Morice & Lakes IFPA

April 2008
Summary No. 63

Morice & Lakes Innovative Forest Practices Agreement

Project Summary

Ecosystem Management

Forest Productivity

Public Involvement

Adaptive Management

Morice & Lakes IFPA projects are exploring ways to enhance forest productivity through a better understanding of factors affecting productivity, through intensive silviculture treatments, by increasing the area of productive forest land, and by improving site productivity estimates.

Integrated Visual Design for the Morice and Lakes IFPA

Babine Forest Products

BCTS BC Timber Sales Babine

D.L.F.P.

Houston Forest Products

L & M Lumber Ltd.

Fraser Lake Sawmills

CANFOR

Introduction

The licensees that form the Morice and Lakes Innovative Forest Practices Agreement (IFPA) all contain tenure that has a significant portion of its timber harvest land base comprised of dead and/or dying mature lodgepole pine. As these large areas of mature lodgepole pine degrade over time, this group of licensees faces the challenge of balancing fiber recovery through beetle salvage operations with the many multiple use objectives placed on the land base. In particular, the licensees have significant volume based tenure that is located in areas where visual design objectives are a primary driver for forest land use planning. In an effort to manage for both visuals and fibre recovery a strategy that should be adopted is one that finds a balance between the objectives for short term timber salvage and long term visual quality objectives. As a result, the development of an Integrated Visual Design (IVD) for fourteen (14) geographically separated visual design units (VDUs) located within the Morice and Lakes Timber Supply Area was undertaken by Forsite. The goal was to identify a balance between maximizing salvage recovery and multiple use resource objectives within each VDU (See Figure 1).

Objectives

To develop an Integrated Visual Design for fourteen (14) visual design units located within the Morice and Lakes IFPA boundary. The guiding principle of the IVD process is to consider and incorporate all known resource information during the development of a total chance harvest opportunity plan (TCP). The TCP is to extend over a multiple pass rotation whereby visual objectives are considered the primary objective. For this particular project, two additional objectives were added:

Option 1: Design a three pass TCP to maximize salvage recovery of mountain pine beetle damaged stands. This option will consider visual design to be subordinate in the first pass and present a 'worst-case scenario' in an attempt to model the effects of a mass salvage operation. This option is expected to generate harvest disturbance that will likely exceed established rVQO levels[1].

Option 2: Modify the Option 1 plan and use visual design as the primary driver to meet established rVQOs. This option will have visuals as the primary objective and salvage maximization secondary.

[1] The forest licensees have the option to forgo implementing option 2 and applying for a FSP amendment. A draft example of an official amendment to the forest stewardship plan was also created as an appendix to the report.

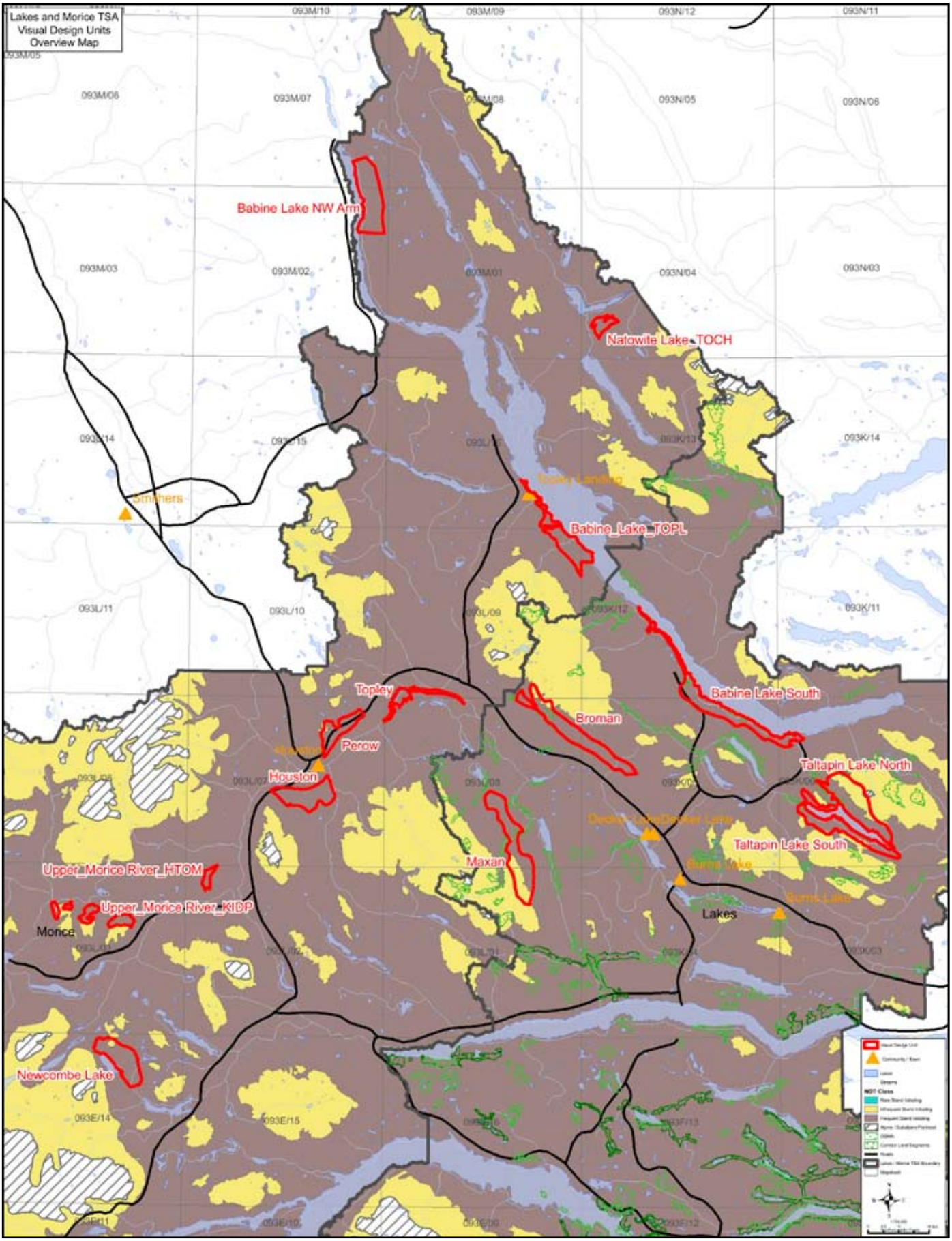

Figure 1: Overview map of the Visual Design Units.

Methods

Photography

Viewpoints were selected for evaluation of each of the 14 VDUs in direct consultation with each licensee. Digital photographs were taken from the selected viewpoints and GPS information was recorded for each. Travel to the viewpoints was accomplished via floatplane and road travel. The photographs were used in order to evaluate the character of the VDU, confirm the visual extent of the VDU and to provide quality control against the computer model.

Resource Analysis

The establishment of resource objectives for each of the VDUs was identified through discussions with IFPA representatives. Information relating to visual quality objectives, Forest Stewardship Plan (FSP) commitments, timber flow, recreation and tourism, water quality, Natural Disturbance Types (NDTs), biodiversity, wildlife resources, cultural and archaeological resources and soil stability was collected. Where specific restrictions to timber development resulted, these areas contributed to the development of a 'not harvestable' or 'not likely to harvest' spatial layer. Specific items that contributed to the 'not harvestable' layer included the following:

- Existing roads
- Parks
- Non-forested and non-productive polygons
- Low productivity sites
- Deciduous leading stands
- Wildlife tree retention areas
- Areas of unstable terrain
- Old Growth Management areas
- Specific portions of Corridor Land Segments in the Lakes TSA
- Very steep slopes (over 80% slope and larger than 5ha in size)
- Riparian reserve zones
- Preservation rVQOs
- Land not available for planning (woodlots, private crown grants, Indian Reserves)

Items that were included in the 'not likely to harvest' layer include the following:

- Prescribed buffers on recreation sites, commercial cabins, lodges and recreation trails;
- Recreation areas designated as 'highly sensitive to development;' and,
- Retention rVQOs.

The best known forest cover information was used as a base and the following parameters were used to help identify the forest cover polygons to be considered for salvage harvesting within the first pass of a three pass TCP:

- ≥50% pine, based on relative gross volume
- ≥ age class 5
- ≥ height class 3
- ≥ 140m3/ha mature volume
- ≥ Site index 10

In addition to the above base information, the following criteria were used:

- Any stand that met the above criteria should be considered for the first pass and scheduled for harvest within 5 to 10 years to maximize saw log recovery.
- Age class 3 and 4 stands that did not meet the minimum age class criteria but were comprised of ≥50% lodgepole pine with a mix of other conifer species were defaulted to pass three. Rationale to support this action was based on the following assumptions: 1) the mature Pl component would not be of sufficient quality for use as a fiber source in the second pass, 2) the minor Sx and Bl component represented in the current stand did not meet the benchmark volume of ≥140m^3/ha for pass 2 inclusion, 3) the minor Sx and Bl component represented in the current stand would not be of sufficient age for inclusion in the second pass, and 4) the minor Sx and Bl component represented in the current stand would not have significant volume culmination for inclusion in the second pass.

Visual Force Analysis

Photographs and contour map information was used as the basis for location and definition of the ridges and gullies visible within each VDU. These features were assigned lines of force and were used extensively throughout the design phases to assist in placement of visual reserves and boundary modification.

Land Feature Analysis

This analysis was carried out using photographic panoramas and forest cover mapping to identify unique visible land features within each VDU. Land feature analysis assists resource professional in understanding how proposed harvest shapes can be designed in a manner that is consistent with the landscape character.

Concept Design

Target forest cover polygons identified as ≥50% Pl by species based on parameters set for age, height, volume and site index for the first pass of a three pass system. The concept design did not include second or third pass harvest shapes.

Detailed Design and Design Testing

An initial TCP was developed for each VDU based on the IFPA licensee harvesting rules for road and block development. This detailed design was then compiled and tested within the World Construction Set (WCS) model for each VDU. Within the four-

teen VDUs six were found to be within the acceptable rVQO parameter for pass 1; as a result, only Option 1 was considered. The remaining eight VDUs were found to require both Option 1 and Option 2 planning.

For the final three pass design, Option 1 was carried forward and then Pass 2 and Pass 3 were designed. The forest cover within each VDU was advanced in growth based upon site index, age and forest type between each successive pass, with 25 years separating each pass.

Results

The decision to target and maximize the amount of stands comprised of ≥50% Pl by volume in the first pass resulted in the creation of natural, organic shapes by default. Where natural timber type boundaries did not create organic shapes additional reserves of dead Pl and other timber types were retained. This retention assisted in softening the impact of the aggressive first pass harvest. It is expected that reserves comprised of non-merchantable or young lodgepole pine will degrade and fall over as time goes by.

It should be noted that the attempt to maximize salvage recovery of mature lodgepole pine has resulted in some of the VDUs containing first pass volume levels that may exceed annual cut levels. Furthermore, the high concentration of damaged lodgepole pine has created a significant fall down in volume for some of the VDU's second pass allocation.

Discussion

There were a total of eight VDUs that, after applying option 1 parameters, did not meet the recommended Visual Quality Objective when assessed from the viewpoints used in this project. These VDUs had an option 2 developed to illustrate a total chance harvest design that would meet the visual objectives. In these cases, an analysis was conducted to show the differences in area between the two options.

The visual design is limited by the accuracy of the TRIM-based topological information, as well as by the accuracy of all other data inputs provided by the licensee. Although an attempt was made to incorporate operational factors into the design (e.g., road access or harvest method) it is limited in its operational detail and should only be used as a guide for operational planning and implementation. The visual success of the proposed design is based on the location of blocks and reserves and may need to be re-evaluated following stand level block design.

Recommendations

It is recommended that, for the eight VDU's that did not meet the recommended VQOs, an FSP amendment be developed and submitted to the MoFR. There are several options for proposing such amendments, outlined in FRPA General Bulletin Number 10 "Beetle Wood Salvage and Visual Quality" (www.for.gov.bc.ca/rco/pfit/index.htm.

A summary of the recommendations for amending the licensee's Forest Stewardship Plans was created. The decision between applications for an amendment under the Forest Plan and Practices Regulation (FPPR) section 25.1 and section 12(7) was made based on the determination that the "option 1" did not meet the commitments of the respective Forest Stewardship Plan.

The best possible integrated visual design product is one where a full rotation harvest plan is created based on field knowledge and confirmation of harvest shapes on an iterative basis. Unfortunately funding did not often allow this process to be completed.

References

Forest Investment Account: Integrated Visual Design Interim Procedures and Standards (anon, May 1, 2002) and Visual Landscape Design Manual.

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For More Information...

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