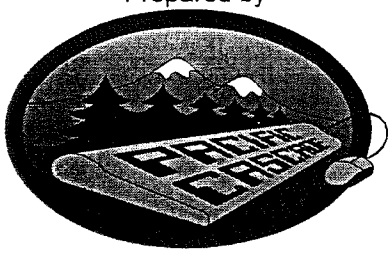
Level 1 Riparian Habitat Assessments

Lakelse Watershed Restoration Project

Prepared for

Lakelse WRP Steering Committee
Terrace, BC

Prepared by



Pacific Cascade Consultants Ltd.
Terrace, BC

August 1996

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

Background

The Watershed Restoration Program (WRP) is a component of Forest Renewal British Columbia (FRBC) *to restore the productive capacity of fisheries, forest and water resources that have been adversely impacted by past forest harvest practices. The goals of the Watershed Restoration Program are:*

- *to restore, protect and maintain fisheries, aquatic and forest resources that have been adversely impacted by forest harvesting practices an that would require several decades to recover naturally,*
- *to provide community-based employment, training and stewardship opportunities throughout the province, and*
- *to provide a mechanism to bridge historical forest harvesting practices and the new standards established by the Forest Practices code by diversifying hobs in the forest sector.* (from WRP, 1994)

Watershed Restoration Program projects are normally conducted using a three level assessment procedure and focus on assessments of impacts to fisheries, roads and riparian habitats. Level 1 assessments are conducted at a reconnaissance level over a large watershed to determine where impacts have occurred and set priorities for more detailed level 2 assessments. The level 2 assessments provide detailed information on the impacts noted in the level 1 assessment and are used to create restoration prescriptions. The restoration prescriptions are the final level of a WRP project, outlining the work that has to be completed.

In the Lakelse Watershed Restoration Program, a number of consultants were used to complete the level 1 assessments. McEllhanney Consulting Services Ltd. (Terrace) was engaged as the project managers and to perform the upslope and road assessments. Triton Environmental Consultants Ltd. (Terrace) assisted in project management and was the prime consultant on the fisheries and riparian assessments. Pacific Cascade Consultants Ltd. was sub-contracted for the riparian assessments and J&S Outdoor Ventures was sub-contracted to assist in the fisheries assessments.

Study Objectives

Riparian habitat assessments were carried out in conjunction with fisheries and road assessments of the Lakelse watershed. The purpose of the riparian assessments was to determine the impact of forest harvesting on the mature forest characteristics important to many fish and wildlife species.

Riparian areas adjacent to rivers, streams, lakes and wetlands are important habitats for both fish and wildlife for many reasons. Riparian vegetation provides a number of elements critical to fish such as stream bank stability, input of large organic debris, and nutrients in the form of leaves and insects that fall from the vegetation. Another crucial role that streamside vegetation plays in maintaining healthy fish habitat is providing thermal cover from solar radiation. This thermal protection then affects the temperature and dissolved oxygen content of fish streams. Riparian habitat is also used by a wide variety of wildlife for feeding, resting, raising young, seeking shelter from weather or predators and movement. Large trees originating from rich and moist riparian soils provide areas of snow interception. This is important for wintering ungulates, as well as for denning, resting and nesting sites for species such as wolverine, bears, eagles, owls and woodpeckers. The edges caused by watercourses, along with the rich soils and high moisture content, contribute to increased biodiversity by providing a wide range of plant species that wildlife feed on. Timber harvesting in riparian habitats causes the mature forest characteristics important to many species of fish and wildlife to be lost until the stand reforms these structures. If harvesting is extensive enough, species dependent on these mature forest characteristics may be displaced for years.

The purpose of the riparian assessments is to determine, at a reconnaissance level, the impact of forest harvesting on riparian habitats and identify potential areas where further assessments should be

undertaken. It is hoped that rehabilitation and reconstruction work can be undertaken within heavily impacted riparian habitats to speed up the process of establishing mature forest characteristics.

Project Components

Due to the size of the Lakelse Watershed and the number of assessments completed in this project, there are a number of reports that make up the completed level 1 assessment. This level 1 riparian habitat assessment report is based on aerial photo-mosaics compiled in three volumes that are bound separately. The following photo-mosaic reports should be consulted during any review of this report:

- **Lakelse WRP Project: Photographs and Maps: Volume I**
  Lakelse River, Furlong Creek, Granite Creek, Hatchery Creek, Scully Creek, Clearwater Creek, Andalas Creek, Ena Creek, North Ena Creek, Eel Creek, Herman Creek, Junction Creek. (Triton Environmental Consultants, 1996)

- **Lakelse WRP Project: Photographs and Maps: Volume II**
  Coldwater Creek, Silvertip Creek, Boot Creek, Johnstone Creek, End Creek, Mink Creek, White Creek, Powerline Creek, Killutsal Creek. (Triton Environmental Consultants, 1996)

- **Lakelse WRP Project: Level 1 Fisheries Assessment**
  Williams and Sockeye Creeks. (J&S Outdoor Ventures, 1996)

Methods

Riparian assessments were carried out by reviewing low-level aerial photograph mosaics, forest cover maps and 1:50,000 topographic mapping of the Lakelse watershed. The assessments considered the riparian productivity and the impact to the riparian habitat due to removal of mature or old-growth forests. The overall impact to the riparian habitat was determined by combining the rating for riparian productivity and loss of mature riparian habitat characteristics.

Assessing Riparian Productivity

Riparian productivity was rated from low to very high based on the vegetation, riparian habitat complexity, and potential fish and wildlife use. Habitats with low vegetative cover were rated lower than those riparian habitats that were made up of wetland and forested habitat complexes.

The table below outlines the ratings and rationale used in the assessment.

Table 1. Ratings of riparian productivity.

Code	Productivity	Description
L	low	Narrow V-shaped valleys with braided, active gravel channels; mixed conifer, deciduous and shrubs, sparse vegetation coverage, mostly shrubs or young trees.
M	moderate	V-shaped valley with mixed conifer, deciduous and shrubs, moderate vegetation coverage, mostly mature conifers with some deciduous and shrubs.
H	high	Wide, valley-bottoms with wetland and forest complexes; braided stream channels with well established stands of conifers and riparian vegetation.
VH	very high	Very wide floodplain habitats with wetland and forest complexes; oxbows and meandering stream patterns with well established stands of conifers and other riparian vegetation.

Assessing Mature Riparian Habitat Removal

Damage to riparian habitat was assessed based on the amount of harvesting that has occurred of the riparian habitat, the age of the harvesting, the type of regeneration and the potential effects on fish and wildlife use. The ratings ranged from nil to high impacts. Areas that had not been harvested and were under the influence of natural disturbance patterns were rated nil. Riparian habitats that had over 70% of the riparian forests removed were rated as high impact.

The table below summarizes the ratings and rationale used in this assessment.

Table 2. Ratings of mature riparian habitat removal.

Code	Damage	Description
N	nil	No removal, natural disturbance regime occurring.
L	low	Less than 20% riparian forests removed, natural regeneration well established. Little management required to return habitat to mature forest conditions within 20 years.
M	moderate	More than 20% but less than 70% riparian forests removed, regeneration poor. Requires some management to return to mature forest conditions within 20-40 years.
H	high	More than 70% riparian forests removed, regeneration very poor or non-climax species. Requires extensive management to return to mature forest conditions within 40 years.

Assessing Impact to Riparian Habitat

Assessing the overall impact to riparian habitat was based on assessing the riparian productivity and the mature habitat removal due to forest harvesting or road building.

The table below outlines the matrix used in this assessment. Habitat with high riparian productivity and high levels of habitat removal have a very high impact rating. Areas with only medium productivity but high levels of habitat removal are assessed as a high impact rating. Riparian productivity that is high or very high combines with medium levels of habitat removal to give high impact ratings as well. As seen in the next section of this report, high and very high impact levels are those which are important in determining further assessment criteria.

Table 3. Riparian habitat impact matrix.

Mature Riparian	Riparian Productivity			
Habitat Removal	L	M	H	VH
N	N	N	N	N
L	L	L	M	M
M	L	M	H	H
H	M	H	VH	VH

N = nil, L = low, M = moderate, H = high, VH = very high

Future Riparian Habitat Assessments

Those drainages that were rated as having a high or very high impact to riparian habitat should be assessed for the opportunities for stand management or habitat enhancement activities. In general, the assessments would look at the structure of the existing stand and determine how closely the stand mimics mature and old-growth forest conditions (e.g. amount of coarse woody debris, percent canopy closure, snag density, age, size and distribution of tree species, etc.). The second part of the assessment would be to determine the appropriate stand management or habitat enhancement activities that could be used to bring about mature or old-growth stand structure attributes in as short a time-frame as possible.

Prior to any field assessment of these riparian areas, a thorough check of Repap British Columbia Inc., Skeena Sawmills and Ministry of Forest silviculture information system files should be undertaken to determine the status of the areas. Current status, previous silviculture treatments, stand tending prescriptions and planned silviculture activities should be assessed to ensure that a complete description of the area is obtained.

Approximate costs for future assessments of riparian areas are given for those reaches rated very high, and high. Increased efficiencies could be realized in planning, manpower and equipment usage if the upslope and/or fisheries level 2 assessments or restoration activities are carried out at the same time.