Mike Wiegele Helicopter Skiing

SADDLE MOUNTAIN
Master Plan 2000

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I. INTRODUCTION

I.1 Project Overview

The following Resort Master Plan for Saddle Mountain has been prepared by Brent Harley and Associates Inc., on behalf of Cariboo Helicopter Skiing (88) Ltd., operating as Mike Wiegele Helicopter Skiing.

Saddle Mountain is situated in the Monashee Mountains, directly across the North Thompson River, due east of the town of Blue River, British Columbia (see Figures 1 and 2). A small town of 230 people, Blue River is located on the Yellowhead Highway (Hwy. #5), midway between Kamloops, BC and Jasper, Alberta. The local economy of Blue River is supported by the forestry industry, BC Rail, and Mike Wiegele Helicopter Skiing.

Established in Blue River in 1974, the Mike Wiegele Helicopter Skiing operation has grown into a year round operation employing 68 full time staff, plus additional seasonal staff. During the 1997/98 season, the operation supported approximately 10,000 skier visits. The quality of skiing attracts an international clientele, and has established Blue River as one of the premier heli-skiing destinations in the world.

It is Mike Wiegele's vision and goal to develop lift-serviced powder skiing opportunities on Saddle Mountain. Although planned as a distinct and separate resort entity, Saddle Mountain is intended to complement and improve the well established Mike Wiegele Helicopter Skiing operation. Ultimately, the goal is to develop a truly unique alpine ski resort at Saddle Mountain, with complementary year round facilities that will contribute to an improved diversity of recreational product within the Blue River area.

Working closely with Mike Wiegele and his staff, the following Master Plan fully describes the elements, issues and parameters influencing its creation. The resultant product defines both in a written and graphic form, all aspects of the proposed mountain resort development on a phase by phase basis.

I.2 The Vision

The vision for Saddle Mountain is ***to develop a unique mountain resort retreat that caters to the pursuit of powder skiing in the winter and a backcountry ambiance in the summer.***

It will operate independently from, yet in conjunction with, Mike Wiegele Helicopter Skiing. Through a special combination of extensive alpine skiing terrain development, serviced by comparatively low uphill capacity, the new resort at Saddle Mountain is planned as a lift-serviced powder skiing facility, the first of its kind in British Columbia.

In the winter, the opportunities of a lift-serviced powder skiing facility operating in conjunction with an adjacent heli-skiing operation include the following:

- A powder skiing teaching academy, established to instruct skiers, beginners and experts alike, in the techniques of skiing fresh, untracked snow.

- Reduced cost skiing packages offering a mix of heli-skiing and lift serviced skiing. In this way, the range of the marketplace can be broadened to include families.

- A broader spectrum of skiing packages in a remote setting that are less demanding for older and less physically inclined skiers that find they are incapable of coping with a full week of heli-skiing.

- "Down day" skiing for heli-skiers when the weather limits or restricts the use of helicopter access.

- Guaranteed low density skiing effectively eliminating the crowding now often plaguing most of the popular ski resorts throughout the world.

- Readily accessible recreational activity available to the employees of the heli-skiing operation and the residents of Blue River, thus helping diversify and improve the quality of life in this remote community.

In the summer, the opportunities to cater to a backcountry character and ambiance include the following:

- An organized staging point to the BC backcountry, as accessed either by helicopter or by ski lift or on foot.

- Low key, upscale facilities in a wilderness setting.

- Year round employment and readily accessible recreational activity available to the employees of the heli-skiing operation and the residents of Blue River, thus helping diversify and improve the quality of life of this remote community.

I.3 Development Goals and Objectives

As defined by Mike Wiegele, the primary goal of this project is ***to establish Saddle Mountain as an alpine ski resort that will function as an independent entity, while complementing the existing facilities and operations of the Mike Wiegele Helicopter Skiing Resort***.

In support of this, the following objectives were established as guiding principles in the creation of the Saddle Mountain Resort Master Plan:

- To develop a new, distinct and high quality mountain resort on Saddle Mountain;

- To provide lift-serviced powder skiing, a unique product in the British Columbia marketplace;

- To provide a more rounded and more affordable ski resort product, attractive to families and beginner skiers that have traditionally been intimidated by the idea of a heli-skiing vacation;

- To provide a mix of facilities and opportunities that can complement the heli-skiing product at Mike Wiegele Helicopter Skiing;

- To provide an affordable and consistent skiing opportunity for the resort personnel and residents of Blue River;

- To expand the employment opportunities for the town's residents, thereby improving the quality of life and overall "livability" of Blue River, which in turn will provide a stable employee base for the resorts;

- To establish a club-like ambience to the resort where the guests, visitors, employees and residents of Blue River will have a strong sense of belonging;

- To develop a base area village incorporating a boutique retail core, a lodge/hotel, pensions, and overnight accommodation (public and private); all with ski to/ski from access;

- To provide more comprehensive and integrated year-round facilities throughout the resort in order to accommodate such recreational activities as walking, golf, mountain biking, hiking, watersports, an interpretive centre, picnicking, etc;

- To influence and reduce the negative visual impact of the logging cut blocks within sight of the heli-ski resort;

- To establish a resort that will be considered a world class example of environmentally sensitive development, and;

- To develop a comprehensive mountain resort that is economically viable in its own right, that also serves as an operational and financial complement to the successful Mike Wiegele Helicopter Skiing Resort.

I.4 Planning Process

In the fall of 1995, Brent Harley and Associates initiated an analysis of a number of mountains in close proximity to Blue River, in an effort to assess alpine ski resort development potential. Using large scale topographic mapping, these mountains were analyzed as to their ability to support an alpine ski resort corresponding to the Client's development goals and objectives.

Derived from the analysis, ski lift and trail concepts were generated for several mountains. Ultimately, Saddle Mountain was chosen as the most capable of supporting the type of alpine ski resort development envisioned by Mike Wiegele (Cariboo Helicopter Skiing). In April 1996, Cariboo Helicopter Skiing submitted an Expression of Interest to the Kamloops office of the Ministry of Environment, Lands and Parks for alpine ski resort development on Saddle Mountain. The Saddle Mountain proposal was advertised, and on October 16, 1996, Cariboo

Helicopter Skiing (88) Ltd. was designated as the official proponent for commercial alpine skiing development on Saddle Mountain.

During the summer of 1996, with permission from the Ministry of Forests, two 11 meter wide trails were cut from the top of the mountain. In addition, five summer-groomed test plots were established within the cut blocks, where the logging debris was removed and some earth work was completed. This facilitated greater use of Saddle Mountain and enabled an ability to more fully test the potential of the skiing experience from the top of the mountain to the mid mountain bench (the Upper Base Area) during the winter of 1996-97. The end result was a very positive response by all that had the opportunity to ski the mountain.

An Interim Agreement was signed by Cariboo Helicopter Skiing and the Province of British Columbia on May 21, 1997. On May 30, 1997, the Saddle Mountain Resort Development Concept was submitted to the Kamloops office of the Ministry of Environment, Lands and Parks, and was distributed to the various referral agencies for their input. Also part of the review process, the public was invited to an Open House in Blue River on August 11, 1997, to examine the Concept Plan and identify issues of concern. During this period, other studies were initiated, including an Environmental Audit by Nelson Environmental Services and GeoAlpine Environmental Consulting, a Soils Capability/Geotechnical Assessment by Golder Associates Ltd., an Archaeological Impact Assessment by Golder Associates Ltd./North Thompson First Nations, and a Preliminary Traffic Impact Assessment by Creative Traffic Solutions.

The following Saddle Mountain Resort Master Plan represents a progression of the ideas presented in the May 1997 Resort Development Concept, addressing issues identified by the various consultant reports, interagency referrals and public review processes. This Resort Master Plan, once approved, will form the basis for the Master Development Agreement between the Province of British Columbia and Cariboo Helicopter Skiing (88) Ltd., the issuance of subsequent permits, and the eventual construction and operation of Saddle Mountain Resort.

II. RESORT CONTEXT

II.1 Introduction

Saddle Mountain is located directly across the North Thompson River, due east of the town of Blue River, British Columbia. The proposed Saddle Mountain Ski Area boundary encompasses approximately 2,000 hectares of terrain bordered by Mud Lake to the north, the North Thompson River to the West, Smoke Creek to the south, and the summit area of Saddle Mountain to the east. The Metes and Bounds Description (see Figure 3 and Appendix A-1) legally defines the Saddle Mountain study area.

Saddle Mountain commands a prominent location, within sight of the Yellowhead Highway, the town of Blue River, and the existing Mike Wiegele Helicopter Skiing Resort Village. The proposed alpine ski area falls entirely within the 420,000 hectare helicopter skiing tenure area, utilized by Mike Wiegele Helicopter Skiing, under License of Occupation # 335761.

Lands within the Saddle Mountain study area are owned by the Crown, with the exception of 50 hectares owned privately by Mike Wiegele Helicopter Skiing, in the vicinity of the Mud Creek/North Thompson River confluence. The primary land uses presently occurring within the study area are timber harvesting and related forestry activities. Apart from the helicopter skiing License of Occupation, no other land tenure or claims exist within the study area.

II.2 Location and Access

Blue River is located between the Cariboo and Monashee Mountains on the Yellowhead Highway (Highway #5), approximately 214 kilometres north of Kamloops. Destination guests will travel to Saddle Mountain via Calgary, Vancouver or Seattle International Airports. Daily connecting flights are offered into Kamloops Airport from these centres. Once in Kamloops, there are several transportation options available: a weekly shuttle service offered by Mike Wiegele Helicopter Skiing; daily Greyhound Bus service; rental car; rail; or air charters to the Blue River air strip.

Currently, road access to Saddle Mountain is possible using the highway bridge over the North Thompson River, 11 kilometres south of Blue River, and following existing Smoke Creek FSR logging roads along the east side of the river for 15 kilometres. However, initial and on-going public access through the first two phases of development will by via helicopter from Mike Wiegele's resort in Blue River. It should be noted that any access alignments shown within this document are for illustrative purposes only. Future alternatives for direct vehicular public access to the Saddle Mountain will be explored.

II.3 Community Context

Blue River is a small community of 230 people, supported by the forest industry, BC Rail, and Mike Wiegele Helicopter Skiing. While traditional resource industries are locally in decline, outdoor recreation and related tourism development represent potential growth industries. The quality of skiing at Blue River, in particular, has attracted a growing international clientele, and

has established the area as a premier skiing destination.

The Saddle Mountain Resort proposal represents an opportunity for significant new investment, job training, increased community stability, and diversification of the local economy. In addition to strengthening the tourism sector of the economy, the resort's development will also bring high wage logging and construction jobs back to town, during construction phases of the project. Over the long term, Saddle Mountain will also contribute substantially to the community's taxation base, permitting improvements to infrastructure that would not typically be possible in a community the size of Blue River.

The proponent acknowledges that more detailed evaluation is required to assess immediate and long-term community needs, and the implications of the Saddle Mountain proposal. There will be substantial impact on schools, health services, emergency services, and the potential for strain on existing community infrastructure. Servicing needs and traffic concerns, in particular, are addressed in section IV.4.

A medical clinic has already been funded and established by Mike Wiegele Helicopter Skiing to serve members of the local community as well as heli-skiing guests of the resort.

The ongoing viability of the existing community of Blue River is of utmost importance. The proponent is extremely community-minded, and will make efforts specifically directed to ensure that the proposed resort becomes an integral and complementary part of the existing community of Blue River, not a competing entity that might threaten the town's viability.

II.4 Regional Context

As the mid-point between Kamloops and Jasper on Highway #5, Blue River is well positioned to play a key role in the regional economy. Development of the Saddle Mountain Resort will contribute significantly to the existing Yellowhead Highway tourism corridor from Kamloops, and Sun Peaks to Clearwater, Valemont and Jasper.

Saddle Mountain Resort will provide a skiing product strategically located within a comfortable day's drive from either Sun Peaks or Marmot Basin, effectively filling the void between ski resorts of the Okanagan and those of the Rocky Mountains. Additional opportunities for year-round tourism, and the ability to capture a share of the summer highway traffic, strengthen the viability of tourist facility development in the Blue River area.

It is the intent of Mike Wiegele Helicopter Skiing that proposed developments on Saddle Mountain support the goals and objectives of the Blue River Official Community Plan. The proponent will work cooperatively with Thompson Nicola Regional District planning staff to bring about amendments to the Plan to permit higher density resort development, as determined to be in the best interests of the local and regional community.

All efforts will be made to ensure that developments at Saddle Mountain coincide with the goals, objectives and strategies of the Kamloops Land and Resource Management Plan, and the soon to be completed Regional Growth Strategy.

Figure 1. Location Plan

Figure 2. Regional Context Plan

III. DEVELOPMENT POTENTIAL OF SADDLE MOUNTAIN

III.1 Introduction

In 1995, an analysis of a variety of mountains in the Blue River area was undertaken, to assess development potential for the creation of an alpine ski resort. Ultimately, Saddle Mountain was selected as the most desirable development site. The Metes and Bounds Description of the Saddle Mountain study area (Figure 3 and Appendix A-1) was determined to encompass not only the best skiing opportunities on Saddle Mountain, but also to ensure that an adequate buffer could be established to guarantee a high level of visual quality and resort ambience.

The Study Area was analyzed in terms of slope, elevation, aspect and fall-line to gain an understanding of the ski resort development potential of Saddle Mountain. The analyses were performed using 1:5,000 mapping with a 5 metre contour interval. The map studies, combined with weather data, avalanche records, and site knowledge gained from a series of site visits, culminated in an understanding of the Study Area's capability to physically and environmentally support alpine skiing and snowboarding (Section III.2. Mountain Development Potential).

Development on the mountain should be complemented with an appropriate amount of base area development to bring the resort into a well-integrated balance. Section III.3 (Base Area Development Potential) describes the range of base area facilities required at build-out, for the operation of a year-round resort at Saddle Mountain, and investigates the suitability of potential base area development lands.

Analysis of the Saddle Mountain ski terrain and potential base area lands led to the creation of the Saddle Mountain Resort Development Concept, submitted to the BC Ministry of Environment Lands and Parks in May 1997. This concept is summarized in Section III.4, and described graphically by Figure 10.

The Resort Development Concept forms the basis for the Saddle Mountain Resort Master Plan described in Section IV. Using the Resort Development Concept as a starting point, a variety of changes have been made over the course of the master planning and design process, to reflect government agency and public input (Section III.5), and to take into account the findings of consultant reports initiated following the creation of the original Resort Development Concept (Section III.6).

Section III.7 summarizes Saddle Mountain development opportunities and constraints, as identified through each stage in the evolution of the Resort Master Plan: the initial site analysis, resort development concept, government agency referral process, public meetings, and consultant reports relating to geological hazards, archaeological resources, traffic impacts and environmental considerations.

Fig. 3. Metes and Bounds

III.2 Mountain Development Potential

A critical early stage in the design process was to assess the development potential of the skiing opportunities on Saddle Mountain. To that end, the following analyses were undertaken:

- slope analysis;
- elevation analysis;
- aspect analysis;
- fall-line analysis;
- climatological analysis;
- assessment of avalanche hazard;
- terrain capacity analysis.

III.2.1 Slope Analysis

The Slope Analysis (Figure 4) divides the topography of Saddle Mountain into a range of skiable gradients as they relate to each of the primary skier/snowboarder skill classes. These are as follows:

- White: Slope gradients between 0 - 8%. Too flat to ski/snowboard, ideal for base area development.

- Green: Slope gradients between 8 - 25%. Ideal for Beginner skiers/snowboarders.

- Blue: Slope gradients between 25 - 45%. Ideal for Intermediate skiers/snowboarders.

- Grey: Slope gradients between 45 -80%. Ideal for Expert skiers/snowboarders.

- Red: Slope gradient over 80%. Too steep for skiing/snowboarding trail development, increased avalanche hazard.

The result delineates the general character of the land, illustrating that the summit locations of Saddle Mountain are predominated by steep or expert terrain, and the lower elevations, having relatively consistent grades, coincide with intermediate and beginner skiing.

It is apparent that there is significant potential for alpine skiing development on Saddle Mountain. The slope analysis graphically illustrates that these lands have an excellent mix of terrain, predominated by intermediate and expert slopes. The slopes level out at a prominent, mid-mountain, west-facing bench overlooking Blue River. Moving further down the north side toward Mud Lake, a steep band of expert terrain crosses the face of the mountain (this will require careful consideration in order to accommodate skiers of lower skill classes).

The lowest elevations of the north side of Saddle Mountain again level out to a large expanse of relatively flat land. Both this area and the mid-mountain bench lands offer good to excellent opportunities to establish base area facilities (village, residential areas, golf course, etc.) necessary to stage the skiing in a well-balanced fashion. A more detailed slope analysis of potential base area lands appears in section III.3.1.

Fig. 4. Slope Analysis

III.2.2 Elevation Analysis

The Elevation Analysis (Figure 5) illustrates the height and "flow" of land. Saddle Mountain ranges from an elevation of approximately 2,000 metres at the summit down to about 700 metres at the base. With 1,300 metres (4,265 feet) of elevation, Saddle Mountain, once developed, will have one of the highest lift-serviced, skiable vertical drops in North America.

The consistency of the terrain is again apparent, as illustrated by the basic form of the mountain from top to bottom.

Fig. 5. Elevation Analysis

III.2.3 Aspect Analysis

The Aspect Analysis (Figure 6) involves colour coding the topographic features of Saddle Mountain to illustrate the orientation and geographical exposure with respect to the eight points of the compass. Receiving reduced direct sunlight, northern exposures are better for snow retention. These slopes are best for ski trail development, but are undesirable for base area or residential development. Southern exposures are less desirable for skiing terrain, as they have reduced snow retention capabilities. Conversely, because these slopes receive partial or full sun exposure, they are more desirable for base area or residential development.

The slopes under consideration for ski trail development have a north-west to north orientation, making them generally ideal for snow retention.

The potential base area lands on the west-facing, mid-mountain bench are well placed to receive direct sun exposure during the afternoon. The potential base area lands on the north side of Saddle Mountain will be impacted by the shadow of the mountain, especially during the winter months.

Fig. 6. Aspect Analysis

III.2.4 Fall-Line Analysis

The Fall-Line Analysis (Figure 7) is an evaluation of the terrain on Saddle Mountain in terms of the path an object would take as it moves down a slope perpendicular to the contour lines of the topography. Fall-line paths indicate the natural flow of potential ski trail routes, from the top of the mountain and along ridge lines to the valleys, creek bottoms and into potential base areas. Consistency of fall-line provides the best recreational skiing experience for skiers. It also results in the least amount of environmental disruption during ski trail construction, due to minimal requirements for earthwork.

The fall-lines generally indicate a good flow potential leading from the peak of Saddle Mountain down to the mid-mountain bench and the north-facing lower base area lands. The fact that there are very consistent lines down the mountain collecting at the two potential base areas indicates excellent potential to establish a well-connected system of ski trails.

Fig. 7. Fall-Line Analysis

III.2.5 Climatological Analysis

Mike Wiegele Helicopter Skiing gathers data from three weather stations. The weather stations are located at the Blue River base (670 metres), Mt. Ste. Anne (1,768 metres), and Hroch peak (2,621) metres).

Generally, Blue River enjoys a superb climate for winter and summer recreational activities. The winter climate is relatively mild with clear, sunny conditions and negligible winds. Temperatures vary from -32EC to +10EC, with the average being about -10EC in the morning warming to +1EC in the afternoon. In terms of snow pack, approximately 300 to 400 cm of packed snow can be expected at the 1,500 to 2,000 metre elevation by late January or early February, giving plentiful snow.

It is the presence of powder snow (defined as having a density of 5% to 7% water content) that is the skiing condition sought by heli-skiers. While conditions vary considerably from year to year, snow conditions have been tracked by Mike Wiegele Helicopter Skiing over the past 28 years, allowing the establishment of the following averages:

- Outstanding snow (60-100 cm of powder) occurs 20% of the time.
- Excellent snow (30 cm of powder) occurs 25% of the time.
- Good snow (15 cm of powder) occurs 35% of the time.
- Poor skiing conditions (no powder) occur 20% of the time.

Based on the above data, combined with anecdotal records, commentary, and skiing experience on the mountain, we are confident that there is sufficient precipitation and reliable snowpack to warrant ski trail and lift development on Saddle Mountain.

In terms of providing a year-round resort experience, the summer season provides exceptionally long daylight hours and pleasantly warm days and nights that are ideally suited for golf and many other summer outdoor recreation activities.

III.2.6 Avalanche Hazard and Control

Lands within the study area are not significantly influenced by avalanche occurrences. A geotechnical assessment of the Saddle Mountain study area prepared by Golder Associates Ltd. (Appendix A-4) identified active avalanche paths to the south and east of the Saddle Mountain summit, in isolated terrain features, upper elevation creeks and gullies. These avalanche paths fall well outside any areas identified by the site analysis as potential ski terrain (see Figure 11. Opportunities and Constraints).

Observations over past helicopter skiing seasons have not indicated a significant avalanche hazard, nor have isolated historical occurrences been recorded. While it is not anticipated that ski area development will increase avalanche hazard on Saddle Mountain, the proponent will

ensure that appropriate ski terrain closures and avalanche control measures are undertaken to minimize the risk to guests of the Saddle Mountain Resort.

III.2.7 Terrain Capacity Analysis

After synthesizing the results of the various analyses, several conceptual alternatives for ski trail and lift development on Saddle Mountain were explored. Well-integrated skiing potential was identified within three "pods", as illustrated on the Mountain Development Potential Plan (Figure 8). Potential ski trail centre lines were delineated, within each of these pods, that radiate out from an upper elevation and return naturally to a lower focal point (also indicating potential lift terminal locations). The gradients of the trails are generally consistent within a given pod, matching a basic skier/snowboarder skill class.

A maximum lift-serviced elevation has been identified as the prominent sub-summit of Saddle Mountain, at an elevation of 2,021.5 metres. Depending on the results of a wind speed analysis and engineering details for the summit lift, this lift terminal location and elevation may vary slightly. It is assumed that an upper terminal elevation of 2,000 metres is attainable.

From this upper limit of skiable terrain, the mountain's topography defines the descent possibilities for Saddle Mountain. Fall-line skiing opportunities, within the confines of the upper mountain's over 80% slope limitations have shaped the mountain development concept. The lower limits to skiing have been defined by return trails, of no less than 10% gradient, to potential lift terminal locations.

Potential base areas have been identified where large expanses of relatively flat land are directly associated with skiing opportunities and access capability. An Upper Base Area has been identified at the 965 metre elevation on a mid-mountain bench overlooking the North Thompson River and the town of Blue River. Development opportunities for a Lower Base Area exist at the base of Saddle Mountain's north-facing slopes, at an elevation of 700 metres. It is desirable to maintain a skiable connection from the Upper Base Area to the Lower Base Area, at a minimum gradient of 10%.

Based on these criteria, the extent of skiable terrain has been delineated on the Mountain Development Potential Plan (Figure 8).

The gross area of skiable terrain for Saddle Mountain has been calculated at 455 hectares, or 1,124 acres. Using this gross area calculation, a preliminary indication of Saddle Mountain’s Comfortable Carrying Capacity (CCC) can be established as follows:

- The 455 hectare gross area of skiable terrain figure is effectively reduced by any terrain steeper than 80% slope appearing within the "Limit of Skiable Terrain" polygon, as outlined in Figure 8. The net area of skiable terrain, therefore, is 447 hectares (1,105 acres).

- Actual skiable terrain typically equals 25-30% of this net skiable terrain figure. Due to the size and extent of existing clear-cuts on Saddle Mountain, and the desire to simulate the larger scale skiing experience of helicopter skiing, this figure is expected to be closer to 50%.

As a result, actual skiable terrain has been estimated at 224 hectares (552 acres).

- The capacity of this terrain to support alpine skiing has been analyzed to provide a preliminary indication of the number of skiers Saddle Mountain could comfortably accommodate per day. Utilizing the low density standards defined in the Guidelines to Alpine Ski Area Development in British Columbia (Appendix A-7), applying an average density of 25 skiers/hectare, Saddle Mountain appears capable of supporting a Comfortable Carrying Capacity (CCC) of 5,600 skiers/day.

To provide the diversity of skiing product consistent with Mike Wiegele's "Vision" for Saddle Mountain (Section I.2), only Pod A will be developed under typical skier density assumptions. At a gross skiable area of 145 hectares of intermediate terrain (assuming 50% of which is actual skiable terrain, and an accepted density of 15-35 skiers/hectare), the CCC of Pod A can be estimated at between 1,100 and 2,500 skiers per day.

For the remainder of Saddle Mountain (Pods B and C), the intent is to provide lift-serviced powder skiing. As a result, the potential capacity figure for these pods has been reduced significantly. To that end, the proposed capacity for Saddle Mountain's "Powder Terrain" has been limited to a maximum of 300 skiers per day.

Although analysis of the mountain's terrain indicates a potential CCC of 5,600 skiers per day, the desire to preserve a powder skiing experience in Pods B and C reduces the resort capacity to an overall CCC of between 1,400 and 2,800 skiers per day, depending on the accepted density of Pod A.

A more detailed analysis of skiable terrain, skier density, and comfortable carrying capacity calculations appears in Section IV.

III.2.8 Mountain Development Potential Summary

In terms of terrain and physical capability, Saddle Mountain is ideally suited to alpine ski resort development. At 1,300 metres (4,265 feet) of attainable lift-serviced vertical, Saddle Mountain Resort has the potential to become one of the largest ski areas in North America.

The mountain exhibits consistency of terrain, a reliable snowpack, ideal ski terrain orientation (primarily north-facing slopes, preferred for snow retention), and excellent fall-line skiing opportunities which are suitably connected to potential base area lands.

Of equal importance, the terrain on Saddle Mountain is capable of supporting a sufficient Comfortable Carrying Capacity to achieve the project goals and objectives, as outlined in Section I.3.

Fig. 8. Mountain Development Potential

III.3 Base Area Development Potential

Analysis of the mountain development potential in Section III.2 has identified two potential base area development sites (see Figure 8).

In combination, the two sites effectively service the potential ski terrain of Saddle Mountain, and offer sufficient developable land to establish base area facilities including lift terminals and appropriately-sized loading zones, skier services, parking, village development and overnight accommodation, residential areas, golf course development, and additional recreational facilities. Access to both potential base areas is currently possible via existing logging roads.

The carrying capacity of the ski terrain (Section III.2.7) provides a preliminary idea of the amount of skier-related infrastructure, parking and built-space necessary to support resort facilities at build-out. Detailed calculations appear in Section IV.3. In addition to the development requirements of the skiing facilities, Saddle Mountain Resort is also intended to act as a staging point for heli-skiing, heli-hiking, golf and summer sightseeing activities.

Lower Base Area

The north side of Saddle Mountain levels out to a large expanse of relatively flat land at the 700 metre elevation (see Figure 9), well-positioned to service fall-line ski trails from the summit of Saddle Mountain. This potential base area represents the lower limit of skiable terrain on Saddle Mountain. It also involves the shortest and easiest road access, of the two potential staging points for the mountain. As such, the Lower Base Area is anticipated to become the primary access point for day-skiers and summer visitors to Saddle Mountain Resort.

The Lower Base Area possesses sufficient land to support golf course development, and provides a unique opportunity to develop fairway-view real estate offerings that also have ski to/ski from capability. The relatively low elevation of these lands ensures an adequate length of season for golf course operations.

Upper Base Area

A prominent, mid-mountain bench exists at the 965 metre elevation, which collects consistent fall-line skiing opportunities of Saddle Mountain's northwest aspect. This potential base area offers commanding views of the North Thompson River, the town of Blue River, and the glaciers and peaks of the upper Mud Creek drainage.

III.3.1 Base Area Slope Analysis

For the purposes of more accurately assessing base area development potential, the sites described above have been analyzed in greater detail. In addition, slope analysis gradient categories have been adapted, from those which previously defined skier skill categories in Figure 4, to categories that better suit the anticipated land uses of base area development.

The Base Area Slope Analysis (Figure 9) is utilized to identify the range of slope gradients suitable for potential base area development. The topographical information has been colour coded into slope gradient categories as follows:

- White: Slope gradients between 0% - 5%. Ideal for base area village, residential, and golf course development.

- Yellow: Slope gradients between 5% - 10%. Maximum for base area village development. Acceptable for golf course and residential development.

- Light Green: Slope gradients between 10% - 20%. Acceptable for golf course and residential development.

- Mid Green: Slope gradients between 20% - 30%. Maximum contoured design for golf course development. Acceptable for residential development.

- Blue: Slope gradients between 30% - 40%. Maximum for low density residential development with careful design.

- Purple: Slope gradients greater than 40%. Generally too steep for development.

The Base Area Slope Analysis represents a critical tool in the detailed design of base area development lands. While this detail does not appear until Section IV.3 (Base Area Development Plan), the Slope Analysis confirms, in a preliminary sense, that there is a significant amount of developable base area land on Saddle Mountain with slope gradients of 30% or less.

Fig. 9. Base Area Slope Analysis

III.4 Preliminary Saddle Mountain Resort Development Concept

Driven by the vision of Saddle Mountain Resort as a lift-serviced powder skiing opportunity, and guided by the over-riding goals and objectives described in Section I.3, a preferred concept for the resort was assembled. Analysis of the Saddle Mountain ski terrain and potential base area lands led to the Saddle Mountain Resort Development Concept described graphically by Figure 10.

This concept formed the basis for the Resort Master Plan, which is described in detail in Section IV. It should be noted that, building from the Resort Development Concept, a variety of changes have been made over the course of the master planning and design process; to reflect government agency and public input; and to take into account the findings of consultant reports initiated following the creation of the original Resort Development Concept.

As such, **many of the elements described below and illustrated in Figure 10 have been significantly altered in the final Master Plan**. However, in order to fully understand the improvements that have been adopted within the Master Plan layout, we feel that it is important to document the original thinking.

Specifications of the Saddle Mountain Resort Development Concept, as submitted to the BC Ministry of Environment, Lands and Parks in May of 1997, are summarized below:

Saddle Mountain Summit	2,000 metres (6,560 feet)
Upper Village Elevation	1,025 metres (3,365 feet)
Lower Village Elevation	690 metres (2,265 feet)
Upper Terminal	1,985 metres (6,510 feet)
Vertical Rise	1,310 metres (4,300 feet)
Number of Lifts	5
Ski Terrain (Gross Area)	500 hectares (1,235 acres)
Daily Skier Capacity	1,600 (at buildout)
Distance from Blue River	26 kilometres via existing road
Accommodation (Bed Units)	1,850
Single Family Units	72
Bed & Breakfast Units	16
Multi-Family Units	124
Hotel/Condo	200,000 sq.ft.
Lodge	50,000 sq.ft.
Additional Built Space:	
Resort Core	30,000 sq.ft.

The Saddle Mountain Resort Development Concept proposed the development of two base areas. The Upper Base Area was envisioned to include a 3.5 hectare Village Core with tourist commercial facilities, retail outlets, hotel, parking, and multi-family residential units, as well as 51.8 hectares of ski to/ski from single family residential and estate lot development.

The Lower Base Area, located at the 690 metre level on the north side of Saddle Mountain included a skier services/golf clubhouse building, parking, an eighteen-hole golf course, and a combination of ski to/ski from, and fairway-view single family residential subdivisions. Lower Base Area development lands were to occupy an area of 21.3 hectares, with an additional 69.0 hectares reserved for the golf course.

As illustrated in Figure 10, access to Saddle Mountain involved the installation of a gondola from the Blue River townsite to the Upper Base Area and Village site. The lower gondola Terminal Site occupied an additional 1.0 hectare of land across the North Thompson River from Saddle Mountain. Including this gondola terminal site, the Resort Development Concept required an area for facilities and real estate development of 76.6 hectares, plus the 69.0 hectares for the golf course, for a total resort development area of 145.6 hectares (360 acres).

Vehicular access was to be maintained via the existing 26 kilometer road system from Blue River to the Lower Base Area. The existing switch-back road to the Upper Base Area was to be upgraded to establish a maximum 10% gradient in order to facilitate public winter use.

In the early phases of development, winter access was planned to be by gondola and/or helicopter. At or near buildout, a bridge over the North Thompson River, providing a more direct access link to the Lower Base Area from Blue River was to be considered.

This concept was utilized as the submission for interagency review. The resultant comments and suggestions acted as the basis for the changes that have been developed into the Saddle Mountain Master Plan.

Figure 10 - Resort Development Concept

III.5 Interagency and Public Review

The Saddle Mountain Resort Development Concept was distributed to referral agencies on June 2, 1997 , in order to identify issues requiring resolution prior to the development of a Resort Master Plan for Saddle Mountain. Agencies involved in the referral process are listed below:

- BC Environment, Kamloops
- Federal Fisheries and Oceans, Clearwater
- Ministry of Forests, Clearwater
- Ministry of Forests, Kamloops
- Ministry of Mines, Kamloops
- Ministry of Health, Kamloops
- Archaeological Branch, Victoria
- Ministry of Highways, McBride
- Canadian Coast Guard, Vancouver
- Ministry of Environment Lands and Parks, Kamloops
- Thompson Nicola Regional District
- North Thompson Band.

Subsequently, a public meeting was held in the form of an open house, at Blue River, on August 11, 1997 to solicit public comment.

The following is a summary of the key points that emerged from the interagency and public review of the Saddle Mountain Resort Development Concept. Comments have been organized into general areas of concern including: Forest Resources; Geology and Mineral Resources; Archaeological Resources; Fisheries, Wildlife Habitat and Environmental Resources; Transportation Systems; Socio-economic Impacts/Benefits, and; Regional Planning Objectives.

All referral submissions and open house comments appear in their entirety in Appendices A-2 and A-3.

III.5.1 Forest Resources

The primary land uses presently occurring within the proposed Saddle Mountain Resort development area are timber harvesting and related forestry activities. As such, a number of government agency referral comments involved concerns relating to the study area's forest resources.

The metes and bounds description of the Saddle Mountain study area was determined to encompass not only the best skiing opportunities on Saddle Mountain, but also to ensure that an adequate buffer can be established to guarantee a high level of visual quality and resort ambiance to support the proposed development. A concern was voiced that the removal of this land from the provincial forest will place undue stress on regional timber harvesting objectives. The proponent ensures the government and public alike that only those areas necessary to establish and maintain an adequate buffer will be removed from the productive forest.

Mike Wiegele Helicopter Skiing will work in cooperation with harvesting and tenure requirements of the MOF Small Business Forest Enterprise Program, and current chart holders, to ensure that trail development and glading activities serve a dual mandate of meeting recreational objectives, while at the same time maximizing timber production. Further, the proponent will work with forest health and protection staff of the MOF to ensure that all measures of prevention, control or abatement of forest health or fire issues are considered and implemented as appropriate.

Communication between Mike Wiegele Helicopter Skiing and the Ministry of Forests will be given high priority, to ensure that enough lead time is given to permit effective administration and scheduling of timber harvesting activities. Cooperative decision-making is also required in matters relating to the visual or scenic qualities associated with harvesting practices, and the preservation and enhancement of recreational attributes of the study area's forest.

The visual impact of timber harvesting on the mountains that surround the Blue River townsite is a significant concern of the existing Mike Wiegele Helicopter Skiing operation. With guests coming to British Columbia from all over the world, the negative visual impact of logging activity can be profound. To that end, a Five Year Plan will be completed to describe the harvest areas and schedule of cut coinciding with the planned implementation of the Resort Master Plan.

In the case of Saddle Mountain, cut blocks are highly visible from the Mike Wiegele Lodge. If these cut blocks are "softened" in the form of ski trails and glading, the visual quality can be greatly improved, particularly in the eyes of the visiting skier. Mike Wiegele Helicopter Skiing has worked diligently over the past year to ensure that proposed ski trail development at Saddle Mountain improves the aesthetic quality of the mountain as well.

Once skiing activity commences on Saddle Mountain, Visual Quality Objectives (VQO's) relating to areas seen from the ski hill may require a greater degree of cooperative planning between Mike Wiegele Helicopter Skiing and the Ministry of Forests. It has been suggested that an interpretive display on Saddle Mountain, describing forest management activities, may develop a greater tolerance for logging in the surrounding area, lessening the potential impact to timber flow from the area.

Additional concerns arising over a perceived loss of investment into the area's forests, should be abated by the realization of greater return to the Crown through the development of the ski potential of the study area, outweighing the value of lost silviculture investments or reduced timber harvesting potential. Access for logging operations beyond the ski hill will not be affected.

III.5.2 Geology and Mineral Resources

The geology and mineral potential of Saddle Mountain is poorly documented. To date, the general area has not seen much mineral exploration activity. In the interests of minimizing the impact of the proposed Saddle Mountain Resort Development on potential future mineral exploration and development, the extent of the Controlled Recreation Area will be kept to a minimum.

III.5.3 Archaeological Resources

The proponent recognizes that future land altering activities related to the Saddle Mountain proposal could conflict with archaeological sites protected under the Heritage Conservation Act. Based on recommendations from the Archaeology Branch of the Ministry of Small Business, Tourism and Culture, the proponent engaged the services of an archaeological consultant to conduct an impact assessment.

In August 1997, Golder Associates Ltd. initiated an Archaeological Impact Assessment, with full support and participation of the North Thompson First Nation. There were no significant findings discovered (see Section III.6.3 and Appendix A-6). The discovery of additional archaeological sites during construction phases of the project, however, remains a possibility. In the event of archaeological discovery, avoidance of the area, or some other approved form of mitigation (excavation, surface collection, mapping, etc) will be undertaken to minimize the impact of ski resort development.

III.5.4 Fisheries, Wildlife Habitat, and Environmental Resources

Based on the Saddle Mountain Resort Development Concept submitted in May 1997, the capacities and development areas associated with the preliminary concepts fall well below the threshold points that would trigger the need for an Environmental Assessment. As a result, the Environmental Assessment Pre-Application file for Saddle Mountain was officially closed. An Environmental Review, however, was completed, and has become an integral component in master planning efforts (see Section III.6.1 and Appendix A-5).

III.5.4.1 Water Quality and Fish Habitat

Referral comments from the Federal Department of Fisheries and Oceans, the BC Ministry of Environment Lands and Parks, and the Thompson Nicola Regional District highlighted a number of concerns related to potential impacts on water quality and fish habitat.

The North Thompson River, Blue River, Mud Lake, Mud River and Smoke Creek are all fish bearing waters, and must be protected throughout construction phases, and for the long-term once the project is complete. Section VI outlines appropriate measures to prevent impacts on water quality and fish habitat.

Particular aspects of the proposed Saddle Mountain development requiring the most scrutiny are the initial ski trail development, proposed bridges, river and creek crossings, as well as the base

area, residential and golf course developments. Section VI addresses each of these specific areas of concern. In general, protection of fish and fish bearing waters will be specified in the Land Development Guidelines for the Aquatic Habitiat (Chilibeck et. al. 1992) or the Forest Practices Code Riparian Management Area Guidebook (MoF, 1995b), whichever is more stringent. In the case where deviation from the guidelines is proposed, consultation with BC Environment and the Department of Fisheries and Oceans will occur.

III.5.4.2 Wildlife and Vegetative Communities

The Environmental Review (see Section III.6.1 and Appendix A-5 and A10) included a complete wildlife and vegetation inventory. Specifically mentioned by referral comments, moose and bear habitat areas are recognized as being present . The proponent has incorporated the findings of the Environmental Review relating to Wildlife and Vegetation concerns into the Resort Master Plan.

III.5.4.3 Environmental Impact

The proponent will undertake recommended measures for watershed management, wildlife management, environmental monitoring, and mitigation/reaction programs.

The management of potential environmental impact by the proponent will complement and be integrated with local government planning objectives and initiatives including Zoning Bylaws, Official Community Plan designations and guidelines, Regional Waste Management Plan, etc.

Refuse

As are currently provided at the Mike Wiegele Lodge, animal proof containers will be provided as necessary throughout the Saddle Mountain Resort. Public education programs will also be implemented to prevent human/animal conflicts.

The proponent will also promote measures to support regional government policies supporting the principles of reduction, reuse and recycling of solid waste. It is fully recognized that the Blue River landfill transfer station will need to be upgraded to handle the increase in refuse volume. As part of the Servicing and Infrastructure Plan (see Section IV.4), the proponent will communicate closely with the Regional District to ensure that the provisions of the Regional Waste Management Plan are supported.

The Servicing and Infrastructure Plan also deals with the issues of dangerous goods, special wastes and spills.

Noxious Weeds

Attention to cleanliness of imported gravels, recreational user education programs, signing and trail checks will be imposed, as per Regional District suggestions, to help control the spread of noxious weeds.

Air Quality

A monitoring program may be imposed to assess the possibility of poor air quality during atmospheric inversions, as a result of increased traffic, commercial and residential development. If necessary, restrictions will be placed on the efficiency and/or suitability of wood burning appliances.

III.5.5 Transportation Systems

Referral comments from the Ministry of Transportation and Highways indicated that the proposed development at Saddle Mountain would generate a significant enough impact to warrant a Traffic Impact Study. Based on standard terms of reference supplied by the Ministry of Transportation and Highways, Creative Transportation Solutions was contracted to undertake an impact study.

Mike Wiegele Helicopter Skiing recognizes that the issuance of conditional project approval by the Ministry of Transportation Highways does not obligate the Ministry to construct, gravel, grade or snowplow that portion of the public road or forestry road which is not presently maintained. In addition, all modifications required to the existing road network as a result of the proposed development shall be at the proponent's expense, developed as per the Ministry of Transportation and Highways current Design and Construction Standards and to the satisfaction of the District Highways Manager.

III.5.6 Socio-Economic Impacts/Benefits

Referral comments from the Small Business Development Branch of the Ministry of Employment and Investment, as well as public comment from the August 11, 1997 Open House in Blue River, were for the most part, positive as to the socio-economic impact of the Saddle Mountain proposal to local, regional and provincial communities.

At a provincial level, the government "recognizes the need for further sustainable development, new jobs and diversification of the economy, especially in areas outside of the Lower Mainland." The Saddle Mountain proposal represents an opportunity for significant new investment, job training and increased community stability. In addition, the Saddle Mountain Resort would contribute significantly to the Highway 5 tourism corridor from Sun Peaks to Clearwater, Valemont and Jasper.

While attracting international tourists, Mike Wiegele Helicopter Skiing has had a very positive influence on the region, employing many local residents and generating a significant economic contribution to the local enterprises on a year round basis. With the continued growth of their summer operation, offering a range of activities from heli-hiking and fishing to mountain biking, the economic activity will become more balanced over time.

The resort is now the biggest employer in Blue River. Many of the heli-guides are establishing permanent homes there. Most visitors patronize local businesses while in Blue River. Further, a great deal of construction has been undertaken by Mike Wiegele Helicopter Skiing, thus

supporting the community in terms of supplies, jobs, the purchase of land and an increased tax base.

With the addition of an alpine skiing facility, as well as the associated complementary facilities, the economic impact should only become more positive over time. At the Open House, Blue River residents commented that the proposal will bring high wage logging and construction jobs back to town, and will contribute substantially to the community's taxation base, permitting improvements to infrastructure that would not typically be possible in a community the size of Blue River.

The proponent acknowledges that ongoing evaluation is required to assess immediate and long-term community needs, and the implications of the Saddle Mountain proposal. There will be substantial impact on schools, health clinics, and the potential for strain on existing community infrastructure. A medical clinic has already been funded and established to serve members of the local community as well as heli-skiing guests of the resort.

The continued viability of the existing community of Blue River is a recurring theme of government referral comments, as well as public comment from the Open House. The proponent will make efforts specifically directed to ensure that the proposed resort becomes an integral and complementary part of the existing community of Blue River, not a competing entity that might threaten its viability. The proponent will work in close association with the Regional District's Planning Department to preserve the viability of the commercial core of Blue River, planning resort growth in concert with town growth.

In response to criticism of the proposal's suggestion of on-mountain residential development, it is anticipated that this component will strengthen the appeal of the Saddle Mountain Resort, increase investment in the area, and result in the simultaneous in-filling of the existing townsite. The extent of on-mountain residential development is subject to market response, however, and may be altered over time. Similarly, the need for employee housing will be constantly monitored and reassessed.

The issue of access to Crown Land, and land ownership rights raised a number of concerns. In response, the proponent will ensure that the rights of all private landowners and Crown Land leaseholders are upheld, and that the community and public at large will have equitable access to the resort and recreational amenities. It is not the intent of the proponent for the project to evolve into a "restrictive playground" or "exclusive country club" at the expense of the community and provincial user. The provision of affordable and consistent skiing opportunities for resort staff and Blue River residents is one of the over-riding resort development objectives of the Saddle Mountain proposal.

The benefits of Crown Land will remain accessible to all. The inclusion of the foreshore of Mud Lake in the metes and bounds description is not an attempt to privatize access along the entire south shore of Mud Lake, but to ensure an adequate buffer for resort development. A greenspace trail network, proposed as part of the Resort Master Plan, will actually improve public access to Mud Lake and other areas within the project area.

All efforts will be made by Mike Wiegele Helicopter Skiing to ensure public safety during the development phases of the project. Local residents will be kept up-to-date on the agenda of development as it is defined throughout future levels of planning detail. The proponent will communicate with the Regional District Planning Department to coordinate phases of resort development, with the provision of housing, schools, banks, health care, and other required services in a timely fashion to meet the needs of community growth and development.

Mr. George McKay of the Ministry of Employment and Investment summarized the potential economic benefits of the Saddle Mountain proposal as follows:

"This well established resort operation offers a quality ski concept already well positioned in the national and international marketplace, and is geographically located to expand upon the more recent summer operations. We see continued growth in tourism air traffic, offshore markets and adventure travel demand...Lift skiing will certainly add diversity to the existing heliski operation...In summary, you have a good product, in a great location with a growing market, and a well developed and experienced management team."

III.5.7 Regional Planning Objectives

The Saddle Mountain study area is currently zoned RL-1 (Rural), which would permit "ski hill development in accordance with an open land use,... but would not allow for the range of use envisioned as part of the comprehensive ski facility" development as proposed by the Saddle Mountain Resort Development Concept.

Under the current Blue River Official Community Plan, a "Rural Resource" designation applied to the study area permits adventure tourism, recreation, recreational residential and public uses of a low density or open land recreational nature. The higher density residential, commercial, and all-season resort facility development proposed by the May 1997 Resort Development Concept and this Resort Master Plan, however, would require an amendment of the OCP to create a new designation and related policies to direct the development of the Saddle Mountain Resort.

It is the intent of Mike Wiegele Helicopter Skiing that proposed developments on Saddle Mountain support the goals and objectives of the Blue River Official Community Plan. The proponent will work cooperatively with Thompson Nicola Regional District planning staff to bring about amendments to the Plan to permit higher density resort development, as determined to be in the best interests of the local and regional community.

Policies and guidelines relating to the Official Community Plan's natural hazard and environmentally sensitive areas designations will be respected by future planning and design efforts dealing with affected portions of the proposed development area. Development will also adhere to additional management guidelines which relate to the designation of Mud Lake as a “Natural Environment Lake”, in recognition of significant ungulate values in the surrounding vicinity.

All efforts will be made to ensure that developments at Saddle Mountain coincide with the goals, objectives and strategies of the Kamloops Land and Resource Management Plan, and the soon to

be completed Regional Growth Strategy.

III.6 Consultant Reports

In response to referral comments suggesting that additional information was required to properly assess the potential impacts of the Saddle Mountain project, a number of consultant reports were completed at the proponent's expense.

III.6.1 Environmental Review

In October, 1998, GeoAlpine Environmental Consulting Ltd. and Nelson Environmental Services completed an Environmental Review of Saddle Mountain. The following are the recommendations and conclusions of their report:

- The integrity of the water quality, habitat values and downstream fisheries values of all waterbodies should be protected by the establishment of riparian buffer zones and a surface water runoff plan. In general, buffers should be as specified in the Land Development Guidelines for the protection of Aquatic Habitat (Chilibeck et al., 1992).

- Any proposed development within the study area should strive to maximize old growth forest preservation opportunities by avoiding destruction of plant communities and minimizing ground disturbance. Ski trails and glading should be flagged prior to cutting.

- An attempt should be made to preserve wetlands within the study area. In order to protect the functional values associated with the wetlands preservation, buffers should be incorporated into the plans. Any wetlands potentially impacted by future development should be subjected to detailed assessment to identify all plant species prior to development approval.

- An on-site environmental monitor should be retained to be present during all construction planning and implementation.

- During the planning and design stage, special management options must be considered in habitats indicated as being of Moderately High to High suitability for priority species, particularly moose and grizzly bear unless additional studies suggest site utilization is lower than suitability rating indicates.

- Areas with high densities of snags should be retained. A minimum fifteen metres vegetated buffer on either side of creeks (i.e. from the top of bank) should be retained. In areas where windthrow is a risk, wider buffer zones to 30 metres should be set aside. Setbacks along the North Thompson River should be at least 50 m wide. Existing vegetation in all setback areas should not be disturbed. These set-back zones should be established whether an area has been previously disturbed (e.g., clearcut) or not. Natural regeneration is expected to occur rapidly in most areas where clearing has already encroached into this zone. Protection of these areas will retain wildlife trees, breeding and foraging areas for wildlife, and provide corridors for wildlife moving or migrating through the site.

- All open wetlands should be retained. No disturbance such as filling, redirection of runoff, etc, should occur. Water utilization for watering and other uses should ensure that current hydrology of wetlands is not altered. A 30 m vegetated set-back should be established adjacent to wetlands to protect the unique plant and wildlife values of the wetland and adjacent riparian areas. Often, wildlife trees important to bats and other wildlife species are located within the 30 m setback area.

- Wildlife movement corridors will be provided if retention zones along creeks are designated as recommended above. Road and trail crossings of these creeks should be designed so that wildlife movements is not impeded or discouraged. The number of stream crossings should be minimized. Bridges rather than culverts or fords are preferred. Planting of additional native, riparian shrubs and trees may be necessary.

- Nests of raptors such as northern goshawk and great horned owl found during lands clearing activity must be adequately protected by a forested buffer while the nest is occupied.

- A preservation mechanism for high value wildlife habitat should be considered prior to development.

III.6.1.1 Master Plan Implications

The Environmental Review recommendations for the Saddle Mountain Resort Master Plan have been taken into account as described below.

Wetland areas

Two significant wetlands were identified within the Saddle Mountain study area. The largest of these is a wetland complex running the length of Bottom Creek, from an open pond near the proposed Lower Base Area. The second area is a forested wetland on the upper bench. Both wetlands are associated with the "relatively flat lands" identified by the slope analyses as potential base area development lands. Exact delineation of the wetland areas will be completed prior to construction and engineering planning.

In order to avoid encroaching on these wetland areas, notable changes to the Resort Development Concept have been made in the creation of the Resort Master Plan. Most significantly, in the Lower Base Area, the eighteen-hole golf course was relocated to avoid the Bottom Creek wetland complex and to maintain wildlife corridors. The access road was also realigned to take advantage of an existing road location crossing the Bottom Creek wetland, minimizing additional impact. This access road will skirt the perimeter of the wetland complex, with no new roads being developed across the wetland itself. Further, it should be noted that the golf course plan is conceptual. Golf course architectural design, once embarked upon, will give further consideration to the riparian zones of the creek running through the golf course.

The lift terminals, parking, residential developments at both the Upper and Lower Base Areas, have been relocated in the Resort Master Plan to avoid encroaching on the two identified wetland

areas.

The proponent acknowledges the unique nature of the Upper Base Area wetlands and commits to the avoidance of these areas. Detailed analysis and design will be completed in order to ensure that the impact is negligible.

Surface run-off

Storm sewers to transfer run-off from the Upper Base Area to Lower Base Area infrastructure will be utilized to avoid increasing surface run-off volumes in existing gullies. A storm water and drainage plan will be developed to address concerns relating to surface run-off (changes to water quality, soil stability, and sediment load).

Improved water quality baseline data will be gathered to monitor potential impacts during development.

Creeks and riparian areas

Detailed construction planning will incorporate adequate vegetative buffer from top of bank, within which vegetation will remain undisturbed. Stream crossings will be required on a number of ski trails, but will be kept to a minimum. Where stream crossings are unavoidable, culverts will be utilized to maintain the creek function. None of the ski trail stream crossings involve fish-bearing streams.

Through careful redesign, the proposed road network requires only two stream crossings, both using existing road locations to cross the creeks. The two stream crossings are required to access the Upper Base Area, with the same road crossing Bottom Creek and West Creek. Existing crossings are accomplished using culverts, but as road improvements are undertaken, site-specific assessment may require upgrading of these crossings to involve bridge construction. In general, protection of fish and fish bearing waters will be specified in the Land Development Guidelines for the Aquatic Habitiat (Chilibeck et. al. 1992) or the Forest Practices Code Riparian Management Area Guidebook (MoF, 1995b), whichever is more stringent. In the case where deviation from the guidelines is proposed, consultation with BC Environment and the Department of Fisheries and Oceans will occur.

Mature forests (including old growth)

Ski trails, base area developments and golf course development will be undertaken in a manner that will improve the visual quality of existing cut-blocks. Any significant earthwork and site improvements will be undertaken on lands previously disturbed by timber harvesting. Removal of mature forest will be kept to a minimum, and will involve selective logging practices to establish ski trails and glading, in a manner that will preserve the integrity of the remaining trees. All logging will be subject to consideration of WCB concerns, liability issues and forest health issues.

Wildlife habitat suitability and capability

Potential base area lands coincide with areas of moderate to high wildlife habitat suitability for moose and grizzly bear (see Appendix A-5, Terrestrial Ecosystems of Saddle Mountain: *Habitat Suitability for Grizzly Bear; Habitat Suitability for Moose*).

Where it is not possible to avoid these areas of wildlife habitat, efforts will be made to maintain the integrity of existing *patterns* in habitat suitability, and to preserve *continuity* of habitat. Interruptions to habitat continuity exist at present in the form of the Yellowhead Highway, the railway, and the town of Blue River.

In the context of surrounding areas, the value of suitable wildlife habitat in the Saddle Mountain study area may be less significant than suggested when viewed in isolation, as it has been under the specific terms of reference of the Environmental Review. This will be determined in future studies.

As additional data is collected, it will become possible to distinguish between areas of *suitable habitat*, and areas where the *presence* of wildlife species can be determined. Helicopter surveys over the Saddle Mountain study area have become part of the standard Mike Wiegele Helicopter Skiing winter operations to record moose sightings, and patterns of site use. An on-site assessment will be conducted in the spring of 1999 by an independent consultant to confirm the presence or absence of grizzly bear and moose within the study area. (See Appendix 10).

Until more information is acquired relating to the presence or absence of grizzly bears, and the accurate delineation of study area wetlands, the Saddle Mountain Resort Master Plan will approach these environmental issues cautiously, with development lands respecting the defined sensitive areas to the greatest degree possible. Should environmental issues be determined to be of lesser significance, areas of development may be relocated to maximize ski to/ski from residential values; to improve the play and aesthetic qualities of the golf course development; to improve the visual and aesthetic quality of the entrance road; to diversify the range of facilities being offered; etc. This allows operational flexibility through discussion between the proponent and the effected agency.

III.6.2 Geological Hazard Assessment

In April, 1998, Golder Associates completed a Preliminary Geological Hazard Assessment for the Proposed Saddle Mountain Ski Hill and Resort Development. Based on their characterization of the site and assessment of potential terrain hazards, it is Golder's opinion that no significant geotechnical concerns or potential geological hazards are present at the site which would have a significant impact on proposed development of the site. This opinion is supported by the following:

- The location of major amenities under consideration all fall within areas rated as low, or in some areas, moderate hazard for terrain instability or site disturbance. The one exception to this is portions of some of the proposed runs and trails on the east side of the proposed ski area, which were rated as high because of the steep slope gradients present.

- Review of available airphotos across a 28 years span of time indicates that no new naturally occuring areas of unstable terrain have developed at the site in recent years.

- The proposed development does not impact any areas with active terrain stability features, including avalanche and slide tracks, and gully and debris chutes.

- Inactive terrain instability features may be impacted by the proposed ski facility. However, the current performances of the "grooming test areas" as well as the remainder of the logged areas at the site has been favourable with respect to lack of significant surface erosion features. This performance, despite the relatively high precipitation noted in the region, strongly suggests that site preparation of the ski facility, if conscientiously executed, should not pose a significant risk of unacceptable site disturbance through excessive erosion.

Recommendations arising from Golder's assessment include the following items:

- Long term access requirements to the site in relation to the present location and condition of the existing Smoke Creek FSR should be considered, and possible alternatives explored. At best, the two areas of active instability along the existing roadway constitute an ongoing 'high maintenance" requirement and possible inconvenience. At worst, with heavier traffic demands, either or both of these two areas could become a serious impediment to reliable vehicular access to the site.

- Appropriate handling of surface runoff and staging or scheduling of any site development activity on moderately steep to steep slopes will be a key factor in minimizing site disturbance during development. The development process must also include provision of prompt and effective revegetation of all disturbed areas in terrain with moderate or steeper slope gradients.

- Completion of a hydrological assessment for the site, or hydrological consultation during the detailed design stage should be undertaken. This will provide appropriate information at the detailed design stage for design and sizing of runoff systems and stream crossing structures in development areas including the alpine bases, residential areas, and the golf course.

- Depending on the details of the waste and septic disposal requirements and water supply requirements of the proposed development, as determined during the detailed design stage, further detailed geotechnical and hydro geological studies may be necessary to identify suitable sites and determine design criteria for such facilities.

In summary, based on the results of their assessment, Golder is of the opinion that the conceptual plan for the proposed development is appropriate for the terrain conditions at the site, and if executed in accordance with good engineering practice, should not result in unacceptable levels of ground disturbance at the site.

III.6.2.1 Master Plan Implications

There are no implications to the Master Plan layout and design as a result of the Geological Hazard Assessment. All effort will be made to adhere to the recommendations to ensure that any impact will be negated during the detailed design and construction stages of the project.

III.6.3 Archaeological Assessment

In January, 1998, Golder Associates completed an Archaeological Impact Assessment of the Proposed Saddle Mountain Ski Resort Development (See Appendix 6). The impact assessment was conducted September 17 to 19, 1997 under Heritage Inspection Permit 1997-230, issued by the Archaeology Branch (Ministry of Small Business, Tourism and Culture).

The management recommendations outlined in their report are as follows:

> No heritage sites pre-dating 1846 were identified during the archaeological impact assessment of the proposed resort development, and no further archaeological work is recommended based on the development plans available at the time of the field inspection. The level of investigation is considered adequate to identify any substantial archaeological concerns in the development areas, and the probability that unidentified archaeological sites are present (with the possible exception of isolated artifacts) is considered low. However, consistent with the intent of the Heritage Conservation Act, the proponent is advised that if archaeological remains are encountered during development, all work in the vicinity of the remains should cease until the Archaeology Branch, The North Thompson Indian Band and a qualified archaeologist are contacted and an appropriate site management plan is devised. Moreover, if the proposed development plans are revised, additional areas may need to be inspected for heritage concerns prior to the initiation of any land altering activities.

The Archaeolgy Branch of the Ministry of Small Business, Tourism and Culture concurred with the findings and conclusions of the Golder study, stating that no additional archaeological work is required.

III.6.3.1 Master Plan Implications

There are no implications to the Master Plan layout and design as a result of the Archaeological Assessment and no further work is required. All effort will be made to adhere to the requirements of the Heritage Conservation Act during plan implementation.

The already completed additional environmental studies (Appendices 8, 9, and 10), verified that the proposed mountain and base area plans take into account the known environmental attributes of the site. Any additional refinements to the plan will be made as detailed planning is embarked upon.

III.6.4 Traffic Impact Assessment

Referral comments from the Ministry of Transportation and Highways suggested that the proposed ski resort development at Saddle Mountain would generate a significant enough impact to warrant a Traffic Impact Study. Based on standard terms of reference supplied by the Ministry of Transportation and Highways, Creative Traffic Solutions was contracted to undertake an impact study.

III.6 4.1 Master Plan Implications

The traffic impact study has been completed. The most significant findings of the investigation caused changes to the Saddle Mountain Resort access concept.

While the Resort Development Concept assumed that the existing highway bridge over the North Thompson River could be used to access Saddle Mountain, it has since been suggested that any significant volume of traffic flow would eliminate this access route as a possibility. Use of the existing logging road, accessing Saddle Mountain via the highway bridge, would require the construction of a turning lane on Highway #5. The proximity of the logging road to the highway bridge, however, would require that the turning lane be accommodated at the existing bridge location, thereby requiring highway widening and bridge reconstruction.

As such, a more cost effective alternative has been adapted in the Master Plan that will provide access to Saddle Mountain using an existing logging bridge over the North Thompson River just north of the Blue River air strip. An additional bridge will be required to cross Mud Creek (see Section II.2. Location and Access).

As more detailed information becomes available additional changes will be made to the Master Plan, while adhering to the conclusions of the CTS Study.

III.6.5 Internal Review of Development Concept

The general layout and design of the ski lift and trail concept as illustrated in the Resort Development Concept (Figure 10) was reviewed by key staff at Mike Wiegele Helicopter Skiing and by Brent Harley and Associates. Although the gondola conceptually made sense from a variety of perspectives, economically and operationally the cost of such a conveyance could not be justified.

III.6.5.1 Master Plan Implications

The ski lift placement has been redesigned to access the mountain in a fashion that coincides with the changes effected by the Environmental Assessment, while offering an opportunity to develop the skiing facilities in a more economically sensitive fashion.

III.7 Summary of Development Opportunities and Constraints

Based on the site inventory and analysis, it is readily apparent that Saddle Mountain has the physical potential to meet all of the development goals and objectives determined at the outset of this report (Section I.3). Most importantly, Saddle Mountain possesses the physical attributes to function as an independent ski resort, while also providing an effective complement to the highly successful helicopter skiing operation already in place.

Within a proposed ski area boundary of 455 hectares (gross area of skiable terrain), Saddle Mountain has the potential to support 1,300 vertical metres (4,265 feet) of lift-serviced skiing, providing an excellent mix of terrain. Detailed on-site evaluation, including two winters of testing the mountain to determine its skiability and character, further supports the notion that lift-serviced skiing on Saddle Mountain is physically viable.

The May 1997 Resort Development Concept presented a development option derived from the site information available at the time. This concept was based on the findings of physical site analysis components including slope, elevation, aspect, fall-line, climate, avalanche hazard considerations, which were, in turn, synthesized to derive a preliminary idea of terrain capacity, mountain development potential, and base area development potential for Saddle Mountain.

Since that time, additional information has become available in the form of government agency referral comments, public meeting and open house comments, and consultant reports summarizing potential environmental constraints, traffic impacts, archaeological and geotechnical considerations.

The Opportunities and Constraints Plan (Figure 11) summarizes the most significant factors influencing the mountain planning, site planning, and design components of the Saddle Mountain Resort Master Plan. In order to graphically summarize the development opportunities and constraints associated with the proposed Saddle Mountain Resort, Figure 11 has been created using an overlay format:

The base plan displays physical attributes of the site, which may represent either an opportunity or constraint to development:

- Local context (the town of Blue River, Mike Wiegele Lodge, railway, highway, local roads)
- Existing logging roads
- Existing vegetation and logging cut-blocks
- Rivers, streams and lakes
- Wetlands
- Riparian buffers (setbacks from creek banks)
- Slopes over 80%
- High instability hazard (geotechnical assessment)
- Moderate to high instability hazard (geotechnical assessment)
- Avalanche paths
- Active instability features (gullies, etc.)
- Relict instability features

A corresponding overlay incorporates aspects of the physical site analysis (as design criteria) to delineate suitable locations for resort features or required design elements. These include:

- Limit of skiable terrain
- Potential base areas
- Existing access
- Potential access
- Potential ski to/ski from residential development
- Potential heli-lots
- Potential golf course development
- Proposed buffer zones

Each of the development opportunities displayed on the mylar overlay is based on a set of design criteria that dictates where specific development can or can not physically occur within the study area. The skiable terrain boundary, for example, is delineated primarily by the over 80% slope limitations from the summit of Saddle Mountain. Fall-line skiing opportunities, and a minimum skiable gradient of 10% dictate the lower limits of skiable terrain (see Section III.2.7).

Potential base areas are indicated where large areas of relatively flat land are directly associated with skiing opportunities and access capability. According to the Base Area Slope Analysis (Figure 9), slopes of 0 to 5% represent the ideal gradient for base area development, with 10% being the maximum acceptable slope.

The base areas must be easily accessible by road. For this reason, the Opportunities and Constraints Plan shows existing access roads, which may represent the most cost-effective access solution in the early phases of resort development. Improved access routes (potential access) are also indicated, but may require critical infrastructure development including bridge construction and/or improvements, upgrading of existing roads, or total realignment. Potential access roads (public roads) are designed to a maximum 8% gradient, with corners at 5% and intersections at 4% for a minimum distance of 20 metres. Strata roads may contain stretches of up to 10% gradient.

Accepting the limit of skiable terrain and potential base areas indicated on the Opportunities and Constraints Plan, potential ski to/ski from residential development is indicated where access roads can be constructed (meeting the criteria listed above) to service residential units located within 400 metres of the Saddle Mountain ski trails. Slopes of over 40% are generally considered too steep for even low density residential development.

Finally, golf course development potential is indicated over a contiguous area of rolling terrain under 30% in slope. These golf lands must be capable of being staged from the Lower Base Area in order to avoid unnecessary duplication of facilities (access road, parking, built-space, etc.)

In addition to the criteria described above, the Resort Master Plan will avoid encroaching on the wetlands identified within the study area. More accurate delineation of the wetlands will enable

further refinements to the plans. The Master Plan will respect the objective of maintaining the continuity of medium to high wildlife habitat suitability. Additional studies will indicate the significance of the wildlife habitats and corridors and will enable further refinements to the plans. Where considerable site disruption and earthwork is required, the Resort Master Plan will locate these disturbances in lands previously harvested by the forest industry.

Figure 11 - Development Opportunities and Constraints

RESORT MASTER PLAN

IV.1 Introduction

The content of the Resort Master Plan includes the description of the Mountain Development Plan, Base Area Development Plans, and Servicing and Infrastructure Plan for Saddle Mountain Resort. It is important to note that these plans represent the proposed development of the mountain and base areas at buildout. As proposed, the implementation of the Master Plan will occur over a series of sequential phases (see Section V. Implementation Plan). These phases must be carefully choreographed to ensure that each phase functions as a finished, well balanced, comprehensive resort product.

The plans contained herein have been adjusted throughout the planning process to reflect new information pertaining to the physical, environmental, economic and market realities of the project (See Appendices 8, 9, and 10).

The proponent acknowledges the unique nature of the Upper Base Area wetlands and commits to the avoidance of these areas. Detailed analysis and design will be completed in order to ensure that the impact is negligible.

Public access to Mud Lake and the North Thompson River will be unimpeded. Detailed design prior to construction will provide a direct link to both water bodies, integrating them into the overall offering at Saddle Mountain.

IV.2 Mountain Development Plan

The Mountain Development Plan (Figure 12a) is the product of several concepts where a variety of lift and trail alternatives were explored. In combination with Tables 1 and 2, The Mountain Development Plan provides detailed design for lift and trail development on Saddle Mountain.

The primary objective of the Resort Master Plan is to establish a low density powder skiing experience on Saddle Mountain that stands alone as a viable ski resort, but complements the Mike Wiegele Helicopter Skiing Resort. To that end, the design of a lift-serviced ski trail system was approached from the perspective of providing the same range of skiing experiences on Saddle Mountain that would typically by offered by helicopter skiing. This includes wide open bowl skiing, spacious glade skiing, and tree skiing.

A second objective in the design of the ski trail system has been to soften the visual impact of the existing cut-blocks on Saddle Mountain.

If the Resort Master Plan is able to facilitate these two primary goals, the following additional benefits will all become a function of carefully developed operational programming: the use of Saddle Mountain to provide "down day" skiing; to accommodate a powder skiing academy (training and instruction); to provide a complementary activity as part of the heli-skiing packages; to facilitate world class powder skiing competitions (ie. the Powder Eight Championships); and to provide recreational opportunities for Blue River residents and the resort

staff.

At buildout, the Mountain Development Plan will consist of approximately 334 hectares of developed ski terrain, which includes 94 hectares of gladed skiing opportunity. An equally impressive statistic, Saddle Mountain Resort will provide 1,305 vertical metres (4,280 feet) of lift-serviced skiing. The mountain exhibits consistency of terrain, a reliable snowpack, ideal ski terrain orientation, and excellent fall-line skiing opportunities which are well-connected to potential base area development lands.

The upper third of the mountain is predominated by steep or advanced/expert terrain. A potential mid-station location exists at the 1,445 metres elevation where a small bench of reduced gradient will accommodate lift loading and off-loading functions. This mid-station location coincides with a distinct terrain break on the mountain, between the advanced/expert terrain of the upper mountain, and the predominantly intermediate terrain of the lower mountain. This mid-station is located at the top of an area of mature forest remaining between existing cut-blocks, conveniently separated, but not removed, from the flow of existing and proposed fall-line skiing opportunities (see Figures 12a and 12b).

Below the 1,445 metre elevation, the terrain has relatively consistent grades coinciding with the slope category defining intermediate skiing terrain. A steep band of expert terrain on the north side of the mountain, however, will place a number of ski trails on the lower mountain into the advanced/expert category.

While a smaller percentage of beginner terrain exists, sufficient beginner vertical is associated with each of the proposed base areas to stage kids camps and to accommodate the needs of beginner skiers.

Complementing the ski terrain, five ski lifts are proposed (see Figure 12a and Table 1). Two lifts are staged from each of the proposed base areas, with an additional lift servicing the summit of Saddle Mountain from the mid-station described above. The implementation of the Resort Master Plan has been designed to occur over nine phases, resulting in an ultimate CCC of 2,000 skiers per day. The coinciding ski area boundary will total 455 hectares, as illustrated in Figures 12a and 12b, and discussed in Section IV.2.4.

Fig.12a. Mountain Development Plan

Fig. 12b Mountain Development Plan at Maturity

IV.2.1 Proposed Ski Lifts

Five ski lifts have been proposed in the Mountain Development Plan (Figure 12a). Table 1 provides the statistical data of the proposed lifts. Attributes of the ski lifts are described below.

The Ski Lift Concept for Saddle Mountain includes two low-capacity, high-speed detachable chairlifts (Lifts A and C), a fixed grip double chair (Lift B), and two beginner tows (Lifts D and E). Together they will provide lift-serviced skiing for approximately 1,305 metres (4,280 feet) of vertical. The placement of these lifts has been determined as a function of providing efficient access to the skiing. As planned, the use of low-capacity ski lifts, delivering a restricted number of skiers to the top terminals combined with operational controls and guided use will maintain a powder skiing experience.

In the early phases of development, skiing on Saddle Mountain will be helicopter-accessed with guided descents in groups. This will enable the mountain to be utilized gradually, progressively tracking the powder snow. Operational considerations relating to the proposed lifts are described in Section IV.2.5.

Lift A

Lift A will become the primary access lift onto the mountain from the Upper Base Area. With its lower terminal at the 965 metre elevation, it will deliver skiers to a bench at the 1,445 metre elevation (Mid-Station). Traveling a slope length of 1,650 metres, Lift A will service 480 vertical metres (1,575 feet) of intermediate terrain, as well as provide access to Lift B.

Lift A will be the first lift installed on Saddle Mountain (see Section V. Implementation Plan). It will initially be installed as a fixed grip double chair with a ride time of approximately 12 minutes and an uphill capacity of 1,200 skiers per hour. In a subsequent phase it will be converted into a high-speed detachable chair, reducing the ride time to about 6 minutes. (When it is upgraded, the fixed grip carriers and terminal assemblies from Lift A will be used in the installation of Lift B). Initial installation will involve the construction of towers designed to detachable chair standards, facilitating this eventual improvement. The uphill capacity of Lift A at buildout will be 1,400 skiers per hour.

Lift B

Lift B will act as the summit lift for Saddle Mountain. It will rise from Mid-Station at the 1,440 metre elevation to a point near the top of a prominent sub-summit of Saddle Mountain at approximately 2,000 metres. As a fixed grip double chair, it will have a ride time of about 9 minutes, to cover 1,270 metres of slope length, at an uphill capacity of 600 skiers per hour. Lift B will service 560 vertical metres (1,840 feet) of advanced/expert powder skiing terrain. As planned, it will be installed at the same time as the Lift A upgrade (see Section V).
The summit lift terminal at the top of Saddle Mountain will include a small restaurant facility and upper mountain trail heads, that will act as an attraction in its own right. As such, the chairlift has also been designed as a summer use attraction with downloading capability to cater to the rubber tire traffic and tourists traveling between Jasper and Kamloops on the Yellowhead

Highway.

Lift C

Lift C will provide access from the Lower Base Area (elevation 695 metres), up to Mid-Station (elevation 1,445 metres) for a total lift-serviced vertical of 750 metres (2,460 feet). As a high-speed detachable chair the lift ride time will be approximately 9 minutes, to cover a slope distance of 2,380 metres, at an uphill capacity of 600 per hour. It will service a mix of intermediate and advanced terrain.

Lift C will also provide access to the base of Lift B. The combination of Lifts B and C will provide access from the primary day-use staging point at the Lower Base Area to the summit restaurant, trail heads and summer sightseeing facilities. As such it will be designed for 100% downloading capability.

Lift D

A Beginner Skiing Area will be staged out of the Upper Base Area using Lift D, a T-bar with an uphill capacity of about 150 skiers per hour. This lift will service 10 hectares of beginner/ novice terrain, to accommodate the needs of first time skiers and kids camps.

Lift E

An additional beginner tow will be installed in association with the Lower Base Area. Lift E will be a T-bar servicing 6 hectares of beginner/novice terrain, with an uphill capacity of about 150 skiers per hour.

TABLE 1
Ski Lift Specifications at Buildout

Proposed Lift	Type of Lift	Hourly Capacity	Top Elevation (m)	Bottom Elevation (m)	Total Vertical (m)	Horizontal Length (m)	Slope Lenght (m)	Average Slope (%)	Maximum Slope (%)
A (Initial)	Fixed Grip Chair	1,200	1,448	968	480	1,571	1,650	31	45
A (Final)	Detachable Chair	1,400	1,448	968	480	1,571	1,650	31	45
B	Fixed Grip Chair	600	2,014	1,440	574	1,228	1,270	47	56
C	Detachable Chair	600	1,446	693	753	2,239	2,380	34	56
D	T-Bar	150	1,057	970	87	528	535	16	21
E	T-Bar	150	776	692	84	459	466	18	26

IV.2.2 Proposed Ski Trails

At buildout, the Mountain Development Plan (Figure 12a) proposes a total of 334 hectares of developed ski trails, which includes 94 hectares of gladed terrain. The proposed ski trail developments are listed in Table 2.

The ski trails have been carefully laid out to enable logical circulation, follow the natural fall-line, minimize potentially dangerous trail intersections, and minimize environmental impact. The proposed ski trails have been designed to flow to either of the two potential base areas: the

Upper Base Area on the mid-mountain bench; or the Lower Base Area on the north side of the mountain.

Key fall-lines were utilized to determine the primary ski trail centre-lines. The width of these primary ski trails, however, is greater than that found at a "typical" ski area. The desired effect is to replicate the wide open bowl skiing that is usually associated with a heli-skiing/powder snow experience. The edges of these trails have been designed to establish glade skiing.

Two densities of clearing will effectively create two different glade skiing experiences. The areas closest to the primary trails will be gladed to 40% retention (60% glading), and have widely spaced trees, roughly 5 to 10 metres apart. Further in from the trail edge, a denser glade condition of 70% retention (30% glading) will be retained. The end result will offer three different skiing experiences, correlating to three different skier skill classes, on any given trail. This will further enhance the skiing variety, challenge, and attractiveness of Saddle Mountain, from top to bottom. The lower branches of the gladed trees will be removed to enable a spacious and enjoyable skier/snowboarding experience.

As the snowboarding market continues to grow, there may be increased demand for additional snowboard specific facilities on the mountain. In anticipation of this increased demand, snowboard facility requirements will be identified and established during implementation stages of the project.

In terms of visual impact (see Figures 13a, 13b, 13c, 14, 15 and 16), the primary ski trails tie into existing cut-blocks in an effort to make them less rectilinear. The feathered edge effect created by the graduated glading, aids in softening the negative visual impact of the current clearings. A revegetation plan has been developed as an integral component of the Mountain Development Plan (Figure 12a) to create additional islands of trees within the cut-blocks. The Mountain Development Plan at Maturity (Figure 12b) gives an indication of the end result of the mountain development and revegetation programs.

The visual impact of logging on the mountains that surround the Mike Wiegele Helicopter Skiing Resort Village is a significant concern of the existing operation at Mike Wiegele. With guests coming to British Columbia from all over the world, the negative impact of cut-blocks can be profound. In the case of Saddle Mountain, large, rectilinear cut-blocks are highly visible from the Yellowhead Highway, the town of Blue River, and from Mike Wiegele Resort Village. By creating ski trails and glading, the logging cut-blocks are "softened", and the visual impact of the logging is minimized.

The following figures illustrate the Existing Condition (Figure 13a); the Digital Terrain Model of the same view (Figure 13b), and the view of Saddle Mountain from the Mike Wiegele Lodge, once the proposed plan is established (Figure 13c). Figures 14, 15 and 16 represent additional views of the proposed mountain development from vantage points along the Yellowhead Highway.

Figure 13a. Visual Impact: Existing View

Figure 13b. Visual Impact: Digital Model

Figure 13c. Visual Impact : View from Mike Wiegele Lodge

Figure 14. Visual Impact: View from the Southwest

Figure 15. Visual Impact: View From the Northwest

Figure 16. Visual Impact: View from the North

TABLE 2
Ski Trail Specifications at Buildout

Trail #	Horizontal Length (m)	Slope Length (m)	Vertical Drop (m)	Avg. Grade (%)	Max. Grade (%)	Ability Level
1	1,211	1,343	566	47	60	Expert
2	1,298	1,431	575	44	61	Expert
3	435	459	146	38	36	Expert
4	901	951	292	33	47	Intermediate
5	1,739	1,815	481	28	42	Intermediate
6	1,081	1,136	332	31	43	Intermediate
7	1,948	2,025	475	24	53	Intermediate
8	1,463	1,582	554	38	66	Intermediate
9	900	943	263	29	40	Intermediate
10	519	550	163	31	48	Intermediate
11	536	557	146	27	34	Intermediate
12	1,969	2,033	422	21	47	Intermediate
13	1,282	1,324	259	20	36	Beginner
14	686	742	233	34	65	Expert
15	713	748	192	27	41	Intermediate
16	539	566	147	27	45	Intermediate
17	1,373	1,467	468	34	65	Intermediate
18	1,110	1,194	403	36	54	Expert
19	457	502	188	41	56	Expert
20	497	532	177	36	51	Expert
21	499	525	115	23	51	Intermediate
22	1,797	1,979	796	44	71	Expert
23	3,122	3,347	1,029	33	70	Expert
24	487	498	85	14	23	Beginner
25	565	572	85	15	18	Beginner
Total	**27,127**	**28,821**	**8,592**			

IV.2.3 Proposed Capacity Distribution

The proposed capacity distribution of Saddle Mountain is a function of the physical design of ski trails and the lift system configuration, but is also influenced significantly by the operational parameters intended for the mountain (see Section IV.2.5).

Typically, capacity figures are derived on a trail by trail basis. Once a skier skill classification is associated with a particular ski trail, industry standards for accepted skier density (skiers per hectare) are applied to the ski trail area calculation (see Appendix A-7. Design Criteria).

For Saddle Mountain, however, the intent is to provide lift-serviced powder skiing. As planned the width of the ski trails will be significantly greater than those found at a "typical" ski area. The trails are, in fact, designed to replicate the wide open bowl skiing that is usually associated with a heli-skiing or powder snow experience. As such, the standard means of trail by trail capacity calculation becomes less appropriate.

An overall ski pod calculation appears to be a more representative means of capacity calculation for Saddle Mountain Resort. A delineation of ski pods appears in the Mountain Development Potential Plan (Figure 8). These ski pods are associated, for the most part, with the lifts that service them.

Pod A

Pod A can be defined as the ski terrain that generally flows to the Upper Base Area from the Lift A off-load at Mid-Station, a total of 480 vertical metres (1,575 feet) of skiing. Pod A occupies a gross area of 145 hectares (358 acres). Of this terrain, there are 95 hectares of open ski trails, with an additional 28 hectares of gladed terrain, for a total of 123 hectares of skiable terrain.

The ski terrain in Pod A is predominantly intermediate terrain, with a gentle run-out to the base area providing opportunities for beginner ski area development (10 hectares) in direct association with the Upper Base Area. For the purposes of Comfortable Carrying Capacity (CCC) calculation, Pod A can be broken down into skier skill classifications as per Table 3.

TABLE 3
Capacity Distribution by Ability Level at Buildout: Pod A

Skier Skill Classification	**Areas of Skiable Terrain**	**Density (skier/ha.)**	**Skier Capacity**
Beginner Terrain	10 hectares	30 - 60	300 - 600
Intermediate Terrain	85 hectares	15 - 35	1,275 - 2,975
Expert Terrain (Gladed Skiing):	28 hectares	5 - 15	140 - 420
Total	**123 hectares**		**1,715 - 3,995**

Pods B and C

Only the ski terrain in Pod A will be applied traditional skier density figures in the calculation of skier capacity. Pods B and C, as per Section IV.2.5 (Mountain Operational Considerations) will be reserved as Saddle Mountain's "Powder Terrain", providing skiing for a maximum of 300 skiers per day.

Pod B consists of ski terrain linking the summit lift terminal to Mid-station. Serviced by Lift B, this pod offers 560 vertical metres (1,840 feet) of advanced/expert skiing opportunity. The pod occupies a gross area of 65 hectares (161 acres).

Pod C has been calculated to include all remaining terrain within the proposed ski area boundary. This consists of terrain linking the summit terminal to the Lower Base Area (not including overlapping terrain from Pods A and B). A total vertical skiing opportunity of 1,305 metres (4,280 feet), Pod C encompasses a gross area of 245 hectares (605 acres) of intermediate and advanced/expert terrain.

In combination, Pods B and C provide 145 hectares of open ski trails, with an additional 66 hectares of gladed terrain, for a total of 211 hectares of skiable terrain. The beginner ski area serviced by Lift E accounts for 6 hectares of terrain. The remaining 205 hectares have been, for the purposes of simplification, evenly allocated between intermediate and advanced/expert skier skill categories.

For the purposes of comparison, the "traditional" capacity of Pods B and C has been calculated in Table 4, using the same method as for Pod A.

TABLE 4
Capacity Distribution by Ability Level at Buildout: Pods B and C

Skier Skill Classification	**Areas of Skiable Terrain**	**Density (skier/ha.)**	**Skier Capacity**
Beginner Terrain	6 hectares	30 - 60	180 - 360
Intermediate Terrain	102.5 hectares	15 - 35	1,538 - 3,588
Expert Terrain (Gladed Skiing):	102.5 hectares	5 - 15	512 - 1,538
Total	**211 hectares**		**2,230 - 5,486**

IV.2.4 Comfortable Carrying Capacity (CCC) at Buildout

The capacity calculations presented in Tables 3 and 4 indicate a skier capacity for Pod A of 1,715 to 3,995 skiers per day, and between 2,230 and 5,486 for the combined Pods B and C. The total potential skier capacity for Saddle Mountain, therefore, has been calculated at between

3,945 and 9,481 skiers per day.

The ski terrain in Pod A will be operated at the lower end of the calculated capacity range. At buildout Pod A will provide balanced up-hill lift capacity and skiing terrain capacity for 1,700 skiers per day. Pods B and C will be restricted to a total of 300 skiers per day (150 skiers/pod) in an effort to preserve a high quality powder skiing experience.

As per Mountain Operational Considerations described in Section IV.2.5, the overall Comfortable Carrying Capacity (CCC) of Saddle Mountain, therefore, has been calculated at 2,000 skiers per day.

IV.2.5 Mountain Operations Concept

Operationally, Saddle Mountain will provide a wide range of skiing product. While Pod A will function as a traditional ski resort servicing up to 1,700 skiers per day, Saddle Mountain's "Powder Terrain" will be set aside for only 300 skiers per day, with skiing passes guaranteed only through prior reservation. Guided descents will ensure the best utilization of powder skiing terrain.

The proximity of the Mike Wiegele Helicopter Skiing Resort, the premium lift-serviced skiing of Saddle Mountain's Powder Terrain (Pods B and C), and the more traditional lift-serviced skiing product of Pod A, combined with on-mountain real estate development and public overnight accommodation (Section IV.3), opens the door to an incredible diversity of packaging and programming opportunities.

It is intended that the following user groups will be accommodated at Saddle Mountain Resort:

Club Members

Although public access to Pod A skiing will remain unrestricted, it is also intended that Saddle Mountain will function as a Resort Club. The sale of private homes on Saddle Mountain, with the additional requirement of pre-determined annual dues, will assure certain skiing, golf and recreational privileges.

In this way, heli-skiers can stay at their own private mountain home, yet participate in programs and activities offered both at Mike Wiegele Helicopter Skiing and at Saddle Mountain Resort. Club members can bring their families, invite their friends, or entertain clients on a more frequent basis, with Saddle Mountain providing an easier, more affordable skiing option previously unavailable in Blue River.

Club membership will be directly tied to real estate purchased on Saddle Mountain, and will include an additional annual fee requirement. The number of days of membership entitlement for each activity at Saddle Mountain Resort, will be based on the number of bed units associated with each particular type of real estate purchase:

- Bed and Breakfast ownership: 10 bed units;

- Single Family Units: 6 bed units;
- Multi-Family Units: 4 bed units;
- Condominium Hotel Rooms: 2 bed units.

Saddle Mountain Resort Club membership benefits will include the following:

- Heli-pads in direct association with all Saddle Mountain properties to provide direct access to the Mike Wiegele Helicopter Skiing operation;

- A pre-determined number of helicopter skiing days at Mike Wiegele Helicopter Skiing;

- A pre-determined number of helicopter skiing days in the immediate vicinity of Saddle Mountain, Ptarmigan and Redsands Mountains;

- A pre-determined number of days of premium lift-serviced skiing in Saddle Mountain's Powder Terrain;

- A pre-determined number of days of lift-serviced skiing in Saddle Mountain's intermediate terrain (Pod A);

- A pre-determined number of rounds of golf at the championship 18-hole golf course;

- Access to Saddle Mountain Resort recreational facilities which will include cross-country skiing, hiking, mountain bike trails, horseback riding, and watersports facilities on Mud Lake.

- Unlimited summer chairlift ride access to the top of Saddle Mountain

Reservations will be required to ensure helicopter skiing and Powder Terrain availability. Club members will be given priority on reservations and packages until a certain cut-off date, potentially May 31. After that date, reservations will be accepted on a first come, first served basis. Extra days may be reserved and purchased based on availability.

During early and late season periods at the Resort, members will be offered unlimited use of the lift-serviced skiing facilities. Dates associated with these unlimited use periods can be adjusted over time, based on the actual number of user days and desired capacity figures for the Saddle Mountain Resort ski terrain.

While public access will be maintained to the Lower Base Area, gated strata roads will restrict access to real estate development areas, creating a sense of privacy and security.

Packages

Ski packages will be available for club members and their guests, as well as destination resort visitors to Saddle Mountain. A variety of packaging opportunities exist combining "frontcountry" helicopter skiing in the vicinity of Saddle, Redsands and Ptarmigan Mountains,

the premium lift-serviced skiing of Saddle Mountain's Powder Terrain, and the more traditional lift-serviced skiing product of Pod A.

Packages for non-members will be structured to include meals and on-mountain accommodation in the Upper Village Lodge, and other public accommodation facilities throughout Saddle Mountain Resort. Golf packages and other summertime programs are also anticipated.

Day Skiers

Standby capability for Mike Wiegele Helicopter Skiing, "frontcountry" heli-skiing, and Saddle Mountain Powder Terrain skiing will be available for day skiers visiting Blue River.

A more conventional lift-serviced skiing product will be available through the purchase of a day ticket, entitling skiers to one ride only on Lift C to access the day skiing terrain of Pod A, with unlimited skiing serviced by Lifts A and D for the remainder of the day.

Down-Day Availability

The Pod A ski terrain will be made available for guests of the Mike Wiegele Helicopter Skiing Resort, in the event that poor weather restricts helicopter use. The additional 120 skiers will be accommodated within the Pod A capacity of 1,700 skiers per day.

Pods B and C will be made available only if the addition of "down-day" guests will not force the total number of skiers beyond the desired Powder Terrain capacity of 300.

Community and Staff Skiing

Skiing will be available for members of the local community, as well as Mike Wiegele Helicopter Skiing and Saddle Mountain Resort staff, through the purchase of a day ticket or season's pass (Pod A only). Wednesdays and Saturdays will cater specifically to staff and community, with a Pod A restricted day ticket. In addition, as is currently with the heli-skiing, the lift-serviced guided powder skiing in Pods B and C will be offered subject to availability on a stand-by basis, with paying guests given priority.

IV.3 Base Area Development Plan

The defined carrying capacity of the skiing facilities provides a basis for a preliminary calculation of the amount of alpine skier related built space requirements (to house restaurants, rest rooms, day care, retail, rental, administration, etc.); parking; and infrastructure necessary to fully support resort facilities at buildout.

In addition to requirements dictated by the defined carrying capacity, the base areas are intended to act as staging points for heli-skiing, heli-hiking, golf, and summer activities. As such, these uses increase the overall scope and size of the entire resort, with a specific emphasis on providing an appropriate amount of public and private accommodation, destination space, and other year-round recreational facilities and attractions.

First and foremost, the location, scale and implementation program for base area village facilities must be very carefully integrated with the carrying capacity and phased development of the skiing facilities. An emphasis on access and egress at the beginning and end and the day is a critical component to the success of the resort operation.

Base Area Development Plans (Figures 17, 18 and 19) have been created to complement the Mountain Development Plan. During the development of these plans, particular consideration was given to the relationship of the base area facilities to the mountain facilities and the CCC of the mountain, the study goals and objectives, and the issues identified throughout the Inventory and Analysis process.

The Base Area Development Plans include two locations for proposed base area development on Saddle Mountain:

1. The "Upper Base Area" on the west facing, mid mountain bench overlooking the North Thompson River and the Town of Blue River.

2. The "Lower Base Area" at bottom of the north side of the mountain.

At buildout, it is anticipated that both base areas will be necessary to stage the skiing in a balanced and well integrated fashion.

These resort development areas are associated with the base terminal locations of the ski lifts. Staging, support facilities, public overnight accommodation, complementary year-round activities, etc. will also be established at both bases. Increased detail as to the amount and type of development, exact location of base area structures, capacities, space use requirements, bed units, and accommodation types will be a function of more detailed planning throughout the phased development of the resort.

The Upper and Lower Base Areas are connected via Lift C, skier return trails, and via the access roads described in Section II.2. Combined, the Villages will become the resort core and focal point for Saddle Mountain Resort. Connected to all resort facilities by a year-round trail system, the Upper and Lower Villages will act as the staging points for resort activities.

In order to fully service the proposed development of the mountain to accommodate 2,000 skiers/snowboarders per day, the base area facilities will require a total of approximately 3,000 square metres (32,000 sq. ft.) of skier related built space.

With Saddle Mountain intended to achieve destination resort status, the number of bed units at the resort should equate to at least 115% of the CCC. This equates to approximately 2,300 bed units. Of this number 15% should be set aside as staff accommodation, to be located in association with the town of Blue River. The remaining 85%, or 1,955 bed units will be accommodated on Saddle Mountain.

Adjacent to the two Villages are development parcels consisting of various types of resort

accommodation including: ski to/ski from single family homes; multifamily units; estate homes, heli-lot estate homes; and pension/bed and breakfast units. To create a variety of private and public accommodation, the ratio of unit type should approximate that shown in Table 7. A year-round trail system connects each development parcel to the base area developments.

The amount and type of accommodation will be a function of a more in depth review of market demand.

IV.3.1 Skier Related Built Space Requirements

In order to fully service the proposed expansion of the mountain to accommodate 2,000 skiers/snowboarders per day, plus an estimate of 160 additional non-skiing guests, the base area facilities must provide a total of approximately 2,600 square metres (28,000 sq. ft.) of skier related built space, as illustrated in Table 5.

The allocation of the skier related built space within the Upper and Lower Village will require an in depth planning exercise, incorporating the skier oriented facilities with the development of destination visitor space so that everything works effectively on a year round basis.

TABLE 5 Space Use Requirements at Buildout

CCC= 2,000 Guests = 160 Total = 2,160

Service / Function	**Total Space Required (m^2)**
Restaurant	648
Kitchen / Scramble	259
Bar / Lounge	39
Women's Rest Rooms	124
Men's Rest Rooms	83
Ski School	32
Equip. Rental / Repair	172
Retail Sales	151
Ski Patrol / First Aid	66
Public Lockers	108
Day Care / Nursery	214
Ticket Sales	20
Administration	112

Employee Lounge	20
Subtotal	**2,281**
Storage	111
Mechanical	93
Circulation / Walls / Waste	93
Total Skier Related Space	**2,578**
Space / Skier	1.29

IV.3.2 Destination Space Requirements

In addition to the skier related space, a variety of destination-oriented space must be incorporated into the Village plans. This would be oriented toward accommodating facilities for conventions, seminars, retail, restaurants, bars, etc. The exact amount of development remains to be determined as it would be a function of existing and future developments in Blue River.

However, as the resort takes on an increasing destination capacity, it is safe to assume that the amount of space catering to the specific needs of destination guests will increase, This will range from approximately 10% to 40% of the skier related space. As such, at buildout the Villages will provide in total between 260 square metres and 1,040 square metres of destination-oriented space.

IV.3.3 Parking

With the development of Saddle Mountain to accommodate 2,000 skiers per day plus an estimate of 200 additional non-skiing guests, parking will be required in association with both base areas. Assuming that 20% of the visitors arrive by car (with an average of 3.0 people per car), and that 10% of the visitors arrive by bus (with an average of 40 people per bus), parking will be required for 150 cars and 6 buses. Additional parking will be associated with Upper Village Lodge development, golf facilities, and all public and private real estate development.

It should be noted that the parking capacity requirements in the Upper and Lower Villages will ultimately be reduced based on the amount and occupancy of ski to/ski from accommodation established with self-contained provisions for parking.

IV.3.4 Overnight Accommodation

Assuming that Saddle Mountain achieves destination resort status, the number of bed units at the resort should equate to 115% of the CCC. To create a variety of private and public accommodation, the ratio of unit type should approximate those found in Table 6 and illustrated in Figures 17, 18 and 19.

It must be noted, that more detailed planning and design will be required as the Master Plan is implement. Adjustments will be made to accommodate new data and information that may

become available prior to development.

TABLE 6 Accommodation Capacity at Buildout

Assumptions and Criteria

CCC = 2,000

Overnight Accommodation (115%) of CCC = 2,300 bed units

15% Employee Beds = 345 bed units (in Blue River)

85% Public and Private Guest Beds = 1,870 bed units (accommodated on Saddle Mountain)

- 15% Hotel = 280 beds (140 rooms @ 2 beds/room)
- 15% Lodge = 280 beds (70 suites @ 4 beds/suite)
- 20% Multi-family Units (MFU) = 388 beds (97 MFU @ 4 beds/unit)
- 40% Single Family Units (SFU) = 732 beds (122 SFU @ 6 beds/unit)
- 10% Bed and Breakfast (B&B) = 190 beds (19 B&B @ 10 beds/unit)

Total = 1,870 bed units

U**pper Base Area**

74 SFU
19 Heli-Lots (SFU)
97 MFU
Hotel: 10,000 square metres (108,000 sq. ft.)
Lodge: 4,000 square metres (43,000 sq. ft.)
Additional Built-Space: 2,000 square metres (21,500 sq. ft.)

Lower Base Area

16 SFU
32 Estate Lots (SFU)
Additional Built-Space: 1,000 square metres (10,800 sq. ft.)

Summary

141 SFU (including Estate Lots and Heli-Lots)
97 MFU
17,000 square metres (183,000 sq. ft.) of Built-Space (Upper and Lower Village Buildings)

IV.3.5 Golf Facilities

A championship 18-hole golf course will be developed at Saddle Mountain Resort, staged from the Lower Base Area. Gently rolling topography, combined with lake and mountain views will create an exceptional golf experience. The relatively low elevation of these lands will ensure an

adequate length of season.

TABLE 7
Golf Course Summary

HOLE	LENGTH	PAR	TEE EL.	GREEN EL.
1	320	4	730	747
2	180	3	730	730
3	485	5	695	703
4	255	4	732	747
5	370	4	718	680
6	440	5	690	700
7	390	4	720	726
8	190	3	730	745
9	370	4	730	750
Total	**3000**	**36**		
10	330	4	750	765
11	465	5	780	827
12	360	4	812	792
13	330	4	765	770
14	170	3	770	768
15	430	5	782	767
16	325	4	770	765
17	185	3	780	760
18	420	4	755	720
Total	**3015**	**36**		
Course Total	**6015**	**72**		

The golf course will significantly improve the visual quality of existing clear-cuts in the vicinity of the Lower Base Area, as well as improving the sense of arrival along the Saddle Mountain Resort access road. This golf course alignment will provide a rare opportunity to develop single family lots that offer fairway views and ski to/ski from accessibility.

Staging facilities, practice green, driving range, 1st tee and 18th green have been designed to be in close proximity to the Lower Base Area, thereby avoiding unnecessary duplication of facilities (access road, parking and built-space). The Lower Base Area skier services building will be used as the golf clubhouse during summer months. A small café/restaurant will be developed between the 9th green and the 10th tee, on a knoll overlooking Mud Lake.

The golf course alignment avoids the wetland complex identified by the Environmental Review, and occupies, for the most part, previously disturbed lands (existing clear-cut areas).

IV.3.6 Base Area Development Summary

The following represents a summary of the Saddle Mountain Resort base area development:

- Upper Base Area Village Core = 2.9 hectares
- Upper Base Area Residential Areas
- Heli-lots (SFU) = 21.9 hectares
- Ski to/ski from SFU = 33.3 hectares
- Ski to/ski from MFU = 5.2 hectares
- Total Upper Base Area Residential = 60.4 hectares
- Lower Base Area Village Core = 1.9 hectares
- Lower Base Area Residential Areas
- Ski to/ski from SFU = 45.8 hectares
- Total Base Area Facilities Development Area = 111.0 hectares
- Golf Course = 69.0 hectares

- Total Development Area = 180.0 hectares

Figure 17 - Base Area Development Plan

Figure 18. Upper Base Area

Figure 19. Lower Base Area

IV.4 Integrated Resort Master Plan

The Mountain and Base Area Plans are illustrated in an integrated fashion on Figure 20, the Resort Master Plan Illustrative and on Figure 21, the Digital Terrain Model.

Figure 20 Resort Master Plan Illustrative

Figure 21 - Digital Terrain Model

IV.5 Infrastructure and Servicing

The following outlines the preliminary concepts for the road grading, water, sanitary sewer, storm drainage, solid waste disposal, power, commercial and residential heating, fire services and access and transportation considerations.

Although significantly more research needs to be completed, it is anticipated that sewer and water requirements will be accommodated on site, with hydro brought across to Saddle Mountain from Blue River.

Where the connection of services is required between the Upper and Lower Base Areas, the Infrastructure Concept specifies common areas of disturbance, using proposed ski trail alignments for all buried services.

IV.5.1 Grading

The Grading Concept (Figure 22a) illustrates the viability and layout of the road system. All effort has been made to adhere to the lay of the land so as to minimize environmental impact. Generally, all roads have been graded to a maximum of 8% to facilitate winter driving. The exceptions are within the straight runs of the switchback road, where steeper grades were required to access to the upper bench.

Detailed grading plans will have to be completed prior to construction.

IV.5.2 Water

The Infrastructure Concept (Figure 22b) illustrates the potential layout of the water lines. It is anticipated that water requirements will be accommodated on site, through existing ground water supply. Test drilling of potential well sites will be undertaken as the base area and residential development components of the project are designed in greater detail.

It is intended that wells will be located on the upper bench, with water supply piped to a holding tank of sufficient volume to meet the needs of both base areas, including fire flow. An 8" pipe beneath the proposed ski trail #13 will adequately supply water to the Lower Base Area. Detailed engineering plans will have to be completed prior to construction.

IV.5.3 Sanitary Sewer

The Infrastructure Concept (Figure 22b) illustrates the potential layout of the sanitary sewer lines. Sewage treatment will be accommodated on site, creating no impact on town infrastructure. Two sewage treatment lagoons will be required, with several infiltration ditches to be located below the lagoons. It is estimated that primary and secondary treatment facilities will be required, with each designed to accommodate 3.4 million litres (750,000 gallons). This translates into minimum lagoon dimensions of 25m x 25m x 5m depth (each lagoon).

The lagoons will be located in association with the Lower Base Area to avoid duplication of

facilities at the Upper Base Area, and to eliminate costly pumping requirements. Upper Base Area sewage will be piped beneath ski trail #13, with reducing stations required to accommodate an anticipated gradient of 19%.

It is anticipated that the lagoons will be located in an area adjacent to the Bottom Creek wetlands. Accurate delineation of this wetland complex is required for detailed sewage lagoon design. Fencing will be required for wildlife safety.

Detailed engineering plans will have to be completed prior to construction. Additional research will be required to identify potential sewage lagoon impacts, soil stability considerations, and to determine the exact location of lagoons and infiltration ditches. Evaluation will be required to determine projected flow volumes and sewer main requirements to service the resort area.

IV.5.4 Storm Sewer/Drainage

Increased development will lead to higher run-off volumes and a potential degradation of stormwater quality. Of particular importance is the run-off from the Upper Base Area, where vulnerable gullies and potentially unstable drainage courses must be protected. Although it is anticipated that some of the storm water drainage will be accommodated in exiting gullies, the majority of the Upper Base Area surface flow will be collected in storm sewers and transported to the Lower Base Area via conduits buried under ski trail #13. The storm sewer will be discharged to the Bottom Creek wetland complex.

Prior to construction, the proponent will undertake all necessary hydrological studies to review and make recommendations for the management of storm water runoff from the ski resort and base area development lands.

IV.5.5 Solid Waste Disposal

The town of Blue River currently collects refuse from residential properties and hauls it to the landfill site, located across the highway from the Blue River air strip. In the future, it is anticipated that the town will continue to collect refuse from the residential properties on Saddle Mountain, with costs offset by the increased revenue from municipal tax collection.

As are currently provided at the Mike Wiegele Lodge, animal proof containers will be provided as necessary throughout the Saddle Mountain Resort. Public education programs will also be implemented to prevent human/animal conflicts. Further, a problem wildlife management program will be developed and committed to as part of the Master Development Agreement.

The proponent will also promote measures to support regional government policies advocating the principles of reduction, reuse and recycling of solid waste. It is fully recognized that the Blue River landfill transfer station will need to be upgraded to handle the increase in refuse volume. The proponent will communicate closely with the Regional District to ensure that the provisions of the Regional Waste Management Plan are supported.

The issues of dangerous goods, special wastes and spills will be handled in accordance with

established regional government and provincial policies.

IV.5.6 Power

B.C. Hydro currently supplies power to Blue River. With increased demand created by the Saddle Mountain Resort, the existing transformer may have to be upgraded, or an additional transformer installed. Mike Wiegele Helicopter Skiing will meet with B.C. Hydro to discuss the overall requirements, phasing and timeframe of future development.

Power supply to Saddle Mountain Resort will cross the North Thompson River from the existing supply near the luge hill, and follow the road to the Upper Base Area. Once in the subdivisions, power lines will be buried. Power to the Lower Base Area will be supplied underground via ski trail #13.

IV.5.7 Commercial and Residential Heating

In an effort to establish Saddle Mountain Resort as an environmentally-friendly community, commercial and residential heating will be accomplished by tapping geothermal heat sources. Already, several buildings at Mike Wiegele Helicopter Skiing have successfully incorporated geothermal heating methods. Experience has shown that the high cost of drilling is offset by low operational costs, with a payback period of approximately five years.

Woodstoves and fireplaces will be permitted, but may be restricted in the future for the purposes of maintaining air quality. Air tight woodburning stoves will not be allowed

IV.5.8 Fire Services

In order to meet the requirement of a five minute response time, on-mountain fire halls will be necessary at both the Upper and Lower Base Areas. As anticipated, Village Development Guidelines will specify hydrant requirements, fire-related building restrictions, and commercial building sprinkler requirements. In addition, a wildfire suppression plan will be developed.

IV.5.9 Access and Traffic Considerations

A Traffic Impact Study has been initiated by Creative Traffic Solutions but is, at present, incomplete. Following the completion of this traffic study, significant implications will be incorporated into the resort access concept (Section II.2), and detailed site design.

Figure 22a. Grading Concept

Figure 22b Infrastructure Plan

V. IMPLEMENTATION PLAN

The implementation of the Saddle Mountain Master Plan will involve nine phases of development on the mountain and in the base area as illustrated on the Mountain Development Plan (Figure 12a) and the Mountain Phasing Plan (Figure 23). Each phase of development must be approached as a completed, well balanced resort offering. This enables a resort to operate in a "finished" fashion until there is sufficient market support to move to the next level of development. To that end, the following is the proposed development program:

V.1 Phase One

The first phase of development is focused on the skiability of Saddle Mountain. Ski trails numbers 1 to 9 will be established (see Figures 12a and 23). In total, this will involve 49.0 hectares of clear cut logging and 17.0 hectares of selective glading. The ski trails will be summer groomed (debris cleared, grubbed, graded, erosion protected and seeded). In addition, 90.0 hectares of existing clear cut will be summer groomed. The cutting, glading and summer grooming must all be completed in a single construction season (June to September). Helipads will be developed in a variety of locations on the upper mountain.

Once completed, Saddle Mountain will be well set up as far as providing a diverse and balanced range of skiing. For this phase (and Phase Two), skiing on Saddle Mountain will be accessed by helicopters only. By establishing the trail system, Saddle Mountain will become a significantly more important component to the existing heli-skiing operation. Further, it will offer an expanded opportunity for heli-skiing on poor visibility days in that the skiing will be well defined by the cut trails and the glading, combined with the fact that Saddle Mountain is located in such close proximity to Blue River.

Finally, this first phase of ski trail development will dramatically improve the visual quality of Saddle Mountain.

V.2 Phase Two

Phase Two will see an expansion of the ski trail and glade system to include trails numbered 10 through 17 (see Figures 12a and 23). This will involve the cutting and summer grooming of 36.0 hectares of land; 21.0 hectares of gladed trails, and; 6.0 hectares of summer grooming on the existing cut block areas. Again, these ski trail improvements will be embarked upon and completed within a single construction season.

The resultant improvements will approximately double the skiing capacity of the mountain. Skiing on Saddle Mountain will still be accessed by helicopter only.

V.3 Phase Three

The third phase of development will see the establishment of ski trails 18 to 25, for a total of 55.0 hectares of cutting and summer grooming of open trails; 20.0 hectares of gladed trails, and; 4.0 hectares of summer grooming on existing cut blocks to be retained as ski trails. Approximately 52 hectares of remaining open, clear cut areas will be reforested. This completes the ski trail development on Saddle Mountain (see Figures 12a and 23).

Lift A, the resort's first ski lift, will be installed to cater to the Pod A ski terrain (see Figures 12a and 12b). This will be a fixed grip chairlift with a 1,200 person per hour uphill capacity. The towers will be constructed to enable conversion to a high speed detachable chairlift in Phase 5. Lift serviced skiing will be staged from the Upper Base Area up to a Mid-Mountain bench, providing access to intermediate ski terrain for the resort visitors; heli-skiing clients on down days, and; Mike Wiegele staff.

Upper Saddle Mountain skiing opportunities down to the Lower Base Area will only be accessible by helicopter. As planned, packages combining lift serviced and helicopter skiing, lift serviced powder skiing instruction prior to heli-skiing, and lift serviced skiing in a more traditional sense will be offered.

A limited development will be established in the Upper Base Area with the construction of a portion (3,000 square feet) of Building B (see Figure 18). This will act as a basic base lodge, housing a restaurant, washrooms, and limited administrative and patrol facilities.

A 2,000 square foot maintenance building will be developed (see Figure 18) to house and maintain the grooming machines and implements. Coinciding with this, a grooming machine will be purchased. This will enable snow grooming to facilitate the maintenance and skiability of the lift serviced ski terrain.

To accommodate access to the Upper Base Area, some basic road improvements will be made to the existing network of logging roads which currently access the mountain. The resort's electrical system will be built to power the ski lift and the base area facilities. A water system and septic system will be constructed to service the buildings.

Phase Three will see the development of the Resort's first real estate offerings, with 14 heli-lots made available in the Upper Base Area.

V.4 Phase Four

With ski trail development on Saddle Mountain already at buildout, the fourth phase of development will concentrate on improving skier services at the Resort. The installation of a T-bar (Lift D) will provide the opportunity to develop a Beginner Ski Area and Teaching Centre at the Upper Base Area (see Figures 12a and 12b).

Building A will be constructed to provide 10,000 sq. ft. of built space, housing on-mountain skier services including retail shops, a ski repair/rental/demo centre, a café/restaurant, lockers,

and ski school facilities. The architecture and materials used throughout the building will reflect the rustic yet luxurious design style consistent with Mike Wiegele facilities already in existence in Blue River. The design of the building will incorporate expansion capability for future phases of development at the Resort.

Additional road improvements, a shuttle vehicle drop-off area, and the provision of parking for 50 cars and shuttle vehicles will further establish the Upper Base Area as a self-sufficient staging area for lift-serviced skiing on Saddle Mountain.

V.5 Phase Five

In Phase Five, Lift A will be upgraded to a high speed detachable chairlift. Chairs and infrastructure of the original fixed grip chairlift will be refurbished and relocated for the installation of Lift B. With the development of Lift B, lift service will now be provided to the summit of Saddle Mountain.

Building A will undergo a 5,000 sq. ft. expansion to provide increased amenities at the Upper Base Area. This development will include overnight accommodation, dining and support facilities, as well as enhanced on-mountain skier services. At this point, the architectural character of Saddle Mountain Resort will be well established with 20,000 sq. ft of built space completed at the Upper Base Area.

Parking capacity will be increased to 100 cars, plus shuttle vehicles. Additional access road upgrading will involve the construction of realigned switchbacks which will dramatically improve access to the Upper Base.

Phase Five will see the next installment of real estate development, with 12 ski to/ski from single family lots, 5 heli-lots, and 25 multi-family units made available at the Upper Base Area. Roads, sewage treatment facilities, and all necessary infrastructure requirements will be undertaken to service the Phase Five real estate development and Upper Base Area expansion.

V.6 Phase Six

Phase Six focuses primarily on the creation of Saddle Mountain's Lower Base Area, intended to service the day-skier and summer sightseeing components of the market. The installation of a high speed detachable chairlift (Lift C) from the Lower Base to the mountain mid-station effectively connects the new staging area with the Saddle Mountain summit lift (Lift B), and with resort facilities already established at the Upper Base.

The development of basic skier services and summer visitor facilities at the Lower Base Area will involve the construction of a 3,000 sq. ft. Daylodge (Building E), a new access road, and parking facilities for 150 cars. To accommodate increased traffic to the Resort, a bridge will be constructed over Mud Creek, providing direct access from Highway #5, north of the Town of Blue River.

With the increased focus on summer sightseeing activities, the development of a mountain-top

café will be undertaken in Phase Six. In direct association with Lift B's summit terminal, the new restaurant will offer an outdoor sundeck, viewing scopes, interpretive displays, and provide access to hiking trailheads.

Development of 35 single family residential lots and 25 multi-family units at the Upper Base Area will make up the residential component of Phase Six.

Additional Upper Village development will be added to accommodate expanding needs (overnight accommodation, tennis club, restaurant and retail facilities) .

A community park and cross-country ski trail network will be established in direct association with Upper Base Area real estate development.

V.7 Phase Seven

The development of an eighteen-hole golf course at the Lower Base Area will be undertaken in Phase Seven (see Figures 17 and 19). The course will occupy an area of rolling terrain between Mud Lake and the ski trails on the northern slopes of Saddle Mountain. The golf course will offer commanding views of the mountains and glaciers of the upper Mud Creek drainage, Saddle Mountain ski trails, and Mud Lake. A driving range will be established between Lift C and the future alignment of Lift E (see Phase Eight).

A 7,000 sq. ft. Golf Clubhouse will be established at the Lower Base Area, providing restaurant, bar, and additional skier services during the winter season. At the completion of Phase Seven, 10,000 sq. ft of resort-related built space will have been developed at the Lower Base Area.

Twenty-seven ski to/ ski from single family lots and 25 multi-family units will be developed at the Upper Base Area in Phase Seven.

V.8 Phase Eight

Phase Eight will see the installation of a second T-bar (Lift E) to accommodate the needs of beginner skiers from the Lower Base Area (see Figures 12a and 12b). A second grooming machine will also be acquired in Phase Eight.

Low-density residential real estate will be developed in direct association with the golf course, and lower mountain ski to/ski from opportunities. In Phase Eight, 20 estate lots will be developed at the Lower Base Area, offering fairway and lake views, as well as ski trail access.

Development of a cross-country skiing network will also be undertaken, in association with the golf course development lands.

Additional Upper Base Area real estate development, in the form of 22 Multi-family Units, will complete the residential component of the Upper Base Area lands.

V.9 Phase Nine

In Phase Nine, the construction of a new bridge over the North Thompson River will complete the required improvements to the Saddle Mountain Resort access road network, and effectively bring resort construction to buildout. Ski trail improvements will be undertaken in the form of thinning of Phase Three reforestation areas, to create gladed skiing opportunities as indicated in Figures 12a and 12b.

The final component of residential development will be completed at the Lower Base Area, with 12 estate lots and 16 ski to/ ski from single family lots made available.

Upper Village facilities will be infilled to complete the development of Saddle Mountain Resort

Fig. 23. Mountain Phasing Plan

VI. MANAGEMENT PLAN

The following management and operational program has been developed as part of the Saddle Mountain Master Plan.

VI.1 Land Use Issues

Forest Resources

- Only those areas necessary to establish and maintain an adequate buffer for Saddle Mountain Resort will be removed from the productive forest.

- The Proponent will work in cooperation with harvesting and tenure requirements of the MOF Small Business Forest Enterprise Program. To ensure that trail development and glading activities serve the mandate of meeting the recreational objectives, the recreational area may be removed from the allowable cut.

- Communication with the Ministry of Forests will be given high priority to ensure that enough lead time is given to permit effective administration and scheduling of timber harvesting activities. To that end, a Five Year Plan will be completed to describe the harvest areas and schedule of cut coinciding with the planned implementation of the Resort Master Plan. As development proceeds, the resultant detailed planning will take into account any subsequent information gained that may become available. In turn, similar communication from the Ministry is requested to ensure that the tourism important visual and scenic qualities of and from Saddle Mountain and the surrounding mountains are preserved and enhanced through harvesting practices sensitive to their potential negative impact.

- Access to logging operations beyond the ski resort will be maintained.

- All logging will be subject to WCB concerns, liability issues, and forest health requirements.

VI.2 Archaeological Resources

- In the event of archaeological discovery during implementation phases of Saddle Mountain Resort, avoidance of the area, or some other approved form of mitigation (excavation, surface collection, mapping, etc) will be undertaken to minimize the impact of ski resort development.

VI.3 Fisheries, Wildlife Habitat, and Environmental Resources

VI.3.1 Water Quality and Fish Habitat

The North Thompson River, Blue River, Mud Lake, Mud River and Smoke Creek will be protected throughout construction phases and for the long-term once the project is complete.

Ski Trail Development:

Mike Wiegele Helicopter Skiing will adopt the following methods and principles, as suggested by the Ministry of Environment, Lands and Parks, throughout development stages of the Saddle Mountain project.

- Ensure phased development so as little bare soil as possible is exposed at any one time;
- Keep grading to a minimum;
- Quick reseeding once any disturbance is completed;
- Water bars/cross drains to natural or armoured drainage courses;
- Maintain natural vegetation buffers along water courses;
- Properly protect watercourses where they must cross ski runs;
- Undertake all practical methods to control erosion, and ensure the treatment of inevitable erosion by the installation of sediment control works, such as diversion ditches, settling ponds and wetlands.

Base Area Development:

- The proponent will ensure that storm drainage systems are designed, constructed and operated in accordance with Urban Runoff Quality Control Guidelines for British Columbia.
- An appropriate buffer will be established along all watercourses, and drainage courses will avoid crossing through building lots.
- Project phases will be developed in accordance with Land Development Guidelines for the Protection of Aquatic Habitat, and will similarly respect suggestions published in Stream Stewardship: A Guide for Planners and Developers.
- Plans for snow clearing, storage, and sand management (from spring cleanup) will be completed prior to site development.
- An entire site grading and drainage plan will be developed with associated guidelines for ensuring soil conservation and effective water management measures are implemented throughout all phases of construction and project operations.

Golf Course Development:

- Fairways will be located so as to avoid crossing watercourses;
- An appropriate undisturbed buffer of natural vegetation will be maintained along all watercourses, with the only incursion being for cart paths between fairways;

- Green and tee locations (requiring the most intensive turf management regime) will be located well back from water courses and underdrained to infiltration pits;

- Organic methods will be implemented wherever possible to prevent contamination of watercourses with pesticide residues;

- Erosion and sediment controls will be incorporated into the golf course design (and may be included as water hazards in the golf course routing plan).

- Consideration will be given to the information provided in the Golf Industry Study – Environmental Impact Supplement (Habitat Protection Branch); the Best Management Practices for Fraser Basin Golf Courses (Department of Fisheries and Oceans) and; Guidelines to Protect, Maintain and Enhance Fish and Wildlife Habitat on and Adjacent to Proposed Golf Course Development (BC Ministry of the Environment).

VI.3.2 Wildlife and Vegetative Communities

- Impact to red and blue listed species, vegetative communities, and wildlife habitats identified throughout the project, will be kept to a minimum.

VI.3.3 Environmental Impact

In order to minimize and mitigate environmental impact, an Environmental Management Plan (including a problem wildlife plan) will be developed and implemented as per the Master Development Agreement.

Refuse

- Animal proof containers will be provided as necessary throughout the Saddle Mountain Resort. Public education programs will also be implemented to prevent human/animal conflicts.

- The proponent will promote measures to support regional government policies supporting the principles of reduction, reuse and recycling of solid waste.

- The proponent will work closely with the Regional District to ensure that the provisions of the Regional Waste Management Plan are supported.

- Dangerous goods, special wastes and spills will be handled in accordance with established regional government and provincial policies.

Noxious weeds

- Attention to cleanliness of imported gravels, recreational user education programs, signing and trail checks will be imposed, as per Regional District suggestions, to help control the spread of noxious weeds.

Air Quality

- In an effort to preserve the air quality, air tight wood burning facilities and equipment will not be used by the resort and will not be allowed for use in the residential developments on Saddle Mountain.

- A monitoring program may be imposed to assess the possibility of poor air quality during atmospheric inversions, as a result of increased traffic, commercial and residential development. If necessary, additional restrictions will determined.

VI.4 Transportation Systems

- The proponent will make the necessary transportation improvements as required to provide access to the resort and within the resort.

- All road network development will be completed as per the Ministry of Transportation and Highways current Design and Construction Standards and to the satisfaction of the District Highways Manager.

VI.5 Socio-Economic Impacts/Benefits

- Long term institutional needs including social services, commercial requirements, schools, recreation resources, emergency services and other community needs will be investigated in detail during the ongoing development of Saddle Mountain

- The proponent will work in close association with the Regional District's Planning Department to preserve the viability of the commercial core of Blue River, planning resort growth in concert with town growth.

- The proponent will ensure that the rights of all private landowners and Crown Land leaseholders are upheld, and that the community and public at large will have equitable access to the resort and recreational amenities. The benefits of Crown Land will remain accessible to all.

- All efforts will be made by Mike Wiegele Helicopter Skiing to ensure public safety during the development phases of the project. Local residents will be kept up-to-date on the agenda of development as it is defined throughout future levels of planning detail. The proponent will communicate with the Regional District Planning Department to coordinate phases of resort development, with the provision of housing, schools, banks, health care, and other required services in a timely fashion to meet the needs of community growth and development.

VI.6 Regional Planning Objectives

- Resort facility development will require an amendment of the OCP to create a new designation, and related policies, to direct the development of the Saddle Mountain Resort.

- It is the intent of Mike Wiegele Helicopter Skiing that proposed developments on Saddle Mountain support the goals and objectives of the Blue River Official Community Plan.

- Policies and guidelines relating to the Official Community Plan's natural hazard and environmentally sensitive areas designations will be respected by future planning and design efforts dealing with affected portions of the proposed development area.

- All efforts will be made to ensure that developments at Saddle Mountain coincide with the goals, objectives and strategies of the Kamloops Land and Resource Management Plan, and the Regional Growth Strategy.

- Infrastructure development and operational policies will be established with the TNRD, including the use of Development Cost Charges (DCC).

- An in-depth socio-economic analysis will completed in an effort to address the potential short and long term impact on the community of Blue River.

VI.7 Geotechnical Assessment

As per recommendations arising from the Preliminary Geological Hazard Assessment by Golder and Associates Ltd. (see Appendix A-4), the following items have been addressed:

- Long term access requirements to the site in relation to the present location and condition of the existing Smoke Creek FSR will be considered, and possible alternatives explored.

- Surface runoff will be designed to minimize site disturbance during and after development of the resort. The development process will include provision of prompt and effective revegetation of all disturbed areas especially on terrain with moderate or steeper slope gradients.

- A hydrological assessment of the site, and hydrological consultation during the detailed design stage will be undertaken in order to provide appropriate information at the detailed design stage for the design and sizing of runoff systems and stream crossing structures in development areas including the alpine bases, residential areas, and the golf course.

- Detailed geotechnical and hydro geological studies will be completed during the design stage to identify suitable sites and to determine design criteria for waste and septic disposal facilities.

VI.8 Environmental Review

As per the recommendations arising from the Environmental Review of Saddle Mountain completed by GeoAlpine Environmental Consulting Ltd. and Nelson Environmental Services (see Appendix A-5) the following items have been addressed:

- The integrity of the water quality, habitat values and downstream fisheries values of all water bodies will be protected by the establishment of riparian buffer zones. In general, buffers will be as specified in the Land Development Guidelines for the protection of Aquatic Habitat (Chilibeck et al., 1992) or the Forest Practices Code Riparian Management Area Guidebook (MOF, 1995b), whichever is more stringent. In the case where a deviation from the buffer guidelines is proposed, consultation with BC Environment and Department of Fisheries and Oceans will occur.

- Any proposed development in the study area will strive to maximize preservation opportunities of sound old growth forest by avoiding destruction of plant communities and minimizing ground disturbance.

- An attempt will be made to preserve wetlands within the study area. In order to protect the functional values associated with the wetlands preservation, buffers will be incorporated into the detailed plans.

- An on-site environmental monitor will be retained to be present during all development activity.

- During detailed design stage, special management options will be considered for habitats proven as high utilization sites for priority species.

- Areas with high densities of snags will be retained, providing compliance to WCB regulations are adhered to.

- An appropriate vegetated buffer zone will be retained on both sides of all active water courses. All effort will be made to ensure that vegetation in all setback areas will not be disturbed. These set-back zones should be established whether an area has been previously disturbed (e.g., clearcut) or not.

- All effort will be made to maximize the retention of open wetlands. An appropriate vegetated set-back will be established adjacent to wetlands to protect the unique plant and wildlife values of the wetland and riparian areas.

- Road and trail crossings of creeks will be designed so that wildlife movements are not impeded or discouraged. The number of stream crossings will be minimized.

- Revegetation will utilize indigenous plant material when ever possible.

- Additional environmental preservation mechanisms will be utilized as necessary prior to development and during construction.

VII. MARKET ASSESSMENT

VII.1 Introduction

The market conditions for the establishment and development of Saddle Mountain are unique. The proponent of Saddle Mountain, Mike Wiegele Heli-Skiing, is one of the oldest, largest and most successful heli-skiing operations in the world. They draw from a well established base of international clientele of whom 80% are return customers. The concept of developing Saddle Mountain as a complement and enhancement to the heli-skiing operation has come together based on in-house surveys and guest comments stating that they would return more often and bring their families if there were more recreation options. In addition, many visitors, who frequent the resort 3 or 4 weeks per ski season have expressed an interest in purchasing real estate in order to enjoy the heli-skiing, the back-country adventure recreation, the beauty and the seclusion the area has to offer on a year round basis.

A market challenge is the perception by many potential heli-skiing guests that powder skiing lies beyond their skiing ability. As outlined within the Master Plan, Saddle Mountain will act as a powder skiing academy, effectively providing introductory type terrain to allow skiers to develop the skills to proficiently ski powder snow. It is anticipated that a variety of packages will be offered whereby guests will spend several days to be instructed and to practice their powder skiing skills on Saddle Mountain. Subsequently, they will graduate to a day or two of heli-skiing. This will enable Mike Wiegele Heli-skiing to offer a more diverse product and expanded range of product. They will have greater flexibility to create a variety of package combinations and associated pricing, appealing to an expanded market base. Further this will enable a party of guests with a wide range of skills to visit and enjoy the resort as a single unit (i.e. while one guest in a party spends the visit focused on and absorbed with heli-skiing, another member of the group only spends part of the visit heli-skiing and the rest of time skiing on a less demanding level at Saddle Mountain). In turn, the fact that Saddle Mountain will be the first lift serviced, powder skiing oriented facility to be developed in British Columbia (if not the world), the resultant skier base will effectively expand the market of future clientele. This will be a benefit, not only for Mike Wiegele Heli-skiing, but for the rest of the heli-skiing and snowcat skiing operations throughout the Province.

Saddle Mountain will play a supporting role for Mike Wiegele Heli-skiing by providing skiing for their clientele during downtime periods when the helicopters are unable to fly due to bad weather. This will lessen the potentially negative impact for a skier who is unable to go heli-skiing, by offering lift serviced skiing as an alternative. Further, this will maintain a skiing focus to the holiday for the guests. It will also enable the heli-groups to be kept together and prepared for heli-skiing should the weather break, as compared to the current situation where upwards of 100 guests have dispersed to their accommodations and to a variety of other activities.

The development of Saddle Mountain will be a significant improvement to the quality of life in Blue River. It will diversify and expand the employment base at Blue River. It will provide residents and Mike Wiegele employees the opportunity to go skiing. This will be a benefit that

will assist in attracting and retaining high quality personnel to a fairly remote area of the Province.

Finally, it must be noted that Saddle Mountain is not intended to compete with or operate like any other ski resort in B.C., or in the world. In order to maximize the desired powder skiing quality experience, the majority of the mountain will be preserved for guided use of the trails and glades. The number of skiers at one time will be limited and controlled through a reservation system modeled after golf course operations. Guests wishing to enjoy the powder skiing dedicated areas of Saddle Mountain will be required to reserve their days of skiing well in advance of the actual event. Ticket pricing will reflect this low density approach to the use of the facilities. The unique nature of the proposed operation, combined with heli-skiing and real estate packages, will make Saddle Mountain somewhat independent of the need to be located in close proximity to a large market base, as is typical of most other ski resort operations where their success relies on easy access by significant numbers of day use and destination skiers.

VII.2 Ski Resort Trends

Over the past twenty years, the development of new ski resorts in North America has virtually stopped. In that time, growth in the sport in terms of skier visits appears to have largely leveled off. However, resorts that have continued to grow have done so in response to demands by the baby boomers for a high quality recreation and vacation experience. This has involved the improvements of the day use facilities, designing them to anticipate the visitors needs and desires; reducing the "hassle factors"; improving the levels of comfort; providing such complementary facilities as day care, kids camps, business centres, etc; expand the variety of restaurants; diversifying the shopping opportunities; offering high quality rentals; focusing on customer service; creating a pedestrian oriented experience, getting and keeping people out of their cars; etc.

In a destination capacity, mountain resorts have made every possible type of accommodation available. An emphasis has been placed on convenience and ease of use, integrated with the resort's attractions. Developers have directed their attention to the establishment of publicly available "hot beds" to keep the resort active every day of the year. They have also continued to offer the opportunity to purchase single family and multi-family units for private use.

It is anticipated that the availability of disposable income by the baby boomers, now in their peak earning years, will continue to increase as they begin to inherit the estates of their parents. This, combined with increased amounts of time for recreation as they retire and a growing desire to escape from the urban setting, will cause the demand for resorts to experience a growth trend for the next 15 to 20 years.

On the negative side, planning has begun to homogenize resorts. Developers and planners have carefully analyzed successful resorts throughout the world in an effort to determine what makes a good resort work. Annually there are conferences on how to ensure successful resort development. This has led to a "sameness" to the types of facilities one can expect to find at a

mountain resort. In its worst state the result is a characterless product that does all of the right things but has no unique qualities. They have nothing to distinguish them many other facilities. Tied to this is the advent of resort conglomerates. Intrawest, Resorts of the Canadian Rockies, the American Skiing Company, Booth Creek, Vail Resorts, Hines Interests Ltd. and the Aspen Ski Corp have each purchased a variety of resorts. In an effort to improve margins, they have centralized operations and standardized their product. They have all made a concerted effort to broaden the offering in the mountain resort setting to a 365 day per year operation. Not surprisingly, many of the resorts tend to be very much the same, falling into a mega resort/industrial tourism classification.

In response, many of the smaller independent resorts are beginning to make an effort to distinguish themselves with unique and character oriented facilities that cater more to the individual than the masses. The most dramatic example is the Yellowstone Club, a 13,500 acre development on private land in Montana, created as an exclusive resort. With only 850 members, the intent is to cater to wealthy families that wish to escape to the security and seclusion of Montana's backcountry, while being pampered with highest level of comfort and state of-the-art facilities.

VII.3 Ski Resort Trends in Western Canada

Unlike the pattern of limited growth for the ski industry as a whole, British Columbia and Alberta have had the good fortune to see their skier visits steadily grow. From1984/85 to 1998/99, the total number of skier visits for these two provinces have increased from 4.3 million visits to 8.3 million visits. This is an annual compounded increase of 4.8%. Much of the success can be attributed to Whistler and the international attention and accolades that resort has achieved. In 1998/99, skier visits to Whistler/Blackcomb alone surpassed the 2,000,000 mark for the first time, placing them as one of only three resorts in the world able to make that claim.

While Whistler is an unqualified success, with this growth comes a variety of issues and problems. Specifically, there is a loss of the friendly quaintness that can only be found at a smaller venue. Tied to this, there is a real and perceived loss of security and safety. There is an increase in the cost of real estate and there is an increased inability to attract and retain an employee base to provide the high level of service that Whistler's patrons have come to expect. Further, there are segments of the skier marketplace that simply do not like the big resort experience. In a similar fashion, Banff has now grown to a size and scale that it too has an overcrowded feel to it.

This has led to the potential for many of the smaller resorts to grow. Specifically, mid sized resorts like Big White, Silver Star and Sun Peaks have been able to play on the size and expense of Whistler to their advantage. Likewise, Panorama, Fernie, Kimberley and possibly the soon to be developed Golden Peaks have been able to provide a product that is very different than what is being offered at Banff. They too have been able to focus on more affordable vacation homes that cater to the "retreat to the woods" oriented desires and expectations of baby boomer families.

In a similar fashion, the desire for something different, remote, special, and self fulfilling has created the opportunity for the B.C. heli-skiing and snowcat industry to flourish. Being able to offer the visitors a different adventure oriented, backcountry experience, has enabled the prospect of developing a hybrid resort such as that proposed for Saddle Mountain.

VII.4 Resort Types

Regional-destination to destination resorts can be generally broken into three categories:

- The Mega Resort
- The Mid-Sized Resort
- The Specialized Niche Resort.

Mega Resorts

The mega resorts (Whistler, Vail, Aspen, Banff, etc.) are small, self sufficient towns, generally trying to be everything to everybody. They are expensive. They are life style oriented. They offer a full range of formalized year round recreation facilities and cultural amenities, where skiing is only one of the winter activity options. They have all forms of retail and service outlets. They have a vast array of publicly available accommodation (one or two statement hotels, several brand name hotels, a variety of condominiums/townhouses using timeshare, quarter share, residence and vacation club vehicles). The private accommodation comes in a variety of forms from single family second homes, to multi-family condominiums and townhouses, to trophy homes and ranches.

Mid-Sized Resorts

The mid-sized resorts are smaller than the mega resorts. They are less diverse and often directly associated with a larger town or city (Big White/Kelowna, Fernie Alpine/Fernie, Silver Star/Vernon, Sun Peaks/Kamloops, etc.). They still maintain skiing as their cornerstone winter activity. They are usually family oriented, with a loyal following. Their character is one of familiarity, where people know one another. Although they are usually year round resorts with summer activities and programs, the summer season is significantly slower than the winter.

There appears to be an undercurrent of a Whistler rejection going on to the benefit of the mid-sized resorts of Big White, Silver Star and Sun Peaks. These resorts are still largely within striking distance of the Vancouver centered market that Whistler draws from. The quality of skiing, although not as big as Whistler/Blackcomb is still very good. The ambience is small resort family oriented. They are relatively cheap and affordable, both from a day visitor, destination guest and a real estate perspective. They have local population bases from which to draw for employees.

Specialized Niche Resorts

The specialized niche resorts are a relatively new configuration. They are usually high end oriented, catering to a well defined target market. They are places of escape and seclusion. They offer a refuge of security from the urban setting. They offer a special ambiance and espres-de-corps. The facilities are state of the art and well appointed. Examples are Deer Valley in Utah, Beaver Creek in Colorado and the under construction Yellowstone Club in Montana.

Currently, the specialized niche resorts in BC are represented by the heli-skiing and snow cat operations. These are very unique and come about as a result of a combination of snow and mountain conditions with relatively easy access. However, to this point there has been no effort to establish something in the order of the Yellowstone Club.

Saddle Mountain is designed as a specialized niche resort, offering a unique combination of products found no where else in the world.

VII.5 Competitive Impact of Saddle Mountain

It is anticipated that the specialized niche character of Saddle Mountain will attract skiers from all over the world. By providing such a unique product, growth in skier visits will be new as compared to simply seeing a shift of visits from other resorts. This type of development and growth will be good for the tourism and mountain resort industry of British Columbia, complementing the ongoing operation and sustained prosperity of more conventional ski areas.

In terms of heliskiing and snowcat resorts, demographics point to a need to develop future heli-skiers, as the core group of the current market are rapidly approaching the age that they will not be able to participate in a full week of powder skiing. Saddle Mountain will enable aging skiers to still enjoy the challenge of powder skiing without the all demands of a typical multiday commitment. Further, the proposed powder skiing academy will effectively develop the next wave of powder skiers to the benefit of, not only Mike Wiegele but, all other similar operations found throughout the Province.

VIII. ECONOMIC FEASIBILITY

VIII.1 Introduction

The development of Saddle Mountain is a totally unique product. Its development is very directly tied to the well established and highly successful Mike Wiegele Heli-skiing operation. The proposed development has been carefully phased to complement the heli-skiing. Each phase will only be embarked upon when the market conditions and business circumstance from Mike Wiegele perspective are ideal. As such, the breakeven analysis and pro forma statements that might be utilized to evaluate a more typical ski resort development proposal have not been applied. Instead, a basic Financial Analysis of the proposed development has been completed. The phased capital cost estimate of the various expenditures required to establish the resort acts as a baseline to the analysis. These have been compared to the estimated streams of revenue throughout the project's life, in an effort to display the financial viability of the resort.

VIII.2 Capital Costs

Based on the proposed development on the phased Implementation Plan (Section V), the following describes the associated capital costs in 1999 Canadian dollars. These costs (Table 8) have been estimated utilizing actual construction costs at other Western Canadian ski resorts and equipment purchase proposals for Saddle Mountain. They represent what Brent Harley and Associates believe to be realistic estimates of expenditures to develop Saddle Mountain. All assumptions and limiting conditions are listed on a line by line basis in the appendix.

TABLE 8
Capital Cost Budget

Capital Cost by Phase	Pre-Develop.	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	Phase 9	TOTAL
Pre-Development Planning	$200,000										$200,000
Resort Facilities											
Planning and Design		$50,000	$50,000	$50,000	$50,000	$100,000	$100,000	$50,000	$50,000	$50,000	$550,000
Ski Trails		$612,500	$450,000	$687,500							$1,750,000
Glading		$212,500	$262,500	$250,000							$725,000
Summer Grooming		$3,475,000	$1,050,000	$1,475,000							$6,000,000
Reforestation				$20,000						$130,000	$150,000
Nordic Trails							$40,000		$40,000		$80,000
Ski Lifts				$1,200,000	$500,000	$2,500,000	$3,000,000		$600,000		$7,800,000
Golf Course (18 hole)								$4,500,000			$4,500,000
Grooming Machines				$250,000	$250,000		$250,000				$750,000
Base Area Facilities and Equipment				$750,000	$2,000,000	$500,000	$1,200,000	$1,400,000			$5,850,000
Infrastructure				$1,070,000	$50,000	$25,000	$250,000		$100,000		$1,495,000
Roads				$50,000	$10,000	$4,600,000	$800,000				$5,460,000
Parking Lots					$7,500	$15,000	$45,000				$67,500
Bridge Across Mud Creek							$500,000				$500,000
Bridge Across North Thompson										$5,000,000	$5,000,000
Resort Facilities Subtotal	$200,000	$4,350,000	$1,812,500	$5,802,500	$2,867,500	$7,740,000	$6,185,000	$5,950,000	$790,000	$5,180,000	$40,877,500
Contingency (10%)	$20,000	$435,000	$181,250	$580,250	$286,750	$774,000	$618,500	$595,000	$79,000	$518,000	$4,087,750
Total Resort Facilities	$220,000	$4,785,000	$1,993,750	$6,382,750	$3,154,250	$8,514,000	$6,803,500	$6,545,000	$869,000	$5,698,000	$44,965,250
Real Estate Development											
Planning and Design				$75,000		$100,000	$100,000	$100,000	$50,000	$50,000	$475,000
Roads				$440,000		$290,000	$440,000	$360,000	$1,200,000	$400,000	$3,130,000
Sewer Treatment Plant						$1,190,000					$1,190,000
Crown land Aquistion				$87,500		$67,500	$103,125	$83,125	$138,750	$115,000	$595,000
Develop. Costs 19 Heli-Lots				$700,000		$250,000					$950,000
Develop. Costs 90 Single Family Lots						$420,000	$1,225,000	$945,000		$560,000	$3,150,000
Develop. Costs 32 Estate Lots									$1,000,000	$600,000	$1,600,000
Develop. Costs 97 Multifamily Units						$500,000	$500,000	$500,000	$440,000		$1,940,000
Community Park							$20,000				$20,000
Real Estate Subtotal	$0	$0	$0	$1,302,500	$0	$2,817,500	$2,388,125	$1,988,125	$2,828,750	$1,725,000	$13,050,000
Contingency (10%)	$0	$0	$0	$130,250	$0	$281,750	$238,813	$198,813	$282,875	$172,500	$1,305,000
Total Real Estate	$0	$0	$0	$1,432,750	$0	$3,099,250	$2,626,938	$2,186,938	$3,111,625	$1,897,500	$14,355,000
PROJECT TOTAL BY PHASE	$220,000	$4,785,000	$1,993,750	$7,815,500	$3,154,250	$11,613,250	$9,430,438	$8,731,938	$3,980,625	$7,595,500	$59,320,250
CUMULATIVE PROJECT TOTAL	$220,000	$5,005,000	$6,998,750	$14,814,250	$17,968,500	$29,581,750	$39,012,188	$47,744,125	$51,724,750	$59,320,250	

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VIII.3 Revenues at Buildout

Revenues at Buildout are broken into Ski Operations Revenues and Real Estate Revenues. These projections have been generated by David Hughes and Associates.

Skiing Operations Revenues

The skiing operations revenues (Table 9) have been calculated utilizing 1999 dollars. They were based on the operational capacity of the three lift pods; differentiated lift pass pricing and; the estimated utilization. Directly tied to these are the revenues generated through food and beverage sales, lessons, equipment rentals and retail sales.

From the total skiing operations revenues, the estimated departmental expenses are subtracted to give the departmental income. Overhead expenses were then subtracted to determine income before financing, depreciation and income taxes.

At buildout it is estimated that the annual revenue from skiing operations will total approximately $7,500,000.00. After the expenses have been removed, the resort should net about $1,900,000.00 a year before financing, depreciation and income taxes.

TABLE 9
Ski Revenue at Buildout

Lift Revenue	Visits	Gross Lift Pass	Discount	Net Lift Pass	Total	Gross Revenue
Pod A	1,700	50	85%	$43	$72,250	
Pod B&C	300	200	90%	$180	$54,000	
Total					$126,250	
Utilization (40%)					$50,500	
# of Days (130)						$6,565,000
F&B Revenue			Revenue/Visit	Total		
Pod A	88,400		$10	$884,000		
Pod B&C	15,600		$15	$234,000		
Total				$1,118,000		
Margin (25%)						$279,500
Lessons						
Pod A	88,400		$5	$442,000		
Pod B&C	15,600		$15	$234,000		
Total				$676,000		
Margin (35%)						$236,600
Rentals						
Pod A	88,400		$5	$442,000		
Pod B&C	15,600		$10	$156,000		
Total				$598,000		
Margin (60%)						$358,800
Retail						
Pod A	88,400		$5	$442,000		
Pod B&C	15,600		$7	$109,200		
Total				$551,200		
Margin (25%)						$137,800
Total Ski Revenue						$7,577,700
Departmental Expenses (50%)						$3,788,850
Departmental Income						$3,788,850
Overhead Expenses (50%)						$1,894,425
Income Before Financing, Depreciation & Income Taxes						$1,894,425

Produced by: David Hughes and Associates

Real Estate Revenues

The Real Estate Revenues at Buildout (Table 10) have been calculated based on the actual number of lots and units planned for development at Saddle Mountain. Average prices in 1999 dollars were applied on a unit by unit basis to project a gross real estate revenue of approximately $61,000,000.00.

TABLE 10
Real Estate Revenue at Buildout

	Number of Lots	Average Size & Price	Total	
Private Accommodation				
Single Family	90	1.0 Acre @$275,000	$24,750,000	
Heli Lots	19	2.5 Acre @$550,000	$10,450,000	
Estate Lots	32	2.5 Acre @$500,000	$16,000,000	
Total	141			$51,200,000
Multi-family	97	10/Acre @$500,000	$4,850,000	
Total	238			$4,850,000
Public Accommodation				
Hotel Site	140	140 units @ $25,000	$3,500,000	
Lodge Site	70	70 units @ $20,000	$1,400,000	
Total	210			$4,900,000
Total Potential Gross Lot Revenue				$60,950,000

Produced by: David Hughes and Associates

VIII.4 Conclusions

Although this is a fairly basic analysis, the fact that the total revenues surpass the total capital costs over the life of the project suggests that Saddle Mountain will be financially viable. The captured market of the resort, created by the real estate, will act as a secure source to perpetuate the ongoing success of the resort. Further, the annual ski revenues plus the unaccounted potential for summer use will give Saddle Mountain a steady stream of cash flow into the future.

IX. FINANCIAL CAPABILITY

IX.1 Introduction

Mike Wiegele Heli-skiing is a very successful resort operation. They have achieved over 30 years of sustained growth in visits and revenues, limited only by the resort's capacity of 110 weekly guests. This is primarily due to the fact that, in order to consistently deliver a superior product, access to untracked powder is critical. The current leasehold terrain will only support this number of guests without developing additional ski runs.

Mike Wiegele Heli-skiing has an unwavering commitment to safety and training. All effort is made to preserve and protect the environment that acts as a primary attraction for their guests.

They are a major employer in Blue River and the North Thompson Valley with economic benefits spun off throughout the region.

Their record as a successful resort operator has provided Mike Wiegele Heli-skiing with the financial capability to develop Saddle Mountain. The proposed phased development of Saddle Mountain is designed to ensure the ongoing viability of their existing operation while methodically bringing on portions of the envisioned resort. As such, financial capability will be maintained, only initiating expansion as the resort can pay for itself, supplemented by the resources available to MWHS.

IX.2 Phased Development

As described in the Implementation Plan, the development of Saddle Mountain will occur in a sequential and incremental fashion. The first two phases of development will be 100% oriented toward the improvement of Saddle Mountain in terms of skiability. During that time it will be accessed by helicopter and utilized by Mike Wiegele Heli-skiing. The establishment of the wide trails and glades will improve the heli-skiing product by virtue of its proximity to Blue River. The powder skiing capacity of Saddle Mountain will be significantly expanded. The visual impact of the current cut blocks will be noticeably improved and the potential for lift serviced development will be readily apparent. Visitors will be able to ski the product. They will be fully exposed to the mountain's potential.

During this time, proposed development areas will become physically obvious and the potential of the Master Plan will become more apparent to the prospective purchasers and investors. Further market analysis will be completed with surveys of clientele with direct reference to the proposed developments. The results of these surveys will define, to a greater extent, the final product mix and specific refinements that may be necessary to the plans and phasing.

It is important to note that, unlike the development of a brand new ski resort (i.e. Cayoosh, Jumbo, or Garibaldi) Saddle Mountain is closely tied to an existing and successful resort operation. This gives the developer the luxury to monitor and adjust plans as they go. If the development of Saddle Mountain goes no further than cutting the trails, at the very least, the heli-skiing has been improved; the close to Blue River heli-skiing capacity has been expanded,

and; the visual quality of Saddle Mountain to the Mike Wiegele visitors from all over the world has been dramatically improved. As such, several of the key Master Plan development objectives will have already have been achieved.