cariboo Mountains Wilderness Coalition - Radies, Douglas	Giesbrect, Lawrence
Cariboo Regional District - Stanton, Paul	Godfrey, Robert James
	Goglin, John
	Gripich, Stan
	Hamblin, Daniel John
	Hampton, Robert
	Hampton, Steve
	High Country Outfitters - Elliot, Gordon

High Country Motor Inn - Biggs, Darlene & Geoff	Long, Kent
Hodgkin, Peter and Linda	Lowrys Outfitters Ltd. - Mitzel, Gerry
Hood, Robin and Darlene	M H King Excavating Limited
Hooker, Clarence	Macburney, Gerald
Horsefly Bay Contracting Limited	Maitland, Stuart Gordon
Horsefly Community Development Centre	Meadowbrook Ranch - Gilbey, Gerry
Horsefly District Tourism and Rate Payers Association	Meiss Lake Ranch - Hansen, Johannes
Horsefly Landing Resort - Hiebert, Greg & Charlene	Menning, John
Horsefly Livestock Association - Rolph, Bruce - President	Miocene Ranch Ltd.
Horsefly Hotel	Mitchell Bay Landing Resort
Hutchinson, Robert Henry	Monsen, Wayne
IWA Local 1-425 - Derbyshire, Bill	Moorehead Lake Resort
J Redekopp Hauling Limited	Morrow, Mervin
Jacksons Trailrides - Jackson, Darcy & Cherie	Mountain Wilderness Adventures - Zimmer, William
Jacobson, John Maurice	Mount Polley Mining Corp.
Janzen, Martin	Mundeling, Jason
Jay-Ray Enterprises Ltd. - Scambler, Jack	Neilsens Lakeshore Cabins - Purdy, Allan & Donna
Johnston, Kenneth Allan	Nicol, Michael and Shelley
Kearney, Dennis	Niquidet, Ernest
Ken's Custom Grading Limited	Norm & Vonnies Scrap Metals
Kerley, Glen	Norquay, Andrew
Kin Club	North Thompson Band - Matthew, Nathan - Chief
King, Marcel	Olie's Trucking Inc
Kiwanis Club	Oliver, Rollie
Kinnunen, Marko (†)	OI Nicks Place - Nickstadt, Hans
Kizinna, Carl	Order of the Eastern Star - Anderson, Marlene
Knights of Columbus	O'Toole Trucking & Contracting
Kroener, Charles	Pawlik, Ronald
Krumsiek, Rainer	Plato Island Resort - Macfarlane, Dan & Bonnie
Laffer, Franz Xavier	Plews, Gordon
Lebourdais, Matthew	Plummer, Kenneth Lee
Lignum Limited	Potter, Dorothy
Likely & District Chamber Of Commerce – Watt, Doug	Potter, James and Allan
Likely Hotel - Deacon, Bruce	Preceptor Gamma Gamma
Lioness Club	Quesnel Forks Preservation Society - Smith, Jim
Lions Club	Quesnel Lake Cedar
Little Horsefly Bed & Breakfast - Notter, Walter	Quesnel Lake Contracting
Lonesome Loon Lodge - Palangio, Michael James	Quesnel Lake Resort - Ficktner, Hans

Quesnel Lake Wilderness Adventures - Davis, Ken & Sue	Williams Lake Sportsman Association
Quesnel River Watershed Alliance R Bicchieri Contracting Ltd	Williamson, Harry Gerald
Reid, William	Woodjam Ranch - Gisler, Joseph Peter
RFP Timber Limited	Wright, John William
Robbins, Robert Jaroslaw	Zimmer, William
Roberts, Brian	Zirnhelt, Damon
Robertson, Ian F.	Zirnhelt, Norm
Rodear Cattle Co Ltd	
Rolph Stock Ranch, Rolph, Bruce	
Rotary Club	
Rowley, Frank	
Royal Canadian Legion	
Rustlers Roost Guest Ranch	
Scoville Ent.	
Share Cariboo Chilcotin Resources - Zimmer, Catherine	
Sharp Wings Ltd. - Schuetze, Gideon	
Shumaker, Carl Robert	
Silvertip Lodge	
Smith, Jack	
Speed, Norman	
Stanchfield, Don	
Stone, David	
Teppema, Ronald	
Thompson, Errol	
Tillotson, William F.	
Toastmasters	
Turner, Terry	
Ufawu - Sinclair, Jim & Burrows, Mae	
Valburg, Christian	
Wallis & Associates - Wallis, Jim	
Walters Ranching Ltd - Walters, Gilbert	
Weldwood of Canada Limited	
West Fraser Mills Ltd	
Wiggins, Lewis John	
Wiggins, William	
Williams, Ronald Albert	
Williams Lake Cedar Products	
Williams Lake Environmental Society	
Williams Lake Field Naturalists	
Williams Lake Powder King Snowmobile Club	

Appendix D: Goal 2 Candidate Protected Areas

The CCLUP allocated 22,000 ha of Goal 2 Protected Areas to be allocated across the region. The Inter-agency Management Committee and the Regional Resource Committee have held back 25 per cent of that to be used to address regional issues, leaving 16,500 ha available to sustainable resource management planning. The Horsefly Sustainable Resource Management Plan's share is calculated by dividing the size of the plan area (812, 578 ha) by the size of Cariboo Forest Region (8,246,896 ha) and then multiplying by 16,500 ha.

1 Long Creek Mineral Lick

Size: 244 hectares.

Representation and Values: This proposal would protect a portion of the Quesnel Highland (QUH) Ecosession, of which 12 per cent is currently protected. It would also protect a portion of the ESSFwc3 and ESSFwk1 biogeoclimatic ecosystem classification (BEC) variants, of which 33 per cent and 12 per cent are protected respectively. Other parks in this ecosession include Wells Gray, Cariboo Mountains, Cariboo River, Bowron Lake, Canim Beach and Cedar Point. It protects a unique mineral lick used by the red-listed Mountain Caribou and other wildlife. The lick is located in a low, wet subalpine meadow at the confluence of a number of small streams. It is believed to be one of the few mineral licks used by Caribou in this area.

Boundary Intent: The boundary follows an old No Staking Reserve that was established back in the 1970's. The final boundary will have to be designated using UTM's, as there are no logical geographic features to use as a point of commencement.

Management Intent: This area will be established as an Ecological Reserve. Hunting and other consumptive recreational activities are incompatible with protecting an area that is as heavily used by wildlife as this mineral lick.

Public Support: This candidate was submitted by the RPAT as part of its 1996 recommended list of protected areas.

First Nations: This candidate is in the area of interest of the Soda Creek, Red Bluff and Williams Lake Bands.

Land Status: This area is Crown land, with no private land or other encumbrances.

2 Rye Lake/Beaver Valley

Size: 400 hectares (800 total size, of which 400 hectares is in the Williams Lake Sustainable Resource Management Plan area)

Representation and Values: This proposal would protect a portion of the Cariboo Plateau ecosession, of which less than 1 per cent is currently protected. Less than 6 per cent of the SBS BEC zone is protected provincially. It would also protect a portion of the SBSdw1 variant (Horsefly variant of the Sub-Boreal Spruce dry warm BEC subzone), of which less than 1 per cent is currently protected. Other very small parks in this ecosession include Bridge Lake, Bridge Lake/Centennial, small portions of Green Lake, and Ruth Lake. The lower Beaver Valley Creek is the only slow water ecosystem in this BEC subzone. The remainder of this subzone is located along the faster moving Quesnel and Fraser Rivers. The area is characterised by annually inundated

floodplains, and a chain of lakes and wetlands connected by a meandering stream. The area has a cool climate with warm, moist summers and cold, high snowfall winters. The unique combination of flooding regimes, a long growing season, a moist hot climate and the biologically rich stream/wetland/lake complex make the valley highly productive in terms of its aquatic and terrestrial ecosystems. The amounts and varieties of annual succulent growth (fruits and shoots) support a highly productive aquatic and terrestrial food web. Blue listed species found in the area include trumpeter swans, sandhill cranes, fishers, northern bitterns, wolverine, sharp-tailed grouse and blue heron. The first observation of the red-listed Northern Long Eared Myotis in the Cariboo was recorded in this valley.

Boundary Intent: The boundary intent of the candidate area is to include the inflow stream, save and except the private property located on the north shore, as well as all of Rye Lake. The boundary would extend to the ridgelines and viewscape surrounding the lake. The final boundary will need to be designated using UTM's in conjunction with the private land located at the inflow stream i.e., lot 8250.

Management Intent: This area will be managed as a Class A Provincial Park. Hunting, trapping, guiding, fishing and other existing activities will be permitted. Access will be limited, consistent with the intent of managing this small area as a "pocket wilderness." Access to the land lease on the northeast side of the park via motorised vehicle will also be permitted, consistent with the CCLUP, but upgrading of access will not be permitted. While the private land has been excluded, it is considered to be valuable both for completion of a more viable protected area and for its ecological values. Purchase may be considered in the future on a willing seller, willing buyer basis.

Public Support: This candidate was submitted by Richard Case and Norm Zirnhelt, and is believed to have the support of a number of people and tenure holders in the Beaver Valley area.

First Nations: This candidate is in the area of interest of the Soda Creek, Red Bluff and Williams Lake Bands.

Land Status: This area is Crown land, with no encumbrances. The private land has been excluded.

3 Cedar Point Park addition

Size: 6 hectares

Representation and Values: This proposal would protect a very small portion of the Quesnel Highland (QUH) Ecosection, of which 12 per cent is currently protected. It would also protect a portion of the ICHwk2 BEC variant, of which 11 per cent is currently protected, the vast majority of it in Cariboo Mountains Park. Other parks in this ecosection include Wells Gray, Cariboo Mountains, Cariboo River, Bowron Lake, Canim Beach and Cedar Point. The values in this small addition are natural, recreational and cultural/historical. Portions of this ancient fluvial fan have been harvested, but in the 50+ year range, and a second growth stand of fir, hemlock, and cedar is well established and showing attributes of an old growth forest. The shoreline component is marshy and has a significant deciduous component. Culturally, the area had a long history of mining, as gold had been actively mined on Cedar Creek. It is also suspected that the Interior Shuswap people used the area as a stopover. The northwestern side of the fan was

made a Class C Provincial Park in 1962. Recreationally, the area is a natural extension of Cedar Point Park, and can be used for the construction of an interpretative trail and use of the shoreline.

Boundary Intent: The boundary intent of the candidate area is to include the area of Lot 11284 from Quesnel Lake to the western boundary of Winkley Creek Road. No private land will be included.

Management Intent: This area will be managed as an addition to the existing Cedar Point Class C Provincial Park and will be managed by the Cedar Point Park Board and BC Parks. The Park Board has received permission from the Ministry of Forests to cross their property, which separates L. 11284 from L. 11587, where the existing Park is located. It is expected the Park Board would provide management direction for the addition.

Public Support: This candidate was submitted by Robin Hood from Likely, and was accompanied by a letter of support signed by about 300 people.

First Nations: This candidate is in the area of interest of the Soda Creek, Red Bluff and Williams Lake Bands.

Land Status: This area is Crown land, with no encumbrances. The private land has been excluded.

4 Quesnel Lake Marine Park (QLMP)

Size: Approximately 1144 ha (distributed across eight sites: Watt Creek, Bouldery Creek, Peninsula Bay, Horsefly Delta, Faux Bay, Roaring River, Welcome Point, and Cariboo Island and Twain Island).

Representation and Values: All nine sites included in the Quesnel Lake Marine Park are located in the Quesnel Highland (QUH) Ecosection, of which 12 per cent is currently protected. All sites are also in the ICHwk2 BEC variant, of which 11 per cent is currently protected, the vast majority of it in Cariboo Mountains Park. Other parks in this ecosection include Wells Gray, Cariboo Mountains, Cariboo River, Bowron Lake, Canim Beach and Cedar Point. The values distributed through this system of small, generally marine access only areas is very diverse. Some sites have valuable fish habitat, including shore spawning by sockeye and kokanee (Roaring River, Welcome Point, Bouldery Creek, and Watt Creek) while others have creeks important for rearing and spawning (Roaring River, Horsefly River, Bouldery Creek, and Watt Creek). A number of the areas are considered important as early season foraging sites and late season access to salmon for grizzly bears (Watt Creek, Bouldery Creek, Roaring River). Several areas are also used as early wintering areas for caribou (Roaring and Watt Creek). The QLMP includes a number of features representative of landscapes around Quesnel Lake. These include sandy beaches (Bouldery Bay, Welcome Point, Faux Bay, Roaring, Watt), anchorages (Faux Bay, Bouldery Bay and Peninsula Bay), waterfalls (Roaring), wetlands and rivers (Horsefly delta, Roaring), creeks (Bouldery, Watt), large tree communities (Watt, Roaring), one of the few islands on Quesnel Lake (Bouldery Bay), and wildlife viewing opportunities in all areas. Culturally, many of these areas may have received significant use by First Nations, and physical remains may exist. They may also be significant from a traditional use perspective, including hunting, berry picking, gathering areas, fishing, spiritual use etc.

Wasko Creek was originally one of the proposed protected areas within the Quesnel Lake Marine Park. Wasko Creek provides high known grizzly habitat and important spawning for sockeye and coho salmon. There is a known industrial mineral deposit north of the creek. The Inter-Agency Planning team (IPT) deferred this area from Goal 2 protection in recognition of the potential economic benefits from further mineral development (a Class A park would preclude mineral development within the park boundaries). The IPT chose alternative methods for protecting the area's wildlife and fisheries values that still allow for mineral exploration. The area will be managed (i) as a permanent OGMA with specific biodiversity and wildlife objectives to manage grizzly bear, and (ii) as critical fish habitat (designated by DFO) to enable the effective management of the fisheries values.

Boundary Intent: The boundaries of these small areas will have to be designated using UTM's, as their small size prohibits the use of geographic features or private land as points of commencement.

Management Intent: This area will be managed as a Class A Provincial Park. Hunting, trapping, guiding, fishing and other existing activities will be permitted. Road access will be limited to these areas, as access is to be primarily by boat. The road to Faux Bay will be permanently deactivated to prevent road access.

Public Support: This is primarily a BC Parks proposal

First Nations: This candidate is in the area of interest of the Soda Creek, Red Bluff and Williams Lake Bands.

Land Status: This area is Crown land, with no encumbrances. The private land has been excluded.

Appendix E: Watershed Sensitivity

A sensitive watershed is a watershed having significant fisheries or downstream fisheries values, and in which the quality, flow rates of the water, water temperature, and stream channel complexity is vulnerable to physical changes in the watershed. Such watersheds typically have steep slopes, erodable soils, are prone to landslides, experience higher annual precipitation, or have risks of high water temperatures during late summer low flows.

The Interagency Planning Team recognises that some harvesting will be undertaken *before* appropriate watershed-level planning can be completed, harvesting without requisite watershed-level planning should be minimised in watersheds that are suspected of being “sensitive”.

A qualified registered professional (as defined in the WAP) carries out the watershed sensitivity analysis. It is a procedure designed to determine whether, and in what degree, land use or land development will affect the flows of water and/or water quality in a watershed. All features relevant to delineating and determining the sensitivity of a watershed should be identified. These include:

- Fish species and distribution.
- Classification of surface waters.
- Terrain stability mapping that includes the following 4 points:
 - i. Drainage feature mapping can be incorporated into terrain mapping for cost-effectiveness, but should include stream gradient, width, channel pattern, riparian characteristics, floodplain width, type of floodplain, degree of confinement, etc. Information on published topographic maps is not sufficient, and ground checking is important.
 - ii. General terrain maps and other assembled information (e.g., geology, drainage features, soils), showing slope stability classes, erodable materials and poorly drained organic terrain.
 - iii. Detailed terrain stability mapping (classes I–V); especially class V (unstable under natural conditions) and class IV (potentially unstable) (field checked).
 - iv. Erosion potential classes, especially terrain subject to surface erosion by running water under natural conditions.
 - Landslide inventory, all recognisable landslides (symbols for each slide scar, extent of tracks, code for approximate age).
 - Avalanche tracks (for applying avalanche protection zones).
 - Baseline stream channel audits.
 - Stream at risk for water temperature increases that are harmful to fish and fish habitat (may include field sampling program)
 - Existing and proposed roads and road densities (field checked).

Rate-of-harvest Defined:

Rate-of-harvest: the proportion of the watershed area (in hectares) allowed to be harvested each year or in a time period. (AAC applies to the entire Williams Lake TSA, and is not relevant at the watershed level)

Selecting a silvicultural system is a separate decision from the rate at which a forest is harvested—the “rate-of-harvest.” The choice of silvicultural system is based on site-specific characteristics and management objectives for a specific area of land. The determination of rate-of-harvest, while considering these factors, employs larger planning units such as a watershed, and is calculated as an area.

The rate-of-harvest is also distinct from Equivalent Clearcut Area (ECA). ECA is the area that has been harvested, cleared or burned, with consideration given to the silvicultural system, regeneration growth, and location within the watershed. For example, as a watershed is harvested, the ECA increases and as replanted forests grow, ECA decreases.

At present there are no standards to establish a rate-of-harvest to regulate the total area cut in a watershed. The *Watershed Assessment Procedure* recommends that an assessment of the “cumulative effects” of logging should be carried out on all watersheds larger than 500 ha. that:

- have at least 20% of the total watershed area has been logged during the past 25 years; or
- there is evidence of significant stream channel instability; or
- landslides are frequent; or
- over 25% of the riparian forest along either bank of the main stream channels has been logged over the past 40 years.

There is however, a risk of disrupting the hydrological stability of a watershed before the WAP is initiated. Also, the *Watershed Assessment Procedure* does not take into account other potential impacts to the fisheries resource such as increases in water temperature. For these reasons “rate-of-harvest” is described in the CCLUP and the integration report as a management tool for the conservation of salmon.

If a watershed is determined to be potentially sensitive then a qualified registered professional (as defined in the *Watershed Assessment Procedure*) will be retained to examine this watershed, confirm the sensitivity, and recommend (among other things) controls on the “rate of harvest”, high levels of retention (selective cut), restrictions on the amount of new road development, reserve areas, and prescriptions for riparian management zones.

Appendix F: Lake Management Objectives and Strategies for Lakes Greater than 5 ha.

Table 19 Lake Management Objectives

* Waterbody Identifiers available

**Forest Management Classes in the Lakeshore Management Zone and their objectives (see Table 21 in this appendix for associated strategies):

A - no harvest

B - retain 90% of the area or 90% of the basal area per 20 years.

C - retain 80% of the area or 80% of the basal area per 20 years.

D - retain 70% of the area or 70% of the basal area per 20 years.

E - retain 50% of the area or 50% of the basal area per 20 years.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
Lake Management Category: Wilderness Fisheries											
DHO -	1093A054_165	Annette Lake	12.2	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	2093A028_197	<i>Banana # 2 Lake</i>	14.5	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	4093A057_200	Buckingham Lake	47.1	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	5093A013_963	Cossack Lake (<i>Crow Lake</i>)	65.2	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	14093A043_6369	Edney Lake	33.5	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	6093A037_125	<i>Eureka Lake</i>	20.7	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO -	7 093A054_156	Freshette Lake	37.2	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	9 093A025_592	<i>Little Tisdall Lake</i>	33.2	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	11 093A027_249	McKee Lake	15.5	10	200	A	Wilderness Fisheries	Existing road; no new permanent access.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	12 093A035_28	Patenaude Lake (<i>Marten Lake</i>)	27.0	10	200	A	Wilderness Fisheries	Existing road; no new permanent access.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	13 093A046_365	Suey Lake (<i>Sam Suey Lake</i>)	18.7	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	11 093A015_3690	unnamed lake	30.6	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	11 093A015_4707	unnamed lake	20.1	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	11 093A015_4877	unnamed lake	50.1	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	14 093A028_168	unnamed lake	5.0	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries
DHO -	15 093A056_98	Wasko Lake (Little) (<i>Round Lake</i>)	24.3	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries

Lake Description				Lake Management Objectives								Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lake-shore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan	
DHO - 16	093A056_178	Wasko Lake (Lower)	167.3	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries	
DHO - 17	093A056_224	Wasko Lake (Upper) (<i>Obstacle Lake</i>)	448.7	10	200	A	Wilderness Fisheries	Non-motorized access; walk-in or fly-in only.	No new development.	No new permanent access within 2 km of lakeshore.	Fisheries	
Lake Management Category: Refugium												
DHO - 8	093A086_150	<i>Grizzly Lake</i>	6.5	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Protect fish populations.	Fisheries	
DHO - 24	093A018_2996	unnamed lake	7.6	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.	
DHO - 25	093A018_2099	unnamed lake	6.9	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.	
DHO - 25	093A018_3110	unnamed lake	5.4	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.	
DHO - 25	093A027_3528	unnamed lake	7.3	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.	
DHO - 25	093A037_1230	unnamed lake	10.4	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.	
DHO - 25	093A037_630	unnamed lake	6.0	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.	
DHO - 25	093A038_1338	unnamed lake	31.8	10	200	A	Refugium	Non-motorized access; walk-in or	No new development.	Maintain alpine tundra ecosystem.	As required.	

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
								fly-in only.			
DHO -	25093A038_1496	unnamed lake	5.4	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	25093A047_1898	unnamed lake	5.3	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	25093A047_2973	unnamed lake	10.2	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A047_2075	unnamed lake	6.6	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	25093A048_572	unnamed lake	38.1	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A057_3167	unnamed lake	5.5	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A064_1216	unnamed lake	6.4	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A067_1626	unnamed lake	5.5	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A067_1728	unnamed lake	6.9	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A067_1977	unnamed lake	5.5	10	200	A	Refugium	Non-motorized access; walk-in or	No new development.	Maintain alpine tundra ecosystem.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
								fly-in only.			
DHO -	27093A067_4138	unnamed lake	14.1	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	27093A068_2062	unnamed lake	10.9	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	27093A068_4248	unnamed lake	18.6	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	27093A068_4350	unnamed lake	8.5	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A077_1412	unnamed lake	25.9	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A077_1513	unnamed lake	8.0	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	18093A077_1218	unnamed lake	19.4	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A077_134	unnamed lake	10.1	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
DHO -	26093A078_1838	unnamed lake	28.8	10	200	A	Refugium	Non-motorized access; walk-in or fly-in only.	No new development.	Maintain alpine tundra ecosystem.	As required.
Lake Management Category: Quality											

Lake Description				Lake Management Objectives							Strategy	
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan	
DHO -	62	093A033_303	Abbott Lake	22.1	10	200	A	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ.	As required.
DHO -	18	093A032_593	Ballon Lake	23.0	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Fisheries Research Lake).	As required.
DHO -	3	093A054_316	Benny Lake	56.7	10	200	A	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ.	As required.
DHO -	19	093A052_330	Bootjack Lake	261.7	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.
DHO -	20	093A017_345	Bosk Lake	511.3	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.
DHO -	21	093A016_267	Buster Lake	92.8	10	200	A	Quality	Site specific.	Limited or no new development.	No permanent motorized access in LMZ.	As required.
DHO -	22	093A074_289	Cariboo Lake	1030.6	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.
DHO -	23	093A044_330	<i>Clam Lake</i>	11.2	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	24	093A027_292	Crooked Lake	1097.1	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site and resort).	As required.
DHO -	25	093A026_603	Doreen Lake	19.9	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 26	093A044_86	Douglas Lake (<i>Little Burn Lake</i>)	20.1	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO - 27	093A026_155	Elbow Lake	342.6	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.
DHO - 28	093A052_530	Frypan Lake	17.0	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO - 29	093A034_752	<i>Game Crossing Lake</i>	2.9	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO - 30	093A042_933	Gavin Lake	93.9	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO - 31	093A034_463	Gruhs Lake	28.2	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO - 32	093A045_513	Hen Ingram Lake (<i>9 Mile</i>)	353.7	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.
DHO - 33	093A077_327	Hilda Lake	24.3	10	200	A	Quality	Site specific.	Limited or no new development.	No permanent motorized access in LMZ.	As required.
DHO - 34	093A044_398	Hooker Lake	23.6	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO - 35		Horsefly Lake (<i>Narrows</i>)		10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ.	As required.
DHO - 36		Horsefly Lake (<i>Suey Bay</i>)		10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. .	As required.
DHO - 37	093A052_250	Jacobie Lake	85.9	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.

Lake Description				Lake Management Objectives							Strategy	
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan	
DHO - 38	093A045_401	Jacques Lake	176.6	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.	
DHO - 39	093A044_19	Jim Lowry Lake	28.4	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	
DHO - 40	093A045_835	Keno Lake	229.4	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.	
DHO - 41	093A044_81	Kwun Lake (<i>Burn Lake</i>)	50.9	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	
DHO - 42	093A044_6	Lea Lake	12.8	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	
DHO - 43	093A042_918	<i>Little Gavin Lake</i>	15.8	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	
DHO - 44	093A034_731	Little Horsefly Lake	39.8	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	
DHO - 45	093A062_73	Little Lake	74.4	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	
DHO - 10	093A076_330	Maeford Lake	53.1	10	200	A	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ.	As required.	
DHO - 46	093A026_529	McKinley Lake	519.4	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.	
DHO - 47	093A024_386	<i>Mica Lake</i>	20.5	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	
DHO - 48	093A044_473	Murdock Lake (Centre) (<i>Otter Lake</i>)	6.9	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	
DHO - 49	093A044_474	Murdock Lake (North) (<i>Goose Lake</i>)	29.2	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.	

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO -	50 093A044_3 69	Murdock Lake (South) (<i>Skunk Lake</i>)	29.9	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	51 093A046_4 09	<i>Oslie (Kantymir) Lake</i>	26.1	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	52 093A027_2 62	Pickertow Lake (North)	7.8	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	53	<i>Quesnel Lake (Junction)</i>		10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	54	<i>Quesnel Lake (Mitchell Bay)</i>		10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	55	<i>Quesnel Lake (Silver Tip)</i>		10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	56 093A054_6 24	Spanish Lake	450.0	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.
DHO -	57 093A024_7 59	Starlike Lake	58.2	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ.	As required.
DHO -	58 093A025_1 69	Tisdall Lake	496.6	10	200	B	Quality	Site specific.	Limited or no new development.	No new motorized permanent access in LMZ. (Rec. Site).	As required.
DHO -	59 093A052_1 84	Trio Lake	40.1	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	60 093A016_1 95	unnamed lake	12.0	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
DHO -	61 093A044_3 31	<i>Ussa Lake (Camp Lake)</i>	74.1	10	200	B	Quality	No objectives.	Limited or no new development.	No objectives.	As required.
Lake Management Category: General											
DHO -	63 093A034_7 73	<i>Alah Lake (Birch Lake)</i>	28.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 64	093A043_80	Antoine Lake	218.9	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A034_3560	Armstrong Lake	14.9	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A032_1628	Batten Lake	20.5	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A023_17087	Bells Lake	37.6	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A032_2803	Beveridge Lake (<i>Island Lake</i>)	116.5	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 65	093A026_132	Boscar Lake	19.1	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 66	093A053_136	Boswell Lake	10.7	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 67	093A045_115	<i>Campbell Lake</i>	25.7	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 68	093A034_859	<i>Chance Lake</i>	8.9	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A033_1933	China Cabin Lake	14.3	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 14	093A042_4044	Choate Lake	6.4	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 69	093A024_784	Corner Lake	12.3	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 70	093A017_366	Cruiser Lake	84.6	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 14	093A033_3183	<i>Dean Lake</i>	17.3	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 71	093A044_32	<i>Deep Lake</i>	7.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 14	093A044_3 283	<i>Deer Lake</i>	5.6	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 72	093A044_2 52	<i>Dillabough Lake (Bear Lake)</i>	89.5	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 73	093A042_4 16	<i>Dorsey Lake</i>	18.0	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 74	093A043_1 26	<i>Eric Lake</i>	41.2	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 75	093A042_7 44	<i>Fire Lake</i>	16.2	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 76	093A063_5 62	<i>Five Mile Lake</i>	7.3	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 14	093A033_1 454	<i>Gammarus Lake</i>	7.2	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 77	093A024_7 92	<i>Green Lake</i>	11.2	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 78	093A033_2 16	<i>Harpers Lake</i>	9.2	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 14	093A063_7 58	<i>Hepburn Lake</i>	5.1	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 79		<i>Horsefly Lake (East End)</i>		10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 80		<i>Horsefly Lake (Prairie Creek)</i>		10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 81	093A061_2 13	<i>Jackpine Lake</i>	35.0	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 82	093A032_7 4	<i>Jessica Lake</i>	53.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 83	093A073_1 23	<i>Kangaroo Lake</i>	6.9	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lake-shore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 14631	093A077_2	<i>Kato Lake</i>	11.4	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 14746	093A078_2	<i>Kitamara Lake</i>	5.1	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 840	093A055_4	Klinne Lake	20.4	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 8543	093A034_5	Lemon Lake	20.5	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 14803	093A033_4	<i>Little Ballon Lake</i>	27.0	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 14993	093A023_6	Malcolm Lake	7.8	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15051	093A065_3	<i>Matzen Lake</i>	13.2	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 8619	093A032_8	McCauley Lake	101.0	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 8756	093A013_5	McIntosh Lake (North)	249.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 8832	093A013_1	McIntosh Lake (South)	427.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15190	093A022_5	Meiss Lake	23.4	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 8916	093A045_5	Melissa Lake (<i>Back Lake</i>)	57.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15284	093A013_7	Miner Lake	23.4	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 9050	093A015_1	Moffat Lake (East)	120.6	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 9195	093A015_1	Moffat Lake (West)	78.3	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 92	093A042_607	Moorhouse Lake	12.0	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 93	093A052_563	Morehead Lake	203.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 94	093A044_275	Nikwit Lake (<i>"U" Lake</i>)	78.7	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 95	093A053_285	Nina Lake (<i>Cedar Dam Lake</i>)	10.8	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 96	093A044_498	Niquidet Lake	68.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 97	093A026_462	Offset Lake	11.3	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 98	093A052_360	Polley Lake	384.8	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 99	093A063_244	Poquette Lake	16.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 100	093A062_117	Prior Lake	27.9	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 101	093A042_343	Prouton Lake (Big)	40.7	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 102	093A042_3217	Prouton Lake (Little)	16.3	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 103		Quesnel Lake (<i>Beach Point</i>)		10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 104		Quesnel Lake (<i>East Arm</i>)		10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 105		Quesnel Lake (<i>North Arm</i>)		10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 153	093A033_585	Ratdam Lake	41.0	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 10651	093A032_8	Robert Lake	48.6	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15484	093A073_1	Rollie Lake	25.8	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 107027	093A023_1	Sausser Lake	24.3	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 10877	093A043_2	Shiko Lake	42.1	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 10945	093A063_4	Six Mile Lake	9.8	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 11093	093A024_8	Stillwater Lake	4.8	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 11114	093A034_3	Sucker Lake	44.9	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 11224	093A055_2	Tasse Lake	65.9	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 11385	093A013_1	Tillicum Lake	88.5	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 11450	093A034_8	<i>Tommies Lake</i>	22.8	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 115172	093A023_1	Triplet Lake	11.0	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 19372	093A002_5	unnamed lake	14.9	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 209068	093A003_1	unnamed lake	16.9	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 20014	093A003_4	unnamed lake	11.8	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 20676	093A003_8	unnamed lake	5.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 20782	093A003_8	unnamed lake	5.2	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 20875	093A003_9	unnamed lake	22.8	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 19234	093A012_2	unnamed lake	5.3	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 1950	093A013_2	unnamed lake	6.8	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 20460	093A013_7	unnamed lake	25.0	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 20531	093A013_8	unnamed lake	18.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 1943	093A014_1	unnamed lake	13.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 19648	093A014_1	unnamed lake	6.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 19705	093A014_2	unnamed lake	15.9	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 19820	093A014_2	unnamed lake	8.9	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 19947	093A014_2	unnamed lake	5.7	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 20105	093A014_6	unnamed lake	6.8	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 20217	093A014_6	unnamed lake	16.2	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 20319	093A014_6	unnamed lake	5.3	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15534	093A014_7	unnamed lake	5.5	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 21	093A015_2049	unnamed lake	12.1	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15	093A015_5624	unnamed lake	6.6	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 21	093A016_3169	unnamed lake	13.5	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 11	093A016_4992	unnamed lake	6.9	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12	093A016_4099	unnamed lake	14.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15	093A017_4752	unnamed lake	5.2	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15	093A019_1813	unnamed lake	13.9	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 21	093A022_2580	unnamed lake	19.0	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 21	093A022_2695	unnamed lake	6.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22	093A022_6443	unnamed lake	6.5	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23	093A023_16107	unnamed lake	19.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12	093A023_2193	unnamed lake	6.5	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22	093A023_6909	unnamed lake	9.6	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23	093A023_7174	unnamed lake	6.2	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23	093A023_9515	unnamed lake	7.5	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 22	093A024_253	unnamed lake	5.7	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23	093A024_704	unnamed lake	7.3	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12	093A025_4454	unnamed lake	10.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A025_6302	unnamed lake	5.0	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12	093A026_1393	unnamed lake	5.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A026_4154	unnamed lake	5.1	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A026_4269	unnamed lake	7.2	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23	093A026_772	unnamed lake	6.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A027_1789	unnamed lake	11.0	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A027_3870	unnamed lake	6.1	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A027_3976	unnamed lake	11.9	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A028_1536	unnamed lake	6.6	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A028_1639	unnamed lake	10.9	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 21	093A032_1361	unnamed lake	9.9	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 21	093A032_1472	unnamed lake	5.6	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 21786	093A032_4	unnamed lake	13.7	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 21894	093A032_4	unnamed lake	6.3	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 21920	093A032_5	unnamed lake	5.3	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22072	093A032_5	unnamed lake	5.6	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22100	093A032_6	unnamed lake	5.5	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22232	093A032_6	unnamed lake	10.8	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22341	093A032_6	unnamed lake	17.6	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 2124	093A032_9	unnamed lake	8.9	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22695	093A033_2	unnamed lake	6.7	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 15956	093A033_6	unnamed lake	11.2	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12275	093A033_6	unnamed lake	6.0	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23277	093A033_7	unnamed lake	9.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23387	093A033_7	unnamed lake	5.8	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22775	093A034_3	unnamed lake	6.6	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 22869	093A034_5	unnamed lake	6.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 23	093A034_7 487	unnamed lake	7.3	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A036_3 010	unnamed lake	7.8	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 16	093A038_3 4	unnamed lake	5.6	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A042_2 083	unnamed lake	9.9	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A042_3 068	unnamed lake	10.3	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A042_6 157	unnamed lake	9.3	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A043_4 205	unnamed lake	10.0	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A043_6 424	unnamed lake	6.8	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A044_2 319	unnamed lake	22.3	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A044_2 432	unnamed lake	6.8	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A044_2 134	unnamed lake	7.5	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A044_5 367	unnamed lake	5.6	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12	093A045_2 555	unnamed lake	7.1	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A045_3 736	unnamed lake	17.4	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A045_4 665	unnamed lake	6.0	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 12	093A045_5639	unnamed lake	5.6	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A045_7757	unnamed lake	8.6	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A046_157	unnamed lake	5.6	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A046_169	unnamed lake	12.2	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 24	093A046_4851	unnamed lake	5.9	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23	093A051_2958	unnamed lake	5.1	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 23	093A052_282	unnamed lake	7.5	10	200	E	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A054_922	unnamed lake	7.6	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A055_1563	unnamed lake	8.6	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 17	093A058_985	unnamed lake	11.1	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A065_3073	unnamed lake	6.8	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A065_4172	unnamed lake	15.7	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A067_1335	unnamed lake	13.5	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A067_1439	unnamed lake	5.9	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 19	093A067_2029	unnamed lake	8.2	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.

Lake Description				Lake Management Objectives							Strategy
District Lake Number	Forest Cover Map & Polygon Number *	Lake Name (unofficial names in italics)	Area (ha)	Riparian Reserve Zone width (m)	Lakeshore Management Zone width (m)	Forest Management Class in the Lakeshore Management Zone **	Lake Management Category	Lakeshore Management Zone Access Management	Lakeshore Management Zone Crown Land Development	Site Specifics	Lake Management Plan or resource values initiating the need for a Lake Management Plan
DHO - 17	093A074_294	unnamed lake	8.5	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A077_1883	unnamed lake	6.3	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A077_2901	unnamed lake	6.0	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A078_1540	unnamed lake	14.8	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A078_1647	unnamed lake	5.2	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 18	093A078_1753	unnamed lake	9.9	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 19	093A086_1120	unnamed lake	9.0	10	200	D	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12	093A032_5718	Veith Lake	21.9	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12	093A023_2887	Walters Lake	13.4	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 12	093A058_2908	Warttig Lake	53.5	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A034_4090	Wawn Lake	19.6	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A044_5160	Whiffle Lake	144.8	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A045_5221	Wolftrack Lake (<i>Cutoff Lake</i>)	9.0	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A063_5398	Wolverine Lake	21.2	10	200	B	General	No objectives.	No objectives.	No objectives.	As required.
DHO - 13	093A024_2462	Woodjam Lake (<i>Square Lake</i>)	7.3	10	200	C	General	No objectives.	No objectives.	No objectives.	As required.

Table 20 Lake Management Strategies

Lake Management Zone Forest Management Class Strategies					
	A Class	B Class	C Class	D Class	E Class
Preferred Forest Management Practices for the Lakeshore Management Zone:	No harvest.	Clearcutting is not permitted in the LMZ unless partial cutting is not feasible.	Partial cutting is encouraged to maintain non-timber values.	Partial cutting is encouraged to maintain non-timber values.	Partial cutting is encouraged to maintain non-timber values.
Uneven-Aged / Selection Silvicultural Systems (partial cut):*	No harvest; this restriction may be waived by government on a site specific basis for the management of fire, windthrow, above endemic levels of pests or disease.	≤20% of the LMZ area per 20 years and ≥50% of the original basal area must be retained.	≤40% of the LMZ area per 20 years and ≥50% of the original basal area must be retained.	≤60% of the LMZ area per 20 years and ≥50% of the original basal area must be retained.	≤100% of the LMZ area per 20 years and ≥50% of the original basal area must be retained.
Even Aged Silvicultural Systems (clearcut):*		≤10% of the LMZ area.	≤20% of the LMZ area.	≤30% of the LMZ area.	≤50% of the LMZ area.
		<10 ha cutblocks.	<10 ha cutblocks.		
		Maximum lateral distance of an individual opening along the LMZ / RRZ interface is 300 metres.	Maximum lateral distance of an individual opening along the LMZ / RRZ interface is 400 metres.	Maximum lateral distance of an individual opening along the LMZ / RRZ interface is 500 metres.	Maximum lateral distance of an individual opening along the LMZ / RRZ interface is 500 metres.
Combined Silvicultural Systems (partial and clearcut):	Incorporate/combine the recommendations as per the even and un-even aged silvicultural system guidelines.				
Roads, Landings and Skid Trails in the Lakeshore Management Zone:	No new roads, borrow pits or landings should be located in the LMZ unless there are no feasible alternatives.	Locate operational/haul roads outside of the LMZ.	Locate operational/haul roads outside of the LMZ.	Locate operational/haul roads >75 metres away from the RRZ.	Locate operational/haul roads >30 metres away from the RRZ.
		Locate spur/block roads and landings >200 metres away from the RRZ.	Locate spur/block roads and landings >100 metres away from the RRZ.	Locate spur/block roads and landings >40 metres away from the RRZ.	Locate spur/block roads and landings >30 metres away from the RRZ.
		Locate skid trails >30 metres away from RRZ.	Locate skid trails >30 metres away from RRZ.	Locate skid trails >30 metres away from RRZ.	Locate skid trails >30 metres away from RRZ.

Lake Management Zone Forest Management Class Strategies

	A Class	B Class	C Class	D Class	E Class
		Back spar trails are not recommended without an approved rehabilitation plan.	Back spar trails are not recommended without an approved rehabilitation plan.		

* translated to area or basal area retention objectives for each LMZ forest management class (see SRMP Lake Management Appendix)

Appendix G: Viewpoints, Viewlines, and Viewscapes

Viewpoint			Viewscape			Comments	
Number	Location		Viewline Number	Number	VQO		Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
no #			023L	069V	PR	1.6 - 7.0	from guide-outfitter's trail
013U			004L	072V	PR	1.6 - 7.0	
015U			005L	072V	PR	1.6 - 7.0	
020U			006L	072V	PR	1.6 - 7.0	
			265L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			268L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			270L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			272L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			274L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			276L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			278L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			280L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			282L	072V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
010U			067L	073V	PR	1.6 - 7.0	
006U			068L	073V	PR	1.6 - 7.0	
007U			069L	073V	PR	1.6 - 7.0	
004U			070L	073V	PR	1.6 - 7.0	
no #			124L	073V	PR	1.6 - 7.0	from Cariboo River

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			201L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			202L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			203L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			204L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			205L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			206L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			207L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			208L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			209L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			210L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			211L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
			212L	073V	PR	1.6 - 7.0	from centreline of Cariboo Lake
005U			001L	074V	PR	1.6 - 7.0	
009U			002L	074V	PR	1.6 - 7.0	
011U			003L	074V	PR	1.6 - 7.0	
027U			007L	074V	PR	1.6 - 7.0	
			267L	074V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			269L	074V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			271L	074V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			273L	074V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			275L	074V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			277L	074V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			279L	074V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
			281L	074V	PR	1.6 - 7.0	from centreline of Quesnel Lake (North Arm)
018U			038L	080V	PR	1.6 - 7.0	
011T			039L	080V	PR	1.6 - 7.0	Silvertip Lodge
			291L	080V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			293L	080V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
017U			065L	083V	PR	1.6 - 7.0	
017U			066L	083V	PR	1.6 - 7.0	
			396L	084V	PR	1.6 - 7.0	from lake centre (East Arm)
no #			029L	085V	R	0.1 - 1.5	from Niagara Falls
011T			033L	085V	R	0.1 - 1.5	Silvertip Lodge
			289L	085V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			290L	085V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			292L	085V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			295L	087V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			297L	087V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			299L	087V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
011T			034L	090V	PR	1.6 - 7.0	Silvertip Lodge
016U			036L	090V	PR	1.6 - 7.0	
014T			060L	092V	PR	1.6 - 7.0	Likely Hotel / Lone Wolf Tours
011T			032L	093V	PR	1.6 - 7.0	Silvertip Lodge
016U			035L	093V	PR	1.6 - 7.0	
031T			017L	094V	PR	1.6 - 7.0	Cariboo Mountain Wilderness Adventures
022T			020L	094V	PR	1.6 - 7.0	Quesnel Lake Resort
021T			021L	094V	PR	1.6 - 7.0	Quesnel Lake Resort
019T			022L	094V	PR	1.6 - 7.0	Quesnel Lake Resort
032U			025L	094V	PR	1.6 - 7.0	
025T			026L	094V	PR	1.6 - 7.0	Quesnel Lake Resort
			284L	094V	PR	1.6 - 7.0	from Wasko Lake (west)
			302L	094V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			303L	094V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			307L	094V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			309L	094V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			311L	094V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
019U			027L	095V	PR	1.6 - 7.0	

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
no #			028L	095V	PR	1.6 - 7.0	from Niagara Falls
011T			037L	095V	PR	1.6 - 7.0	Silvertip Lodge
			294L	095V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			296L	095V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			298L	095V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			300L	095V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			301L	095V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			304L	095V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
034T			050L	097V	PR	1.6 - 7.0	Mitchell Bay Landing
no #			071L	097V	PR	1.6 - 7.0	from Spanish Lake rec. site (# 44)
026U			072L	097V	PR	1.6 - 7.0	
028U			073L	097V	PR	1.6 - 7.0	
no #			125L	097V	PR	1.6 - 7.0	from Cedar Dam Lake rec. site (# 45)
no #			126L	097V	PR	1.6 - 7.0	from Boswell Lake rec. site (# 43)
			223L	097V	PR	1.6 - 7.0	from centreline of Spanish Lake
			224L	097V	PR	1.6 - 7.0	from centreline of Spanish Lake
			225L	097V	PR	1.6 - 7.0	from centreline of Spanish Lake
			226L	097V	PR	1.6 - 7.0	from centreline of Spanish Lake
			227L	097V	PR	1.6 - 7.0	from centreline of Spanish Lake

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			228L	097V	PR	1.6 - 7.0	from centreline of Spanish Lake
			229L	097V	PR	1.6 - 7.0	from centreline of Spanish Lake
			230L	097V	PR	1.6 - 7.0	from centreline of Spanish Lake
			243L	097V	PR	1.6 - 7.0	from centreline of Quesnel Lake ("West Arm")
030T			008L	098V	R	0.1 - 1.5	Lowry's Outfitters
027T			010L	098V	R	0.1 - 1.5	Elysia Resort
028T			012L	098V	R	0.1 - 1.5	Quesnel Lake Resort
026T			014L	098V	R	0.1 - 1.5	Quesnel Lake Resort
031T			018L	098V	R	0.1 - 1.5	Cariboo Mountain Wilderness Adventures
047U			041L	098V	R	0.1 - 1.5	
048U			043L	098V	R	0.1 - 1.5	
033T			044L	098V	R	0.1 - 1.5	Plato Island Resort
			251L	098V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			253L	098V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			255L	098V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			257L	098V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			259L	098V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			261L	098V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			264L	098V	R	0.1 - 1.5	from centreline of Quesnel Lake (North Arm)

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			266L	098V	R	0.1 - 1.5	from centreline of Quesnel Lake (North Arm)
016U			030L	101V	PR	1.6 - 7.0	
011T			031L	101V	PR	1.6 - 7.0	Silvertip Lodge
027U			019L	107V	R	0.1 - 1.5	
			283L	107V	R	0.1 - 1.5	from Wasko Lake (west)
023T			056L	111V	PR	1.6 - 7.0	Northern Lights Lodge Ltd.
020T			057L	111V	PR	1.6 - 7.0	Neilson's Lakeshore Cabins
016T			058L	111V	PR	1.6 - 7.0	Highcountry Inn
014T			059L	111V	PR	1.6 - 7.0	Likely Hotel / Lone Wolf Tours
			232L	111V	PR	1.6 - 7.0	from centreline of Quesnel Lake ("West Arm")
			234L	111V	PR	1.6 - 7.0	from centreline of Quesnel Lake ("West Arm")
			238L	111V	PR	1.6 - 7.0	from centreline of Quesnel Lake ("West Arm")
			240L	111V	PR	1.6 - 7.0	from centreline of Quesnel Lake ("West Arm")
018T			063L	115V	PR	1.6 - 7.0	Morehead Lake Resort & Restaurant
023U			064L	115V	PR	1.6 - 7.0	
			213L	115V	PR	1.6 - 7.0	from centreline of Morehead Lake
			214L	116V	PR	1.6 - 7.0	from centreline of Morehead Lake
			215L	116V	PR	1.6 - 7.0	from centreline of Morehead Lake
			216L	116V	PR	1.6 - 7.0	from centreline of Morehead Lake

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			217L	116V	PR	1.6 - 7.0	from centreline of Morehead Lake
			218L	116V	PR	1.6 - 7.0	from centreline of Morehead Lake
027T			011L	124V	R	0.1 - 1.5	Elysia Resort
028T			013L	124V	R	0.1 - 1.5	Quesnel Lake Resort
029T			015L	124V	R	0.1 - 1.5	Quesnel Lake Resort
031T			016L	124V	R	0.1 - 1.5	Cariboo Mountain Wilderness Adventures
no #			040L	124V	R	0.1 - 1.5	from north end of Suey Bay - Slate Bay trail
			263L	124V	R	0.1 - 1.5	from centreline of Quesnel Lake (North Arm)
			313L	124V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			315L	124V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			317L	124V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			319L	124V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			321L	124V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			235L	129V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
049U			074L	131V	PR	1.6 - 7.0	
041U			075L	131V	PR	1.6 - 7.0	
057U			076L	131V	PR	1.6 - 7.0	
050U			077L	131V	PR	1.6 - 7.0	
058U			079L	131V	PR	1.6 - 7.0	

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
070U			082L	131V	PR	1.6 - 7.0	
069U			083L	131V	PR	1.6 - 7.0	
067U			084L	131V	PR	1.6 - 7.0	
067U			085L	131V	PR	1.6 - 7.0	
			305L	131V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			306L	131V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			310L	131V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			312L	131V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			314L	131V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
			369L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			371L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			373L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			375L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			377L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			379L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			381L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			383L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			387L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			389L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			390L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			391L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			392L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			393L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			394L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			395L	131V	PR	1.6 - 7.0	from centreline of Horsefly Lake
030T			009L	132V	PR	1.6 - 7.0	Lowry's Outfitters
033T			042L	132V	PR	1.6 - 7.0	Plato Island Resort
			249L	132V	PR	1.6 - 7.0	from centreline of Quesnel Lake ("West Arm")
033T			045L	134V	R	0.1 - 1.5	Plato Island Resort
no #			046L	134V	R	0.1 - 1.5	from rec. site at Cariboo Island (North) (# 52)
			248L	134V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			220L	135V	PR	1.6 - 7.0	from centre of Bootjack Lake (northern portion)
046U			054L	136V	PR	1.6 - 7.0	
043U			055L	136V	PR	1.6 - 7.0	
			237L	136V	PR	1.6 - 7.0	from centreline of Quesnel Lake ("West Arm")
no #			061L	137V	PR	1.6 - 7.0	from rec. site at Bootjack Lake (# 38)
			219L	137V	PR	1.6 - 7.0	from centre of Bootjack Lake (northern portion)
025T			024L	139V	PR	1.6 - 7.0	Quesnel Lake Resort

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
no #			308L	139V	PR	1.6 - 7.0	from centreline of Quesnel Lake (East Arm)
040U			062L	141V	PR	1.6 - 7.0	from rec. site at Polley Lake (# 46)
056U			047L	142V	R	0.1 - 1.5	
no #			048L	142V	R	0.1 - 1.5	
			049L	142V	R	0.1 - 1.5	from Winkley Creek rec. site (# 42)
			242L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm"); arrow points into the wrong direction
			244L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			246L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			252L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			254L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			256L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			258L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			260L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			262L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			316L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			318L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			320L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)
			322L	142V	R	0.1 - 1.5	from centreline of Quesnel Lake (East Arm)

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
034T			052L	144V	R	0.1 - 1.5	Mitchell Bay Landing
046U			053L	144V	R	0.1 - 1.5	
			241L	144V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			250L	145V	PR	1.6 - 7.0	from centreline of Quesnel Lake ("West Arm")
			245L	150V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
			247L	150V	R	0.1 - 1.5	from centreline of Quesnel Lake ("West Arm")
055U			094L	156V	PR	1.6 - 7.0	
059U			078L	158V	PR	1.6 - 7.0	
060U			080L	158V	PR	1.6 - 7.0	
072U			081L	158V	PR	1.6 - 7.0	
			368L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			370L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			372L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			374L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			376L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			378L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			380L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			384L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake
			386L	158V	PR	1.6 - 7.0	from centreline of Horsefly Lake

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
051U			092L	160V	PR	1.6 - 7.0	
			221L	160V	PR	1.6 - 7.0	from centre of Gavin Lake
			222L	160V	PR	1.6 - 7.0	from centre of Gavin Lake
055U			093L	165V	PR	1.6 - 7.0	
063U			090L	174V	PR	1.6 - 7.0	
037T			088L	177V	R	0.1 - 1.5	Horsefly Landing Resort
			366L	177V	R	0.1 - 1.5	from centreline of Horsefly Lake
			367L	177V	R	0.1 - 1.5	from centreline of Horsefly Lake
071U			091L	188V	PR	1.6 - 7.0	
037T			364L	192V	M	7.1 - 18.0	from centreline of Horsefly Lake
			089L	196V	R	0.1 - 1.5	Horsefly Landing Resort
			363L	196V	R	0.1 - 1.5	from centreline of Horsefly Lake
038T			365L	196V	R	0.1 - 1.5	from centreline of Horsefly Lake
			362L	197V	M	7.1 - 18.0	from centreline of Horsefly Lake
			104L	209V	PR	1.6 - 7.0	Eureka Peak Lodge & Outfitters
088U			105L	209V	PR	1.6 - 7.0	
084U			106L	209V	PR	1.6 - 7.0	
083U			107L	209V	PR	1.6 - 7.0	
			346L	209V	PR	1.6 - 7.0	from centreline of McKinley Lake

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			347L	209V	PR	1.6 - 7.0	from centreline of McKinley Lake
			348L	209V	PR	1.6 - 7.0	from centreline of McKinley Lake
			349L	209V	PR	1.6 - 7.0	from centreline of McKinley Lake
			350L	209V	PR	1.6 - 7.0	from centreline of McKinley Lake
			351L	209V	PR	1.6 - 7.0	from centreline of McKinley Lake
			323L	210V	PR	1.6 - 7.0	from centre of Eureka Lake
			324L	210V	PR	1.6 - 7.0	from centre of Eureka Lake
039T			086L	211V	PR	1.6 - 7.0	Cariboo Country Inn & Ranch
037T			087L	211V	PR	1.6 - 7.0	Horsefly Landing Resort
no #			114L	216V	PR	1.6 - 7.0	from point between McKinley & Crooked Lakes
054T			117L	216V	PR	1.6 - 7.0	Crooked Lake Resort
085U			118L	216V	PR	1.6 - 7.0	
055T			119L	216V	PR	1.6 - 7.0	Lonesome Loon Lodge / Two Boys Outfitting
081U			120L	216V	PR	1.6 - 7.0	
058T			121L	216V	PR	1.6 - 7.0	Eureka Peak Lodge & Outfitters
091U			122L	216V	PR	1.6 - 7.0	
059T			123L	216V	PR	1.6 - 7.0	Eureka Peak Lodge & Outfitters
			325L	216V	PR	1.6 - 7.0	from centreline of Crooked Lake
			326L	216V	PR	1.6 - 7.0	from centreline of Crooked Lake

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
			327L	216V	PR	1.6 - 7.0	from centreline of Crooked Lake
			328L	216V	PR	1.6 - 7.0	from centreline of Crooked Lake
			329L	216V	PR	1.6 - 7.0	from centreline of Crooked Lake
			330L	216V	PR	1.6 - 7.0	from centreline of Crooked Lake
			331L	216V	PR	1.6 - 7.0	from centreline of Crooked Lake
			332L	216V	PR	1.6 - 7.0	from centreline of Crooked Lake
051T			095L	218V	PR	1.6 - 7.0	Horsefly Motel
no #			097L	219V	PR	1.6 - 7.0	from Horsefly River
no #			098L	219V	PR	1.6 - 7.0	from Horsefly River
no #			101L	219V	PR	1.6 - 7.0	from Horsefly River
053T			102L	219V	PR	1.6 - 7.0	Black Creek Ranch
no #			103L	219V	PR	1.6 - 7.0	from Horsefly River rec. site (# 61)
052T			099L	221V	PR	1.6 - 7.0	Eureka Peak Lodge & Outfitters
052T			100L	221V	PR	1.6 - 7.0	Eureka Peak Lodge & Outfitters
no #			115L	238V	R	0.1 - 1.5	from point between McKinley & Crooked Lakes
096U			112L	239V	PR	1.6 - 7.0	
092U			113L	239V	PR	1.6 - 7.0	
093U			116L	239V	PR	1.6 - 7.0	
			340L	239V	PR	1.6 - 7.0	from centreline of Elbow Lake

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
095U 097U 097U			341L	239V	PR	1.6 - 7.0	from centreline of Elbow Lake
			342L	239V	PR	1.6 - 7.0	from centreline of Elbow Lake
			343L	239V	PR	1.6 - 7.0	from centreline of Elbow Lake
			344L	239V	PR	1.6 - 7.0	from centreline of Elbow Lake
			345L	239V	PR	1.6 - 7.0	from centreline of Elbow Lake
			108L	240V	PR	1.6 - 7.0	
			109L	240V	PR	1.6 - 7.0	
			110L	240V	PR	1.6 - 7.0	
			353L	240V	PR	1.6 - 7.0	from centreline of Tisdall Lake
			354L	240V	PR	1.6 - 7.0	from centreline of Tisdall Lake
			355L	240V	PR	1.6 - 7.0	from centreline of Tisdall Lake
			356L	240V	PR	1.6 - 7.0	from centreline of Tisdall Lake
			357L	240V	PR	1.6 - 7.0	from centreline of Tisdall Lake
			358L	240V	PR	1.6 - 7.0	from centreline of Tisdall Lake
101U			360L	240V	PR	1.6 - 7.0	from centreline of Tisdall Lake
			361L	240V	PR	1.6 - 7.0	from centreline of Tisdall Lake
			397L	243V	PR	1.6 - 7.0	from centre of unnamed lake
			398L	243V	PR	1.6 - 7.0	from centre of unnamed lake
		111L	245V	PR	1.6 - 7.0		

Number	Viewpoint		Viewline Number	Viewscape			Comments
	Location			Number	VQO	Range of forest landbase (in perspective view) allowed to be in non-VEG state (%)	
	UTM Easting (NAD 83)	UTM Northing (NAD 83)					
060T			333L	245V	PR	1.6 - 7.0	from centreline of Bosk Lake
			334L	245V	PR	1.6 - 7.0	from centreline of Bosk Lake
			335L	245V	PR	1.6 - 7.0	from centreline of Bosk Lake
			336L	245V	PR	1.6 - 7.0	from centreline of Bosk Lake
			337L	245V	PR	1.6 - 7.0	from centreline of Bosk Lake
			096L	246V	PR	1.6 - 7.0	Eureka Peak Lodge & Outfitters
			338L	248V	PR	1.6 - 7.0	from centre of Buster Lake
			339L	248V	PR	1.6 - 7.0	from centre of Buster Lake
			388L	none			from centreline of Horsefly Lake
			231L	not yet			from centreline of Quesnel Lake ("West Arm")
			233L	not yet			from centreline of Quesnel Lake ("West Arm")
			236L	not yet			from centreline of Quesnel Lake ("West Arm")
			239L	not yet			from centreline of Quesnel Lake ("West Arm")
			285L	not yet			from centreline of Wasko Lake (east)
			286L	not yet			from centreline of Wasko Lake (east)
			287L	not yet			from centreline of Wasko Lake (east)
			288L	not yet			from centreline of Wasko Lake (east)
			382L	not yet			from centreline of Horsefly Lake
			385L	not yet			from centreline of Horsefly Lake

Abbreviations used:

M means "modification"

RP means "partial retention"

R means "retention"

VEG means "visual effective green-up"

VQO means "visual quality objective"

Suffixes:

L for (view)line

T for Tourism Use Area or Resort

U for land set aside for the "use for the recreation and enjoyment of the public" (UREP)

V for viewscape

Appendix H: Analysis Procedures and Assumptions

Equivalent Excluded Area (EEA)

Equivalent Excluded Area (EEA) is used as a common measure to determine the impact of non-timber strategies (or constraints) on the productive forest land base. The EEA is based on the difference between a strategy rotation age (SRA) and the minimum rotation age (MRA), with the “EEA factor” calculated as follows:

$$\text{EEA factor} = (\text{SRA} - \text{MRA}) / \text{SRA}$$

Where:

EEA factor is expressed as a decimal or percentage

SRA is the strategy rotate on age (years)

MRA is the minimum rotation age (years)

Example: a non-timber value requires the rotation period for a pine stand to be increased from the MRA of 80 years to an SRA of 200 years:

$$\text{EEA factor} = (200 - 80) / 200 = 0.6 \text{ or } 60 \%$$

In other words, 60 per cent of the area is unavailable for harvest within the minimum rotation for the pine stand of 80 years.

For some of the non-timber values, a required overall level of retention is used instead of an extended rotation. For example for riparian management zones, 50 per cent retention is required for S1, S2 and S3 streams, which equates to an EEA factor of 50 per cent.

The EEA factor for each non-timber value is multiplied by the area the non-timber constraint occupies, to reflect the impact on the timber harvesting landbase.

Overlap Analysis

The Overlap Analysis methodology is used to assess the level of timber access and constraint associated with the non-timber resource values. A separate overlap analysis table was completed for each CCLUP sub-unit within the HSRMP area as well as for the SRMP area as a whole. The steps followed were as follows:

1. EEA factors as defined above were calculated or assigned to each non-timber value or constraint to timber based on:
 - the portion of timber allowed by the non-timber strategy to be accessed within the minimum rotation age, resulting in an calculated EEA factor, or
 - a level of retention required for the non-timber value, resulting in an assigned EEA factor;
2. Non-timber values were arranged in a ranked order from the most constraining to the least constraining to timber access; EEA of areas

- overlapped by two or more constraints defaults to the highest EEA of the overlaps;
3. Through GIS and resultant database analysis, the net area of productive forest that is required for each non-timber constraint is calculated; after each constraint is measured in order of descending EEA, the areas are removed from subsequent measurements thus no double counting of overlapped constraints occurs;
 4. The area and percentage of productive forest required for the non-timber constraints, tallied as EEA, is then summed for the CCLUP sub-unit and the SRMP as a whole; sub-unit and SRMP EEA is then compared to the July 2000 EEA targets to determine if the sub-unit and SRMP is over or under the targets for constrained area.

Non-Timber Resources

The non-timber resources that were mapped and analysed are summarised below in Table 21, which includes specifications regarding analysis assumptions, contributions to old seral targets and relevant background information. These specifications are consistent between SRMP's, however additional comments are included in the tables in Workbook 11 to explain factors unique to the Horsefly SRMP, or analysis procedures, that are not otherwise apparent.

Table 21 Non-Timber Resource Assumptions

Non-timber resource	Strategy rotation (years)	EEA factor		Assumptions for definition	Contribution to old seral	Comments
		Pine, decid.	Other conifer			
No Harvest						
Parks	removed from landbase calculations	from forest for EEA		LUCO Protected Areas	100%	<ul style="list-style-type: none"> Coverage updated August 2000 via data from LUCO Some boundary issues to the NE of Caribou Mtns. PA
Goal 2 Areas	removed from landbase calculations	from forest for EEA		BC Parks source	100%	<ul style="list-style-type: none"> Information digitized from 1:50,000 photocopies with line created by 1/8 inch felt marker (!); effective resolution likely around 1:100,000 Last edits made Mar. 29, 2000
Riparian Reserves 20m & 30m	n/a	.9	.9	S1: 50m buffer S2: 30m buffer S3: 20m buffer	100%	<ul style="list-style-type: none"> Forest Cover (FC1) linework used for streams (supplied by Inland Timber) classified streams supplied by Inland Timber and compiled from information supplied by Forest licensees major edits based on MOE, DFO recommendations April 2000 streams not classified default to original modelled buffers
Riparian Reserves Wetlands and shrub-carrs – 10m	n/a	.9	.9	W1 & W5 wetlands and shrub-carrs >5ha: 10m buffer	None	<ul style="list-style-type: none"> FC1 base modelled by Paragon addressed the issue of island polygons within large swamps
Critical Fish Habitat	n/a	.9	.9	Critical habitat for salmon and bull trout	100%	<ul style="list-style-type: none"> DFO submission, jointly refined by DFO and WLAP using 1:50,000 topographic maps to delineate critical floodplain salmon habitat and several critical bull trout streams last edits January 2002
Class A Lakes 200 m buffer	n/a	.9	.9	From Horsefly Forest District Draft Lakes Classification	100%	
Caribou No Harvest	n/a	.9	.9	From updated Caribou East Strategy	100%	New coverage last received from MELP October 12, 2000
OGMA's	n/a	.9	.9		100% to	Coverage in current analysis dated Jan. 19/02; coverage currently being revised to address seral target shortfalls and overages, revisions will be reviewed with stakeholders prior to analysis
Modified Harvest						
Trail reserve zone 50m buffer	n/a	.85	.85	<i>Document source/process</i>	None	<ul style="list-style-type: none"> buffers of 100m, 75m, 50m and 25m width Last update April 2000
Visual Retention VQO	400	.80	.70	<i>Document source/process</i>	Rotation age difference contributes to long term old	<ul style="list-style-type: none"> Assume overall long term average across sustainable resource management plan of 5% non-VEG in planimetric view will meet max 1.5% non-VEG in perspective view 5%/pass + re-entry every 20 yrs = 400 yr. strategy rotation

Non-timber resource	Strategy rotation (years)	EEA factor		Assumptions for definition	Contribution to old seral	Comments
		Pine, decid.	Other conifer			
Rip. Mgmt. Zones Stream Class S4 (30m buffer)	n/a	.70	.70		None	<ul style="list-style-type: none"> • 30m buffers on S4 streams to be average 70% retention level • portions of modelled S4 stream RMZ estimated to be S6 transferred to S6 RMZ, portions estimated by % for 5 quadrants across sustainable resource management plan, overall 34% S4 transferred to S6 after conversion to S6 RMZ width
Caribou East	240	.66	.50	From updated Caribou East Strategy	where overlapped with mapped OGMA	New coverage last received from MELP October 12, 2000
Class B lakes 200m buffer	200	.60	.40	From Horsefly Forest District Draft Lakes Classification	where overlapped with mapped OGMA	From Horsefly Forest District Draft Lakes Classification for Class B lakes: 10% removal/pass + re-entry every 20 yrs = 200 yr. strategy rotation
Rip. Mgmt. Zones Stream Class S1, S2, S3	n/a	.50	.50	S1: 20m S2: 20m S3: 20m	none	<ul style="list-style-type: none"> • FC1 linework used for streams (supplied by Inland Timber) • classified streams supplied by Inland Timber and compiled from information supplied by Forest licensees • major edits based on MOE, DFO recommendations April 2000 • streams not classified default to original modelled buffers
Visual Partial Retention	120	.33	0	<i>Document source/processes</i>	none	<ul style="list-style-type: none"> • Assume overall long term average across sustainable resource management plan of 17% non-VEG in planimetric view will meet max 7% non-VEG in perspective view • 17%/pass + re-entry every 20yrs = 120 yr. strategy rotation
MDWRs	180 (fir stands)	.00	.33 (fir)		Where overlapped with mapped OGMA; in excess of 25% of fir area overlapped with mapped OGMA	<ul style="list-style-type: none"> • Revised MDWR boundaries will be incorporated when completed for Williams Lake TSA and approved by IAMC
Rip. Mgmt. Zones Stream Class S5	n/a	.25	.25	S5: 30m	None	<ul style="list-style-type: none"> • FC1 linework used for streams (supplied by Inland Timber) • classified streams supplied by Inland Timber and compiled from information supplied by Forest licensees • major edits based on MOE, DFO recommendations April 2000 • streams not classified default to original modelled buffers
RMZ wetlands and shrub-carrs	n/a	.25	.25	>5 ha = 30m RMZ (incorrect, should have been 40m) 1 – 5 ha =	None	<ul style="list-style-type: none"> • FC1 base modelled by Paragon • addressed the issue of island polygons within large swamps

Non-timber resource	Strategy rotation (years)	EEA factor		Assumptions for definition	Contribution to old seral	Comments
		Pine, decid.	Other conifer			
				30m RMZ		
Class C Lakes 200m buffer	100	.20	0	From Horsefly Forest District Draft Lakes Classification	None	From Horsefly Forest District Draft Lakes Classification for Class B lakes: 20% removal/pass + re-entry every 20 yrs = 100 yr. strategy rotation
Rip. Mgmt. Zones Stream Class S6 (spatial)	n/a	.05	.05	S6: 20m	none	<ul style="list-style-type: none"> • FC1 linework used for streams (supplied by Inland Timber) • classified streams supplied by Inland Timber and compiled from information supplied by Forest licensees • major edits based on MOE, DFO recommendations April 2000 • streams not classified default to original modelled buffers
Rip. Mgmt. Zones Stream Class S6 (non-spatial: % of S4 by sustainable resource management plan quadrant)	n/a	.05	.05	S6: 20m	none	<ul style="list-style-type: none"> • portions of modelled S4 streams estimated to be S6 transferred to S6 RMZ, portions estimated by % for 5 quadrants, overall 34% S4 transferred to S6
WTP (non-spatial)	n/a	.50	.50	See Tables 27 & 28 for calculation procedures for estimating long term and current WTP requirements		

Appendix I: Overlap Analysis

An Excel Workbook consisting of the following tables is also available for those who want to examine the calculations.

Table 22 Summary

A	B	C	D	E	F	G	H	I	J	K
CCLUP Sub-Unit	PF	% of CCLUP								
	Land Base Horsefly SRMP ha	Sub-Unit in Horsefly SRMP	No- Harvest Horsefly SRMP	Ext Rotations Horsefly SRMP	Total EEA CCLUP Integration	Total EEA Horsefly SRMP	Variance	Weighted EEA CCLUP Integration	Weighted EEA Horsefly SRMP	Weighted Variance
Boss/Deception SRDZ	32,174	63	28.17	9.80	39.00	37.98	-1.02	2.30	2.24	-0.06
Quesnel Highlands SRDZ	16,717	12	9.75	10.71	34.00	20.46	-13.54	1.04	0.63	-0.42
Quesnel Lake SRDZ	211,729	91	21.47	12.59	36.00	34.07	-1.93	13.99	13.24	-0.75
Beaver Valley ERDZ	157,925	47	8.28	9.99	14.00	18.27	4.27	4.06	5.29	1.24
Canim ERDZ	78,177	34	14.39	5.24	18.00	19.63	1.63	2.58	2.82	0.23
Cottonwood ERDZ	44,254	22	19.14	5.44	29.00	24.59	-4.41	2.36	2.00	-0.36
Quesnel ERDZ	3,954	2	29.37	4.02	20.00	33.39	13.39	0.15	0.24	0.10
Totals	544,929						-1.62	26.47	26.46	-0.02
Total PF Base in SRDZs	260,620									
Total PF Base in ERDZs	284,309									
Total PF Base in Horsefly SRMP	544,929									
								SRDZ Variance		-1.23
								ERDZ Variance		1.21

NOTES:

CCLUP Integration
Horsefly SRMP

This table includes updated CCLUP timber targets for No Harvest, approved by the IAMC and RRC (July 18, 2000).
Refers to management inputs from the HSRMP IPT for Scenario 4b analysis.

Table 23 Horsefly SRMP - EEA Analysis

Productive Forest Horsefly SRMP Analysis: 544,929 ha Gross area: 813,004 ha	Management Input	Total Area Prod Forest (ha)	Area Required Prod Forest (ha)	No-Harvest		Harvest with an Extended Rotation												
				Area (ha)	% of PFB	Area (ha)				EEA Factor - % Retention			Area not avail in 1 Rotation Pine	Area not avail in 1 Rotation Other	Area not avail in 1 Rotation all sp	Total Area not avail in 1 Rotation	% not avail in 1 rotation	%Total Area not available
						Pine	Other species	All sp	% Total Area	Extend ed Rotation	Pine	Other sp						
Resource Value (overlap analysis rank)	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Stream Classification - RRZ (1)	20-30m buffer	3,478	3,478	3,478	0.64						0.90	0.90			3,130	3,130	0.57	0.57
RRZ-Wetlands and shrub-carrs (2)	10m buffer	1,673	1,656	1,656	0.30						0.90	0.90			1,491	1,491	0.27	0.27
Critical Fish Habitat (3)	polygon	6,420	4,873	4,873	0.89						0.90	0.90			4,386	4,386	0.80	0.80
Class A Lakes (4)	200 m buffer	1,576	1,559	1,559	0.29						0.90	0.90			1,403	1,403	0.26	0.26
Caribou East (5)	polygon	45,789	45,558	45,558	8.36						0.90	0.90			41,003	41,003	7.52	7.52
Mapped OGMA's (6) (Permanent or Recruitment)	spatial	59,398	42,965	42,965	7.88						0.90	0.90			38,669	38,669	7.10	7.10
Totals - No harvest																	16.53	
Trail Reserve Zone (7)	50m buffer	4,468	3,353					3,353	0.62		0.85	0.85	0	0	2,850	2,850	0.52	0.52
Visual-Retention (8, 9)	polygon	17,911	17,391			2,170	15,221		3.19	400	0.80	0.70	1,736	10,655	0	12,391	2.27	2.27
Stream Classification S4 - RMZ, Some area transferred to S6 RMZ (10)	30m buffer	21,631	13,398					13,398	2.46		0.70	0.70			9,378	9,378	1.72	1.72
Caribou East (11, 12)	polygon	32,751	23,130			311	22,819		4.24	240	0.66	0.50	205	11,410	0	11,615	2.13	2.13
Class B Lakes (13, 14)	200 m buffer	7,655	3,674			212	3,462		0.67	200	0.60	0.40	127	1,385	0	1,512	0.28	0.28
Stream Classification S1, S2, S3 - RMZ (15)	20 - 100m	5,983	1,245					1,245	0.23		0.50	0.50	0	0	622	622	0.11	0.11

	buffer																	
Visual Partial Retention - "Other" not excluded from lower ranking (16)	polygon	117,132	15,249			15,249	66,676		2.80	120	0.33	0.00	5,032	0	0	5,032	0.92	0.92
MDWR (17, 18)	polygon	24,929	15,396					12,276	2.25	180		0.33	0	0	4,051	4,051	0.74	0.74
Stream Classification S5 - RMZ (19)	30m buffer	2,196	1,081					1,081	0.40		0.25	0.25	0	0	270	270	0.05	0.05
RMZ – Wetlands and shrub-carrs (20)	30m buffer	9,043	5,773					5,773	1.06		0.25	0.25	0	0	1,443	1,443	0.26	0.26
Class C Lakes - "Other" not excluded from lower ranking (21)	200 m buffer	1,041	305			305	1,752		0.06	200	0.20	0.00	61	0	0	61	0.01	0.01
Stream Classification S6 - RMZ - Spatial (22)	20m buffer	5,444	2,900					2,900	0.53		0.05	0.05	0	0	145	145	0.03	0.03
Stream Classification S6 - RMZ - From mapped S4 (23)	20m buffer	5,408	4,556					4,556	0.84		0.05	0.05	0	0	228	228	0.04	0.04
WTP (25)	non-spatial	n/a	8,956					8,956	1.64	240	0.50	0.50	0	0	4,478	4,478	0.82	0.82
Visual Partial Retention and Class C - "Other", no EEA impact but constraining, Area after overlaps			62,210				62,210				0.00	0.00	0	0	0	0	0.00	0.00
Other Areas with no constraints			266,222															
Totals - Modified Harvest																	9.92	
Totals - Horsefly SRMP Analysis			544,929	100,091	18.37				20.99				7,162	23,449	23,466	54,077		26.45
Weighted EEA CCLUP Target																		26.47
Variance																		-0.02

NOTES:

- PFB Productive Forest Land Base
- Resource Value (overlap analysis rank) Resource value and order of ranking in the analysis (area covered by higher ranking values are excluded in area summaries for lower ranking values).
- Area Required Total area of PFB for resource value minus overlaps with higher ranking Resource Values (lying above in table)
- WTP Required WTP PF Base amounts in Column D were determined through spatial analysis following criteria of table 20a of the Biodiversity G.B
- EEA Factor Equivalent Excluded Area or additional land base required to account for impact of extended rotations

Area Unavailable in 1 Rotation	Col N (Pine) = Area Pine x EEA factor Pine. Col O (Other) = Area Other species x EEA Other species.
Total Area Unavailable in 1 Rotation	Col Q = Col N + Col O + Col P
% Total Area Unavailable from no-harvest and mod-harvest	Col S = Col F + Col R. This is the total EEA, as a percentage of the Productive Forest Base required for no-harvest and mod-harvest management.
Variance	Difference between Appendix XII targets for CCLUP sub-unit and outcome of scenario analysis
Sub-Unit NH Targets	This table includes updated CCLUP timber targets for No Harvest, approved by the IAMC and RRC (July 18, 2000).
Stream Classification S6 - RMZ - From mapped S4	A portion of the 30m S4 buffer is transferred to S6 (S4-S6 Calculations by Quadrant). This area is reduced by 1/3 to reduce the 30m buffer area to approximate the 20m S6 buffer.

Table 24 Boss Deception SRDZ

Productive Forest Horsefly SRMP Analysis: 32,174 ha: (portion within SRMP only)

Gross area: 55,995 ha: (portion within SRMP only)

Prod Forest (CCLUP 90 day) ha: 55,985	Management Input	Total Area	Area Required Prod Forest (ha)	No-Harvest		Harvest with an Extended Rotation												
				Area (ha)	% of PFB	Area (ha)				EEA Factor - % Retention		Area not	Area not	Area not	Total	%	%	
						Pine	Other sp	all sp	% Total Area	Extended Rotation	Pine	Other sp	avail in 1 Rotation Pine	avail in 1 Rotation Other	avail in 1 Rotation all sp	not avail in Rotation	in 1 rotation	not available
Resource Value (overlap analysis rank)	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Stream Classification - RRZ (1)	20- 30m buffer	431	431	431	1.34						0.90	0.90			388	388	1.21	1.21
RRZ-Wetlands and shrub-carrs (2)	10m buffer	71	71	71	0.22						0.90	0.90			64	64	0.20	0.20
Critical Fish Habitat (3)	polyg on	906	729	729	2.27						0.90	0.90			656	656	2.04	2.04
Class A Lakes (4)	200 m buffer	82	78	78	0.24						0.90	0.90			70	70	0.22	0.22
Caribou East (5)	polyg on	7,355	7,318	7,318	22.75						0.90	0.90			6,587	6,587	20.47	20.47
Mapped OGMA's (6) (Permanent or Recruitment)	spatia l	3,814	1,445	1,445	4.49						0.90	0.90			1,300	1,300	4.04	4.04
Trail Reserve Zone (7)	50m buffer	1,210	886					886	2.75		0.85	0.85	0	0	753	753	2.34	2.34
Visual-Retention (8, 9)	polyg on	141	139			110	29		0.43	400	0.80	0.70	88	20	0	109	0.34	0.34
Stream Classification S4 -	30m buffer	859	355					355	1.10		0.70	0.70			249	249	0.77	0.77

RMZ, Some area transferred to S6 RMZ (10)																		
Caribou East (11, 12)	polygon	3,220	2,480			26	2,455		7.71	240	0.66	0.50	17	1,227	0	1,244	3.87	3.87
Class B Lakes (13, 14)	200 m buffer	527	384			7	377		1.19	200	0.60	0.40	4	151	0	155	0.48	0.48
Stream Classification S1, S2, S3 - RMZ (15)	20 - 100m buffer	830	208					208	0.65		0.50	0.50	0	0	104	104	0.32	0.32
Visual Partial Retention - "Other" not excluded from lower ranking (16)	polygon	9,442	817			817	5,192		18.22	120	0.33	0.00	270	0	0	270	0.84	0.84
MDWR (17, 18)	polygon	0	0					0	0.00	180		0.33	0	0	0	0	0.00	0.00
Stream Classification S5 - RMZ (19)	30m buffer	318	97					97	0.99		0.25	0.25	0	0	24	24	0.08	0.08
RMZ – Wetlands and shrub-carrs (20)	30m buffer	427	113					113	0.35		0.25	0.25	0	0	28	28	0.09	0.09
Class C Lakes - "Other" not excluded from lower ranking (21)	200 m buffer	0	0			0	0		0.00	100	0.20	0.00	0	0	0	0	0.00	0.00
Stream Classification S6 - RMZ - Spatial (22)	20m buffer	772	300					300	0.93		0.05	0.05	0	0	15	15	0.05	0.05
Stream Classification S6 - RMZ - From mapped S4 (23)	20m buffer	443	352					352	1.09		0.05	0.05	0	0	18	18	0.05	0.05
WTP (25)	non-spatial	n/a	373					373	1.16	240	0.50	0.50	0	0	186	186	0.58	0.58
Visual Partial Retention and Class C - "Other",			5,044				5,044				0.00	0.00	0	0	0	0	0.00	0.00

no EEA impact but constraining, Area after overlaps																		
Other Areas with no constraints			10,555															
Totals - Horsefly SRMP Analysis			32,174	10,071	31.30				36.58				379	1,398	1,377	3,154	9.80	37.98
Weighted EEA CCLUP Target																		39.00

Variance **-1.02**

NOTES

- PFB Productive Forest Land Base
- Resource Value (overlap analysis rank) Resource value and order of ranking in the analysis (area covered by higher ranking values are excluded in area summaries for lower ranking values).
- Area Required Total area of PFB for resource value minus overlaps with higher ranking Resource Values (lying above in table)
- WTP Required WTP PF Base amounts in Column D were determined through spatial analysis following criteria of table 20a of the Biodiversity G.B.
- EEA Factor Equivalent Excluded Area or additional land base required to account for impact of extended rotations
- Area Unavailable in 1 Rotation Col N (Pine) = Area Pine x EEA factor Pine. Col O (Other) = Area Other species x EEA Other species.
- Total Area Unavailable in 1 Rotation Col Q = Col N + Col O + Col P
- % Total Area Unavailable from no-harvest and mod-harvest Col S = Col F + Col R. This is the total EEA, as a percentage of the Productive Forest Base required for no-harvest and mod-harvest management.
- Variance Difference between Appendix XII targets for CCLUP sub-unit and outcome of scenario analysis
- Sub-Unit Targets NH This table includes updated CCLUP timber targets for No Harvest, approved by the IAMC and RRC (July 18, 2000).
- Stream Classification S6 - buffer. A portion of the 30m S4 buffer is transferred to S6 (S4-S6 Calculations by Quadrant). This area is reduced by 1/3 to reduce the 30m buffer area to approximate the 20m S6
- RMZ - From mapped S4

Remaining SRDZ and ERDZ tables

See separate Excel Workbook.

Table 25 Summary of Mule Deer Adjustments - CCLUP Sub-Units

Scenario 6a	A	B	C	D	E	F	G	H	I	J	
CCLUP Sub-Unit	MDWR Total (from Overlap Table)	Gross PF Base	MDRW Area as % of PF Base unadjusted for fir	fir leading ha	fir major non-ld ha	fir leading adjustment for sp 80%	fir major non-ld adjustment for sp 40%	total fir subject to ext uneven mgmt - ha	Adjustment for for low Crown Closure	Net Area MDWR subject to EEA cal - ha	MDWR as % of PB Base - adjust
SRMP Rollup	15,396	544,929	2.83%	15,294	102	12,235	41	12,276	n/a	12,276	2.25%
Boss/Deception	0	32,386	0.00%	0	0	0	0	0	n/a	0	0.00%
Quesnel Highlands	0	16,728	0.00%	0	0	0	0	0	n/a	0	0.00%
Quesnel Lake	2,581	212,698	1.21%	2,535	46	2,028	18	2,047	n/a	2,047	0.96%
Quesnel	38	3,958	0.96%	38	0	30	0	30	n/a	30	0.76%
Cottonwood	644	44,090	1.46%	615	30	492	12	504	n/a	504	1.14%
Beaver Valley	12,041	158,145	7.61%	12,015	26	9,612	11	9,623	n/a	9,623	6.08%
Canim	91	78,106	0.12%	91	0	73	0	73	n/a	73	0.09%

NOTES:

- Totals from Column I are carried forward to the CCLUP Summary Tables (cell I: 24) for each CCLUP Sub-unit.
- Col A 'MDWR PF Base Area Required' is the total forest area of each MDWR within a CCLUP sub-unit less non fir stands (less than 40% fir)
- The required Crown Closure Adjustment (Col H) was determined by examining high and moderate Crown Closure objectives for each MDWR within the Horsefly SRMP area. This review, using information from the Mule Deer
- Strategy and CCLUP Integration process technical reports revealed that almost 100% of the area of MDWRs within the Horsefly SRMP will be subject to High/Moderate Crown Closure management. Therefore a non-spatial adjustment for Crown Closure Objectives is not required.

CCLUP Sub-Unit	MDWR in CCLUP sub-unit	PB Base in MDWR in CCLUP sub-unit	High/Mod Crown Closure Objective %	Pro-rated MDWR ha High/Mod.	Overall CCLUP Sub-Unit Objective %
----------------	------------------------	-----------------------------------	------------------------------------	-----------------------------	------------------------------------

Boss/Deception Quesnel Lake	n/a			
	Horsefly Lake	3800	100	
	Horsefly River	2689	100	
	Likely	95	100	
	Niquidet	2204	100	
	Quesnel Forks	711	100	
	West Arm	1208	100	
				100.00%
Quesnel Highlands Canim	n/a			
	Horsefly River	608	100	
				100.00%
CottonWood	Quesnel Forks	2695	100	
				100.00%
Beaver Valley	Antoine Lake	3276	100	3276
	Beaver Valley North	10447	80	8358
	Beaver Valley South	4487	80	3590
	Big Lake North	352	80	282
	Likely	3322	100	3322
	Little Lake	731	100	731
	McIntosh Lakes	901	80	721
	Niquidet	2056	100	2056
	Quesnel Forks	1114	100	1114
	Rose Lake	908	80	726
	West Arm	8238	100	8238
				32413
				90.46%
Quesnel	Little Lake	279	100	
	Quesnel Forks	213	100	
				100.00%

Analysis Steps

1. Col. A: from Overlap Table cell C:24, MDWR area of fir over 40%, excluding more constraining overlaps
2. Col.C: the portion of Col. A fir over 40% that is fir leading area
3. Col. E: the portion of Col. C fir leading area that is fir species (assume overall average of 80%)

4. Col. D: the portion of Col A fir over 40% that is fir non-leading major area
5. Col. F: the portion of Col. D fir non-leading major area that is fir species (assume overall average of 40%)
6. Col. G: sum Columns E & F for total fir subject to MDWR management
7. Col. H: adjustment for the portion of MDWR managed fir subject to low Crown closure which is assumed to have zero EEA impact consistent with Integration. Since almost all Horsefly MDWR is wet belt snowpack zone which has zero % objectives for low Crown closure, no adjustments were made
8. Col. I: Net area of MDWR fir transferred to overlap tables (cell I: 24) for EEA calculations; as noted in #7 above, this area = Col. H since no adjustments were made for the relatively small amount of low Crown closure objectives in Horsefly SRMP MDWR. EEA factor of 0.33 is the blended pro-rating of 33% moderate Crown closure objective at 0.11 EEA and 66% high Crown closure objective at 0.44 EEA

Table 26 Summary of S4/S6 Stream Calculations - CCLUP Sub-Units

Scenario 7

CCLUP Sub-Unit	Area of S4 Mapped by Quadrant						Area of S4 RMZ Using % by Quadrant Calculations						Area of S6 RMZ Using % by Quadrant Calculations					
	A	B	C	D	E	Total	A - 85%	B - 55%	C - 40%	D - 75%	E - 40%	Total	A - 15%	B - 45%	C - 60%	D - 25%	E - 60%	Total
Boss/Deception	0.0	0.0	0.0	0.0	888.2	888.2	0.0	0.0	0.0	0.0	355.3	355.3	0.0	0.0	0.0	0.0	532.9	532.9
Quesnel Highlands	0.0	378.2	0.0	0.0	0.0	378.2	0.0	208.0	0.0	0.0	0.0	208.0	0.0	170.2	0.0	0.0	0.0	170.2
Quesnel Lake	381.1	2,231.0	1,092.1	2,689.3	918.9	7,312.4	323.9	1,227.0	436.9	2,017.0	367.6	4,372.3	57.2	1,003.9	655.3	672.3	551.3	2,940.0
Quesnel	49.1	10.7	0.0	0.0	0.0	59.8	41.7	5.9	0.0	0.0	0.0	47.6	7.4	4.8	0.0	0.0	0.0	12.2
Cottonwood	0.0	1,912.5	0.0	0.0	0.0	1,912.5	0.0	1,051.9	0.0	0.0	0.0	1,051.9	0.0	860.6	0.0	0.0	0.0	860.6
Beaver Valley	5,134.9	1,007.9	0.0	255.9	0.0	6,398.6	4,364.6	554.3	0.0	191.9	0.0	5,110.9	770.2	453.5	0.0	64.0	0.0	1,287.7
Canim	1,687.8	0.0	0.0	433.6	1,229.8	3,351.1	1,434.6	0.0	0.0	325.2	491.9	2,251.7	253.2	0.0	0.0	108.4	737.9	1,099.4
Total	7,252.8	5,540.2	1,092.1	3,378.7	3,036.9	20,300.8	6,165	3,047	437	2,534	1,215	13,398	1,088	2,493	655	845	1,822	6,903
Rollup (All HF SRMP)	7,253	5,540	1,092	3,379	3,037	20,301	6,164.9	3,047.1	436.9	2,534.0	1,214.8	13,397.7	1,087.9	2,493.1	655.3	844.7	1,822.2	6,903.1
NOTES:												66%						34%
Columns H to L = portions of mapped S4 30m RMZ that is estimated to actually be S4; per cent factors used for estimates are shown for each SRMP quadrant in row 5. Estimates based on professional judgement of fisheries staff in MSRM, WLAP and DFO.																		
Column M = total estimated S4 RMZ area by CCLUP Sub-Unit and total SRMP; overall 66% of mapped S4 RMZ is estimated to actually be S4.																		
Column M totals are entered in overlap tables in cell I:19																		

Columns N to S = portions of mapped S4 30m RMZ that is estimated to actually be S6; per cent factors used for estimates are shown for each SRMP quadrant in row 5

Column S = total estimated S6 portion of S4 RMZ area by CCLUP Sub-Unit and total SRMP; overall 34% of mapped S4 RMZ is estimated to actually be S6; Column S totals are entered in overlap tables in cell I:29 after being reduced by 1/3 to convert the 30m S4 RMZ to 20m S6 RMZ

Table 27 Long-term Wildlife Tree Retention Requirements

B	C	D	E	F	G	H	I	J	K
Landscape Unit (Emphasis), BEC UNIT(s)	Total Forest Area (ha)	Forested No Harvest Area (ha) (total all no harvest constraints)	Forested Modified Harvest Area (ha) (total all Modified harvest constraints)	Forested Area of Constraints Contributing to the WTP landbase (see footnote)	Forest Area Available for Harvest (ha)	Per cent Forest Area Available for Harvest (ha)	Per cent of LU available forest harvested w/o WTP requirement s: logged 1995 or prior and not mature or old	WTP Target: from Table 20(a) using columns G and I	WTP Area Required: WTP target % applied to WTP generat- ing landbase then multiplied by 50% overlap factor (see footnote)
	ha	ha	ha	ha	ha (C - D)	% (F/C)	%	%	$((C - (D+E)) + F) * J * 0.5$
Beaver Valley (L), 2-ICHmk3, 1- ICHwk2	12186	1147	2605	1252	11039	90.6%	0.0%	6%	291
Beaver Valley (L), 3-SBPSmk, 3-SBSdw2	9451	1044	855	886	8407	89.0%	0.0%	6%	253
Beaver Valley (L), 3-SBSdw1, 3-SBSmh	34031	3578	9260	2605	30453	89.5%	0.0%	6%	714
Black Creek (I), 1-ESSFwk1, 1- ESSFwc3	13037	2476	2199	983	10561	81.0%	0.0%	5%	234
Black Creek (I), 1-ICHwk2	3549	556	968	382	2993	84.3%	0.0%	5%	60
Black Creek (I), 2-ICHmk3	2256	196	1290	226	2060	91.3%	0.0%	6%	30
Black Creek (I), 3-SBPSmk, 3- SBSdw1, 3-SBSmc1	25029	2542	8141	2504	22487	89.8%	0.0%	6%	506
Cariboo Lake (L), 1-ESSFwk3	6006	1158	1575	113	4848	80.7%	0.0%	5%	85
Cariboo Lake (L), 1-ESSFwk1	15186	2925	2173	685	12261	80.7%	0.0%	5%	269
Cariboo Lake (L), 1-ICHwk4	3193	447	2417	202	2746	86.0%	0.0%	6%	16
Cariboo Lake (L), 3-SBSwk1	2997	403	1195	163	2594	86.6%	0.0%	6%	47

East Arm (I), 1-ESSFwc3	4857	4151	228	94	706	14.5%	0.0%	0%	0
East Arm (I), 1-ESSFwk1	7657	2171	1915	532	5486	71.6%	0.0%	4%	82
East Arm (I), 1-ICHwk1, 1-ICHwk2	9031	151	5393	866	8880	98.3%	0.0%	7%	152
Eastside (I), 1-ESSFwc3	6404	1168	4674	144	5236	81.8%	0.0%	5%	18
Eastside (I), 1-ESSFwk1	6193	1148	3862	139	5045	81.5%	0.0%	5%	33
Eastside (I), 1-ICHwk2	7658	545	6454	349	7113	92.9%	0.0%	6%	30
Horsefly (I), 1-ESSFwc3, 1-ESSFwk1	9792	2011	4852	770	7781	79.5%	0.0%	5%	92
Horsefly (I), 1-ICHwk2	27909	1658	16824	2043	26251	94.1%	0.0%	6%	344
Horsefly (I), 2-ICHmk3	18797	972	7332	1513	17825	94.8%	0.0%	6%	360
Horsefly (I), 3-SBSdw1	4889	585	1909	409	4304	88.0%	0.0%	6%	84
Likely (L), 1-ESSFwc3, 1-ESSFwk1	5188	891	2890	340	4297	82.8%	0.0%	5%	44
Likely (L), 2-ICHmk3, 1-ICHwk2	19098	1017	13825	1435	18081	94.7%	0.0%	6%	171
Little River (I), 1-ESSFwc3	9198	7338	736	185	1860	20.2%	0.0%	0%	0
Little River (I), 1-ESSFwk1	15220	4337	1681	1250	10883	71.5%	0.0%	4%	209
Little River (I), 1-ICHwk4	7753	903	1076	826	6850	88.4%	0.0%	6%	198
Lower Cariboo (L), 1-ESSFwc3	5820	4533	466	35	1287	22.1%	0.0%	0%	0
Lower Cariboo (L), 1-ESSFwk1	10586	1915	2688	564	8671	81.9%	0.0%	5%	164
Lower Cariboo (L), 1-ICHwk2, 1-ICHwk4, 2-ICHmk3	10597	1344	4718	1112	9253	87.3%	0.0%	6%	169
Lower Cariboo (L), 3-SBSmw, 3-SBSwk1	12499	1434	2318	922	11065	88.5%	0.0%	6%	290
McKay (L), 1-ESSFwc3	6200	1178	1719	247	5022	81.0%	0.0%	5%	89
McKay (L), 1-ESSFwk1	11018	2190	1034	1026	8828	80.1%	0.0%	5%	221
McKay (L), 1-ICHwk2	1465	281	137	231	1184	80.8%	0.0%	5%	32
McKinley (H), 1-ESSFwc3, 1-ESSFwk1	9596	2447	1688	509	7149	74.5%	0.0%	4%	119
McKinley (H), 1-ICHwk2, 2-ICHmk3	18838	2546	5014	1493	16292	86.5%	0.0%	6%	383
McKinley (H), 3-SBSdw1	1678	274	329	166	1404	83.7%	0.0%	5%	31
McKusky (L), 1-ESSFwc3	6116	3900	961	386	2216	36.2%	0.0%	1%	8
McKusky (L), 1-ESSFwk1	5784	1212	2143	492	4572	79.0%	0.0%	5%	73

McKusky (L), 1-ICHwk2	8389	1487	5120	1119	6902	82.3%	0.0%	5%	73
Mitchell Lake (I), 1-ESSFwc3, 1-ESSFwk1	1747	955	240	95	792	45.3%	0.0%	1%	3
Mitchell Lake (I), 1-ICHwk2, 1-ICHwk4	1780	0	527	316	1780	100.0%	0.0%	7%	55
Moffat (L), 1-ESSFwc3	3953	685	373	166	3268	82.7%	0.0%	5%	77
Moffat (L), 1-ESSFwk1	9960	1914	872	719	8046	80.8%	0.0%	5%	197
Moffat (L), 3-SBPSmk, 3-SBSdw1, 3-SBSdw2	33086	2650	3039	3399	30436	92.0%	0.0%	6%	924
Moffat (L), 3-SBSmc1	6947	902	736	896	6045	87.0%	0.0%	6%	186
Niagara (I), 1-ESSFwc3, 1-ESSFwk1	5	0	3	0	5	100.0%	0.0%	7%	0
Niagara (I), 1-ICHwk2	0	0	0	0	0	0.0%	0.0%	0%	0
Penfold (I), 1-ESSFwc3	2472	392	1830	17	2080	84.1%	0.0%	5%	7
Penfold (I), 1-ESSFwk1	2589	423	1261	85	2166	83.7%	0.0%	5%	25
Penfold (I), 1-ICHwk2	5625	600	2281	407	5025	89.3%	0.0%	6%	95
Polley (H), 1-ICHwk2, 2-ICHmk3	26439	3208	4496	1478	23231	87.9%	0.0%	6%	606
Polley (H), 3-SBSdw1, 3-SBSmh, 3-SBSmw	12669	2107	1833	683	10562	83.4%	0.0%	5%	235
Wasko/Lynx (L), 1-ESSFwc3, 1-ESSFwk1	7802	1210	5250	445	6592	84.5%	0.0%	5%	45
Wasko/Lynx (L), 1-ICHwk2	10382	1049	8504	864	9333	89.9%	0.0%	6%	51
Westside (I), 1-ESSFwc3	7604	7493	40	48	111	1.5%	0.0%	0%	0
Westside (I), 1-ESSFwk1	5794	2803	1402	227	2991	51.6%	0.0%	2%	18
Westside (I), 1-ICHwk2	5471	703	4243	426	4768	87.2%	0.0%	6%	29
Total	539476	97353	171594	39469	442123				8525
								% Required across SRMP	2.750%

WTR Analysis Steps - Long Term

1. Calculate WTR % targets by LU/BEC (column J above), using the sequence of calculations in column headers C to I above, and based on Table 20(a) from Biodiversity Guidebook as portrayed in Table 29.

- column J - for the long term, % of LU harvested without WTP's has declined to zero, as eventually all available forest will have been harvested with WTP's.

2. Apply the WTR % targets (column J) to the portion of the forest harvesting landbase that generates a WTR requirement, defined as:

- stream RRZ
- RRZ wetlands and shrub-carrs
- trail reserve zone
- S4 RMZ (excluding area transferred to S6)
- S1/S2/S3 RMZ
- S5 RMZ
- RMZ wetlands and shrub-carrs
- S6 RMZ spatial
- S6 RMZ transferred from S4

(the constraints above are summed by LU/BEC in column F)

- Plus all areas with no constraints (columns C minus (D + E))

3. The resulting total ha's are then multiplied by 50% to account for overlaps between WTP's and the above constraints.

4. The resulting total WTP ha's are shown by LU/BEC in the last column (K) of the WTP table above.

5. The resulting WTP ha's are also calculated by CCLUP sub-unit, using the same steps, and transferred to the EEA overlap analysis, Appendix I.

Table 28 Short-term Wildlife Tree Retention Requirements

B	C	D	E	F	G	H	I	J	K	L
Landscape Unit (Emphasis), BEC UNIT(s)	Total Forest Area (ha)	Forested No Harvest Area (ha) (total all no harvest con- straints)	Forested Modified Harvest Area (ha) (total all Modified harvest con- straints)	Forested Area of Con- straints Contribut- ing to the WTP landbase (see footnote)	Forest Area Available for Harvest (ha)	Per cent Forest Area Available for Harvest (ha)	Amount of LU available forest harvested w/o WTP require- ments: logged 1995 or prior and not mature or old	Per cent of LU available forest harvested w/o WTP require- ments: logged 1995 or prior and not mature or old	WTP Target: from Table 20(a) using columns G and I	Estimated maximum potential area of WTP in current rotation that contri- butes to current old seral require- ments (Transi- tion OGMA require- ments)
	ha	ha	ha	ha	ha (C - D)	% (F/C)	ha	%	%	(((C- (D+E))+F) xK)x.25x. 5x.75
Beaver Valley (L), 2-ICHmk3, 1- ICHwk2	12186	1147	2605	1252	11039	90.6%	9287	18.6%	8%	73
Beaver Valley (L), 3-SBPSmk, 3-SBSdw2	9451	1044	855	886	8407	89.0%	9287	18.6%	8%	63
Beaver Valley (L), 3-SBSdw1, 3-SBSmh	34031	3578	9260	2605	30453	89.5%	9287	18.6%	8%	178
Black Creek (I), 1-ESSFwk1, 1- ESSFwc3	13037	2476	2199	983	10561	81.0%	8547	22.4%	7%	61
Black Creek (I), 1-ICHwk2	3549	556	968	382	2993	84.3%	8547	22.4%	7%	16
Black Creek (I), 2-ICHmk3	2256	196	1290	226	2060	91.3%	8547	22.4%	8%	7
Black Creek (I), 3-SBPSmk, 3- SBSdw1, 3-SBSmc1	25029	2542	8141	2504	22487	89.8%	8547	22.4%	8%	126

Cariboo Lake (L), 1-ESSFwc3	6006	1158	1575	113	4848	80.7%	11117	49.2%	10%	32
Cariboo Lake (L), 1-ESSFwk1	15186	2925	2173	685	12261	80.7%	11117	49.2%	10%	101
Cariboo Lake (L), 1-ICHwk4	3193	447	2417	202	2746	86.0%	11117	49.2%	11%	5
Cariboo Lake (L), 3-SBSwk1	2997	403	1195	163	2594	86.6%	11117	49.2%	11%	16
East Arm (I), 1-ESSFwc3	4857	4151	228	94	706	14.5%	2435	16.1%	0%	0
East Arm (I), 1-ESSFwk1	7657	2171	1915	532	5486	71.6%	2435	16.1%	6%	23
East Arm (I), 1-ICHwk1, 1-ICHwk2	9031	151	5393	866	8880	98.3%	2435	16.1%	9%	37
Eastside (I), 1-ESSFwc3	6404	1168	4674	144	5236	81.8%	1549	8.6%	6%	4
Eastside (I), 1-ESSFwk1	6193	1148	3862	139	5045	81.5%	1549	8.6%	6%	7
Eastside (I), 1-ICHwk2	7658	545	6454	349	7113	92.9%	1549	8.6%	7%	7
Horsefly (I), 1-ESSFwc3, 1-ESSFwk1	9792	2011	4852	770	7781	79.5%	11004	19.5%	7%	24
Horsefly (I), 1-ICHwk2	27909	1658	16824	2043	26251	94.1%	11004	19.5%	8%	86
Horsefly (I), 2-ICHmk3	18797	972	7332	1513	17825	94.8%	11004	19.5%	8%	90
Horsefly (I), 3-SBSdw1	4889	585	1909	409	4304	88.0%	11004	19.5%	8%	21
Likely (L), 1-ESSFwc3, 1-ESSFwk1	5188	891	2890	340	4297	82.8%	7074	31.6%	8%	13
Likely (L), 2-ICHmk3, 1-ICHwk2	19098	1017	13825	1435	18081	94.7%	7074	31.6%	9%	48
Little River (I), 1-ESSFwc3	9198	7338	736	185	1860	20.2%	4317	21.9%	0%	0
Little River (I), 1-ESSFwk1	15220	4337	1681	1250	10883	71.5%	4317	21.9%	5%	49
Little River (I), 1-ICHwk4	7753	903	1076	826	6850	88.4%	4317	21.9%	7%	43
Lower Cariboo (L), 1-ESSFwc3	5820	4533	466	35	1287	22.1%	13494	44.6%	3%	2
Lower Cariboo (L), 1-ESSFwk1	10586	1915	2688	564	8671	81.9%	13494	44.6%	9%	55
Lower Cariboo (L), 1-ICHwk2, 1-ICHwk4, 2-ICHmk3	10597	1344	4718	1112	9253	87.3%	13494	44.6%	10%	53
Lower Cariboo (L), 3-SBSmw, 3-SBSwk1	12499	1434	2318	922	11065	88.5%	13494	44.6%	10%	91
McKay (L), 1-ESSFwc3	6200	1178	1719	247	5022	81.0%	5833	37.4%	9%	30
McKay (L), 1-ESSFwk1	11018	2190	1034	1026	8828	80.1%	5833	37.4%	9%	74
McKay (L), 1-ICHwk2	1465	281	137	231	1184	80.8%	5833	37.4%	9%	11
McKinley (H), 1-ESSFwc3, 1-ESSFwk1	9596	2447	1688	509	7149	74.5%	8424	33.9%	7%	39

McKinley (H), 1-ICHwk2, 2-ICHmk3	18838	2546	5014	1493	16292	86.5%	8424	33.9%	9%	108
McKinley (H), 3-SBSdw1	1678	274	329	166	1404	83.7%	8424	33.9%	8%	9
McKusky (L), 1-ESSFwc3	6116	3900	961	386	2216	36.2%	2886	20.5%	3%	5
McKusky (L), 1-ESSFwk1	5784	1212	2143	492	4572	79.0%	2886	20.5%	7%	19
McKusky (L), 1-ICHwk2	8389	1487	5120	1119	6902	82.3%	2886	20.5%	7%	19
Mitchell Lake (I), 1-ESSFwc3, 1-ESSFwk1	1747	955	240	95	792	45.3%	543	21.1%	4%	2
Mitchell Lake (I), 1-ICHwk2, 1-ICHwk4	1780	0	527	316	1780	100.0%	543	21.1%	9%	13
Moffat (L), 1-ESSFwc3	3953	685	373	166	3268	82.7%	10517	22.0%	7%	20
Moffat (L), 1-ESSFwk1	9960	1914	872	719	8046	80.8%	10517	22.0%	7%	52
Moffat (L), 3-SBPSmk, 3-SBSdw1, 3-SBSdw2	33086	2650	3039	3399	30436	92.0%	10517	22.0%	8%	231
Moffat (L), 3-SBSmc1	6947	902	736	896	6045	87.0%	10517	22.0%	8%	47
Niagara (I), 1-ESSFwc3, 1-ESSFwk1	5	0	3	0	5	100.0%	0	0.0%	7%	0
Niagara (I), 1-ICHwk2	0	0	0	0	0	0.0%	0	0.0%	0%	0
Penfold (I), 1-ESSFwc3	2472	392	1830	17	2080	84.1%	78	0.8%	5%	1
Penfold (I), 1-ESSFwk1	2589	423	1261	85	2166	83.7%	78	0.8%	5%	5
Penfold (I), 1-ICHwk2	5625	600	2281	407	5025	89.3%	78	0.8%	6%	18
Polley (H), 1-ICHwk2, 2-ICHmk3	26439	3208	4496	1478	23231	87.9%	10139	30.0%	8%	152
Polley (H), 3-SBSdw1, 3-SBSmh, 3-SBSmw	12669	2107	1833	683	10562	83.4%	10139	30.0%	7%	62
Wasko/Lynx (L), 1-ESSFwc3, 1-ESSFwk1	7802	1210	5250	445	6592	84.5%	232	1.4%	5%	8
Wasko/Lynx (L), 1-ICHwk2	10382	1049	8504	864	9333	89.9%	232	1.4%	6%	10
Westside (I), 1-ESSFwc3	7604	7493	40	48	111	1.5%	1217	15.5%	0%	0
Westside (I), 1-ESSFwk1	5794	2803	1402	227	2991	51.6%	1217	15.5%	3%	5
Westside (I), 1-ICHwk2	5471	703	4243	426	4768	87.2%	1217	15.5%	7%	6
Total	539476	97353	171594	39469	442123		108693			2279

WTR Analysis Steps - Current Condition

1. Calculate WTR % targets by LU/BEC (column K above), using the sequence of calculations in column headers C to J above, and based on Table 20(a) from Biodiversity Guidebook as portrayed in Table 29.
 - column I - for the current WTP requirements, the amount of LU logged without WTP's is estimated to be all areas logged 1995 or prior (i.e. pre-Forest Practices Code) and not mature or old seral based on forest cover stand age.
2. To estimate the area of WTP that contributes to current old seral requirements (i.e. Transition OGMA requirements), shown in column L above, the WTR % targets are applied to the portion of the forest harvesting landbase that generates a WTR requirement, defined as:
 - stream RRZ
 - RRZ wetlands and shrub-carrs
 - trail reserve zone
 - S4 RMZ (excluding area transferred to S6)
 - S1/S2/S3 RMZ
 - S5 RMZ
 - RMZ wetlands and shrub-carrs
 - S6 RMZ spatial
 - S6 RMZ transferred from S4(the constraints above are summed by LU/BEC in column F)
 - Plus all areas with no constraints (columns C minus (D + E))
3. The resulting total ha's (shown in column L above) are maximum potential contributions to current old seral requirements, are subject to assessment regarding suitability criteria, and include the following adjustments:
 - estimate 25% of WTP's are over 2 ha and meeting other suitability criteria
 - estimate 50% of WTP's are overlapped with the above constraints.
 - estimate average WTR % target over current rotation, as % logged without WTP declines, will be 75% of current WTR %'s shown in column K above

Table 29 Extension of Biodiversity Guidebook Table 20(a).

Percentage of a cutblock area required as wildlife tree patches when landscape units have been designated and landscape level biodiversity objectives have been established.

Column A	column L											
% of the area available for harvesting in a landscape unit that has already been harvested without recommended wildlife tree retention	% of the biogeoclimatic subzone within the landscape unit available for harvest											
	Row A	100	90	80	70	60	50	40	30	20	10	0.1*
0	7	6	5	4	3	2	1	0	0	0	0	0
10	8	7	6	5	4	3	2	1	0	0	0	0
20	9	8	7	6	5	4	3	2	1	0	0	0
30	10	9	8	7	6	5	4	3	2	1	0	0
40	11	10	9	8	7	6	5	4	3	2	1	1
50	12	11	10	9	8	7	6	5	4	3	2	2
60	13	12	11	10	9	8	7	6	5	4	3	3
70	14	13	12	11	10	9	8	7	6	5	4	4
80	15	14	13	12	11	10	9	8	7	6	5	5
90	16	15	14	13	12	11	10	9	8	7	6	6
100	17	16	15	14	13	12	11	10	9	8	7	7

NOTES:

1. Table is adapted from Biodiversity Guidebook Table 20(a). Axes are extended from 10 - 90% to 0 - 100% with 10% intervals.

2. Numbers added via extrapolation from Biodiversity Guidebook Table 20(a) are in **bold italic**

3. WTP % target is calculated to one decimal place with row A axis calculated to one decimal and column B axis rounded to the nearest 10%

* Column L/row A: % available for harvest assumed to be minimum 0.1% (instead of zero).

Table 30 Transition OGMA Availability

	TTL Area	Old Target	NH TTL	NH Age1	NH Age2	NH Age3	NH Age4	NH Age5	NH Age6	NH Age7	NH Age8	NH Age9
NDT 3 Transition OGMA availability (yrs. from now)				100	60	30	20	n/a	n/a	n/a	n/a	n/a
NDT 1,2,4 Transition OGMA availability (yrs. from now)				120	120	120	120	90	60	30	20	n/a
Beaver Valley (L), 2-ICHmk3, 1-ICHwk2	12244	1108	1114	225	229	34	60	193	38	155	173	6
Beaver Valley (L), 3-SBPSmk, 3-SBSdw2	9451	890	945	43	61	656	173	12	0	0	0	0
Beaver Valley (L), 3-SBSdw1, 3-SBSmh	34417	3785	3773	296	1936	807	293	219	159	53	9	1
Black Creek (I), 1-ESSFwk1, 1-ESSFwk3	13038	2476	2471	45	74	80	890	23	192	441	463	264
Black Creek (I), 1-ICHwk2	3549	461	557	195	69	3	12	9	182	53	27	6
Black Creek (I), 2-ICHmk3	2257	203	197	92	62	23	0	0	8	2	4	5
Black Creek (I), 3-SBPSmk, 3-SBSdw1, 3-SBSmc1	25144	2584	2547	172	1052	606	406	199	36	44	27	6
Cariboo Lake (L), 1-ESSFwk3	6007	1141	1156	0	21	0	122	101	316	107	25	0
Cariboo Lake (L), 1-ESSFwk1	15192	2886	2900	260	68	174	5	57	558	1213	495	11
Cariboo Lake (L), 1-ICHwk4	3371	438	553	22	0	42	31	9	121	36	146	147
Cariboo Lake (L), 3-SBSwk1	2997	329	403	26	12	25	6	33	186	65	50	0
East Arm (I), 1-ESSFwk3	6046	1148	5327	266	31	40	121	136	597	2237	939	411
East Arm (I), 1-ESSFwk1	9383	1782	3851	269	14	41	60	187	214	1214	1210	426
East Arm (I), 1-ICHwk1, 1-ICHwk2	10863	1412	1951	88	70	22	61	11	2	189	275	1234
Eastside (I), 1-ESSFwk3	6405	1216	1169	23	14	0	0	72	166	761	92	40
Eastside (I), 1-ESSFwk1	6204	1178	1159	24	9	0	11	56	211	502	211	136
Eastside (I), 1-ICHwk2	8144	1058	1030	18	3	9	0	49	7	84	153	706
Horsefly (I), 1-ESSFwk3, 1-ESSFwk1	9792	1859	2009	3	113	16	39	184	293	651	228	482
Horsefly (I), 1-ICHwk2	28466	3700	1807	62	254	24	55	84	22	294	377	635
Horsefly (I), 2-ICHmk3	19251	1732	1206	53	351	420	167	64	3	31	14	103
Horsefly (I), 3-SBSdw1	4988	548	552	31	81	98	99	243	0	0	0	0
Likely (L), 1-ESSFwk3, 1-ESSFwk1	5188	985	889	65	17	2	5	31	74	281	297	104

	TTL Area	Old Target	NH TTL	NH Age1	NH Age2	NH Age3	NH Age4	NH Age5	NH Age6	NH Age7	NH Age8	NH Age9
NDT 3 Transition OGMA availability (yrs. from now)				100	60	30	20	n/a	n/a	n/a	n/a	n/a
NDT 1,2,4 Transition OGMA availability (yrs. from now)				120	120	120	120	90	60	30	20	n/a
Likely (L), 2-ICHmk3, 1-ICHwk2	19333	2452	1082	59	276	86	10	148	98	213	152	39
Little River (I), 1-ESSFwc3	9198	1747	7338	9	1743	477	42	9	736	1872	1481	404
Little River (I), 1-ESSFwk1	15241	2895	4354	38	2392	404	39	31	244	626	437	59
Little River (I), 1-ICHwk4	8742	1136	1887	192	97	251	23	75	49	276	895	30
Lower Cariboo (L), 1-ESSFwc3	5820	1105	4534	225	23	36	65	225	1195	880	456	34
Lower Cariboo (L), 1-ESSFwk1	10586	2011	1910	120	33	4	16	103	530	652	295	44
Lower Cariboo (L), 1-ICHwk2, 1-ICHwk4, 2-ICHmk3	10650	1331	1375	132	454	265	0	92	102	188	106	36
Lower Cariboo (L), 3-SBSmw, 3-SBSwk1	12552	1380	1452	50	256	720	102	3	0	314	7	0
McKay (L), 1-ESSFwc3	6201	1178	1176	1	17	11	6	26	529	410	112	0
McKay (L), 1-ESSFwk1	11018	2093	2190	234	16	104	34	41	327	684	516	215
McKay (L), 1-ICHwk2	1465	190	281	80	0	0	0	0	142	3	55	0
McKinley (H), 1-ESSFwc3, 1-ESSFwk1	9597	2686	2432	31	91	60	14	98	17	444	263	1413
McKinley (H), 1-ICHwk2, 2-ICHmk3	18982	2758	2594	269	560	479	126	248	252	294	176	190
McKinley (H), 3-SBSdw1	1692	270	279	3	154	108	8	7	0	0	0	0
McKusky (L), 1-ESSFwc3	6203	1178	3988	120	78	119	4	115	63	1719	1802	75
McKusky (L), 1-ESSFwk1	5784	1099	1211	59	11	36	3	37	79	361	446	215
McKusky (L), 1-ICHwk2	8516	1107	1480	244	77	17	133	82	169	280	204	273
Mitchell Lake (I), 1-ESSFwc3, 1-ESSFwk1	7308	1388	6503	464	490	168	55	128	864	2555	1157	583
Mitchell Lake (I), 1-ICHwk2, 1-ICHwk4	7198	935	5356	188	161	115	84	115	165	595	901	3032
Moffat (L), 1-ESSFwc3	3953	751	684	2	0	47	152	40	71	13	228	130
Moffat (L), 1-ESSFwk1	9963	1893	1882	88	125	418	748	155	86	77	31	154
Moffat (L), 3-SBPSmk, 3-SBSdw1, 3-SBSdw2	33155	2386	2335	179	365	753	460	337	224	16	0	0
Moffat (L), 3-SBSmc1	7483	823	883	15	13	250	422	34	0	136	10	2
Niagara (I), 1-ESSFwc3, 1-	9357	1777	9293	592	66	15	43	429	1256	4300	1464	1100

	TTL Area	Old Target	NH TTL	NH Age1	NH Age2	NH Age3	NH Age4	NH Age5	NH Age6	NH Age7	NH Age8	NH Age9
NDT 3 Transition OGMA availability (yrs. from now)				100	60	30	20	n/a	n/a	n/a	n/a	n/a
NDT 1,2,4 Transition OGMA availability (yrs. from now)				120	120	120	120	90	60	30	20	n/a
ESSFwk1												
Niagara (I), 1-ICHwk2	5660	735	5639	300	57	23	106	138	190	1002	1059	2763
Penfold (I), 1-ESSFwc3	2477	470	397	2	0	0	23	39	113	98	109	13
Penfold (I), 1-ESSFwk1	2590	492	424	1	0	0	8	38	68	55	16	239
Penfold (I), 1-ICHwk2	5730	744	691	37	0	7	0	3	9	36	352	246
Polley (H), 1-ICHwk2, 2-ICHmk3	26534	3599	3198	252	617	642	537	107	240	328	302	174
Polley (H), 3-SBSdw1, 3-SBSmh, 3-SBSmw	12670	2026	2092	47	360	383	1246	34	5	3	14	0
Wasko/Lynx (L), 1-ESSFwc3, 1-ESSFwk1	8096	1537	1502	20	18	3	124	85	257	594	131	268
Wasko/Lynx (L), 1-ICHwk2	10724	1394	1374	240	285	165	152	31	41	217	87	155
Westside (I), 1-ESSFwc3	7631	1449	7519	164	161	0	38	164	1381	3149	1899	265
Westside (I), 1-ESSFwk1	6022	1144	3028	26	168	0	32	35	330	1267	675	350
Westside (I), 1-ICHwk2	5560	722	747	3	18	13	1	6	35	220	30	416
Grand Total	576092	83800	130677	6764	13722	9300	7472	5232	13251	32292	21087	17639

NOTES:
 NH = RRZ, Cfish, LkA, CarNH, Park, Perm/RecruitOGMA, & TransOGMA

Estimated Transition OGMA availability**, years from now (min. 20 years)			
		NDT 3	NDT 1,2,4
Age 1	< 50	100	120
Age 2	>= 50 and < 100	60	120
Age 3	>= 100 and <120	30	120
Age 4	>= 120 and <140	20	120
Age 5	>= 140 and < 170	n/a (old now)	90
Age 6	>= 170 and < 200	n/a (old now)	60
Age 7	>= 200 and < 230	n/a (old now)	30
Age 8	>= 230 and < 260	n/a (old now)	20
Age 9	>= 260	n/a (old now)	n/a (old now)

	TTL Area	Old Target	NH TTL	NH Age1	NH Age2	NH Age3	NH Age4	NH Age5	NH Age6	NH Age7	NH Age8	NH Age9
NDT 3 Transition OGMA availability (yrs. from now)				100	60	30	20	n/a	n/a	n/a	n/a	n/a
NDT 1,2,4 Transition OGMA availability (yrs. from now)				120	120	120	120	90	60	30	20	n/a

** potential maximum: based on projected recruitment into old seral according to forest cover data and assuming no losses to disturbance.

Appendix J: Short Term Timber Assessment**Table 31 A-Spatial Reference Analysis**

Run	Description	Resulting Harvest Flow (Ha/Yr)	Resulting Harvest Flow (m ³ /yr)	% change from A-Spatial GPF
1	Gross Productive Forest	5,200	1,550,000	N/A
2	SRMP EEA of 71.3% of GPF*	3,700	1,100,000	29%
3	SRMP Direction**	4,100	1,000,000	35%
-	WL TSA II***	3,170	920,000	N/A

*Run 2 is a simple percentage of run #1

**Run 3 is the SRMP direction applied as stated (except with a-spatial OGMA's)

***Horsefly District portion of WL TSA II product

Table 32 Spatial Base Case and Sensitivity Analysis

	Description	Resulting Harvest Flow (ha/yr)	Resulting Harvest Flow (m ³ /yr)	% change from Spatial Base Case
	Base Case			
1	All SRMP and FPC assumptions Applied (20 year planning horizon Scenarios	2,453	657,632	N/A
2	*Transition OGMA's available for harvest	2,539	690,515	+5%
3	Remove 3m green-up constraint over entire SRMP area	4,694	1,329,690	+202%
4	Reduce 3m green-up constraint by 50% over entire SRMP area	3,225	912,615	+38%
5	Reduce 3m green-up constraint by 70% over entire SRMP area	3,777	1,069,015	+62%
6	Apply 3m green-up constraint within Horsefly and Cariboo Watersheds only. Remove 3m green-up constraint in the Quesnel Watershed (concurrently)	3,600	1,034,983	+57%

	Description	Resulting Harvest Flow (ha/yr)	Resulting Harvest Flow (m³/yr)	% change from Spatial Base Case
7	Apply 5m green-up constraint within the Horsefly and Cariboo watersheds. Remove green-up constraint within Quesnel watershed (concurrently)	3,598	1,023,546	+56%
8	**Minimum harvest age reduce by 10%	2,471	715,404	+9%
9	**Minimum harvest age reduced by 20%	2,477	674,294	+2%
	Additional Scenarios Planned			
10	Apply 7 and 9 m green-up within the Horsefly and Cariboo watersheds. Remove green-up constraint within Quesnel watershed (concurrently)	Awaiting results		
11	Detailed ECA calculation using STTA harvest units	Awaiting results		

Note that each scenario has been generated as a separate comparison to the base case. These scenarios are not cumulative. Since this run was generated, an additional 13,000 ha of transition OGMAs have been added to the landbase. This will not influence the long term EEA calculation but will influence the access to timber available in the short term. Testing to determine the level of impact is currently underway.

Appendix K: Old Growth Management Area Analysis

Available as a separate document, due to the large page dimensions.