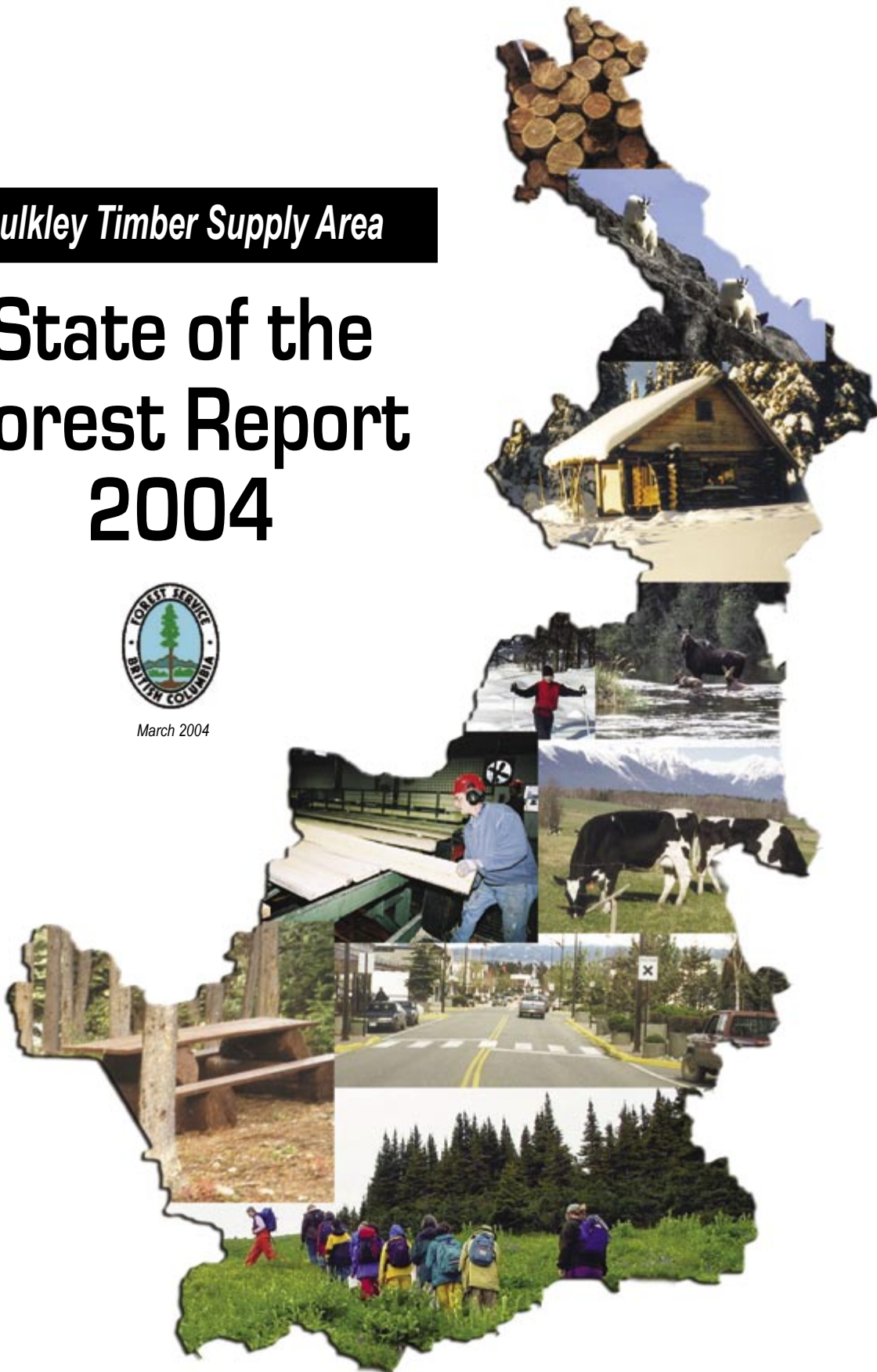


Bulkley Timber Supply Area

State of the Forest Report 2004



March 2004



The Bulkley Land and Resource Management Plan (LRMP) is a consensus-based land use plan covering approximately 760,000 hectares in north central British Columbia. The LRMP guides management of public lands and resources for the Bulkley Timber Supply Area (TSA) portion of the Skeena Stikine Forest District. The Bulkley LRMP is based on the key concepts of biodiversity and sustainability. The LRMP addresses a wide range of issues from wildlife habitat to timber management.

The Bulkley TSA is entering an exciting time in forestry management, having completed both the LRMP and detailed landscape unit plans (LUPs). Critical to keeping these documents current and relevant is a monitoring and reporting program that not only reports on the implementation of the plans but also on the success of the plans to deliver on the intended objectives. This type of monitoring and reporting is often considered effectiveness monitoring.

The *State of the Forest Report*, which is intended to be recompiled every five years, details a series of indicators that have been selected from a wide range of sources. In general, indicators assist the forestry planning process by showing whether resource management targets are being met. The indicators presented in the report shed some light on the current state of the forest in the Bulkley TSA, including all identified values as of March 2004.

This summary document provides a road map to the full report. While all eight resource management themes outlined in the full report are presented here, only one indicator is highlighted within each theme. For complete information, including detailed maps and tables, the full report is located at the Skeena Stikine Forest District website, located at www.for.gov.bc.ca/dss/

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Photo credits front cover composite:

- Darryl Reynolds (goats on bluff)
- Jim Pojar (hikers, also Netazul Falls, this page)
- Allan Banner (skier)
- Ritchie Morrison (main street, cows, and recreation site)
- Steve Gordon (moose, also mountain goats this page)

BIODIVERSITY

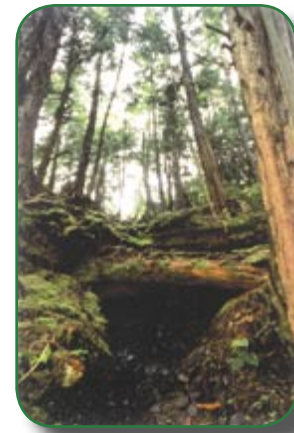
Key pillars of the Bulkley Land and Resource Management Plan are the values of biodiversity and sustainability. One definition for the term biodiversity is “life in all its forms, and the habitat and natural processes that support it.”

List of Indicators:

- Ecosystem Representation
- Core Ecosystems
- Seral Stage Distribution
- Landscape Connectivity
- Patch Size Distribution
- Endangered Plant and Animal Life
- Stand Structure
- Species Composition

Results:

An exercise was conducted to divide the LRC into logical individual corridors, and determine which of these corridors met the mature forest objective. The map below illustrates the results of this analysis. Licensees have agreed that no harvest will be proposed in the corridors identified in yellow and red until such time as the mature forest objective is achieved.



LANDSCAPE CONNECTIVITY

Landscape connectivity is achieved in the Bulkley Timber Supply Area by management of forested networks. These networks are called landscape riparian corridors (LRCs). They include riparian areas near major streams and rivers, and provide linking forest between protected areas, core ecosystems and special management zones.

It was intended that LRCs be dominated by mature tree cover, and contain old forest that provides connectivity and permits movement of plant and animal species. Old forest is defined as a forest area where 70% is greater than 80 years old (i.e. up to 30% harvest is permitted within the LRC over an 80 year period). The harvest pattern must be generally distributed in blocks of three hectares or less.

Indicator Measured by:

Current status of LRCs in achieving a mature forest objective where 70% of the corridor is greater than 80 years old.

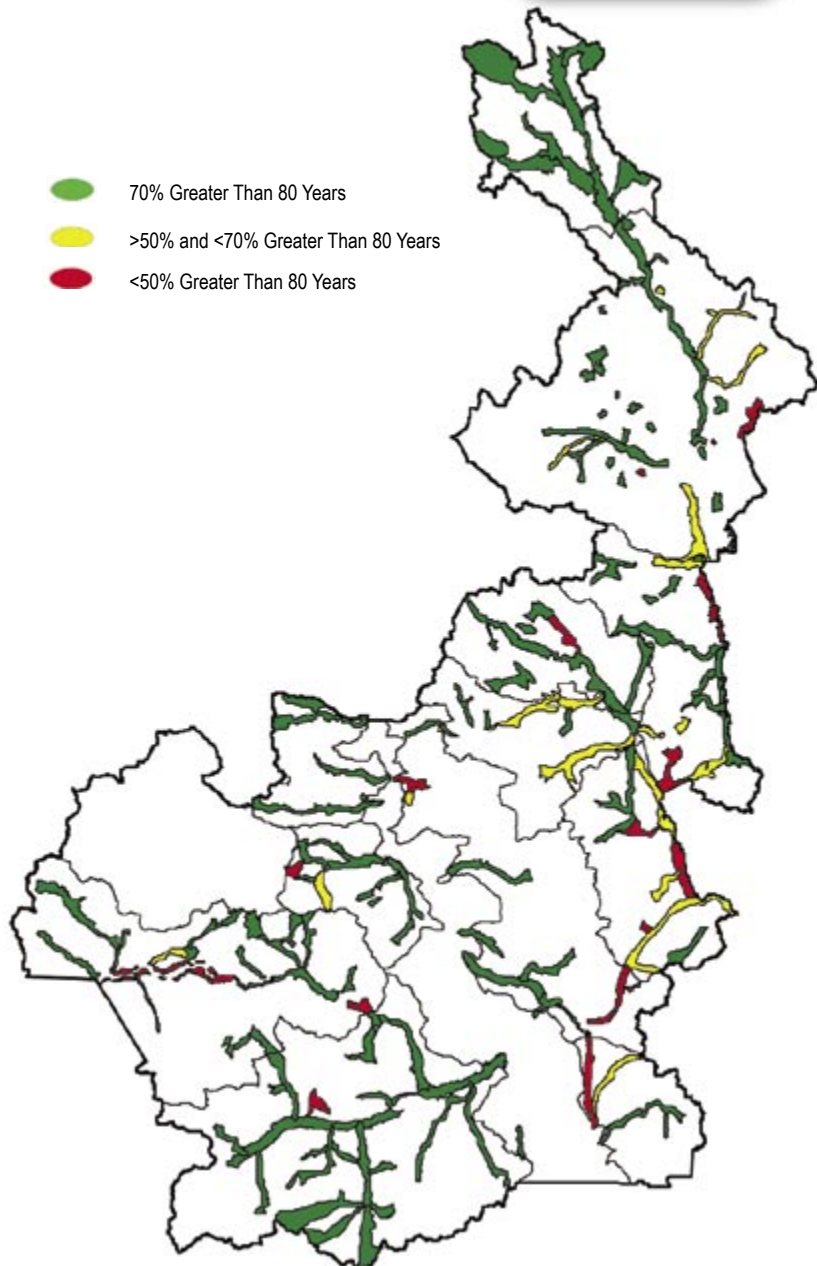


Figure 1. Mature Forest Analysis in Landscape Corridors, Bulkley TSA

WILDLIFE HABITAT

LRMP management direction for wildlife habitat is to maintain values in key wildlife habitats.

The LRMP also directs “retention of habitat for endangered plant communities, plants, and animals.” Endangered animals that may be present in the Bulkley TSA are listed in table 1.

The LRMP identified high-value wildlife habitat for five key wildlife species: caribou, mountain goat, grizzly bear, moose and mule deer. Habitat mapping was improved in 1997, and forest management objectives were established for these new areas in the Bulkley TSA’s Landscape Unit Plans.

Habitat requirement for the five key species are thus accommodated by a fine-filter approach through managing mapped high-value habitat.

Habitat for endangered animals is retained by a coarse-filter approach within protected and no-harvest areas and mapped high-value habitat for the key species noted above.

Sole Indicator:

- Adherence to Forest Management Objectives for Five Key Wildlife Species

ADHERENCE TO FOREST MANAGEMENT OBJECTIVES FOR FIVE KEY WILDLIFE SPECIES

Indicator measured by:

Proportion of total harvested area within high-value habitat areas that meet forest management objectives for caribou, mountain goat, grizzly bear, moose and mule deer.

Results:

For each of the key wildlife species, LUP objectives for forest management within high-value wildlife habitats have been developed. Sample objectives for each species are listed below.

Caribou

- Provide for security cover, forage and large no-harvest areas over a rotation within the Telkwa Caribou Herd Recovery Program (TCHRP) area.

Mountain Goat

- Provide for thermal and snow interception cover and forage for wintering goat populations in areas near identified habitat.

Grizzly bear

- Avoid human-bear conflicts and maintain high-value grizzly bear habitat.
- Maintain a diverse understorey in high-value mixed forest habitat.
- Allow for movement between feeding areas.

Table 1. Red or Blue-Listed Animal Species

Species	Red or blue listed
Giant pygmy whitefish	Red
Short-eared owl	Blue
American bittern	Blue
Swainson's hawk	Blue (Red)
Trumpeter swan	Blue (Yellow)
Bald eagle	Blue
Bull trout	Blue
Wolverine	Blue
Fisher	Blue (Red)
Grizzly bear	Blue
Caribou (northern population)	Blue
Cutthroat trout, clarki ssp	Blue
Dolly varden	Blue
Peregrine falcon	Red

Sources: Bulkley LRMP and "BC Species and Ecosystem Explorer - BCSEE" (<http://srmaps.gov.bc.ca/apps/eswp/>). Any differing BCSEE listings are in brackets.

Moose

- Maintain forage in identified moose winter range

Mule deer

- Maintain forage in mule deer winter range.

Table 2 reports on areas that have been harvested to date within high-value wildlife habitat areas, and Figure 2 shows their location. Both the table and map are separated into ranges of years to allow focus on what has been harvested before and since LUP objective (1998) establishment.

With the exception of moose habitat, the table indicates that harvest is at low levels.

Table 2. Area of Harvest in High-Value Wildlife Habitats

High-Value Wildlife Habitats	Area Harvested before 1998 (ha)	Area Harvested 1998-2002 (ha)	Total Harvest (ha)	Total Area in Habitat Type (ha)	Total Harvest as % of Type	1998-2002 Harvest Meeting LUP Obj's (%)
Caribou	44	34	78	6,468	1	100
Mountain Goat	130	83	213	140,683	0.2	100
Grizzly Bear	641	196	837	17,000	5	100
Moose	11,515	224	11,739	88,345	13	100
Mule deer	57	1	58	1,416	4	100
Moose/ Mule Deer	1,142	62	1,204	20,837	6	100
Totals:	13,208	600	14,130	274,749	-	-

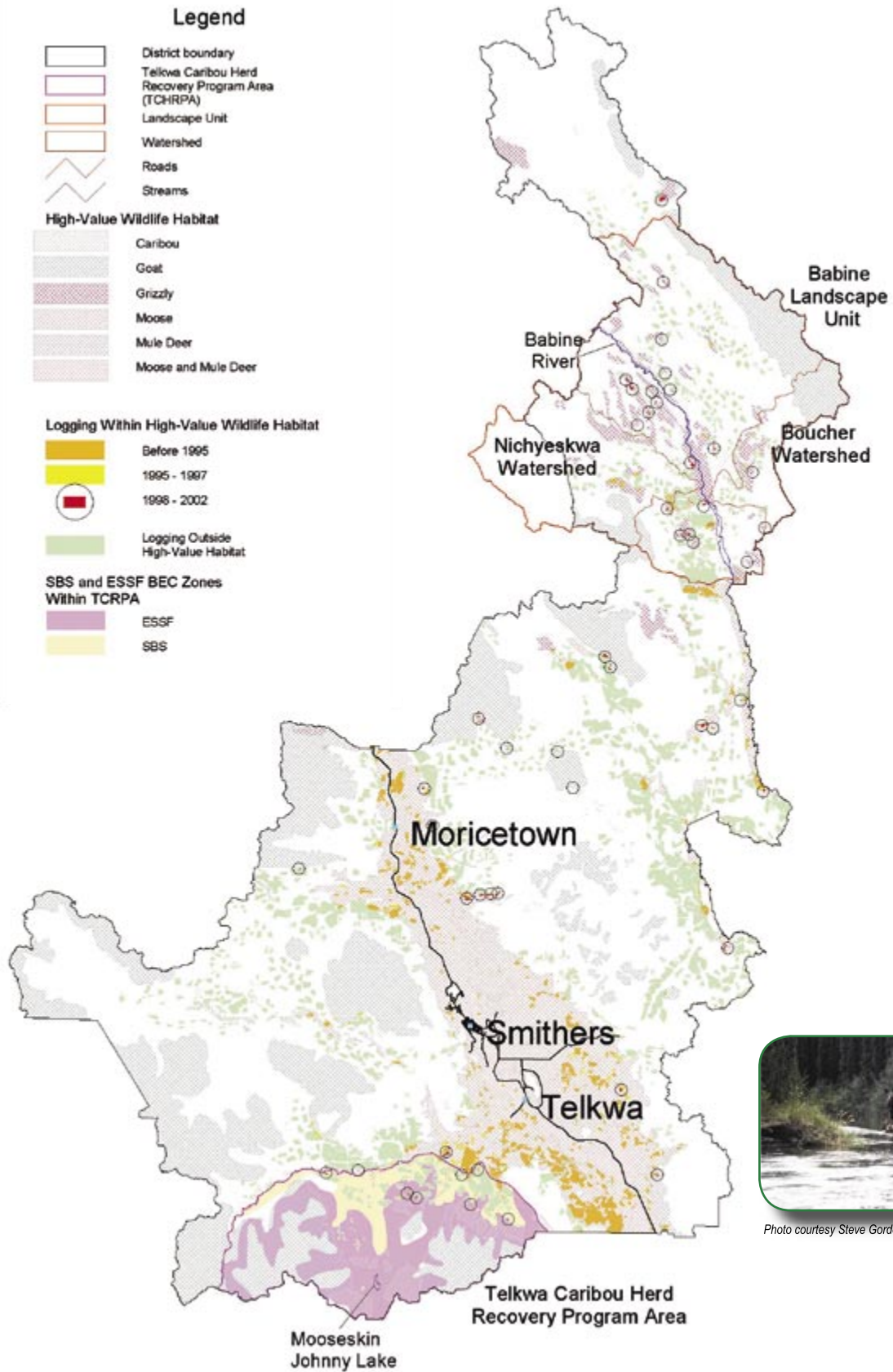


Photo courtesy Steve Gordon

Figure 2. Harvest in High-Value Wildlife Habitat, Bulkley TSA

WATERSHED INTEGRITY

General management direction from the Bulkley LRMP indicates that water health is maintained if fish habitat, and the production of clean potable water in community watersheds, is maintained.

Maintaining fish habitat is complex: it has several integrated elements including inventorying, monitoring changes, and taking action to remedy imbalances in fish population, riparian habitats and water quality and quantity.

Maintaining the production of clean potable water in community watersheds has two critical aspects: 1) maintaining clean water suitable for human consumption, and 2) ensuring continued stream flow to water users in the community watershed.

Several government agencies manage the various elements of water quality in a co-operative manner. The Ministry of Forests is concerned with maintaining watershed integrity so that harvesting and road building do not result in a significant increase or change in:

- Peak stream flow
- Landslide activity
- Surface erosion
- Stream channel bank erosion; channel bed characteristics
- Stream channel location

List of Indicators:

- Terrain stability mapping/ sediment transport capability mapping
- Watershed Assessments
- Watershed restoration
- Water quality monitoring

TERRAIN STABILITY MAPPING & SEDIMENT TRANSPORT MAPPING

Background:

The following terrain types have moderate to high potential to deliver sediment into nearby waterbodies, especially if disturbed by harvest or road building:

- Loamy, sandy or silty soils with gentle slopes (<15%) and a high watertable
- Long uniform slopes (>15%) with loamy soils and moderate (or poorer) drainage
- Steep gulleys and steep streamside slopes of a variety of materials, including glacial till over bedrock.

These terrain types are mapped as moderate to very high surface erosion potential, and/or as unstable terrain.

Forest development within these terrain types has the potential to affect natural or characteristic levels of each of the watershed integrity elements. Completion of this mapping across the TSA is thus an obvious step in identifying potential high hazard sediment sources prior to forest development within those areas.

Indicator measured by:

Progress towards full completion of terrain stability and sediment transport capability mapping for the Bulkley TSA

Results:

See the full report for a map showing current progress towards completion of terrain stability and sediment transport potential mapping. It shows that a significant proportion of the district has been mapped (47% of total area and 61% of the area in the current Timber Harvesting Landbase).

Approximately 92% of high hazard sediment sources in forested areas with slopes greater than 60% have either been mapped or are contained within no harvest zones (i.e. parks, ecoreserves, LRMP special management zone (1) zones, and core ecosystem areas).



Photo courtesy Jim Schwab

TIMBER

The Bulkley LRMP general management direction for timber is to “maintain a sustainable supply of timber for the communities in the Bulkley Plan Area.”

The pie chart shown at right illustrates the proportion of the Timber Harvesting Landbase (THLB) comprised of mature forest (defined for the sake of simplicity as greater than 100 years old) and immature forest (approximately 20–100 years old). It also summarizes the current status of plantations by showing the area and proportion of the THLB that is non-satisfactorily restocked (NSR), satisfactorily restocked (SR), and free-growing (FG).

List of Indicators:

- Prompt reforestation of disturbed areas
- Maintenance of forest health
- A sustained flow of timber to mills within the Bulkley Plan Area communities
- Harvest of the full timber quality profile

A SUSTAINED FLOW OF TIMBER TO MILLS WITHIN THE BULKLEY PLAN AREA

Background:

Maintaining a sustained flow of timber harvest over time to local mills is a key factor in maintaining the economic stability of forest-dependent communities in the Bulkley TSA.

Indicator measured by:

1. Volumes harvested in the Bulkley TSA versus volumes permitted for harvest under the Allowable Annual Cut (AAC).
2. Volumes harvested in the Bulkley TSA versus volumes processed by local mills.

Results Measure 1:

The volume of wood harvested in the Bulkley Timber Supply Area (TSA) for the years 1987 to 2002 was at or below the AAC level set by the Chief Forester.

There has been less harvest in Bulkley TSA since 1996 as a result of some local mill closures and trade tariff issues faced by Canadian lumber companies exporting to the U.S. market.

In addition, the TSA’s major licensees (Pacific Inland Resources and BC Timber Sales) have transferred the bulk of their operations to the Lakes and Vanderhoof TSAs to address the mountain pine beetle epidemic affecting the northwest region of the province. This accounts for the volume drop in 2002.

Results Measure 2:

Figure 4 illustrates (for 1994-2002) what proportion of timber harvested in the Bulkley TSA was processed at local mills versus outside the TSA. On average more than 70% of harvested volume is processed at local mills, which indicates that Bulkley TSA timber contributes significantly to sustaining local forestry employment.

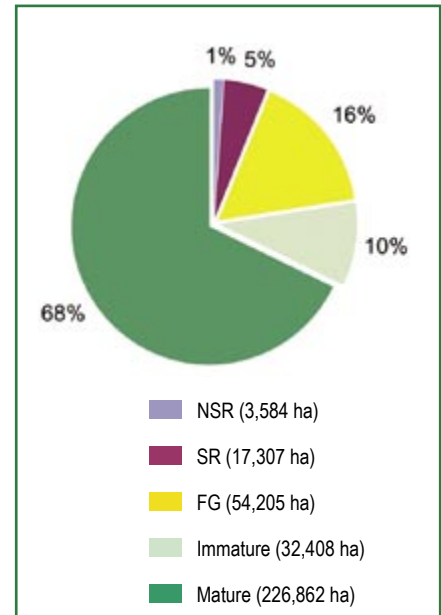


Figure 3. Breakdown of Bulkley THLB by Category, 2002



Photo courtesy West Fraser Mills Ltd. (PIR Division)

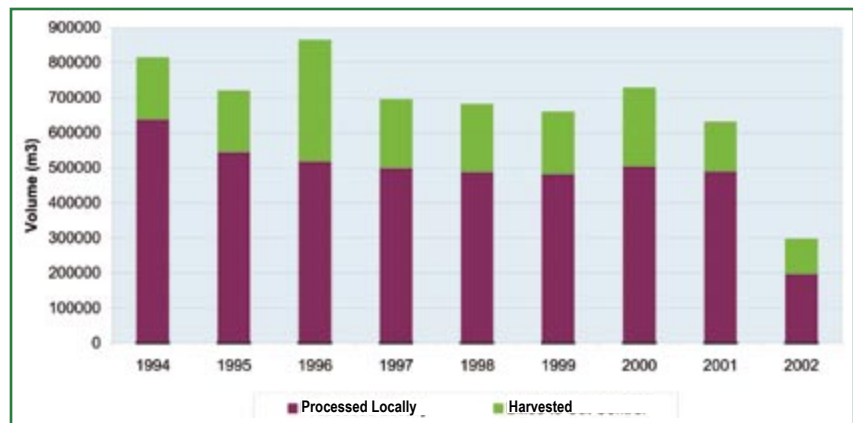


Figure 4. Proportion of District Volumes Processed at Local Mills

VISUAL QUALITY

As stated in the Bulkley LRMP, the scenic resources of the Bulkley TSA are critical to the viability of the tourism recreation sector and to the quality of life of area residents. Scenic quality is a major factor in recreational use, and forest landscapes provide a scenic backdrop that is highly valued by the public and by the tourism industry.

Sole Indicator:

- Visual Quality of Timber Harvesting

VISUAL QUALITY OF TIMBER HARVESTING

Background:

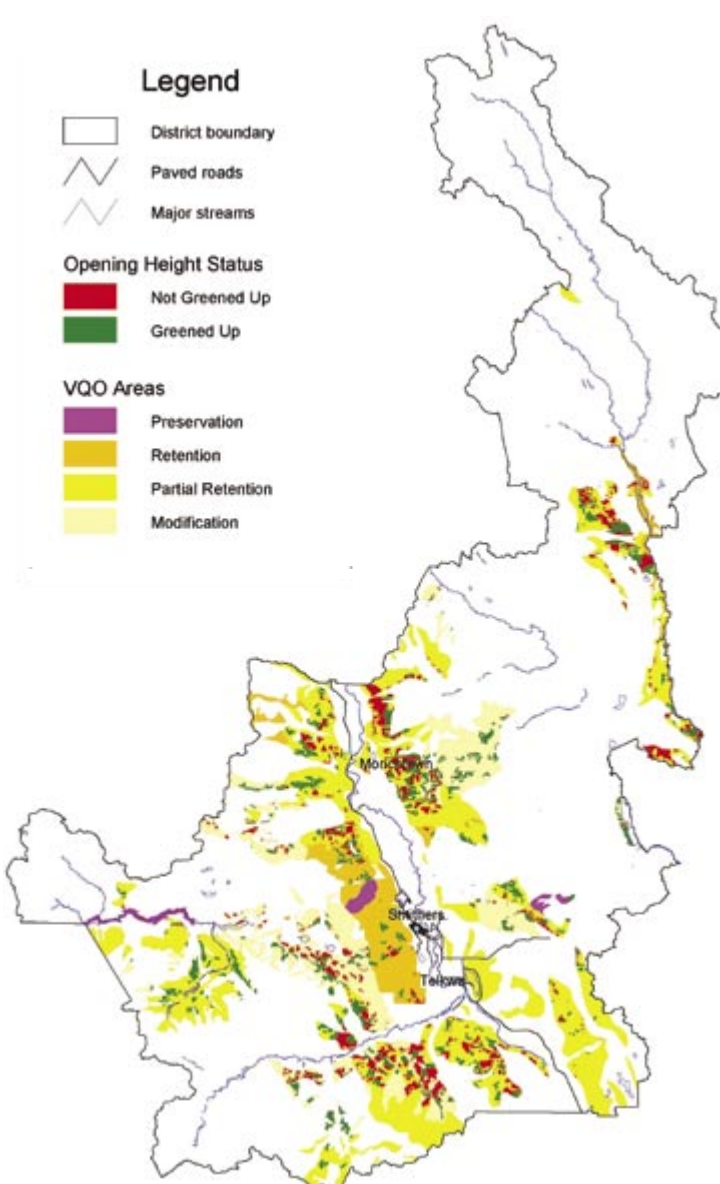
Timber harvesting can have a major effect on the quality of the visual landscape. Visual quality objectives for harvesting activities are provided in Landscape Unit Plans (LUPs) for visually sensitive areas as seen from major highway and river corridors, recreation focus points, and specific viewpoints listed in the Bulkley LRMP.

Indicator measured by: Proportion of openings in VQO areas that meet visual quality objectives

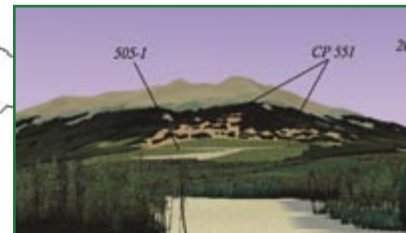
Results:

The map below depicts areas with Visual Quality Objectives, and illustrates the proportion of openings within those areas that have achieved visually effective greenup.

To date, 100% compliance in meeting VQO objectives has been achieved on harvest proposals submitted since the LRMP came into effect. Licensees have adjusted block boundaries, increased the proportion of reserved stems, or dropped blocks to accommodate government and public concerns expressed during Forest Development Plan review periods.



Before Harvesting



Digital Harvest Simulation



After First Harvesting Phase

What are Visual Quality Objectives?

- **Preservation VQO**—forest management activities cannot be visible from designated viewpoints.
- **Retention VQO**—forest management activities may be discernible but not clearly visible to the average viewer. Disturbances must appear to be from natural causes.
- **Partial Retention VQO**—forest management activities may be noticeable but must blend well with the natural appearance of the landscape.
- **Modification VQO**—forest management activities must have natural appearing characteristics, and blend in with existing landforms.

Figure 5. Harvest in Visually Sensitive Areas with VQOs in the Bulkley TSA

CULTURAL HERITAGE

The Bulkley LRMP directs agencies to minimize the impact of development on both archaeological and traditional use sites, consistent with:

- the Heritage Conservation Act
- the Forest Practices Code Act
- the Protocol Agreement on the Management of Cultural Heritage Resources
- British Columbia Archaeological Impact Assessment Guidelines

The LRMP also directs agencies to incorporate recommendations from Archaeological Overview Assessments and Archaeological Impact Assessments into operational plans and consult with First Nations on development plans, as guided by consultation protocols.

Sole Indicator:

- Management of Cultural Heritage Resource Features

MANAGEMENT OF CULTURAL HERITAGE RESOURCE FEATURES

Background:

The *Cultural Heritage and Archaeological Resources Inventory (CHARI)* is a November 2000 District Manager Policy that has the following components:

- An inventory of currently known cultural heritage resource features (archaeological sites, traditional use sites, trails, etc.).
- A map showing where cultural heritage resource features have the potential to occur (*see full report*).
- A detailed local survey of cultural heritage resources.
- Direction for forest management around cultural heritage features.

Indicator measured by (Interim Measures):

- 1) Progress towards development of forest management guidelines that accommodate cultural heritage resource features.



- 2) Site measures undertaken to protect cultural heritage resources (CHRs) and culturally modified trees (CMTs).

Future Measures:

Number of features protected from harvest as a result of consultation, versus number of known features associated with harvested area.

Results:

Management of CHR features occurs at the site level and is addressed within silviculture prescriptions and/or site plans.

Figure 6 shows one example of how a harvest unit is designed to incorporate known CHR features. In this example cultural resource features have been placed into reserves.

Prescribed forest management activities commonly include:

- incorporation of features into reserves within blocks
- exclusion from block boundaries
- harvest with consultation from First Nations

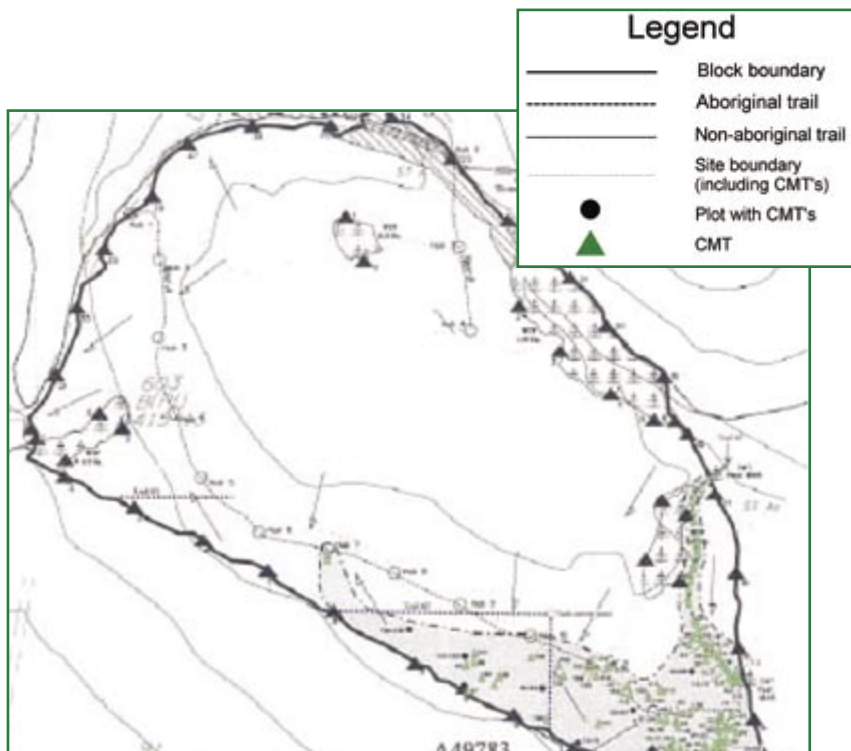


Figure 6. Block design incorporating cultural heritage

ACCESS

Access was not perceived by the LRMP table as being a value in itself, but as having direct influence on the value of other resources. Whether access has a positive or negative connotation depends on the value under consideration and the viewpoint of the resource user.

List of Indicators:

- Access to facilitate natural resource management/extraction
- Recreational access, focusing on backcountry or wilderness experiences
- Access to candidate wilderness lakes
- Circle routes
- Access development in sensitive terrain

RECREATIONAL ACCESS

Background:

The LRMP did not target the proportion of the TSA it is desirable to keep in a wilderness or backcountry setting. It is clear that road development is required to access timber, mineral and range resources, and recreational destinations. However, more roads means fewer remote areas in the TSA.

Indicator measured by:

The changing proportion of total TSA area classed in categories identified by Recreation Opportunity Spectrum mapping.

Results:

The BC Ministry of Forests uses the Recreation Opportunities Spectrum (ROS) classification system to measure how recreation experiences in a given area may vary depending on remoteness, naturalness and potential for human contact.

The map at right shows the 2002 ROS modelling exercise. (See sidebar above for definitions of the three categories used in the map.) There has been increased access development over time, reducing wilderness and backcountry opportunities. For instance, in 1983 11% of the TSA was la-

belled as “primitive”; by 2002 this number dropped to 3%.

Recreational resource users concerned with loss of the more primitive ROS categories are offset by others who appreciate increased access to recreational destinations. However, the MOF recognizes that wilderness areas have a value in themselves regardless of the interests of user groups. Proposed actions to maintain a cross-section of lakes in a primitive or semi-primitive setting partly addresses this issue. See the full report on the district’s website for more information.



Photo courtesy Jim Pojar

Recreation Opportunity Spectrum Classifications

- **Primitive (P)**—more than 8 km from a road, more than 5000 ha in area, no motorized use, very high naturalness.
- **Semi-Primitive non-motorized (SPNM)**—more than 1km from a road, more than 1000ha, very little motorized use, few human encounters.
- **Semi-Primitive motorized (SPM)**—more than 1 km from road, more than 1000ha, low motorized use, few human encounters.

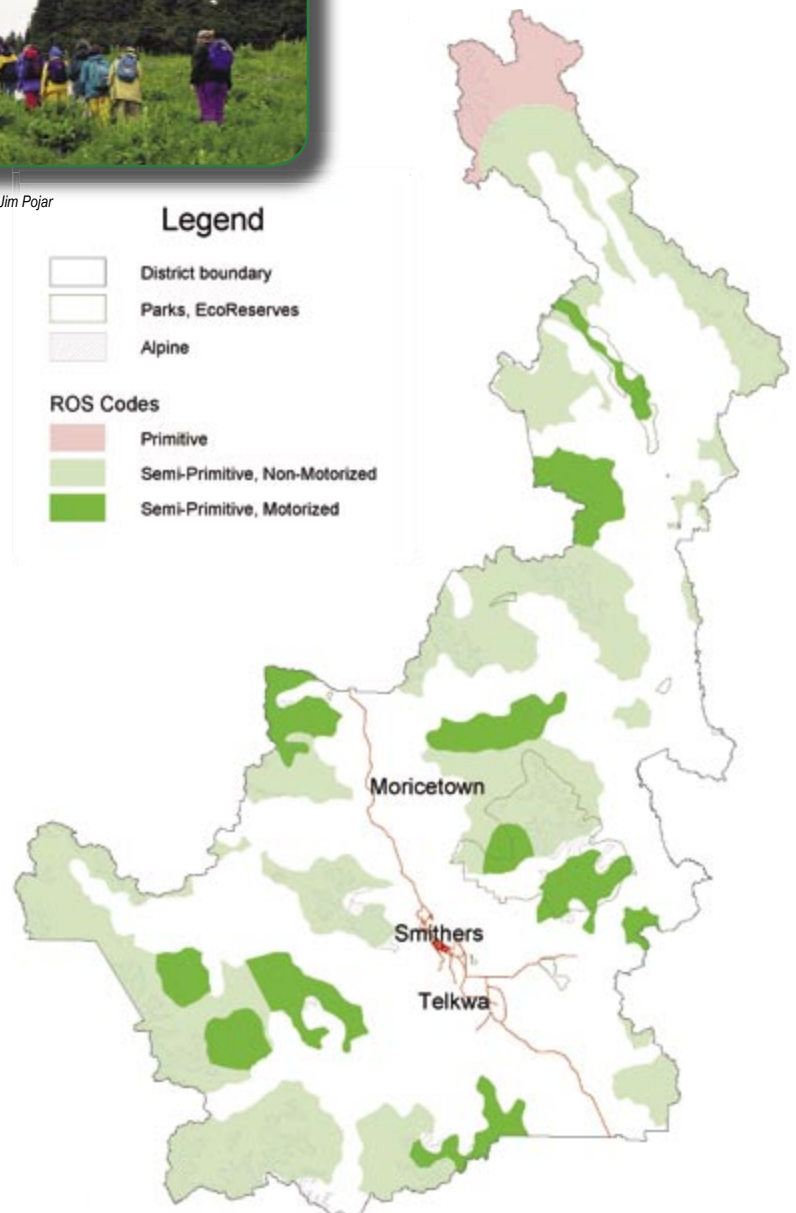


Figure 7. Recreation Opportunity Spectrum Classes: 2002 Modeling for the Bulkley TSA

RANGE

The Bulkley LRMP states that the guidelines set out in the Forest Practices Code Act and other existing legislation and policy will be followed. In addition, the plan states that full use of existing range tenures will be encouraged.

Sole Indicator:

- Use of Existing Grazing Tenure Area

USE OF EXISTING GRAZING TENURE AREA

Background:

The LRMP directed the development of target Animal Unit Months (AUMs) for the Bulkley Valley planning unit, and evaluation of areas close to the Bulkley Valley for potential range expansion. (An AUM is the amount of grazing required by one cow for one month.)

Potential range expansion areas on Crown land in the Bulkley TSA include forest plantations, agricultural lease areas and deciduous forest.

Indicator measured by:

Animal Unit Months (AUMs) issued and allocated versus AUMs available on existing grazing tenures.

Results:

The map at right shows the location of range tenures administered by the Ministry of Forests, including grazing tenures. See the full report on the district website for information on AUM allocation.

In summary, data (table 3) indicate relatively good use of total allocated AUM, and a use of maximum available AUM. Future reporting will include an indicator measuring the number of AUMs issued versus AUM carrying capacity, reported by Landscape Unit and by Range Unit.

Table 3. Baseline Animal Unit Months Allocation, 2002

Maximum AUM's available on existing grazing tenures (estimated)	Total AUM Allocated (existing grazing tenures)	Total AUM issued (2002)	% use of maximum AUM's	% use of total AUM allocation
15000	7760	5260	35	68

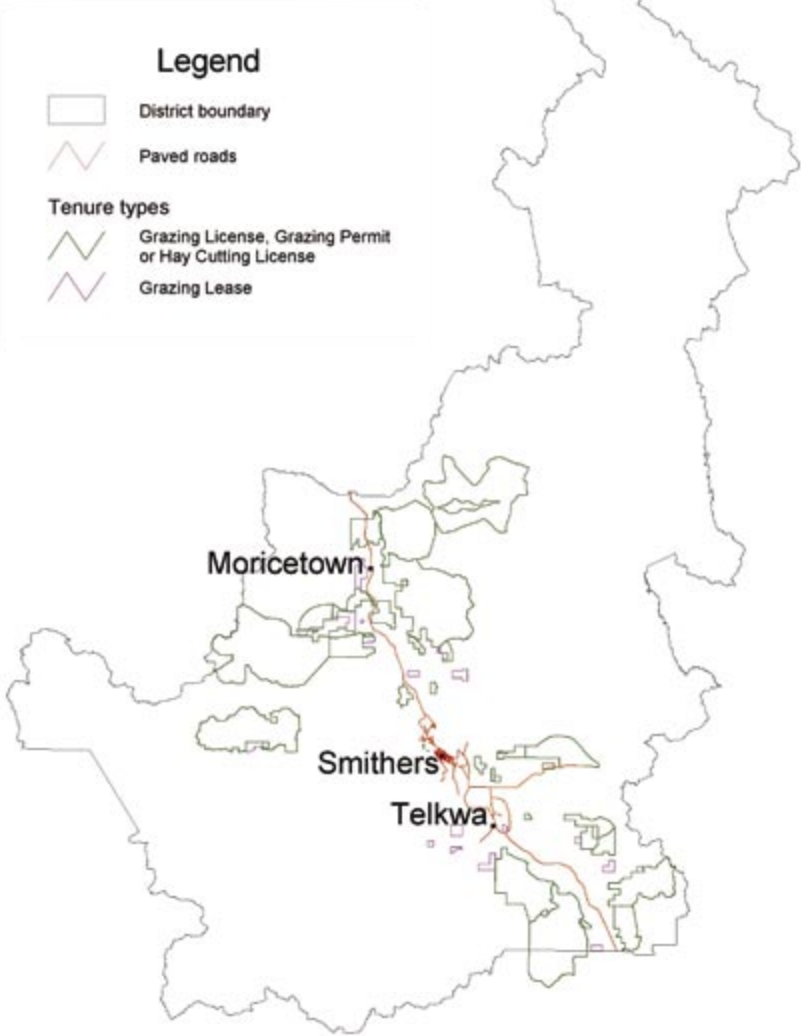


Figure 8. Location of Range Tenure Areas in the Bulkley TSA

CONCLUSION

This report is the first attempt to complete the planning cycle in the Bulkley Timber Supply Area. This step is intended to determine whether the management of local forests is meeting society’s objectives as laid out in the LRMP, and to recommend improvements that can be fed back into management decisions. The table below is a *State of the Forest Report Card*, which provides a concise statement on the current status of each indicator with reference to achieving its explicit or subjective measures.

Another report card will be published in five years to determine whether our performance in achieving indicator targets has improved as a result of implementing this report’s recommendations since 1995.



State of the Forest Report Card

Code	Value	Indicator	Indicator Achievement			
			25	50	75	100
B1	Biodiversity	Ecosystem Representation			100%	
B2		Old Seral in Cores			No Target	
B3		Interior Forest in Cores			100%	
B4		Seral Stage Distribution			93%	
B5		Landscape Connectivity			81%	
B6		Patch Size Distribution			96%	
B7		Protection for Endangered Plant Communities		48%		
B8		Stand Structure			100%	
B9		Species composition			97%	
W1	Wildlife Habitat	Adherence to Forest mgt Objectives			99.9%	
S1	Watershed Integrity	Terrain Stability Mapping			92%	
S2		Overview Watershed Assessments			80%	
S3		Watershed Restoration		65%		
S4		Co-ordinated Water Quality Monitoring	25%			
T1a	Timber Management	Prompt Reforestation (reforested vs. denuded)			95%	
T1b		Prompt Reforestation (FG vs. denuded)			72%	
T2		Maintenance of Forest Health			90%	
T3		Sustained Flow of Timber			86%	
T4		Harvest the Profile			64%	
V1	Visual Quality	Effort to Meet Visual Quality of Timber Harvesting			100%	
C1	Cultural Heritage	Management of Cultural Heritage Features			75%	
R1	Access	Access to Facilitate Natural Resource Mgt. Extraction			84%	
R2		Recreational Access			90%	
R3		Wilderness Lakes			86%	
R4		Circle Routes			88%	
R5		Sensitive Terrain			84%	
R6a		Access per RAMP (summer)			90%	
R6b		Access per RAMP (winter)			79%	
R7		Impact on Fish, Wildlife & Other Env. Values			88%	
R8		Access to Recreational Sites/Trails			100%	
C1	Range	Use of Existing Grazing Tenure Area	35%			

FOR MORE INFORMATION

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