Archaeological Overview Assessment
Lillooet Forest District

Non-technical Report

Prepared for the

Archaeology Branch &
Lillooet Forest District

By:

Millennia Research

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Credits

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The opinions and recommendations expressed in this report are those of the authors, and do not necessarily reflect those of the Ministry of Forests, the Archaeology Branch, of the First Nations with interests in the study area. The study was undertaken without prejudice to aboriginal rights or land claims, and the contents do not define or limit in any way the aboriginal right or title of any First Nation.

Any errors or omissions in this report are solely the responsibility of the authors,

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Our thanks to Dave Home, Special Projects Officer for the Lillooet Forest District, who initiated the Lillooet Archaeological Overview Assessment and provided assistance and feedback during the project.

Throughout the project we worked closely with Joy Sinnett and Steve Lipscomb of Timberline Forestry Consultants Ltd. Joy and Steve digitized trails, generated the data used in the development of the predictive model, developed new approaches to topographic with Millennia Research, and translated the model into maps. Joy also reviewed the draft report and provided comments to clarify the discussion of modelling in particular.

Copies of the draft report were distributed to the steering committee and First Nations. Doug Glaum of the Archaeology Branch, Dave Home, and Marjorie Serack, AFA, Lillooet Forest District reviewed early versions of this report and potential maps. Dave, Marjorie and Doug provided many valuable comments that have been incorporated into this final version. Marie Barney independently reviewed early versions of the AOA report and the potential maps. Marie discussed the AOA with elders, chiefs, and knowledgeable individuals of Upper St'at'imc bands and reviewed maps in the field with D'Ann Owens. Marie's involvement contributed significantly to the final products.

Meetings and telephone conversations with First Nation representatives throughout the project contributed to project direction, model development and report content. In particular, thanks to Pearl Hewitt and Chief David Walkem of the Cook's Ferry Band, Chief Richard Lebourdais and Daphne Jorgenson of the Whipering Pines Band, Chief Perry Redan of Cayoose Creek, Sue Montgomery of Creekside Resources, Johnny Abraham of N'Quatqua, Chief Larry Camille, Canoe Creek, and Don Wise of the Tsilhqot'in National Government.

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Management Summary

In the spring of 1997, Millennia Research Limited was contracted to complete the archaeological component of the Lillooet Forest District Archaeological Overview Assessment (AOA). The AOA includes archaeological potential modelling at a scale of 1:20,000 for all crown and private lands. Timberline Forest Inventory Consultants Ltd. was awarded the contract for GIS implementation of the model.

Predictive modelling using GIS is an important tool for cultural resource management as it provides a means of focussing limited resources in areas most likely to contain archaeological remains. Using mappable environmental, physiographic, and social data the model seeks relationships between variables such as water, salmon streams, biogeoclimatic zone, etc. and the location of previously recorded sites. These relationships are then extrapolated to the whole of the forest district. Users of the archaeological potential maps that accompany this report should be aware however, that no practical model will predict the location of all sites.

The Forest District crosscuts the traditional territories of the Nlaka'pamux, Secwepemc, Lillooet, and Tsilqo'tin peoples, Published ethnographic and historical sources, including map information, were closely examined for information useable in predictive model development. Information on trail networks was also obtained. Mapped traditional use information was not available.

Significant modelling developments include a terrace and ridge model and the creation of a statistically valid buffer program. Using the Arc/Info VIP command Timberline Forest Inventory Consultants and Millennia Research developed a model to locate mountaintops, ridges and terrace edges. Ethnographic literature, oral traditions and previous archaeological work indicate that these topographic features have significant potential for archaeological sites, Near and identity analyses were run on the resulting coverage, and the ridge/terrace edges were incorporated into the model based on the results of statistical analysis. Millennia Research Ltd. developed a computer program named "Buffer.pgm" that calculates the optimal buffer size for any variable and calculated a chi-square statistic for a buffer of that size. This program simplified the process of determining the buffer sizes and improved the accuracy of the model.

Archaeological data gaps and biases remain for the Lillooet Forest District. Data gaps include refined and accurate wildlife, forest and terrain mapping, and mapped traditional use site information. Biases exist in the representation of archaeological survey across biogeoclimatic zones and ecosections. However, in general, the GIS data available was sufficient for modelhng purposes. Incorporation of additional and refined data as it becomes available will improve the model.

Recommendations generated from the project address operational use and interpretation of the map products and ways to improve the model. The operational recommendations are structured to address developments that fall within more than one potential zone (as frequently is the case), and definitions of levels of effort have been provided. Suggestions for model improvement include a review of its performance, hillshade model development, and means to address the identified datagaps.

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This kind of work, looking for places the ancestors lived before the coming of the goldminers, it *needs to be done even before* **the** *logging plans are started.*

An elder of an Upper St'at'imc band commenting on the AOA;
recorded by Marie Barney 1998.

Introduction

The purpose of an Archaeological Overview Assessment (AOA) is to "identify and assess archaeological resource potential or sensitivity within a proposed study area" (Apland and Kenny, 1995:8). An AOA is expected to produce "recommendations concerning the appropriate methodology and scope of work for subsequent inventory and/or impact assessment studies" (Apland and Kenny 1995). In meeting both of these broad objectives, the Lillooet Forest District AOA, in conjunction with on-going consultation with First Nations, will assist Forest District managers in identifying and minimising adverse impacts to archaeological resources during operational planning.

The Lillooet Forest District AOA was completed under two separate contracts: Millennia Research Limited was contracted to complete the archaeological component of the project and Timberline Forest Inventory Consultants Ltd. was awarded the contract for GIS implementation of the model. The AOA includes archaeological potential modelling at a scale of 1:20,000 for all crown and private lands within the Forest District.

Scope

Following the terms of reference, the primary tasks of the AOA are to:

- document research undertaken in the Forest District from a number of sources including archives, libraries, museums and government agencies and consultants;
- consult with First Nations who have identified Traditional Territories or an expressed interest in the study area and with persons or organizations with a knowledge of archaeological resources in the study area;
- assemble data sets for archaeological modelling;
- record areas ofprevious archaeological survey for digitizing;
- verify/correct recorded site locations and types (cross check original siteforms against digitized locations);
- create and implement archaeological models in conjunction with the GIS contractor; and,
- write interim, final and summary reports,

For the purposes of this AOA, archaeological sites include:

- all sites recorded in the Provincial Heritage Registry Database (PHRD) database except municipally and provincially designated non-sites;
- designated archaeological sites;
- archaeological sites protected under Section 1 of the Heritage Conservation Act; and,
- archaeological sites not protected under the Act which have direct application to understanding past aboriginal land use.

Steering Committee

A steering committee, established by the Lillooet Forest District (FD) and comprised of Doug Glaum of the Archaeology Branch, Marjorie Serack and Dave Home of the Lillooet FD, Morley Eldridge and D' Ann Owens of Millennia Research, and Steve Lipscombe of Timberline, met several times during the project to discuss model development, recommendations, and the format of deliverables.

Study Area

The Lillooet FD is located in B.C.'s southern interior (Figure 1). The southern extent of the Forest District lies at a point on the Fraser River roughly 24 km south of the town of Lytton. The eastern boundary extends to the village of Spences Bridge on the Thompson River at the mouth of the Nicola River, and continues along the eastern bank of the Fraser to Kelly Creek. The northern and western reaches of the Forest District are defined by the headwaters of the Yalakom River, Relay Creek, Tyaughton Creek, Gun Creek, Slim Creek, Nichols Creek, Bridge River, McParlon Creek, Donnely Creek and Noel Creek. The southwestern extent of the Forest District excludes only the southern tip of Anderson Lake and includes the headwaters of Cayoosh Creek and the Stein River.

Major lakes, found in the western part of the Forest District include (from north to south) Gun, Downton, Carpenter, Seton, Anderson, and Duffy. Carpenter Lake was formed on Bridge River by the construction of the Terzaghi Dam, which was completed in 1960, and Downton Lake by the construction of the LaJouie Dam.

The tremendous environmental variability within the District is reflected by the number of ecosections and biogeoclimatic zones.

Ecosections

The Lillooet FD encompasses portions of eight ecosections. Ecosections are defined by features such as mountain ranges or river basins and are described in terms of their physical and climatic characteristics (D. Meidinger personal communication 1999). The eight ecosections of the Forest District are the Central Chilcotin Ranges, Fraser River Basin, Leeward Pacific Ranges, Pavilion Ranges Ecosection, Southern Chilcotin Ranges, Thompson Basin, Eastern Pacific Ranges, and Chilcotin Plateau (see Figure 1).

Biogeoclimatic Zones

The province of British Columbia is divided into areas called biogeoclimatic zones. Each zone has a particular series of climatic conditions where certain plant, animal, and insect species are found.

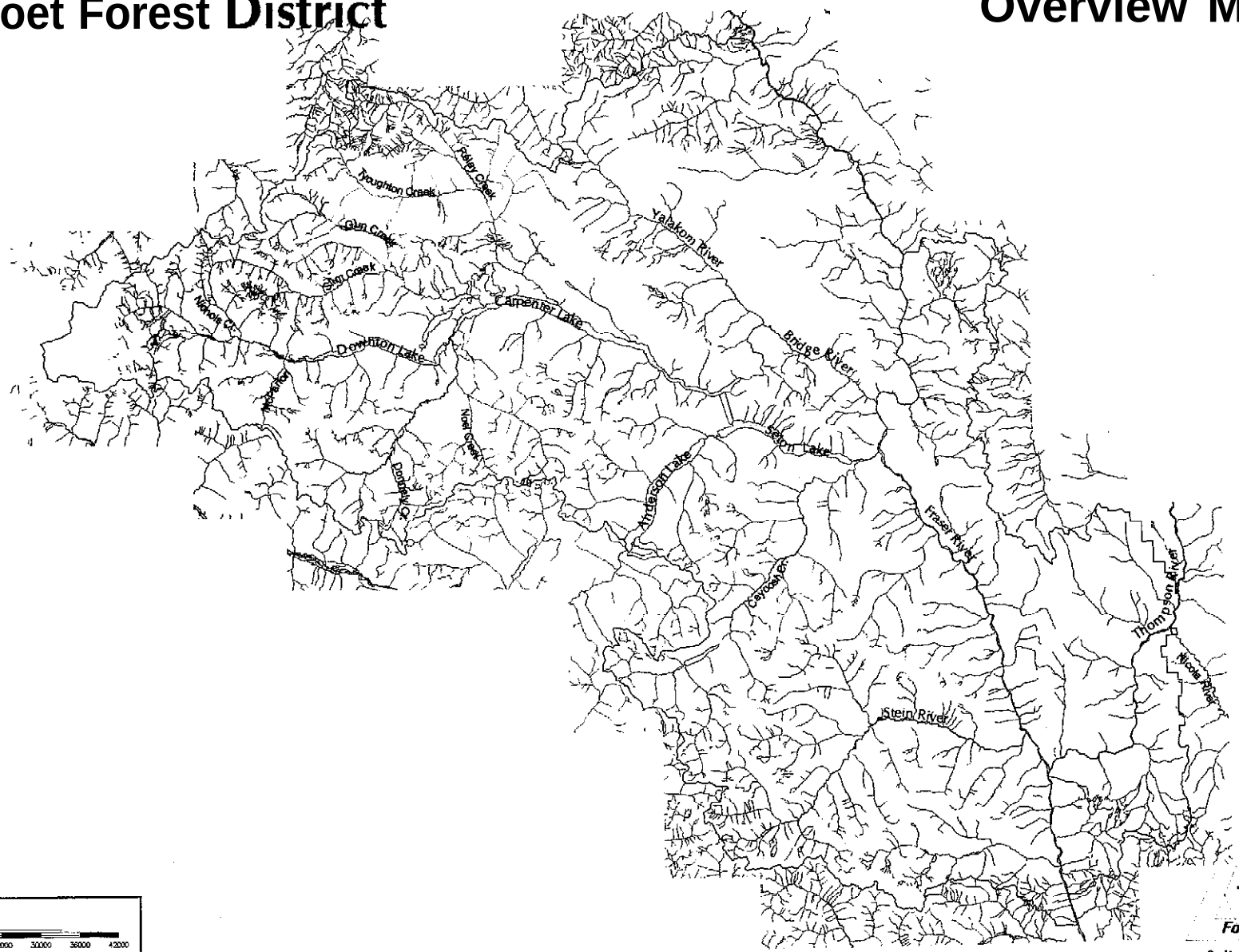
Fourteen biogeoclimatic zones have been identified in British Columbia (Meidinger and Pojar 1991), seven of which are represented in the Lillooet Forest District (Figure 1). These include Coastal Western Hemlock (CWH), Bunchgrass (BG), Ponderosa Pine (PP), Interior Douglas Fir (IDF), Montane Spruce (MS), Engelmann Spruce - Subalpine Fir (ESSF), and Alpine Tundra (AT). Summaries for each of these zones are provided in the technical report prepared for this AOA (Owens et al 1999).

Biogeoclimatic zone classifications are very important to archaeological predictive modelling as certain resources, and the aboriginal economic activities associated with these resources, may be concentrated in specific biogeoclimatic zones. Archaeological remains representing these particular economic activities will tend to be located in the biogeoclimatic zones where specific resources are available.

Figure 1. Lillooet Forest District.

Lillooet Forest District

Overview Map



Metres

0 6000 12000 18000 24000 30000 36000 42000

Timberline

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Traditional Territories

Twenty-nine First Nations and Tribal Councils have an identified traditional territory and/or interest in the study area (Figure 2). The majority of these groups fall into one of three large ethno-linguistic divisions classified by ethnographers, linguists, and historians: the Nlaka'pamux (Thompson), Secwepemc (Shuswap) and the Lillooet. Tsilqo'tin (Chilcotin) peoples also used portions of the Forest District. A list of First Nation groups with an identified interest and/or traditional territory within the Forest District is presented in Appendix 1. This list was supplied by the Forest District and was used as the starting point for correspondence.

It is not the place nor intent of this report to define specific traditional territories. The Native people of the Forest District are dynamic groups and therefore, territorial divides of the recent past may not reflect the distant past. Neighbouring groups often had mutual understandings of shared use of an area, although one group's claim to the land may have been recognized as stronger. For example, Teit (1906:256) notes that "Members of the Fountain, Fraser River, Lake and Pemberton bands, sometimes hunted together, or one after another, in the country around the Upper Bridge River, which was more particularly the hunting-grounds of the Lake Lillooet, because they were the nearest, and used them most." This said, several ethnographic sources and oral traditions identify boundaries between groups. Again referring to the Upper Bridge River, Teit (1909:453) mentions "A little hill or mound with a lake or swamp near it, in a locality called *Xwalxa'stcen* ('plenty of roots'), on a tributary of Bridge River, is looked upon as a perpetual boundary-mark showing the junction of the hunting grounds of the Slemxu'lexamux [Secwepemc people living between High Bar and Soda Creek], Lillooet, and Chilcotin."

Traditional territory maps published in Teit (1900, 1906, 1909) are presented below. These should be considered only an approximation and it is recommended that researchers consult with directly with First Nations, as boundary lines may change as groups rediscover their past and refine their mapping.

Predictive Model Development

Certain factors such as the availability of food and drinking water are assumed to be important to the choices people make about where to establish camps, hunting sites, villages, and most other site types. An archaeological predictive model works by analysing the location of known sites compared to random areas known to not have sites. Features of the landscape are used for this comparison. Most predictive models use mapped information available through geographic information systems (GIS) to analyse this information.

Predictive modelling using GIS is an important tool for cultural resource management (CRM). Because predictive models can accurately predict regions that are likely to contain archaeological material they are useful in focusing limited CRM resources so that the majority of archaeology sites are discovered and protected. No useful model will however, predict the location of all sites. Models are simplifications of complex human behaviour so some deviation from these patterns is expected. This section provides a summary of the limitations and assumptions of predictive models, the nature of information used in developing a predictive model, the goals of a predictive model and how models should be used once they have been applied. Detailed discussion of these topics is provided in the technical report completed for the AOA (Owens et al. 1999).

Assumptions and Limitations of Predictive Modelling

- The basic assumption underlying predictive modelling in archaeology is that human behaviour in the past shows regularities; that people did not wander randomly about the land but that they moved in an organised and planned fashion.
- Certain environmental factors such as availability of drinking water, food, and fuel influenced where people decided to live, camp, etc.
- Given the above, archaeological remains will be distributed in a predictable pattern; most sites will be located within or near economic resources.
- If a model is developed using GIS software (as this one is) the model must use information which is or can be mapped. Most predictive models give preference to environmental data because the location of streams, lakes, plant resources, etc. can be mapped.
- Social data such the spiritual significance of certain locations is often unmappable. Use of environmental information will not necessarily help locate sites such as seclusion areas that may not be associated with economically important features of the landscape.
- People who used small sites only once or very infrequently would not need as many resources as they would living in larger settlements. Because of the large scale of the mapped data used in GIS modelling, small pockets of important resources, small bodies of drinkable water, and small areas of dry, level ground, that people could have used may not be mapped. This leads to sites located in areas mapped as low potential.

- Almost all of the digital map products available to archaeologists are descriptions of current land patterns, but the landscape and climate have changed considerably in the past. Model development should consider changes in the environment through time but are generally more successful at predicting recent sites than ones of considerable age.

Nature *of the Data used for Modelling*

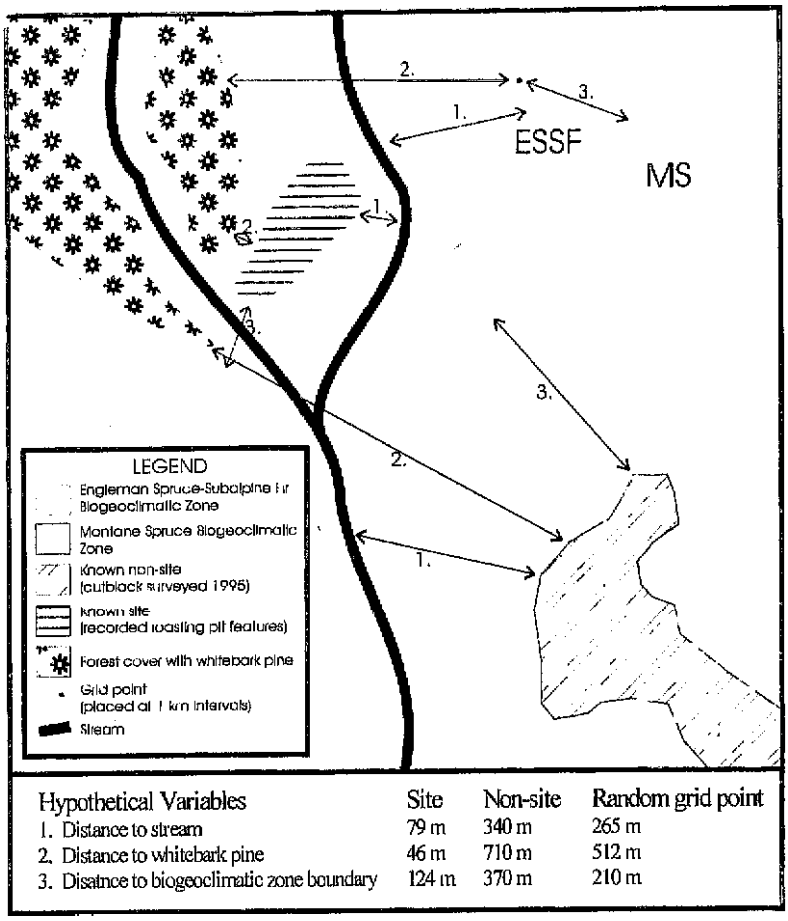
In order for a model to demonstrate that it is effective in identifying areas that may contain archaeological remains, it must also identify areas with a low likelihood of archaeological deposits. In order to do this, the distance between sites and features of the land is determined and the distance from locations that are known not to have sites (areas that have been surveyed by archaeologists) and the same features is also determined. Another way to get negative data is to place randomly spaced points across the entire region. The location of these points in relation to environmental features provides a random sample of the landscape. If the location of sites differs from the locations of these random points, it can be said that the known sites are non-randomly distributed in relationship to environmental variables (see Figure 3).

GIS can gather a lot of data useful for model development including slope, forest cover, biogeoclimatic zone, distance to water, distance to lakes with fish, distance to streams with fish, aspect (the direction the site faces), and wildlife capability. Other important variables are identified through a review of ethnographic information and oral histories. These sources can also suggest the importance of individual variables in determining site location. Finally, trail locations can be digitally traced so that they too can be considered in model development.

Model Development

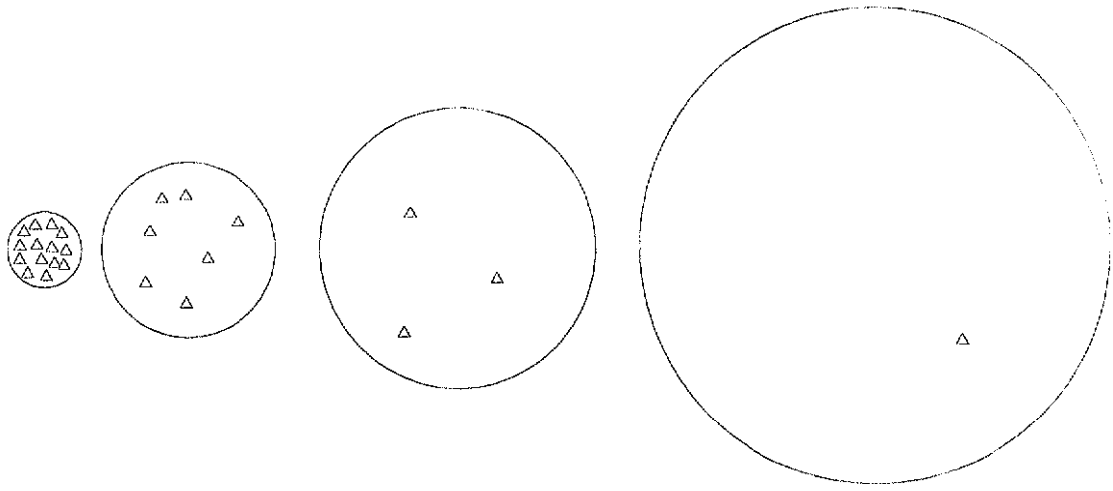
Once the relationships between sites, non-sites, grid points, and model variables is analysed this understanding is applied to the whole of the study area. Areas similar to those with known sites are rated as high potential, and areas similar to those with no known sites are rated as low potential. Areas in between are rated as moderate or moderate-high. The goal of any predictive model should be to maximise the number of known and unrecorded sites in areas of high potential and to minimise the number of sites found in areas of low potential. At the same time the model should strive to be precise by maximising the total area in the category of low potential and minimise the total area in high potential.

Figure 4 represents an idealised potential model. The circle represents the physical area covered by each category of potential. The smallest area (high potential) should contain the greatest number of sites (triangles), while the largest area (low potential) should contain the fewest number of sites. The model is considered ideal because it is most efficient in terms of allocating time and funding to CRM interests. The size of the actual areas of potential may differ from the ideal model, however in all cases the majority of sites should be found in areas of higher potential. The possibility exists that in the best possible model for a region, the area with the highest potential is also the largest.



The actual model analyses the relationship between all grid points and all identified variables within 2000m. Assuming this site and non-site are representative, then the data suggests that closeness to water, whitebark pine, and ecotone are important factors which, in combination, may be indicators of site location. ESSF may have higher site density that MS.

Figure 3. Conceptual illustration of GIS analysis of relationships between sites, known non-sites, grid points, and some model variables.



The circle indicates the proportional area of each level of potential and the number of triangles indicates the number oi sites.

Figure 4. Diagram of an ideal model for four levels of potential.

Past Environmental Conditions and Archaeological Cultures

Ethnographic data from the 1800-1900's and modem environmental data are used in the development of the predictive model. This information has been applied to archaeological cultures within the Forest District to 4500 years ago (see for example Rousseau 1991; Alexander in Hayden 1992). The ethnographic analogy however, is not confidently applied to land use practices prior to 4500 years ago when ecological conditions were significantly different. An understanding of environmental conditions prior to this time is necessary to understanding the nature and distribution of early archaeological sites.

A summary of this information is provided in Table 1. The table also lists the model variables that target the identified archaeological correlates. Detailed summaries of climatic and archaeological characteristics 12 000 to 200 years ago are presented in Owens et al. (1999).

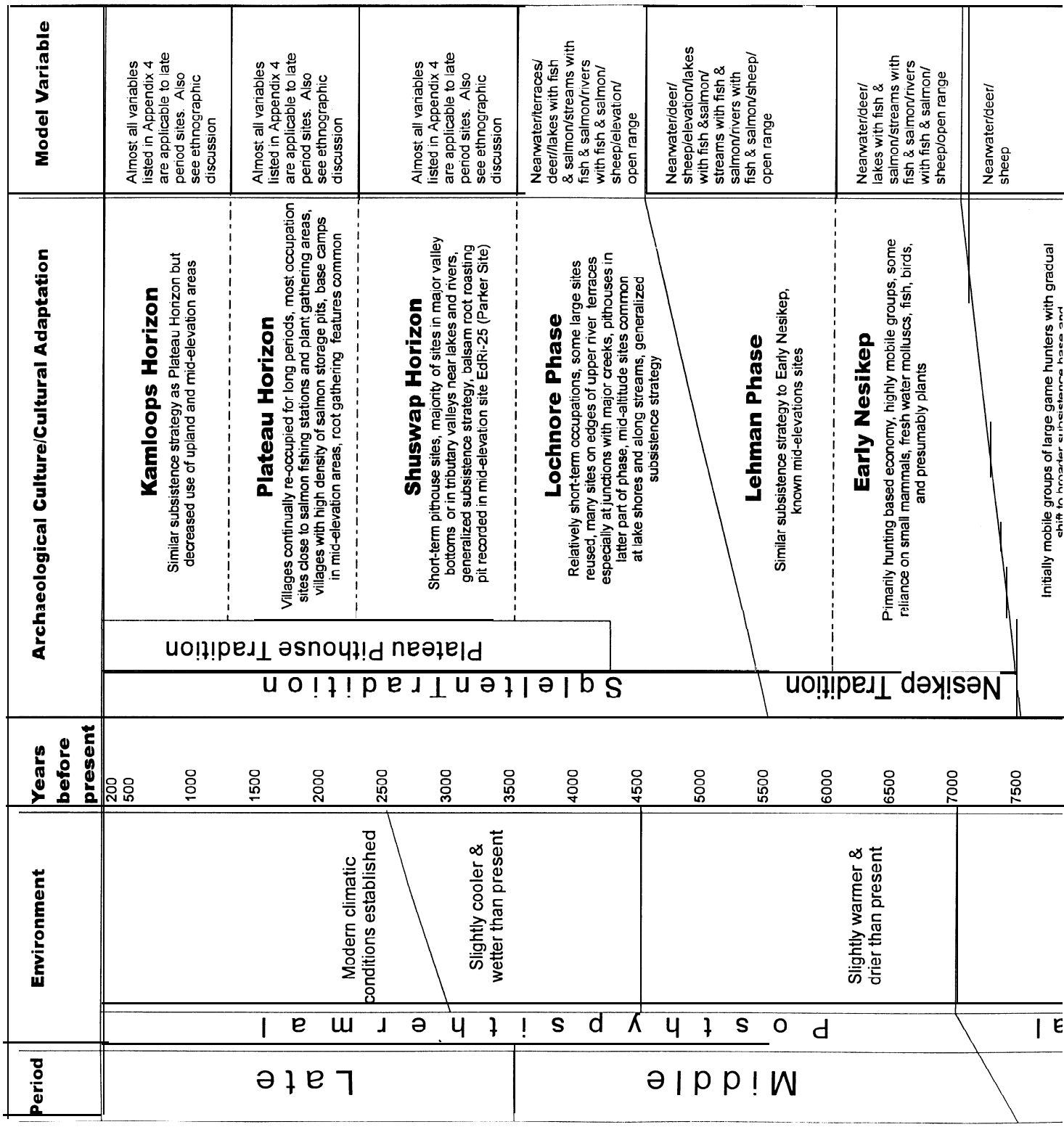
Recent Environmental Change

Times have changed over the time that I have been here, seasons are different.
Elders of Fountain, Pavilion, Cayoosh, Seton, Bridge River, Lillooet
commenting on the AOA;
recorded by Marie Barney 1998.

Recent environmental and climatic changes have affected the distribution of resources within the Forest District. One significant example is the up-slope movement of forested lands. Traditionally, tires were set were set to increase rangeland For ungulates and open land for root crops. Teit (1900:230) records the burning of forested areas "in order to secure a greater abundance of roots on the burnt hillside." Chief V. Adrian of Seton reported that tires set annually in upper elevations (IDF and ESSF) encouraged more open range for the propagation of deer. He notes that as a result, meadowland was 1000 feet lower than present (Wales 1974).

The shift in treeline has significant implications for model development. As will be discussed further in the ethnographic review, hunting and gathering base camps can be expected at the forest edges of the ESSF zone (Alexander 1989:40). As the data used in model development is based on recent biogeoclimatic zone conditions a 50m buffer was placed along AT and ESSF zone boundaries to partially mitigate the shift in their location caused by intentional burning and large scale climactic changes. Application of a wider buffer was not practical for modelling purposes,

Table 1. Past environmental conditions and archaeological cultures.



Based on McRanor and Bailey 1996, Clague 198 1, Hebda 1995, Hebda 1982, Mathewes 1985, Mathewes and Heusser 1981; Richards and Rousseau, 1987, Rousseau 1993, Rousseau, et al. 1991; Stryd and Rousseau 1996.

...cal cultures.

Period	Climatic Episode	Climate	Years BP	Tradition	Phase / Description	Resources
Middle	Posthyp...		4500	Sq...	...Relatively short-term occupations, some large sites reused, many sites on edges of upper river terraces especially at junctions with major creeks, pithouses in latter part of phase, mid-altitude sites common at lake shores and along streams, generalized subsistence strategy	...fish & salmon/rivers with fish & salmon/ sheep/elevation/ open range
Middle	Posthyp...	Slightly warmer & drier than present	5000			Nearwater/deer/ sheep/elevation/lakes with fish &salmon/ streams with fish & salmon/rivers with fish & salmon/sheep/ open range
Middle	Posthyp...		5500	Nesikep Tradition	**Lehman Phase** Similar subsistence strategy to Early Nesikep, known mid-elevations sites	
Middle	Posthyp...		6000	Nesikep Tradition		
Middle	Posthyp...		6500	Nesikep Tradition	**Early Nesikep** Primarily hunting based economy, highly mobile groups, some reliance on small mammals, fresh water molluscs, fish, birds, and presumably plants	Nearwater/deer/ lakes with fish & salmon/streams with fish & salmon/rivers with fish & salmon/ sheep/open range
Early	Hypsithermal		7000	Nesikep Tradition		
Early	Hypsithermal		7500		Initially mobile groups of large game hunters with gradual shift to broader subsistence base and increasing population	Nearwater/deer/ sheep
Early	Hypsithermal		8000			
Early	Hypsithermal	Hypsithermal Peak Significantly warmer &drier than present	8500			
Early	Hypsithermal		9000		No known sites	
Early	Hypsithermal		9500			
Early	Hypsithermal		10000			
Early	Deglaciation		10500			
Early	Deglaciation	Establishment of grasslands followed by large forests	11000			
Early	Deglaciation		11500			
Early	Deglaciation	Wetter & cooler than present	12000			

...2, Mathewes 1985, Mathewes and | lcusser
...Stryd and Rousseau 1996.

Ethnographic Review

The goals of the ethnographic review are two-fold: the first is to illustrate that the statistical analysis of archaeological site distribution supports the description of land-use patterning indicated in ethnographies and traditional knowledge; second, that given this correlation, it is reasonable to hypothesise that information available in ethnographies, traditional use studies, and oral histories can be used to identify the location of sites which are poorly documented in the archaeological dataset. Archaeological studies of the Bunchgrass and Ponderosa Pine zones along the Fraser and Thompson Rivers are over represented relative to the percentage of area they cover within the Forest District. With the possible exception of the Interior Douglas-fir zone, the distribution of sites in other biogeoclimatic zones is less well understood. This point is particularly important from the perspective of forestry operations planning as most logging occurs in the IDF, ESSF, and MS zones.

This review focuses primarily on the data available for the Nlaka'pamux, Lillooet, and Secwepemc peoples who occupy the majority of the study area, with information regarding Tsilhqot'in land use patterns that may be reflected in the archaeological record for the northern fringe of the Lillooet Forest District. It is not intended to present particular information on kinship, linguistics, or belief systems.

Most of the applicable ethnoarchaeological research in the Forest District has been conducted by Alexander (1987, 1989) among the Ts'kwaylaxw (Pavilion) and Xaxli'p (Fountain) First Nations. Other useful studies have been undertaken by Bumard-Hogarth, (1983) and Tyhurst (1994) among the Tsilhqot'in, and Ham (1975) among the Secwepemc. The results of this research are combined with ethnographic data regarding the ethno-linguistic groups represented in the Forest District.

Chiefs raised the possibility of significant differences in site distribution between cultural groups during review of the draft potential maps and such differences have been discussed in the ethnographic literature (e.g., Alexander 1989). To determine if differences could be accounted for in the model, analysis was conducted on the relationship between the location of known sites and traditional territories as noted by Teit (1900, 1906, 1909). No statistically significant distributional differences were noted which would affect site potential mapping. These groups generally share a similar approach to the use and management of resources within their traditional territories and subtle differences may not be evident within the existing inventory. Model refinement could be reconsidered as the sample of recorded sites increases and territorial shifts are better understood. where known, significant differences in resource availability or subsistence practices between these groups are noted where such differences would be reflected in the archaeological record.

Sources were examined for information regarding settlement, subsistence patterns, transportation, and beliefs that affect the patterning of archaeological sites. Information was organized by activity and linked with the corresponding variable classes used in model development (not every variable was repeated; if water was required for roasting pits "water" should be read as meaning all variables relating to water, whitebark pine covering all variables relating to whitebark pine, etc. For a list of variables see (Appendix 4). Because many settlements are associated with a variety of activities, camps and villages are discussed independent of these activities. A detailed summary of the ethnographic data is presented in Owens *et* al. (1999).

Settlement Pattern

> *There are places out there that don't have water today that have pithouse and cache pits* that are *not* near *water.*
>
> Elders of Fountain, Pavilion, Cayoosh, Seton, Bridge River, Lillooet commenting on the AOA. Recorded by Marie Barney 1998.

The settlement pattern of First Nations in the Lillooet FD is characterised by seasonal dispersal and aggregation of families based on the availability of resources. Use of stored foods, particularly dried or smoked salmon, allowed for the gathering of families at winter village sites. In the spring and summer, families dispersed to hunting, gathering, and fishing grounds in the mountains. People gathered in large numbers in the river valleys during the large late summer and fall sockeye salmon runs but separated again following the fishing season to concentrate on game hunting. When the weather grew particularly cold in November or December winter villages were reoccupied.

The Upper Lillooet, Nlaka'pamux, and Secwepemc generally resided at pithouse village sites during the winter (Dawson 1892, Hill-Tout 1978, Bouchard and Kennedy 1975, Teit 1900, Teit 1906). In addition to the pithouse, the Secwepemc (Teit 1909) and Lillooet (Teit 1906) sometimes used insulated mat lodges, primarily used in the summer, in the winter. Ethnographic and ethnoarchaeological information indicates that winter village sites were primarily located in river valleys, on dry loose soil, with southern exposures and easy access to water (Alexander 1989; Dawson 1892; Teit 1900, 1906, 1909).

Tsilhqot'in winter camps were located along the shores of large lakes where fish, particularly kokanee, were abundant. People gathering at winter camps resided in large multi-family households (Lane 1981; Alexander 1989, Alexander 1996). Although Tsilhqot'in winter villages were generally located north of the Forest District, historical records indicate that Tsilhqot'in did camp in the Bridge River Drainage when trapped by winter storms (Bouchard and Kennedy 1977).

Seasonal residences and camps were established at hunting, fishing, and gathering grounds and ranged from rapidly made, temporary, small-party structures to substantial, multi. person seasonal residences used at repeatedly occupied locations.

The ethnographic literature indicates that several different small settlement features can be expected at multi-purpose camps and village sites, including sweat lodges, menstrual huts, and puberty huts.

Table 2. Ethnographic indicators and model correlates for settlement pattern.

Winter Villages	Geographic or Environmental Feature	Source	Model Variable
	"found only in the lower and larger valleys"; "valleys of the principle rivers"	Dawson 1892:8; Teit 1900:192	Nearriver
	areas with dry, sandy or gravelly soils; "a dry sandy or gravelly soil"; "A spot with loose soil ..."	Alexander 1989; Dawson 1892; Teit 1900	-
	easy access to water; "... convenient access to water ..."; [near] "... fresh water; within easy distance of water ..."	Alexander 1989; Dawson 1892:8; Ham 1975; Teit 1900:192	Nearwater
	"... a warm southern exposure ..."	Dawson 1892:8	Southern aspect
	" ...as much sheltered as possible from wind ..."	Dawson 1892:8	-
	Fraser River terraces; housepits are located on terraces	Alexander 1989	Ridge terrace
	"... near a supply of wood ..."	(Ham 1975)	-
	"... mainly in (areas) in which Pseudotsuga menziesii [Douglas-fir] was present ..."	Ham 1975	Zone
	villages were likely to be near major fishing stations	Alexander 1987	Nearsalmon/nearfish/rapid
	located along the shores of large lakes where fish, particularly kokanee, were abundant	Lane 1981; Alexander 1985; Alexander 1996	Large lakes with fish & salmon

Seasonal Residences	Geographic or Environmental Feature	Source	Model Variable(S)
permanent lodges	Near hunting sites that were frequently occupied	Teit 1906	
	".. built in sheltered valleys in the mountains, close to good hunting grounds..."	Teit 1900: 196	Slope/nearwater ridge terrace
fishing camps	near small streams adjoining the lakes	(Alexander 1987); (Alexander 1992); Teit 1900	Lakes with fish & salmon/streams with fish & salmon
	on dry, level ground	Alexander 1987	Slope
	in major river valleys	Alexander 1992	Nearriver/rivers with fish & salmon
	"fishing-resorts near the lakes or rivers"	Teit 1909:493	Nearfish/nearlake nearriver/ nearsalmon/
base camps	associated with tiger lily gathering areas	(Alexander 1989)	Zone/subzone
	"situated at some height above the principle valleys, on the plateaux or mountains .";	Dawson 1892:20	Zone/subzone
	"the Indian women resort to the mountains where these trees [Pinus albicaulis] abound.. often camping for days"	Dawson 1892:22	PA -whitebark pine
ESSF parkland	" at the edge of the trees where there is flat, dry land and a close source of water, just within the forest margins ."	Alexander 1989:40	Ecotone/slope/ nearwater/open range
mid-elevation lakes	at mid-elevation lakes, mainly associated with trout fishing, and to a lesser extent, with plant gathering and hunting	Alexander 1989	Nearlake/near fish
short-term camps	along trails connecting river terraces and to parkland in the intermediate grasslands	Alexander 1989	Near trail/zone

Associated Features	Geographic or environmental feature	Source	Model Variable(s)
sweat houses	" are always found close to water ."	Teit 1900:198	Nearwater
puberty/ menstrual huts	"Close by the hunting lodge, or near an Indian village, is sometimes found a temporary structure for the habitation of girls when coming to womanhood."	Teit 1900:198	See villages, base camps

Transportation

Two means of transportation employed by the people of the southern interior would have resulted in the creation of archaeological sites. Vast Native trail networks extend throughout the Forest District and many were the basis for later wagon trails and roads. This site type is discussed in detail in the following major section. The other site type is a consequence of the manufacture of canoes. Many canoes were made from tree species that, because of their short life spans, are unlikely to preserve in the archaeological record. Examples include rough cottonwood dugouts, small white pine canoes, and bark canoes fashioned from balsam poplar and birch (Teit 1900, 1906, 1909). However, canoes were also made from spruce and cedar bark (Dawson 1892; Teit 1906229) and, in areas where these species are present, bark stripped trees may be expected.

Table 3. Ethnographic indicators and model correlates for transportation.

Transportation	Geographic or environmental feature	Source	Model Variable(s)
trails	trails	Appendix 3	Near trail/ bigroad

Subsistence

The subsistence practices of the people of the Southern Interior were based on fishing, hunting, and gathering. Most of these activities were conducted between spring and fall, although some hunting and fishing occurred in the winter. Spring salmon, spawning trout, deer, tree cambium, and plant shoots were sought or gathered during the spring. Hunting, salmon fishing, and the gathering of roots, berries, and nuts continued throughout the summer, with most salmon caught during the late summer sockeye runs. Nuts from several tree species, berries, and roots crops were also gathered. The largest and most concentrated game hunting took place in the fall following salmon fishing. Stores of dried or smoked meat and salmon allowed most of the groups of the area to congregate in winter villages. "During the winter months, i.e. November to March, much of the diet consisted of dried salmon and deer meat", although the diet "was supplemented by fresh deer meat... and trout caught while ice-fishing..." (Alexander 1987:25).

Fishing

Fishing (see Table 4) was extremely important to all groups within the Lillooet FD (Dawson 1892:15; Teit 1900, 1906, 1909; Tyhurst 1994 and the fall salmon spawning runs dominated the seasonal round of the Lillooet, Thompson, and Shuswap. Because of their abundance, relative reliability, and accessibility, salmon were a primary subsistence resource where available, but nearly all fish species were utilized. Salmon fry were introduced to some lakes in the Forest District, including Cinquefoil, Fountain and McGillvary Lakes, and lakes in the Anderson Lake area (Rodger Adolf, Herman Alec, and Willard Abraham in communication with Marjorie Serack).

In addition to salmon, most other fish species available in the lakes, rivers and streams of the Lillooet FD were sought including several varieties of trout, and suckers, kokanee, whitefish, Dolly Varden, northern squawfish, p&mouth chub, and burbot (Alexander 1989: 102). Large white sturgeon, and possibly other fish, was caught accidentally in salmon nets (Kennedy and Bouchard 1992:279). The importance of trout is indicated by the practice of transplanting the fish. Teit (1900:348) reports that the "Indians have a custom of taking live trout from lakes or streams, and transplanting them into lakes where there are none. Sometimes the fish propagate and become plentiful where introduced."

Table 4. Ethnographic indicators and model correlates for fishing.

Fishing	Geographic or Environmental Feature	Source	Model Variable(s)
netting stations	level ground suitable for netting	Alexander 1987	Slope
	near bedrock projections into the river which formed back eddies	Alexander 1987	-
traps	set along streams, lakes, and creeks	Dawson 1892; Lane 1981; Teit 1909; Tyhurst 1994	Lakes with fish & salmon/streams with fish & salmon
	in creeks and near the outlets of lakes	Dawson 1892; Teit 1909	Lakes with fish & salmon/streams with fish & salmon
	at waterfalls	Tyhurst 1994	Fall
weirs	used "near points projecting out into lakes"	Teit 1909:526	-

Hunting

In general, game would be taken whenever it was available but was specifically hunted in the fall. The most common large animals hunted were mule deer, elk, caribou, bear, mountain sheep and mountain goat (Teit 1900, Teit 1906, Teit 1909). Moose became common in the area only in the twentieth century, and rapidly became an important hunted species (Lane 1981) although they are found only in limited portions of the study area. Small mammals such as marmots, rabbits, beavers, muskrats, and squirrels were also hunted extensively (Teit 1900, 1906, 1909; Tyhurst 1994).

A wide variety of hunting and trapping methods were used including animal drives, snares, fences, and hunting on foot with the assistance of dogs, horses, and snowshoes (see Table 5). Hunters waited in hidden pits along game routes to ambush animals. Some trap types, particularly tethers, tossing poles, snares and pit falls were used to catch large mammals such as deer and bear.

Table 5. Ethnographic indicators and model correlates for hunting.

Hunting	Geographic or environmental feature	Source	Model Variable(s)
fences	frequently built along game routes, in parkland areas	Teit 1900; Alexander 1989	Zone/deer/ sheep
pitfall traps	excavated in flat areas frequented by deer or on known deer trails.	Teit 1906	Slope/deer/ sheep
alpine drives	where "the terrain funnelled the deer into a narrow passage at the top of the slope ."; "especially where the terrain funnels the animals up a broad valley into a narrow pass."	Alexander 1989: 23; Alexander 1989: 23	Ridgetop
	". high points overlooking game trails"	Alexander 1989	Ridgetop

Plant resources

The people of the southern interior gathered a wide variety of plants for food, medicine and materials. In general, the gathering of plants and plant products for sustenance or medicinal purposes leaves little archaeological evidence, however, some of the plants were processed in roasting pits or trenches. A list of utilized plants which require processing and their associated biogeoclimatic zone, subzone, and microenvironmental habitats is presented in Appendix 2. Appendix 2 includes only those species whose processing could result in archaeological evidence.

Table 6. Ethnographic indicators and model correlates for plant resources.

Plant Resources	Geographic, biotic, or environmental feature	Source	Model Variable(s)
roasting pits	"Signs of old roasting-places are common on hillsides where the plant [balsam root] abounds."; "Such root-baking places are usually in the vicinity of root-gathering grounds"	Dawson1892:20; Dawson1892:9	Zone/subzone see Appendix 2
CMTs	canoes of cedar and spruce bark	Dawson 1892; Teit 1906	Red cedar
	lodgepole pine, cedar and spruce bark for household goods	Teit 1906, 1909	Red cedar/ lodgepole pine
	lodgepole pine cambium as food	Teit 1906	Lodgepole pine

Preservation and storage

Teit (1909:517) states that "Five methods of drying meat and fish were in use, - by the sun's rays; by wind, in the shade; by smoke, in the lodges; by heat from the fire; by hot air, in the sweat-house or in houses constructed like a sweat-house but larger. The last method was used when meat had to be dried quickly."

Once dried or smoked, the preserved foods were cached for winter use. Several types of caches were employed including tree caches, elevated caches, and cache pits (Teit 1900, 1906, 1909; Tyhurst 1994, see Table 7).

Table 7. Ethnographic indicators and model correlates for preservation and storage.

Preservation & Storage	Geographic or environmental feature	Source	Model Variable(s)
Drying racks	Fish racks "face the (Fraser) river ."	Sam Mitchell in Bouchard and Kennedy 1977:65	Nearriver
	located close to hunting camps and fishing stations	Alexander 1989	See variables from hunting and fishing camps
caches	should be common *in the vicinity of* Montane Parkland base camps	Alexander 1989	Zone/whitbark pine/See base camp variables
	"often occur about the sites of winter villages ."	Dawson 1892:8	See winter village variables
	". grouped around the actual fishing places."	Damon 1892:8	See fishing variables
	along river terraces and floodplains	Ham 1975	See fishing variables
	near plant resource areas	Ham 1975, (Turner, et al. 1990)	Zone/subzone
	more common in dry, sandy soil	Teit 1909	
scaffolds	near houses	Teit 1900	See winter village variables

Ceremony

Several ceremonial practices are reflected in the archaeological record, including rites of passage associated with puberty and death. Associated archaeological sites include pictographs, petroglyphs, trenches excavated along trails, knotted trees, and burials (see Table 8).

Table 8. Ethnographic indicators and model correlates for ceremonial practices.

Ceremony	Geographic or environmental feature	Source	Model Variable(s)
pictographs	" on bowlders, or oftener on cliffs. especially in wild spots, like canons ."	(Teit 1900:321)	**Slope**
	near waterfalls	(Teit 1900:321)	Fall
trenches	"They were near some trails, and parallel to it, always on the lower side of the trail."; trenches on both sides of trails	(Teit 1900:312-313); Teit 1906	Near trail/big road
burials	"Sandy or loose soil was preferred ."	Teit 1900:328	Ridge terrace
	"Near all the permanent villages or winter village sites. . ."; "generally made near villages.. ."	Dawson 1892:10; Teit 1909:592	See winter village variables
	"often on prominent points of terraces. . ."; "on the edges of terraces. . ."	Dawson 1892:10; Teit 1909:592	ridge terrace
	"on low hills overlooking the river.. ."; "in low side-hills	Dawson 1892: 10; Teit 1909:592	Nearriver
	"sandy hills were generally chosen.. ."; "in sandy knolls"	Dawson 1892:10; Teit 1909592	Ridgetop/ridge terrace
	"along the main valleys, such as those of the Fraser and Thompson.. ."	Dawson 1892:10	Nearriver

Trails

How do you think we moved around? Flew?

Paraphrase of Norman George, member of the Tsleil-Waututh, commenting on the relationship between trails, archaeology sites and traditional use areas.

Not surprisingly, archaeological sites are strongly associated with trails. For example, as noted above, girls dug trenches along trails during their puberty training (Teit 1900, 1906) and Alexander (1989) suggests that short-term camps can be expected along trails connecting river terraces and to parkland. Trail networks connect people with resources, residences, and camps, and serve as communication and trade corridors in the same way as the vast highway and secondary road network which crosscuts the Forest District. In fact, many of the larger roads numerous forestry roads follow old trail systems, Given the importance of trails therefore, considerable effort was made to obtain a vast database of trail information.

Trail data was obtained as three datasets: data gathered by the Lillooet FD during several seasons of fieldwork, trails data gathered by the MoF, Cook's Ferry Band and Lytton First Nation in the Pasulko Lake/Skoonka area; and, archival research conducted by D-M Cultural Services Ltd. (DMCS)for this study. As duplication of data could result in very wide buffers around a single trail, the data provided by the Lillooet FD which is likely more accurate than that transferred from archival map sources, was buffered by 500m; any trail identified by D-M Cultural Services which fell within this buffer was dropped from the model. In total 227 unique trail or trail segments were identified.

Digital *Trail Data*

An on-going trail inventory project managed by Dalton McArthur of the Lillooet FD produced binders of trail information, including GPS locational data and photographs, which are housed at Aestech Consulting Wildland Resource Solutions in Lower Nicola. The current AOA project provided the opportunity for the trails to be digitized and for the development of a digital database. Trails maintained by the Forest Service were included in this database, as Mr. McArthur stated (personal communication June 1998) that the Forest Service did not establish new trails but did maintain and upgrade trails already in existence. This work was completed by Aestech and forwarded to Timberline. The database is included in Appendix 3. Digital data and hardcopy maps were submitted to the Forest District and the Archaeology Branch.

Historic trails obviously connected settlements with each other and settlements with areas of intensive resource use. Many types of sites can be expected to occur along and at the ends of trails. Nearness to main roads was used as a variable in the model because it is well known that many modem roads follow what were once trails used by First Nations people. Although there was a strongstatistical association between minor roads and archaeological sites, the effect of using the minor roads in the model gave areas that were logged a higher potential than unlogged areas (all other things being equal) because the logging spurs counted as roads. This was undesirable and the variable was removed from the model.

Trail data collected by the Cook's Ferry Band, Lytton First Nation, and the Lillooet Forest District was forwarded directly from the Forest District to Timberline and is not included in Appendix 3.

Archival *Trail* Research *by Rob Diaz*

D-K Cultural Services Ltd. (DMCS) was contracted by Millennia Research Ltd. to conduct a study of Native trails in the Lillooet Forest District for the Lillooet AOA Project. The purpose of this study was to identify Native trails within the study area in an effort to assist potential modelling. DMCS was supplied with 150,000 scale topographic maps to hand plot trails identified in the study. Where possible, information on each trail was accompanied with a locational/route description to avoid errors in scale translation. Information concerning these trails is included in Appendix 3 but was used on assessing potential.

Previous Archaeological investigations

This portion of the AOA project involved two components: a check of the plotted location of previously recorded sites based on Provincial Heritage Registry Database (PHRD) and a review of previous survey and excavation reports,

Details of how the project checked and corrected locations of known archaeological sites are presented in the report for this project (Owens et al. 1999).

As part of the overview process, information was gathered on how much of the Forest District had been previously surveyed, where the surveys were conducted, the level of effort for these surveys, and the findings. Survey coverage information, where adequately described, from these reports was transferred to maps and digitized. The methods and results are presented in detail in the Owens et al. (1999) report.

It sure is good to see that someone is going to lay some ground work so that those who are going to be taking out the resources, they will have more consideration for our history, a lot of it has been destroyed over the years.

A member of an Upper St'at'imc band commenting on the AOA;
recorded by Marie Barney 1998.

Table 9 summarizes the effects of European contact on the density, distribution and preservation of archaeological sites within the Lillooet FD. Although much of the information presented is not directly applicable to potential modelling, its significance to the understanding of the archaeological record cannot be ignored. Contact with Europeans had a significant effect on the formation and distribution of archaeological sites. Countless sites were destroyed by early mining, road construction, and forestry activities, and land use practices shifted considerably following the introduction of new diseases, the establishment of Indian Reserves, and subsequent restriction of access to resource areas. More directly pertinent to model development, many of the best-documented and well-understood sites date to later cultural periods when the cultures of the area were adapting to the changes initiated by contact with Europeans. Model developers must recognise the potential difficulties of using this information to model for sites dating to earlier periods.

The introduction of disease, the fur trade, the discovery of gold along the Fraser River, and the establishment of Indian Reserves affected land use patterns and consequently, site distribution. Although relatively few sites created in the post-contact period pre-date 1846, the date prior to which sites receive automatic protection under the ***Heritage Conservation Act,*** the scope of the AOA is to include archaeological sites not protected under the Act which have direct application to understanding past aboriginal land use.

The scale of impact to archaeological sites in the 170 or so years following Simon Fraser's expedition is unprecedented in earlier times. Many sites were completely destroyed by commercial and farm developments prior to the organized inventory efforts of the archaeological community in the 1970's. These will never be recovered and cannot therefore contribute to the development of the archaeological predictive model or to our understanding of the past. Analyses of site density and site distribution must acknowledge this reality. Nor can members of First Nations learn from and use the information contained in the sites if they are not recorded in oral histories.

The table is organized topically-trade, disease, homesteading and the establishment of Indian Reserves, mining, road and rail construction, hydroelectric development and forestry – and indicate the implications for archaeological site density, distribution, and destruction. Obviously, not every effect to site formation, preservation or destruction is presented. The intent is to illustrate examples of impacts that should be considered by future researchers in order to fully understand and interpret the archaeological record, and by cultural resource managers who must formulate operational plans in consideration of impacts to archaeological resources.

Table 9. Effect of contact on the archaeological record.

	Site density and distribution	Site destruction
Horses	9 Possible decreased density of temporary camps at resource gathering areas 9 Less complex and smaller kill sites 9 Wider distribution of sites with increased mobility and carrying capacity	
Trade	9 Concentration of Native people at established fur trade posts 9 Probable decreased use of some traditional use areas and sites and increased site density in vicinity of posts	
Disease	9 Decreased population density 9 Probable decreased use of some traditional use areas, abandonment of sites 9 Concentration of survivors on larger settlements	
Mining		9 Impacts to river banks and terraces from hydraulic placer mining 9 Probable falling of CMTs for underground supports 9 Indirect impact - spurred road and rail construction, homesteading
Homesteading & the establishment of Indian Reserves	9 Concentration of Native people on Indian Reserves 9 Probable decreased use of some traditional use areas and increased site density in vicinity of reserves 9 Abandonment of Native homesteads/settlements due to lack of access to water	9 Impacts from livestock and clearing of fields
Road and rail construction		9 Many roads and rail-lines constructed along former trails 9 Many roads and rail-lines constructed through archaeological sites, particularly along the Fraser and Thompson River Valleys
Hydroelectric development	9 Flooding of traditional use sites/archaeological sites 9 Increased use of areas which would have been upstream prior to flooding	9 Inundation of subsurface sites, continued erosion from water drawdowns 9 Known bail flooded along Bridge River

The Lillooet Forest District Predictive Model

With the background data reviewed and the limitations and assumptions of model development in mind, it is now possible to directly consider the model developed for the Lillooet FD. The discussion of the Lillooet FD predictive model covers the data used in analysis, survey bias and data gaps, variables used for analysis, the preliminary model, the final model, significant variables not used in the model, and application and assessment of the final model. For a complete discussion of these topics see Owens et *al.* (1999).

Data Used in Analysis

The data used for analysis was based on the following mapped sources:

- TRIM (Terrain and Resources Information Mapping), at 1:20,000 scale, provided the base mapping layer. Included were water bodies, wetlands, slope and aspect derived from a DEM, the road system and features such as glaciers, rapids, and waterfalls;
- FISS data on Fisheries biology. Hardcopy maps showing distributions of salmon and other fish species used by aboriginal people, fish barriers, and so on, were digitised onto the TRIM water features;
- Aboriginal trails, researched from a number of sources and digitised from 1:50,000 hardcopy topographic maps;
- Forest cover data from Ministry of Forests 1:20,000 digital base maps;
- Wildlife biology from Environment Ministry on habitat quality for moose, bighorn sheep, deer, and elk,
- Archaeological site locations;
- Previously surveyed areas as indicated in AIA and reconnaissance reports.

In addition to these classes of data, data specific to either sites, survey points or random grid points were collected. The Borden number (unique identifier) and site type were recorded for each site. The surveyor and type of survey (intensive/subsurface and intensive/surface) was recorded for each survey point (the majority of the sites were intensive/surface). Each survey and grid point received a unique identifier.

Survey Bias and Data Gaps

> *In a perfect world there is complete information, that is known by all, for all of the factors [used] in the modeling process...*
>
> Chief David Walkem, Cook's Ferry Band, June 16, 1998 letter regarding AOA.

The review of ethnographic literature, previous archaeology, and trails data highlights gaps in information available in an appropriate, map-able format for use in archaeological predictive modelling of the Lillooet FD. Gaps also exist in the availability of refined wildlife, forest and terrain mapping, although in general, the GIS data available was sufficient for modelling purposes. Incorporation of additional and refined data as it becomes available would improve the model. Identified gaps in information are noted in point form below:

- mapped traditional use information;

- most of the archaeological surveys conducted in this area were judgemental, with the researcher deciding where to look for sites based on his or her experience;
- large survey projects in 1974 missed many site types other than housepits;
- the bulk of previous survey is restricted to the valley bottoms and certain biogeoclimatic zones and certain ecosections have been under-represented in terms of survey coverage (Table 10); however, sufficient survey has taken placed that even Alpine Tundra has 24 recorded sites, a small but useable sample;
- several ecosections are also under-represented in terms of survey coverage (Table 10);
- terrain mapping at a scale of 1:20,000 or larger;
- refined GIS slope model to located small flat areas;
- inaccuracies in forest cover mapping;
- refined wildlife capability mapping.

Table 10. Proportions of surveyed areas by biogeoclimatic zone and ecosection

Zone	Survey 14,316 ha	No-1974 Survey 2961ha	KM-Grid	"+/-"
A l	0.10%	0.48%	32.81%	-
BG	16.99%	3.64%	1.35%	+
CWH	0.00%	0.00%	0.85%	-
ESSF	3.54%	17.26%	24.59%	-
IDF	26.49%	35.09%	24.45%	+
MS	7.00%	34.10%	11.85%	+
PP	45.88%	9.43%	4.10%	+

Ecosection	Survey	No-1974	KM-Grid	"+/-"
Pavilion Ranges	66.19%	43.16%	21.20%	+
Leeward Pacific	4.31%	21.00%	16.77%	+
Southern Chilcotin Ranges	28.74%	32.16%	50.32%	-
Thompson Basin	0.75%	3.64%	0.43%	+
Fraser River Basin	0.00%	0.00%	0.44%	-
Central Chilcotin Ranges	0.01%	0.03%	10.57%	-
Chilcotin Plateau	0.00%	0.00%	0.16%	-
Eastern Pacific Ranges	0.00%	0.00%	0.11%	-

Buffers

Millennia Research Ltd. developed a computer program named "Buffer.pgm" that calculated the optimal buffer size for any variable and calculated a chi-square statistic for a buffer of that size. A buffer is a set distance away from a feature. For example, for areas more than 2 km from a salmon river, the tests suggested that the optimal trail buffer is 200 m. Almost three times the number of sites are within 200 m or less of a trail, compared to the randomly expected number of sites. This program also showed that six times the expected number of sites

fell within 50 m of a trail. This program both simplified the process of determining the buffer sizes and made the resulting model more rigorous and accurate.

Model

Once the relationship between grid points, sites and known non-sites had been determined this knowledge was applied to the whole of the Forest District using GIS. The initial model joined many of the GIS variables: nearwater (nearness to any water source, other than wetlands), nearfish (nearness to any waterbody containing fish) and nearsalmon (nearness to a waterbody containing salmon). The model replaced all locations with a potential of 1, to reflect the use of the entire landscape by traditional cultures, and stress that even 'low potential' does not mean 'no potential'. Then areas within the FD were assigned a point if they met the following criteria:

- less than 50m from a waterbody, to reflect the large 'spike' of sites in this category compared to non-sites;
- less than 300m from a fish-bearing stream or lake;
- less than 2 km from a salmon river or lake;
- areas containing whitebark pine (the presence of whitebark pine almost guarantees a south-facing parkland setting);
- areas with old-growth lodgepole pine and less than 100m from some water source
- less than 100m from a plotted trail
- southern exposure (the southern octant).

Steep areas are generally not associated with sites (with the exception of rockshelters and rock art), so potential was reduced by one point for areas steeper than 30%. However, many small landforms occur in the lower elevations of the study area that do contain sites, and some sites actually occur in these zones on steep terrain. For this reason, this reduction was not applied in the BG and PP zones.

Theoretically, some areas could have scores as high as 7 in this scheme, but of course some features such as whitebark pine and salmon streams are mutually exclusive in their distribution, and the highest scores were 5. A few locations scored 0, since steep slopes removed their single initial point.

These points were then converted to a letter code indicating potential. Locations with 0 or 1 point were assigned low potential, with 2 points were assigned moderate potential, with 3 points, moderate high, and 4 or over, high potential.

Examples of model application are shown in Figure 5-Figure 8.

Fieldwork

Although not part of the AOA, Millennia Research co-ordinated an informal, independent field test of the draft final predictive model with the Fraser Canyon Tribal Administration

(FCTA). The field checking of the model was judgmental in nature and of short duration and in no way should it be considered a true test of the predictive model. It did however, provide the opportunity for a preliminary assessment of the model's ability to identify ridges, knolls, and terraces and distinguish between areas of high to low potential.

A plant and trail inventory being conducted by the FCTA in the Nicomen Valley provided an opportunity for this field-check and for introductory training in the recognition and recording of archaeological deposits and Culturally Modified Trees (CMTs). During the field session we conducted judgemental archaeological survey and predictive model checking. Two previously undocumented sites, an isolated litbic and a cluster of bark stripped lodgepole pine, were recorded. Both sites were located in areas identified by the model as high archaeological potential and both were situated in areas that less refined models would probably rank as low or moderate potential. The sites were recorded using standard techniques with the assistance of Caroline Lytton, Clarissa Florence, and Mary Angus.

The reconnaissance confirmed that the model was accurately identifying relatively small terraces and ridges and areas of high archaeological potential.

Discussion of Significant Variables not Used in Model

Although significant in IDF zone, deer habitat was not used in the model because of the large area that deer habitat occupied and the fact that those areas rated high for deer capability already had high potential scores. Sheep habitat and sheep winter range habitat were not significant for any biogeoclimatic zone comparing sites to both randomly-spaced points and non-site surveyed areas.

Proximity to Indian Reserve showed a significant relationship for sites, however virtually every site near these areas was already in areas of high archaeological potential. The significance of this variable demonstrates cultural continuity in land use patterns.

Application and Assessment *of* Final Model

Over half the land of the Lillooet FD is in low potential, but only 3% of the known sites occur in this class. Two-thirds of the known sites are in high potential land, but this comprises less than 10% of the land.

Some site types are better modelled than others are. No known burial sites occur in Low potential areas. Eighty-six percent fall in High or Moderate-High potential areas. All subsistence features, fishing sites and roasting pits fall in Moderate-High or High, with none occurring in Low or Moderate. All habitation sites occur in High potential. Pithouse sites (which are not included in the 'habitation' class) follow the average for all sites, with 3.5% falling in Low potential, but most occur in Moderate-High or High. Hunting sites (rock blinds built in the mountains, etc.) were expected to be difficult to model for, since often they are widely dispersed across the landscape. Not surprisingly, 60% of these sites fall in Moderate potential, the highest of any site type. The remainder of hunting sites is in Moderate-High and High. Cave sites have the worst prediction rate, with 20% falling in Low potential. Caves occur only rarely, however. Encouragingly, the other site type that tends to occur in very steep slopes, rock art, has only 3% in Low. CMTs are probably the most common site type with a substantial proportion in Low, with just under 10% of known sites. Improvements in the accuracy of forest inventory mapping (as well as a larger sample of CMT sites) will probably allow for greater

accuracy and precision in modelling for CMTs in the future, as incorrect inventory seems to be the cause of most 'mistakes' by the model.

Analysis of sites by culture type and potential class reveals that the model appears to be capturing most older sites as well as younger ones (Table 11). The sample of known older archaeological sites is small and the model should be reassessed as additional sites are located but the results to-date are encouraging.

Table 11. Archaeological cultures by potential class.

Archaeological Period	Number of Sites for each Period	Number of Sites in High Potential	Number of Sites in Mod.-High Potential	Number of Sites in Moderate Potential	Number of Sites in Low Potential
Early Nesikep	2	2	0	0	0
Lochnore/Lehman Phase	9	5	3	1	0
Shuswap Horizon	31	17	9	5	0
Plateau Horizon	45	29	13	3	0
Kamloops Horizon	52	39	9	3	1

1. Bench area in the Soutl
The archaeological potentia
suggested by some of the f
- located on a "ridge terrace
terrace above a steep drop:
- within 250 m of a recorder

No archaeological sites hav
preliminary survey of the ar
In other words, a reconnais

Western lip of bench, 600 m abo

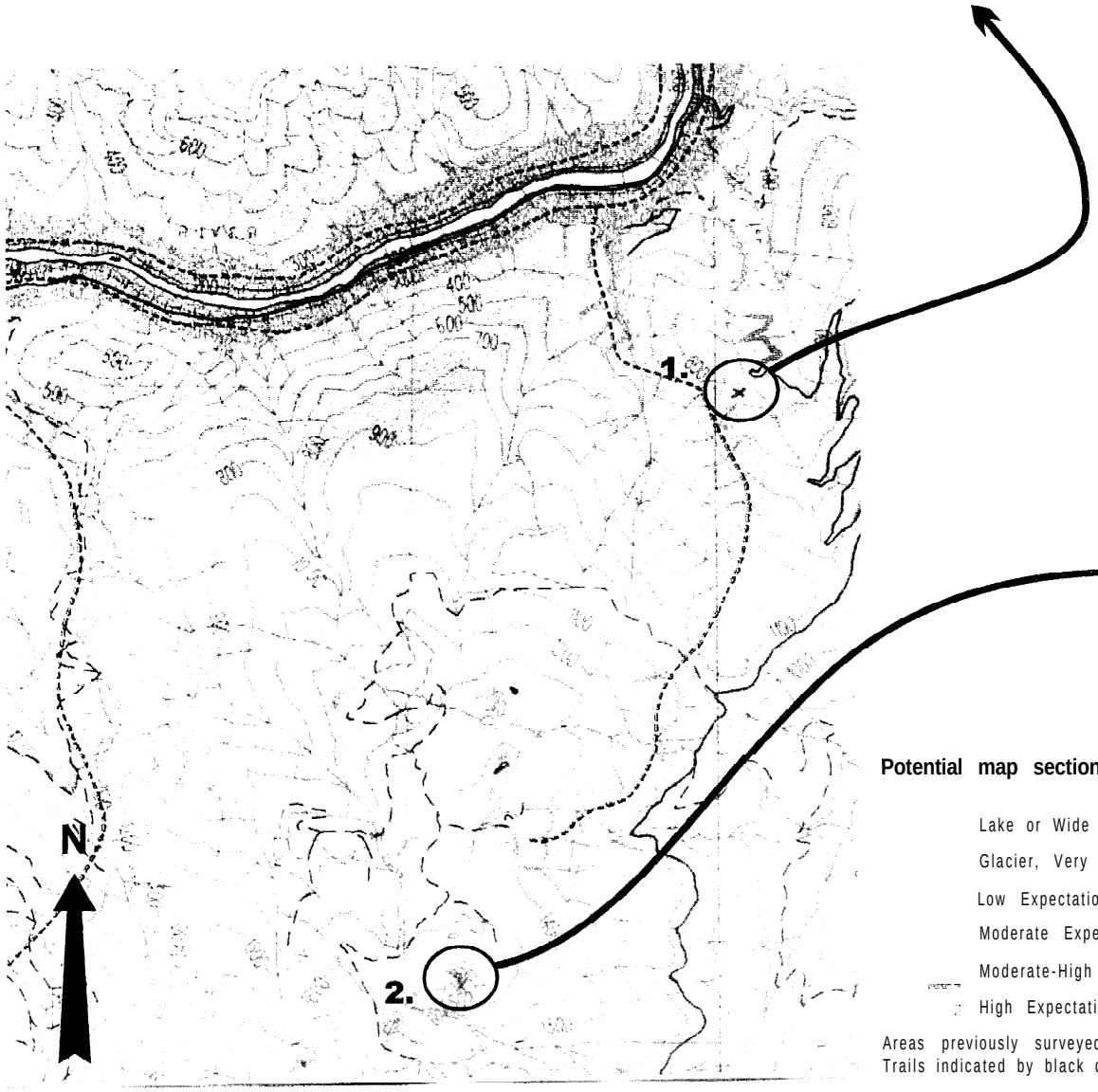


Figure 5. Archaeological potential map section.

e Southwest section of the Lillooet FD

)otential of this area is moderate. This potential is
of the following criteria:
terrace" (flat part of a ridge and the flat edge of a
p drop)
ecorded trail

tes have been recorded in the area, but a
f the area indicated an expectation for sites.
:onnaissance survey would be justified.

3 m above sea level.

CMT MA3, close-up of cutmarks

2. Small Swamp, Southwest corner of Lillooe

The archaeological potential for this area is high.
The potential rating is suggested by some of the following criteria:

- within 50 m of a small lake (As swamp is class TRIM)
- located on a ridge terrace(flat area adjacent to steep drop)
- has a south facing aspect with a gentle slope
- forest cover includes mature stands of lodgepo whitebark pine.

A CMT site is recorded in this area. In addition,t evidence of pre-contact camping nearby.

Looking northward at small swamp. CMTs are located southward and downslope.

bectation

ce

currence

e Occurrence

nce

s-hatching.

Looking down a creek valley from cache or roasting pits in a subalpine parkland meadow, in the northern portion of the Lillooet FD.

A survey of the area conducted in 1996 recorded 18 sites. A large number CMTs and cultural depressions were recorded, in addition to trails and trap sites.

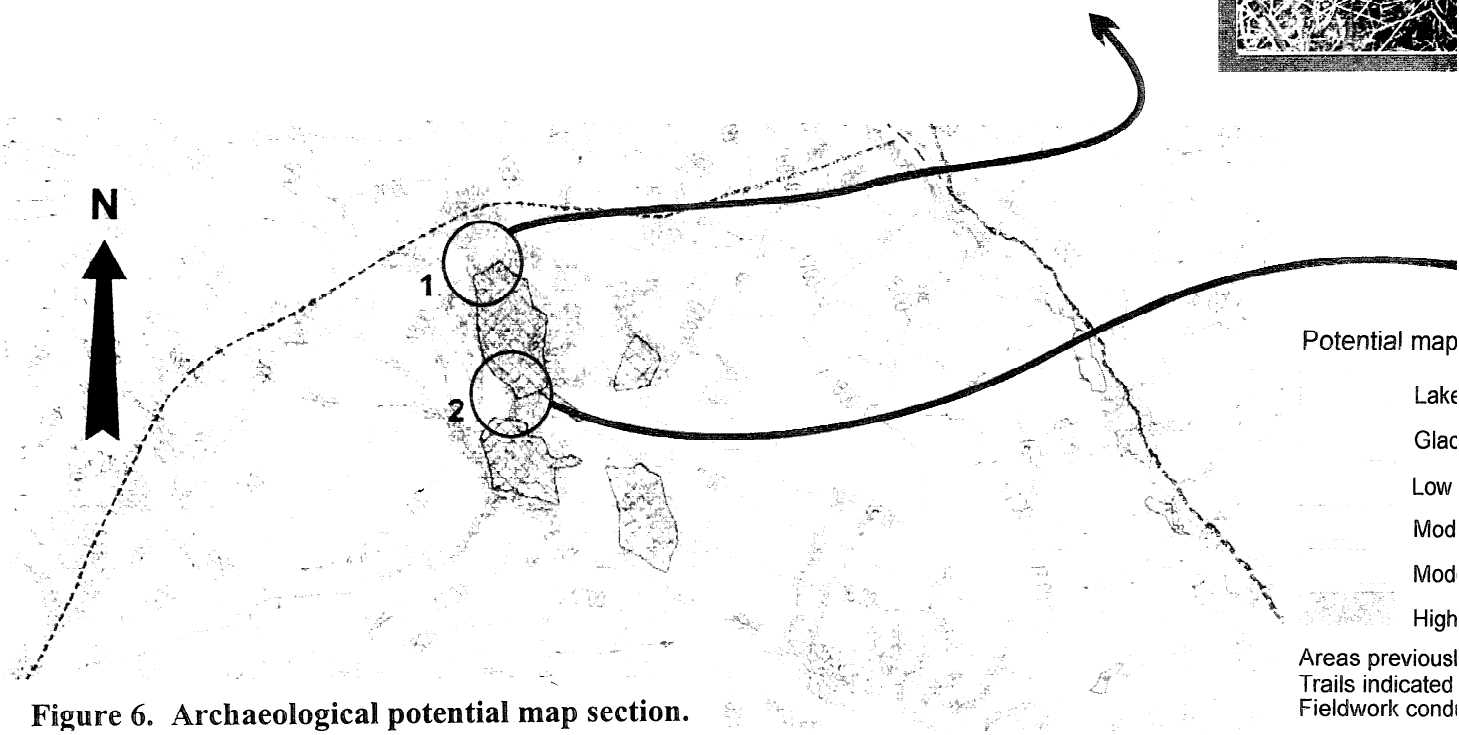
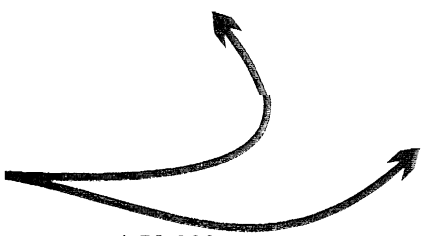


Figure 6. Archaeological potential map section.

CMT in subalpine parkland with antler peeler marks on scar face. Five shallow horizontal lines or depression can seen at regular intervals on the scar face. According to a High Bar elder, these marks are left when the bark adheres tightly to the tree, not stripping easily, and multiple passes with the antler peeler are necessary, using it in a see-saw manner similar to an old-fashioned can-opener.

Lillooet elder at roasting pit in subalpine parkland. Such features can be radiocarbon dated, often contain carbonized remains of crops that can be identified, and sometimes contain stone or antler tools.



psection, 1:50,000

ɛe or Wide River, Very Low Expectation

ıcier, Very Low Expectation

v Expectation of Site Occurrence

derate Expectation of Site Occurrence

derate-High Expectation of Site Occurrence

h Expectation of Site Occurrence

sly surveyed indicated by cross-hatching.
d by black dotted lines.
ducted for area cutblocks, MOF (Eldridge 1996)

1. Upper end of study area (Eldridge 1996)
The archeological potential of this area is high. Variables that contribute to this rating include:
- within 250 m of a recorded trail
- south facing aspect with a gentle slope
- the forest cover includes mature stands of lodgepole and whitebark pine
- some parts have "ridge terrace" characteristics (flat parts of ridges or edges of benches above a steep drop)

2. Middle of study area (Eldridge 1996)
The archaeological potential of this area is also high. Variables that contribute to this rating include:
- within 50 m of a stream
- south facing aspect with a gentle slope
- the forest cover includes mature stands of lodgepole pine

The adjacent moderate-high and moderate zones are in areas with steep slopes or lack mature stands of lodgepole or have unfavorable facing aspects.

Headwaters of creek, east end of Lillooet FD

The archaeological potential for this area ranges from high to moderate. Variables which contribute to this rating include:

High potential area

- "ridge top" (local high point)
- portions are located on "ridge terraces" (edges of flat landforms, above a steep drop)
- portions of the area have a south facing aspect with a gentle slope
- within 50 m of a small lake and stream
- mature stands of lodgepole pine

Moderate-High/Moderate potential areas

- potential is lower in these areas because the terrain is steeper, not terraced, does not have a south facing aspect, is too far from a water source and/or does not have mature stands of lodgepole pine

Low potential areas nearby have few of the positive criteria and several or all of the negative criteria.

Figure 7. Archaeological potential map section.

ial map section, 1:50,000

Lake or Wide River, Very Low Expectation

Glacier, Very Low Expectation

Low Expectation of Site Occurrence

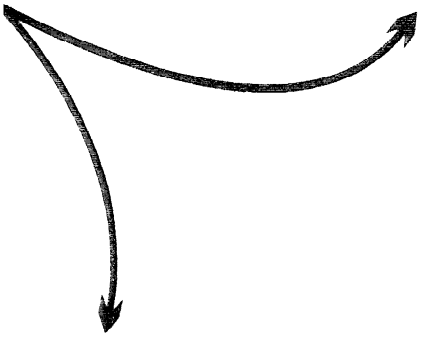
Moderate Expectation of Site Occurrence

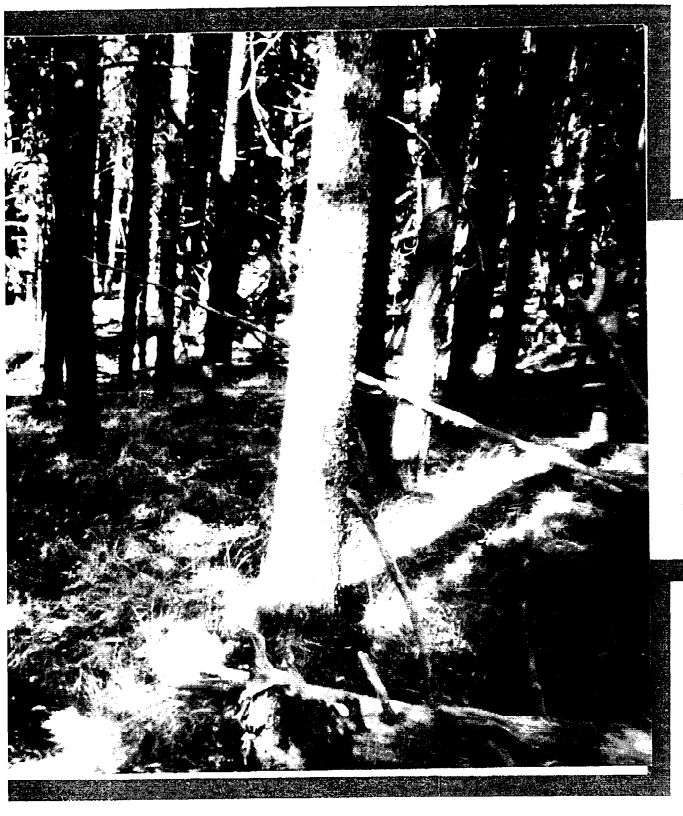
Moderate-High Expectation of Site Occurrence

High Expectation of Site Occurrence

rewiously surweyed indicated by cross-hatching.
dicated by black dotted lines.

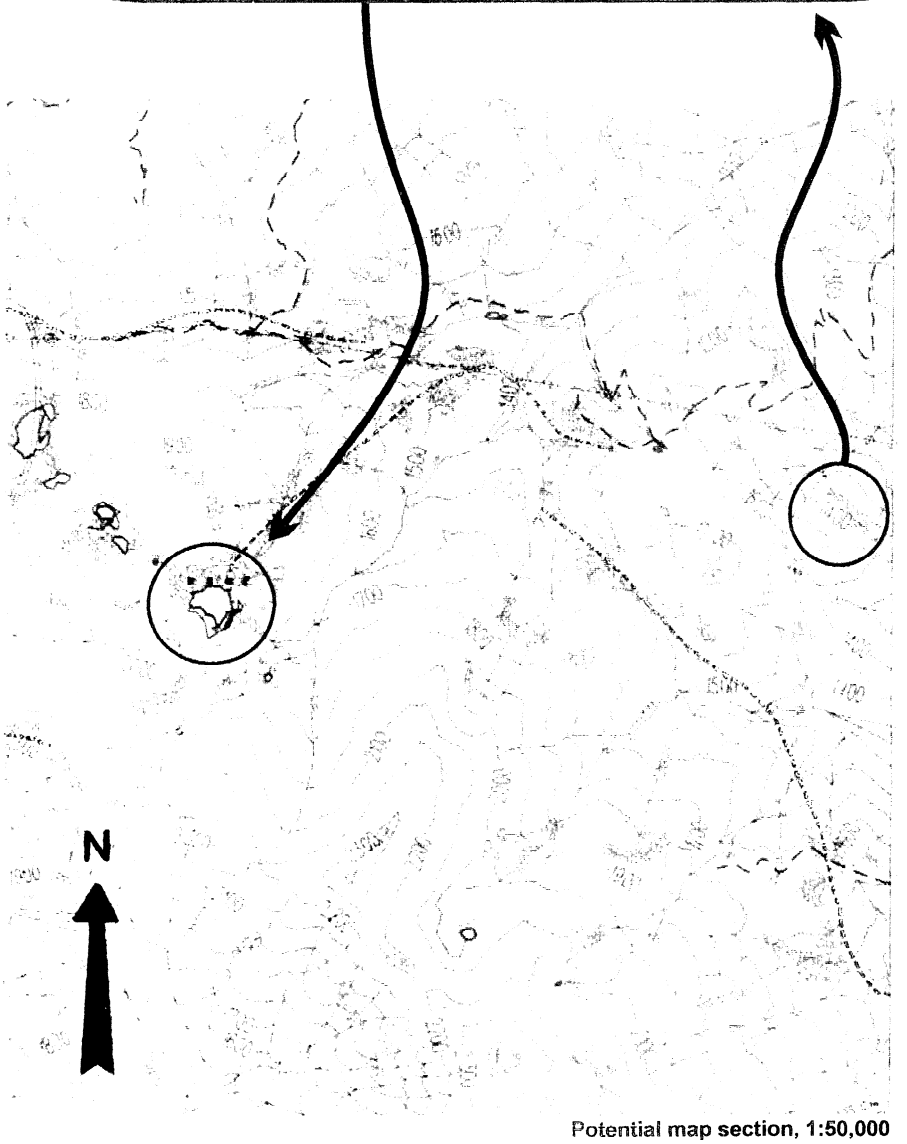
ı circled on the map is part of a larger area
ɔ in 1998 [Stafford 1998). It was surveyed
ɨ development of the model and mapping
ə the study area is not indicated in the map.





An archaeological impact assessment conducted in the area in the fall of 1998 (Stafford 1998) recorded a trail (left) and a number of CMTs. Two classes of CMTs were recorded, bark-stripped lodgepole pine and knotted lodgepole pine. The knotted trees (above) likely mark the trail, a campsite, and/ or a resource gathering area. The trail is or was part of the network of trails which run along the tributaries of the Fraser River.

The base of this lookout was used as a camp in the 1960's by women, men, and children on their way to a small subalpine lake. Chocolate lily and spring beauty were gathered in the spring and tiger lily in the fall from the area around the lake. Two trails led to the area: one leading up a creek valley and the other running up-slope from the power lines.



Potential map section, 1:50,000

Lake or Wide River, Very Low Expectation

Glacier, Very Low Expectation

Low Expectation of Site Occurrence

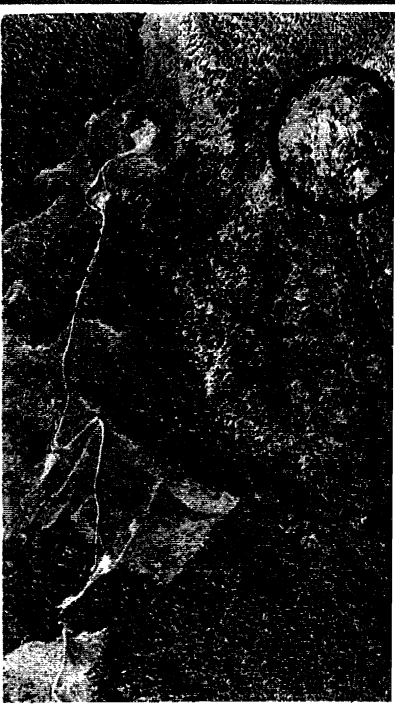
Moderate Expectation of Site Occurrence

Moderate-High Expectation of Site Occurrence

High Expectation of Site Occurrence

Areas previously surveyed indicated by cross-hatching.
Trails indicated by black dotted lines.

Figure 8. Archaeological potential map section.



4. Lookout

The archaeological potential for th

High potential area

- "ridge top" (local high point)
- on "ridge terraces" (flat parts of
- portions have a south facing asp

Moderate-High/Moderate/Low pot

- potential is lower because the te

2. Subalpine Lake

The majority of the area surroundi

Variables which contribute to this

High potential area

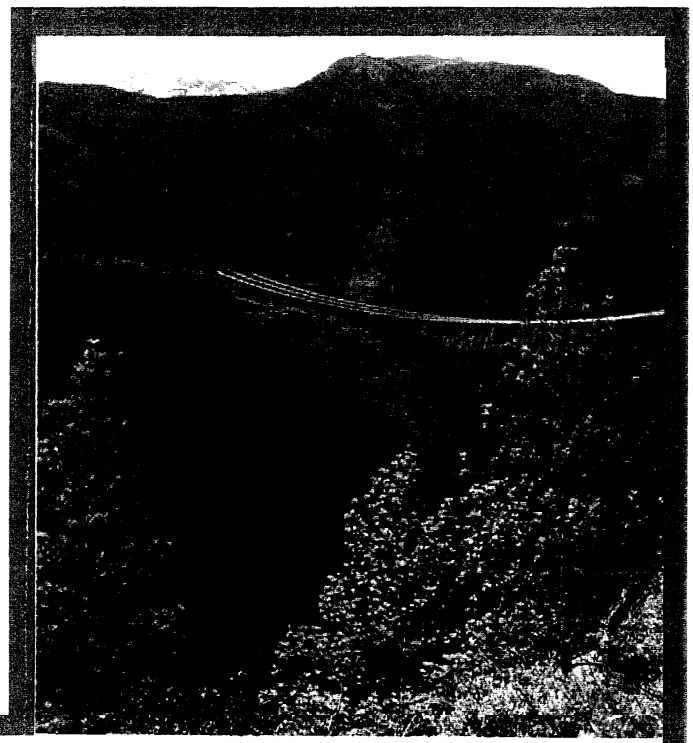
- within 50 m of a small lake and
- within 250 m of a known trail
- south facing aspect with a gentl

Moderate-High/Moderate potentia

- steep slopes on the south side
- north facing aspect lowers poter
- areas further from the water hav

Although no archaeological sites

BCC 97086 No.16 1:10,000



Camp was located at the base of this lookout.

otential for this area ranges from high to low. Variables which contribute to these ratings include:

gh point)
(flat parts of ridges or terrace edges)
rth facing aspect with a gentle slope
rate/Low potential areas
ecause the terrain is steeper, not terraced, has younger forest cover or does not have a south facing aspect

ea surrounding the lake has high archaeological potential with portions of the southern shore ranging from moderate-high to moderate.
ibute to this rating include:

all lake and stream
nown trail
: with a gentle slope
rate potential areas
south side of the lake lowers the potential rating
lowers potential
he water have lower potential
ogical sites have been recorded in these areas, traditional use information indicates a high expectation for sites in both areas.

Recommendations

The recommendations generated by the Lillooet AOA are organized in two categories. The first is specific to the use of the potential maps in operational planning and to the level of archaeological effort required for potential zones. The second category addresses ways in which the model can be improved and provides guidelines for its re-evaluation.

Potential Zones and *Operational Planning*

As a first step for forestry users, the five-year development plan or other mapping should be checked for meeting Ministry topological standards (especially closed polygons) and overlain with the archaeological potential maps. A GIS can then determine the number of hectares of each potential class within each block or development.

The Level of Effort appropriate for archaeological study should be negotiated between First Nations, the Archaeology Branch, and the MoF. However, as a guideline, the following recommendations are offered to match the level of effort to the potential classes. The guidelines assume the scenario that a cutblock or other development encompasses a variety of potential areas.

Levels of Effort

The following are definitions of level of effort.

Archaeological Impact Assessment (AIA). AIAs follow the provincial guidelines for archaeological impact assessment (Apland and Kenny 1995). High potential areas are surveyed using relatively closely spaced traverses in order to observe all, or almost all, the land in the area subject to potential impacts. Shovel tests are excavated at regular spaced intervals, supplemented by judgemental shovel tests where surface exposures are limited and where field observations confirm the high potential assessment. This work requires a Section 14 permit under the *Heritage Conservation Act.*

Detailed Reconnaissance (Detailed Recce). Detailed reconnaissance is similar to an AIA, but the traverses will be wider spaced and shovel testing will be less intensive. Shovel testing may be restricted to small local areas judged in the field to have relatively high potential during fieldwork. This work requires a Section 14 permit under the *Heritage Conservation Act* whenever shovel testing or increment coring of CMTs is conducted.

Cursory Reconnaissance (Cursory Recce). Cursory reconnaissance is a quick field inspection by an archaeologist, involving a walk through areas of potential. A block will be crossed sufficient times (sampling within major environmental types present) to judge whether further fieldwork is necessary. This work does not require a Section 14 permit under the *Heritage Conservation Act.* However, it is advisable to conduct the work under permit. Often, small areas of relatively high potential can be quickly checked to an AIA level if a permit is in place.

No Further Work (NFW). No further work means that the potential for impacting archaeological sites is so low that further archaeological study is thought to be unwarranted. However, if CMTs or other suspected archaeological remains are found in the block, an archaeologist should conduct a cursory reconnaissance to ensure that the remains are indeed archaeological, and an appropriate level of work should be defined at that point. If First Nation

representatives indicate that archaeological resources are present in the area it should, at a minimum, be subject to **a** detailed recce. Note that the Forest *Practices Code* requires that operations that could endanger archaeological remains unexpectedly encountered should cease.

Traditional Use information available for the area should **be** assessed to determine if physical remains of the use may be present, and, if so, a minimum of a Cursory Recce may be necessary.

Developments Overlapping Several Potential Zones

In most cases, especially when cutblocks are designed without archaeological consideration, developments will span several different potential zones. It will often not be necessary to complete a full impact assessment of the entire development.

Table 12. Recommended levels of work.

	Potential Adjacent (in or out of development)			
Highest Potential in Development	High	Moderate-High	Moderate	**LOW**
High	AL4 Recommended	AL4 Recommended	AIA Recommended	AIA Recommended
Moderate-High	AIA or Detailed Recce Recommended	AIA or Detailed Recce Recommended	Detailed Recce Recommended	Detailed Recce Recommended
Moderate	Cursory Recce	Cursory Recce	Cursory Recce	Cursory Recce
LOW	Cursory Recce	Cursory Recce	NFW-see discussion	NFW-see discussion

Developments within High potential areas and Moderate-High areas both run a serious risk of damaging archaeological sites. Some 87% of the known sites occur in the 21% of the land in these two classes. High potential areas will usually have greater site density, and therefore can be expected to require more intensive inventory and assessment compared to Moderate-High potential areas. For developments that have even a very small amount of **High** potential, an AIA should be completed. In many cases, this High potential will be distributed in a very thin sliver along the edge of a cutblock. In this situation the cutblock will usually also contain areas of Moderate-High and Moderate potential. In effect, the "AIA" that is conducted in this situation would be a Detailed Reconnaissance survey, with the area of High potential walked through (shovel testing as required), with a return traverse through the Moderate-High or Moderate potential working at Detailed Recce level. The study would expand to full AIA of these lower potential zones if archaeological concerns are identified in the initial passes.

Where no High potential exists, but **Moderate-High** occurs, some flexibility is necessary. If the area of Moderate-High exceeds about 2ha, then an AIA or Detailed Recce of that part of the block, with inspection of Moderate potential lands within the development and adjacent to the Moderate-High, should be conducted under permit. If the area of Moderate-High is less than 2ha, the block should be assessed by an archaeologist with a minimum of a Cursory Recce that includes the area of Moderate-High potential. The archaeologists should review the values of variables contributing to the potential (access to the database connected to the potential map will be necessary for this step. See below for further discussion.)

Where no High or Moderate-High exists, but **Moderate** potential occurs alone or with low potential, the block should be subject to a Cursory Recce. The archaeologist should examine the variables contributing to the moderate potential (access to the database connected to the potential map will be necessary for this step). Moderate potential presents the greatest challenge

to archaeological management. This is because although only 11% of the known sites lie in moderate potential and the known site density is much lower than for the higher potential classes, many of these sites have individually high significance. All Moderate potential areas have something about them that lead to an expectation that sites could be present. Significant ridges and prominences are often in this class, and are often completely surrounded by low potential. Such areas should receive special attention (a minimum of a Cursory Recce). Small lithic scatters or rock blinds associated with hunting are the most likely site types to be found, with 60% of these sites occurring in Moderate potential. CMTs are badly underrepresented in the existing inventory, and we anticipate many more of these will be found in Moderate potential.

Low Potential: Sites occur infrequently in these areas, with 3% of known sites in Low potential areas (which form almost 60% of the land area). Archaeological sites in these areas are often associated with trails, wagon roads, or Traditional Use Sites. Trails and roads were included in the present model, but no database of Traditional Use sites is available. Undoubtedly additional aboriginal trails exist that are not included in the present mapping. First Nations and the MoF should determine the appropriate level of effort for further archaeological work in Low Potential areas. In cases where Low potential borders High or Moderate-High potential land, it should be subject to Cursory Reconnaissance. Often, this can be done during access to the higher potential parts of the blocks. Otherwise, visual inspection from within the higher potential areas should be adequate to determine if additional survey is needed within the low potential. Generally speaking, however, no further work is expected in low potential land.

CMTs

The model did not try to discriminate between potential for CMTs and potential for other site types. There are several reasons for doing this. Primarily, this is because CMTs appear to generally co-occur with other site types, and so a single model represents all site types reasonably well. During preliminary model development, an initial weakness in capturing CMT sites was addressed by adding additional points for old-growth forests matching certain other environmental criteria. When the model was re-run, the program automatically reported capture rates for the various site types. Not only was the capture rate for CMTs dramatically increased, but the capture rate for other site types also showed marked improvement. This indicated that variable combinations suitable for CMTs also were suitable for several other site types. This corroborated observations Millennia staff have made in the Southern Interior, where it seems CMTs often co-occur with other site types. If two or more models had been used, it also would have created unnecessary complexity in the presentation and interpretation of the map.

CMTs, even those post-dating 1846 and therefore not automatically protected under the *Heritage Conservation Act,* should be recorded in the Provincial Heritage Registry Database, and their presence should indicate the potential for other archaeological sites, and therefore the need for archaeological field inspection. CMTs post-dating 1846 are not protected by the *Heritage* Conservation *Act* but may be regarded as scientifically or historically significant, and therefore are inventoried and managed according to the *Forest Practices Code.* The Ministry of Forests also assumes that CMTs indicate a potential for Aboriginal Rights protected under the Canadian Constitution, More information regarding significance assessment and management is available through the Ministry of Forests Vancouver Region (Eldridge 1997).

Notes regarding Using the Database Variables.

When reviewing areas of Moderate potential, archaeologists should consider the variable or variables that led to the score. Some locations may have scored only Moderate potential because of single variables such as terrace edges, but may be just outside the buffer limit of other variables, such as nearness to a fish-bearing lake. Such locations can reasonably be expected to actually have High potential (i.e., had they been situated just a few metres closer to the lake, the location would have scored Moderate-High or High potential). Some features, such as local high points (ridgetop variable) should receive special attention until sufficient surveys have taken place to determine site density in these places.

In other situations, potential may be determined to be actually lower than indicated. For instance, trails were digitized from MoF and archival sources and in most cases are either clearly aboriginal or can be assumed to have followed aboriginal routes. Some though, particularly in the upper Bridge River Valley, may actually access post-contact commercial mine sites Aboriginal people may not have used these areas extensively. Use of the database to identify the trail specifics combined with local knowledge may identify a trail as having little chance of aboriginal use, and therefore the local ratings could be downgraded by the values of the trail variables. This would in turn affect the resulting score and might affect the potential rating. Note that if enough other variables are present, the score would continue to be high, and a downgrading of potential rating should not be automatic. Also note that historic mining remains may be significant and require managing impacts, although these sites are not automatically protected under the *Heritage Conservation Act.*

Model Revisions

Why is the written word used more than our 'Oral History'?

Chiefs of Pavilion, Bridge River, Cayoosh,
Lillooet, Seton/Shalath commenting on the AOA.
Recorded by Marie Barney 1998.

The model should be re-examined after one or two years to assess its accuracy and usefulness, At the same time, the database upon which it is evaluated should be updated with information from subsequent AIA and AIS survey, and TUS information, as it becomes available. Thereafter, every 5 to 10 years should be an adequate interval for determining whether an update is needed. One year of use should determine if it is appropriate to make immediate adjustments to the model itself, or to the table of recommended levels of work, or if certain map situations should be interpreted differently. It is likely that variable combinations can be identified that can dramatically decrease or increase the amount of land in various potential classes. Any revisions to the model should include the expert opinion of an archaeologist. As part of any revision, the database should be queried with revised parameters to determine the effect of buffer changes on the model's accuracy.

Hillshade modelling should be incorporated into the Digital Terrain Model in future modelling. Hillshading is available through ArcInfo Grid module. Hillshading would support the ridge/terrace edge analysis but the main reason would be to identify palaeolandforms suitable for site location, Modelling in the Kispiox Forest District has shown that hillshading can clearly show features such as minor terracing from ancient raised lakeshore levels, abandoned river channels, eskers, and so on.

Data gaps remain in the Lillooet FD. Archaeological Inventory Surveys (AIS), funded under the FRBC program, can be used to gather data to improve and refine the predictive model developed for the Lillooet FD. AISs provide data useful for refining the model, especially in terms of examining what are currently thought to be "low potential" areas, that are not normally subject to AIA.

AISs should focus initially on poorly known areas, as identified in the 'Data Gaps' section of this report and should include a sample of low potential areas. This can serve as a check on the accuracy of the predictive model, ensuring that the model is not missing large numbers of sites in low potential areas. If large numbers of sites are found in low potential areas, then it will be necessary to return to the modelling stage and (1) conduct an analysis of potential problem variables and analytical methods, and (2) identify ways to improve the model.

Future AIS survey and AIAs will quickly produce a much larger sample of CMT sites. Similar to other interior forest districts (e.g., Eldridge, et al. 1998), CMTs appear to be seriously underreported in previous archaeological investigations conducted in the study area. Particular attention should be paid to the 'Evaluation of Research' components of AIA and AIS studies to ensure that CMT locations are accurately predicted by the model.

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Appendices

Appendix 1. Contact list.

Bands/First Nations	Contacts[1]
• Ashcroft Indian Band	**Chief George Kirkpatrick**
. Bonaparte Indian Band	**Chief Terry Porter** Twyla Norman, Band Administrator Gerald Ettienne, Councillor
• Bridge River Indian Band	Chief Dave Terry Bradley Jack, Band Manager
• Canoe Creek Indian Band	Chief Larry Camille **(Chief Agnes Snow)** **Andrew Boston,** Forestry Scott Cousins, Treaty Office
• Cayoose Creek Indian Band	**Chief Perry Redan**
• Cook's Ferry Indian Band Pearl Hewitt, Councillor	**Chief David Walkem**
. Esketemc First Nation	**Chief Marilyn Belleau** Beth Bedard, Archaeologist
• Xaxl'ip	Chief Arthur Adolf **(Chief Roger Adolf)** Herman Alec, Forestry Ed Mountain, Forestry
• High Bar Indian Band	**Hereditary Chief Rose Haller** **Gordon** Prospers
• Kanaka Bar Indian Band	**Chief James Frank**
. Tl'itl'kit	**Chief Bill Machell**
• Lytton First Nation	**Chief Janet Webster**
· Lil'wat	**Lyle Leo,** Creekside Resources Sue Montgomery, Creekside Resources
• Nicomen Indian Band	**Chief Cyril Spence**
• N'Quatqua	**Chief Harry O'Doneghie** Johnny Abraham
• Oregon Jack Creek Indian Band	**Chief Robert Pasco**
• Siska Indian Band	**Chief Alice Munro** Maurice Michell
• Skuppah Indian Band	Chief **Doug** McIntyre
· Seton Lake Indian Band	**Chief Gary John**
• Stone Indian Band	**Chief Lloyd Myers**

[1] Bold names indicated by Lillooet Forest District as primary contact. Other listed names were identified as contacts by Forest District or during the project. Some of the people whose names appeared on original contact list supplied by Forest District no longer worked for the bands, First Nations, or Tribal Councils. Their names appear in brackets as original correspondence was addressed to them.

. Ts'kw'aylaxw First Nation	**Chief Fred Alec** Chief Robert Shintah Bernard Schulman, Treaty Office
• Toosey Indian Band	Chief **Shirley** Groundbush-Johnny **(Chief Arnold Solomon)**
• Whispering Pines Band	Chief Richard Lebourdais Daphne Jorgenson

Tribal Councils/Associations	Contacts
. Cariboo Tribal Council	Bruce Mack, Administrator
. Carrier Chilcotin Nation	**John Roorda,** Administrator Bert Groenberg
. Fraser Canyon Tribal Administration	Doug McIntyre, Chair
• Lillooet Tribal Council	Mike Leach, Chairman **Larry Casper**, Natural Resources Development Coordinator Marie Barney
• Nicola Valley Tribal Association	**(Paul Mitchell-Banks,** FRBC Coordinator) Bobby Sterling
• Nlaka'pamux Nation Tribal Council	**Robert Pasco,** Chair Debbie Abbott, Administrator Karen Aird
• Shuswap Nation Tribal Council	Chief Arthur Manuel, Tribal Chair Doug Brown **Joe** Thomas, Forestry **Bill Horswill, FRB**
. **Tsilhqot'in National** Government	Chief **Ervin Charleyboy,** Chair Don Wise

Zone	Sub-zones/ mean % cover*	Common Name/ *Scientific Name*	Plant Ecology **	Thompson Method
PP IDF	xh/2-5% dh/2-5% xw/O.l-1%	Arrow-leaved balsam-root/ *Balsamo-rhiza sagitta*	Widespread and frequently abundant at low to mid elevations throughout hot, arid climates of the interior, on dry, often stony slopes, in grasslands and in open forests; also scattered at mid to subalpine elevations on plateaux and in the Chilcotin range, on dry, steep, warm slopes.	The large taproot, th budstems, and the fr in the spring (AY;JK moist and not too ro in the same manner dried by spreading o pounded. The result was eaten as a porric Steedman (1930: 48 fat or grease, brough cooled mass was ma
PP IDF CWH M S ESSF	-	cottonwood/ *Populus balsamifera*	Widespread and common on moist to wet lowlands, riverbanks, gravel bars, stream banks, lakeshores, swamps, seepage sites and disturbed uplands, mostly at low to mid elevations, but also in moist subalpine sites; withstands periodic flooding; shade intolerant; very frost resistant.	Cambium was eaten
PP BP IDF	-	water parsnip/ *Sium suave*	Scattered and locally common at low to mid elevations in shallow water of swamps, marshes, lakeshores and ditches.	The roots were dug u could be eaten fresh
PP BP IDF		silverweed/ *Po ten tilla anserina*	Scattered and often common at low to mid elevations on dry plateaux, in arid basins, in non-peaty wetlands, moist places in grasslands and alkaline meadows.	The roots were eaten Steedman 1930:480) (JK; Steedman, 1930 lakes in the dry interi enough, they were pi
PP BG IDF	 xh	mariposa lily/ *Calochortus macrocarpus*	Widespread and common at low elevations in the Fraser, Thompson and Okanagan basins, in dry grasslands and open nonderosa nine forests.	They could be eaten r

Plant Ecology **	Thompson Methods of Harvest and Processing***	Possible Associated Site Types
Widespread and frequently abundant at low to mid elevations throughout hot, arid climates of the interior, on dry, often stony slopes, in grasslands and in open forests; also scattered at mid to subalpine elevations on plateaux and in the Chilcotin range, on dry, steep, warm slopes.	The large taproot, the root crown, the young leafstalks and leaves, the young budstems, and the fruits were all eaten. The root was dug in the fall (MA) or in the spring (AY;JK), usually from specific localities where the soil was moist and not too rocky. The roots were cooked overnight in a steaming pit, in the same manner as avalanche lily corms. AY recalled that the seeds were dried by spreading out on a mat in the sun, then placed in a buckskin bag and pounded. The resulting "flour" was mixed with oil and water, or broth and was eaten as a porridge, especially in times of famine. Teit (1900: 236) and Steedman (1930: 484) state that the seed meal was put into a basket with deer fat or grease, brought to a boil with hot stones, then allowed to cool. The cooled mass was made into small cakes and eaten.	Roasting pits
Widespread and common on moist to wet lowlands, riverbanks, gravel bars, stream banks, lakeshores, swamps, seepage sites and disturbed uplands, mostly at low to mid elevations, but also in moist subalpine sites; withstands periodic flooding; shade intolerant; very frost resistant.	Cambium was eaten by Thompson (Teit 1900:233).	CMT
Scattered and locally common at low to mid elevations in shallow water of swamps, marshes, lakeshores and ditches.	The roots were dug up in the spring and fall around the edge of lakes. They could be eaten fresh but were usually pit cooked and dried for later use (AY).	Roasting pits
Scattered and often common at low to mid elevations on dry plateaux, in arid basins, in non-peaty wetlands, moist places in grasslands and alkaline meadows.	The roots were eaten, especially by the Upper Thompson (Teit 1900:231; Steedman 1930:480). They could be eaten raw, but more often were cooked (JK; Steedman, 1930:480). They were gathered in the spring and fall around lakes in the dry interior **(AY).** They were steam cooked or if one could gather enough, they were pit cooked (LP-RB).	Roasting pits
Widespread and common at low elevations in the Fraser, Thompson and Okanagan basins, in dry grasslands and open ponderosa pine forests.	They could be eaten raw or were pit cooked like spring beauty (HA-SE).	Roasting pits

Zone	Sub-zones/ mean % cover*	Common Name/ *Scientific Name*	Plant Ecology **	Thompson Metho
IDF	xw/2-5% xm/2-5% dm/6- 10% dk/6- 10%	Kinnikinnick/ *Arctostaphylos uva-ursi*	Widespread and common at low to alpine elevations on sandy and well-drained exposed sites, dry rocky slopes, dry forest clearings and hummocks in shrub-carrs.	Teit (1900:236) not in water in which sa harvested around Sc
IDF	xw/0.1-1 xm/0.1-1	Nodding onion/ *Allium cernuum*	Widespread and common at low to mid elevations in dry open woods (often Douglas-fir), dry rocky sites and grasslands; generally absent from wet climates.	The bulbs were tied partially dry before overnight, and after WS; MJ). For wint 1903).
IDF M S ESSF	dm/6- 10% dk/11-25% mw/6- 10% ww/2-5% xv/11-25% xk/11-25% dc/26-99% dk/11-25% dm/11-25% dc/6- 10% dv/6- 10% mw/2-5%	Lodgepole pine/ *Pinus contorta*	Widespread and common from low elevations to treeline on a wide variety of soils and drainage conditions, from rock outcrops to deep, rich soils to organic deposits.	The cambium layer elevation-EJ).
IDF M S ESSF	ww/2-5% dm/6- 10% xc/2-5% dc/6- 10% dv/11-25% mw/11-25%	Black huckleberry/ *Vaccinium mem brana-ceum*	Widespread and common at mid to high elevations in dry to moist coniferous forests, openings and clearings; absent from dry parts of the interior plateaux	It is possible that the A report by Mack a found in Washingto trenches in B.C.). E and fire created ope: mat using reflected purpose, or stripped side of the log, and trench, holding the

	Plant Ecology **	Thompson Methods of Harvest and Processing***	Possible Associated Site Types
rsi	Widespread and common at low to alpine elevations on sandy and well-drained exposed sites, dry rocky slopes, dry forest clearings and hummocks in shrub-carrs.	Teit (1900:236) notes that the "berries" were boiled together with salmon roe in water in which salmon or trout had been cooked. The berries were usually harvested around September, then buried in birch-bark baskets until needed.	Cache pits
	Widespread and common at low to mid elevations in dry open woods (often Douglas-fir), dry rocky sites and grasslands; generally absent from wet climates.	The bulbs were tied in 8-l 0 cm bundles with maple bark and hung up to partially dry before being pit-cooked (LP). The bulbs were steam-cooked overnight, and after being cooked they became extremely sweet (AY; LP; WS; MJ). For winter storage the bulbs were dried (AY; MJ; Newcombe, 1903).	Roasting pits
	Widespread and common from low elevations to treeline on a wide variety of soils and drainage conditions, from rock outcrops to deep, rich soils to organic deposits.	The cambium layer was stripped in the spring (May or June, depending on the elevation-EJ).	CMT
a-ceum	Widespread and common at mid to high elevations in dry to moist coniferous forests, openings and clearings; absent from dry parts of the interior plateaux	It is possible that the fruit may have been dried using a subterranean trench. A report by Mack and McClure (1998) describes these trenches which were found in Washington state (Ian Franck (1998) has recently reported similar trenches in B.C.). Berry camps were established in and adjacent to meadows and fire created openings. Prior to 1935, huckleberries were often dried on a mat using reflected heat from a log fire. Trees were often felled for this purpose, or stripped of bark for future use. A trench was excavated along one side of the log, and a sloping mound of earth built up along the edge of this trench. holding the mat in place.	Possibly berry trenches Seasonal camps

Zone	Sub-zones/ mean % cover*	Common Name/ *Scientific Name*	Plant Ecology **	Thompson Methods of Harv
IDF	xw/O.l-1% dm/6- 10% dk/2-5% mw/2-5% ww/0.1-1%	Soopolallie (soapberry)/ *Shepherdia canadensis*	Widespread and very common at low to subalpine elevations in dry to moist open forests, openings and clearings.	The berries were placed into a mats or on a layer of "timberg: small fire was lit beneath so th
IDF M S ESSF	•	swamp gooseberry/ *Ribes lacustre*	Widespread and very common at low - subalpine elevations in moist and wet forests, open seepage areas and clearings; on dry forested slopes of subalpine ridges; often on rotting wood.	They were sometimes dried or
IDF M S ESSF	(rare in IDF xh/1-2)	spring beauty/ *Claytonia lanceolata*	Widely scattered at mid to high elevations in open, moist grassy slopes; sometimes among deciduous shrubs or in areas of late snow beds.	The corms of the plant were fc Thompson (AY; LP; HA; MA 1930:482). They were cooked (AY), or steamed in watertight stored for winter could be buri
ESSF	dv mw/2-3 xc/2-3	white bark pine/ *Pinus albicaulis*	at high elevations; frequently on dry, southern exposures and exposed windswept ridges, often on very thin soils; drought resistant, shade tolerant and frost hardy.	Many [seeds] were cached in c eaten raw, but were usually roa *1996)*
A T	N/A	Avalanchelily/ *Erythronium grandi-florum*	Widespread and common in subalpine and alpine meadows and wet, open high subalpine forests; rare in mid-elevation openings and aspen groves.	People used to bum mountains of the corms were pit-cooked, date after they had been strung
		tiger lily/ *Lilium columbianum*	Widespread and common at low to subalpine elevations, mostly on southern plateaux.	The thick scaly bulbs come apa mainly as a condiment (AY; M Teit, 1900:23 1; Steedman, 193 1900: 23 1).
		black tree lichen/ *Bryoria fremon tii*	Found over conifers, especially Douglas-fir and ponderosa pine. In open forests at all elevations; common	This lichen was formerly an in as well as for other Interior Sal was gathered from the branche Douglas-fir. Large piles of lich cleaned and pounded to render The lichen was then steam coo

**from *(Parish 1996)*

***from *(Turner, et al. 2990)* except *Vaccinium membranaceum* (Mack and McClure 1998)

	Plant Ecology **	Thompson Methods of Harvest and Processing***	Possible Associat Site Typ
/	Widespread and very common at low to subalpine elevations in dry to moist open forests, openings and clearings.	The berries were placed into a basket, heated with rocks, then spread out on mats or on a layer of "timbergrass" set on scaffolding and allowed to dry. A small fire was lit beneath so that the smoke would drive away the flies.	Fire pits, drying ra
	Widespread and very common at low • subalpine elevations in moist and wet forests, open seepage areas and clearings; on dry forested slopes of subalpine ridges; often on rotting wood.	They were sometimes dried or buried fresh in the ground (AY).	Cache pi
	Widely scattered at mid to high elevations in open, moist grassy slopes; sometimes among deciduous shrubs or in areas of late snow beds.	The corms of the plant were formerly an important "root" food of the Thompson (AY; LP; HA; MA; JK; BA; MJ; Teit 1900:23 1; Steedman, 1930:482). They were cooked in underground pits, like avalanche lily corms (AY), or steamed in watertight baskets using red-hot rocks (MJ). Corms to be stored for winter could be buried fresh in underground caches (AY, LP; HA)	Roasting pits, cach pits
	at high elevations; frequently on dry, southern exposures and exposed windswept ridges, often on very thin soils; drought resistant, shade tolerant and frost hardy.	Many [seeds] were cached in dry places for future use. The seeds could be eaten raw, but were usually roasted. Cambium was also eaten (Grindes, 1996)	Cache pi fire pits, CMTs
um	Widespread and common in subalpine and alpine meadows and wet, open high subalpine forests; rare in mid-elevation openings and aspen groves.	People used to bum mountainsides to maintain the lilies habitat (AY). Most of the corms were pit-cooked, either immediately after harvesting, or at a later date after they had been strung and dried.	Evidence burning, roasting p
	Widespread and common at low to subalpine elevations, mostly on southern plateaux.	The thick scaly bulbs come apart like cloves of garlic. They were eaten, mainly as a condiment (AY; MA; HA; JK; BA; MJ; JC; Newcombe, 1903; Teit, 1900:23 1; Steedman, 1930:482). They were also boiled in soups (Teit 1900: 23 1).	Roasting
	Found over conifers, especially Douglas-fir and ponderosa pine. In open forests at all elevations; common	This lichen was formerly an important food for all of the Thompson people, as well as for other Interior Salishian peoples (Turner 1977, 1978:35-39). It was gathered from the branches of coniferous trees such sa larch, pine, and Douglas-fir. Large piles of lichen was gathered and soaked. It was then cleaned and pounded to render it of vulpinic acid (potentially poisonous). The lichen was then steam cooked in pits (AY; LP; HA-SE; Teit 1900:237).	Roasting

zceum (Mack and McClure 1998)

Appendix 3. Lillooet FD trails.

LILLOOET DISTRICT TRAILS

TRAIL #	NAME	NTS MAP	LOCATION NOTES	SOURCE
BRV-I	Upper Bridge River			BRVEDS
BRV-2	Nicholls Creek			BRVEDS
BRV-2A	Monty Don Creek			BRVEDS
BRV-25	Nicholls Creek to Slim Pass			BRVEDS
BRV-3	Relay Creek	O015,O016		range, El 7
BRV-4	Mud Lake Trail	O007,O017	also referred to as Mud Creek	FDP
BRV-4A	Mud Creek to Quartz Mountain			BRVEDS
BRV-4B	Mud Lakes to Quartz Mountain			BRVEDS
BRV-5	Noaxe Lake to Quartz Mountain	O007,O017	west Quartz Mountain	BRVEDS
BRV-6	Yalakom River to Noaxe Lake	O007,O008		n side tope
BRV-7	Unnamed Mining Trail		at confluence of Mud Creek and Relay Creek	BRVEDS
BRV-8	Noaxe Lake Trail			BRVEDS
BRV-9	Big Sheep Mountain	0007	old road to alpine	BRVEDS
BRV-I 0	Noaxe Lake to Wilfred Lake			BRVEDS
BRV-11	Yalakom to Shulaps	0008		FDP
BRV-12	Blue Creek Trail			BRVEDS
BRV-I 2A	Yalakom River to Blue Creek			BRVEDS
BRV-I 2B	Blue Creek Spur		includes hike to start of trail	BRVEDS
BRV-13	Liza lake to Noaxe Lake			BRVEDS
BRV-14	Burkholder Main	JO86	historic trail from Cromer to Blue	w section c
BRV-I 4A	Cromer Creek Ridge	JO97		LFD
BRV-15	Cromer Creek	JO97		FDP
BRV-16	East Liza Creek			BRVEDS
BRV-17	Marshall Lake to Shulaps	JO98	Shulaps Peak	BRVEDS
BRV-I 8	Jim Creek to Shulaps	JO98		range, A/P
BRV-18A	Cromer Creek to Jim Creek	JO98		BRVEDS
BRV-19	Shulaps Main	J088,J098	refer to trail report in Recreation Trails Atlas LFD	A/P
BRV-19A	Shulaps Main- Yalakom Connector			BRVEDS
BRV-20	Burkholder Lake	J098,J099,O008	refer to trail report in Recreation Trails Atlas LFD	BRVEDS
BRV-21	Lake La Mare- Yalakom Connector			BRVEDS
BRV-22	Yalakom River to Holbrook Creek	JO90	East Shulaps Paths, Moha to LaRochelle Creek	A/P, FDP
BRV-22A	LaRochelle Creek to Shulaps Range	J089,J099	LaRochelle to Lake La Mare	FDP

LILLOOET DISTRICT TRAILS

LOCATION NOTES	SOURCE	COMMENTS	X REF
	BRVEDS		254
	BRVEDS		255
	BRVEDS		256
	BRVEDS		257
	range, El 77rec		148
also referred to as Mud Creek	FDP	network of roads and trails in area	241
	BRVEDS		259
	BRVEDS		258
west Quartz Mountain	BRVEDS	alpine route	150
	n side topo	likely just a route	68
at confluence of Mud Creek and Relay Creek	BRVEDS		261
	BRVEDS		262
old road to alpine	BRVEDS	good mountain biking trail?	210,263
	BRVEDS		10
	FDP		236
	BRVEDS		265
	BRVEDS		266
includes hike to start of trail	BRVEDS		267
	BRVEDS		260
historic trail from Cromer to Blue	w section on topo		15
	LFD		269
	FDP	possibly just a route	53
	BRVEDS		268
Shulaps Peak	BRVEDS	also referred to as Jim Creek Ridge	12,270
	range, A/P		152
	BRVEDS		151
refer to trail report in Recreation Trails Atlas LFD	A/P		10
	BRVEDS		271
008 refer to trail report in Recreation Trails Atlas LFD	BRVEDS		14
	BRVEDS		89
East Shulaps Paths, Moha to LaRochelle Creek	A/P, FDP	good mountain biking, old roads in alpine	226,240
LaRochelle to Lake La Mare	FDP		239

TRAIL #	NAME	NTS MAP	LOCATION NOTES	SOURCE
BRV-22B	Shulaps Alpine Trail	J088,J089,J098		rec,range
BRV-23	Hog Creek to Shulaps (Carol Creek)	JO99	refer to trail report in Recreation Trails Atlas LFD	BRVEDS
BRV-24	Marshall to Jones Creek	JO88	to left of Jones Creek near lake	A/P
BRV-25	Bighorn Creek			BRVEDS
BRV-26	Cedarville Creek	J089,J098,J099	Starts as small road in ESE direction of highway	P. Branca
BRV-27	Michealmoon Ridge	JO89	access through private land	BRVEDS
BRV-27A	Michealmoon Ridge South			BRVEDS
BRV-28	Bridge River Trail	J089,J090	access through private land	BRVEDS
BRV-29	Viera Creek	JO79	old cart road to large burn area	rec, A/P
BRV-30	High Trail	JO96	Eldorado/ Taylor Loop	rec, range
BRV-31	Upper Eldorado Trail	JO96	Eldorado/ Taylor Loop	rec, range
BRV-32	Taylor Pearson Trail	JO96	Eldorado/ Taylor Loop	rec, range
BRV-33	North Cinnabar Creek			BRVEDS
BRV-34	Tyaughton Alpine Loop Trail	JO39	refer to trail report in Recreation Trails Atlas LFD	range
BRV-35	Pearson Creek	J096,J097	Mehinicks route to alpine	L. Pletzer
BRV-36	Lick Creek	JO96	look for other trails in area ie. Tyax to Slim Creek	BRVEDS
BRV-37	B.F. Creek			BRVEDS
BRV-38	Lower Gun Creek	JO96	Tyaughton to Jewel Creek	rec
BRV-39	Horse Pasture- Taylor Creek	JO96		range, topo
BRV-40	Roxey Creek	J067,J077	old mining roads up to alpine	BRVEDS
BRV-41	Roxey Creek to Jewel Creek			BRVEDS
BRV-42	Norden Jim's Trail	J086,J096	possibly just a route	BRVEDS
BRV-43	Walker Creek Trail	J086,J096	possibly just a route	BRVEDS
BRV-44	Mount Penrose Trail			BRVEDS
BRV-45	Penrose Creek Trail			BRVEDS
BRV-46	Tyaughton to Gun Creek			BRVEDS
BRV-47	Tyaughton Creek	0006		topo
BRV-48	North Tyaughton Lake			BRVEDS
BRV-49	Mowson to Tyaughton Lake			BRVEDS
BRV-50	Bridge River to Tyaughton	JO97	Carpenter Lake to Tyax Rd to E. of Tyaughton Lake	range, A/P
BRV-51	Bridge River to Pearson Pond	JO97		range, A/P
BRV-52	Mowson Pond to Pearson Pond			BRVEDS
BRV-53	Carpenter Lake to Mowson Pond			BRVEDS
BRV-54	Tyaughton Creek to Mowson Pond		Lajoie Creek to Mowson Pond	BRVEDS

AP	LOCATION NOTES	SOURCE	COMMENTS	X REF
089,J098		rec,range	may be just a route	19
	refer to trail report in Recreation Trails Atlas LFD	BRVEDS		1
	to left of Jones Creek near lake	A/P		8
		BRVEDS		27
098,J099	Starts as small road in ESE direction of highway	P. Branca		
	access through private land	BRVEDS	two parallel trails may exist	4
		BRVEDS		4
090	access through private land	BRVEDS	old access trail along Bridge River	9
	old cart road to large burn area	rec, AJP		18
	Eldorado/ Taylor Loop	rec, range		14
	Eldorado/ Taylor Loop	rec, range		14
	Eldorado/ Taylor Loop	rec, range		14
		BRVEDS		27
	refer to trail report in Recreation Trails Atlas LFD	range		2
097	Mehinicks route to alpine	L. Pletzer		24
	look for other trails in area ie. Tyax to Slim Creek	BRVEDS		12
		BRVEDS		27
	Tyaughton to Jewel Creek	rec		19
		range, topo, A/P	starts at end of cut block	7
077	old mining roads up to alpine	BRVEDS	starts as old road east of Roxey Creek	5
		BRVEDS		31
096	possibly just a route	BRVEDS		227,27
096	possibly just a route	BRVEDS		227,27
		BRVEDS		27
		BRVEDS		27
		BRVEDS		28
		topo		19
		BRVEDS		28
		BRVEDS		28:
	Carpenter Lake to Tyax Rd to E. of Tyaughton Lake	range, A/P		7
		range, A/P		7
		BRVEDS		284
		BRVEDS		28:
	Laioie Creek to Mowson Pond	BRVEDS		285

TRAIL #	NAME	NTS MAP	LOCATION NOTES	SOURCE
BRV-55	Gun Lakes Cross Country Ski Trails	J096,J097	refer to trail report in Recreation Trails Atlas LFD	BRVEDS
BRV-56	Gold Bridge to Gun Lake North			BRVEDS
BRV-57	Gold Bridge to Gun Lake			BRVEDS
BRV-58	Carpenter Lake to Liza Lake	J087,J097	Tyaughton Creek to Liza Creek	A/P
BRV-59	Carpenter Lake to Marshall Lake	J097,J098	Marshall Lake to Tyaughton Creek	A/P
BRV-60	Marshall Creek to Marshall Ridge			BRVEDS
BRV-61	Carpenter Lake to Marshall Ridge			BRVEDS
BRV-62	Lone Goat Creek			BRVEDS
BRV-62A	Mount Thiassi			BRVEDS
BRV-62B	Mount Vayu			BRVEDS
BRV-62C	The Frost Fiend			BRVEDS
BRV-63	Green Mountain to Mount Sloan	JO76	old road to alpine and lookout	BRVEDS
BRV-64	Ault Creek			BRVEDS
BRV-65	Blue Grouse Trail			BRVEDS
BRV-66	Gwenyth Lake to Bralorne			BRVEDS
BRV-67	Mason Creek to Mount Noel	JO76		BRVEDS
BRV-68	Noel Creek			BRVEDS
BRV-69	Waterfalls Creek to Noel Creek			BRVEDS
BRV-70	Linsay Creek to Truax	J086,J087	Lost Lake to Truax	BRVEDS
BRV-71	Mount Ferguson and Truax	J086,J088	Lost Lake to Linsay Creek	BRVEDS
BRV-72	Hurley River to Ferguson Creek			BRVEDS
BRV-73	Bralorne to Kingdom Lake			BRVEDS
BRV-73A	Headwaters Kingdom Lake			BRVEDS
BRV-74	Blackbird Creek (Mount Ferguson)	JO77	Waterloo/Old Kiln Trail. Bralorne to Mount Ferguson	BRVEDS
BRV-75	Truax to Grey Rock Mine			BRVEDS
BRV-76	Hawthorne Creek to Bendor Ridge			BRVEDS
BRV-77	Bobb Creek	JO79		BRVEDS
BRV-78	Tommy Creek	J078,J088	old road to mining area	range, A/P
BRV-79	Keary Creek			BRVEDS
BRV-80	Mission to Nosebag	JO80	refer to trail report in Recreation Trails Atlas LFD	BRVEDS
BRV-81	Whitecap Creek			BRVEDS
BRV-82	Whitecap Ridge	JO79	unlikely to exist in this location	BRVEDS
BRV-83	Noel Creek to Chism Pass			BRVEDS
BRV-84	Chism Pass	J067,J077	first 3 km on range	BRVEDS

LOCATION NOTES	SOURCE	COMMENTS	X REF
refer to trail report in Recreation Trails Atlas LFD	BRVEDS		19
	BRVEDS		287
	BRVEDS		288
Tyaughton Creek to Liza Creek	A/P	lots of trails in area	161
Marshall Lake to Tyaughton Creek	A/P	trail becomes a road down to Marshall Lake	160
	BRVEDS		289
	BRVEDS		290
	BRVEDS		291
	BRVEDS		292
	BRVEDS		293
	BRVEDS		294
old road to alpine and lookout	BRVEDS		178,295
	BRVEDS		296
	BRVEDS		297
	BRVEDS		298
	BRVEDS		59
	BRVEDS		299
	BRVEDS		300
Lost Lake to Truax	BRVEDS		54
Lost Lake to Linsay Creek	BRVEDS		55
	BRVEDS		301
	BRVEDS		302
	BRVEDS		303
Waterloo/Old Kiln Trail. Bralorne to Mount Ferguson	BRVEDS	old kiln spur to north of main trail	179,304
	BRVEDS		305
	BRVEDS		306
	BRVEDS		3
old road to mining area	range, A/P		2
	BRVEDS		307
refer to trail report in Recreation Trails Atlas LFD	BRVEDS		4
	BRVEDS		308
unlikely to exist in this location	BRVEDS	extremely steep	42
	BRVEDS		309
first 3 km on range	BRVEDS		56

Chilcotin, Lillooet, Shuswap, and Thompson Traditional Territoric

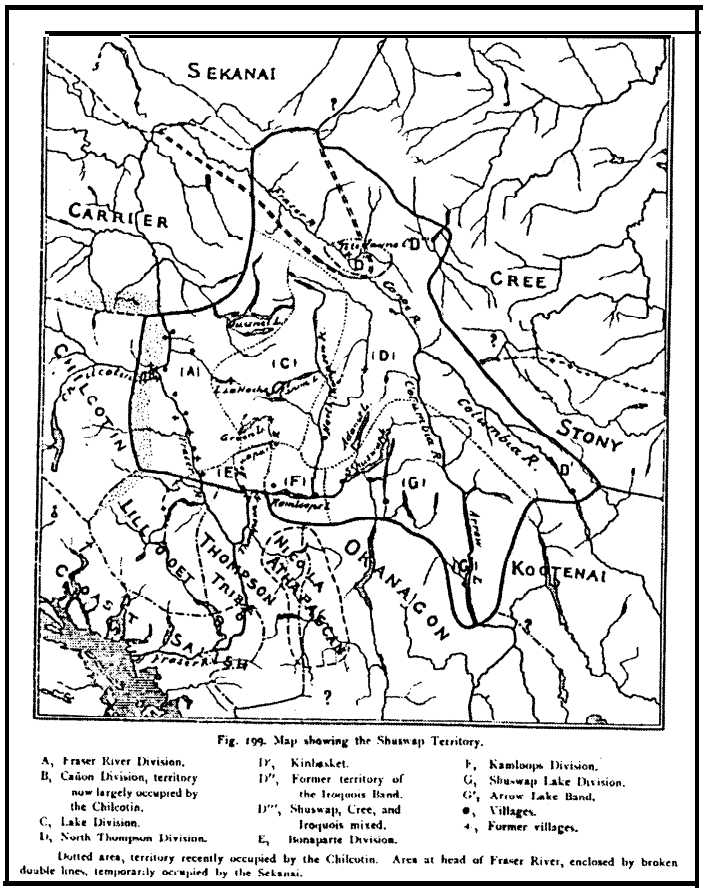
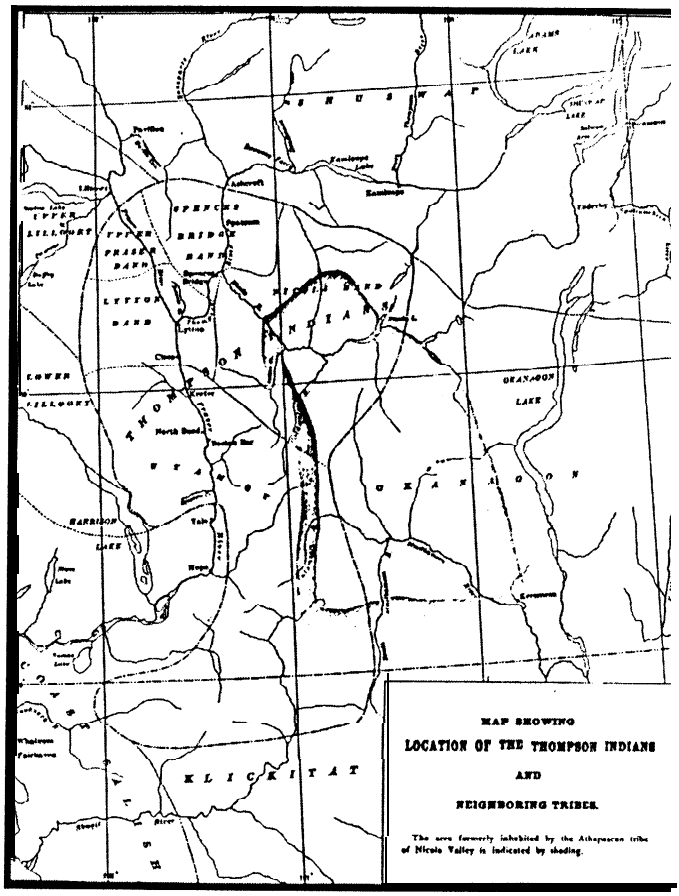


Fig. 199. Map showing the Shuswap Territory.

A, Fraser River Division.
B, Cañon Division, territory now largely occupied by the Chilcotin.
C, Lake Division.
D, North Thompson Division.
D', Kinbasket.
D'', Former territory of the Iroquois Band.
D''', Shuswap, Cree, and Iroquois mixed.
E, Bonaparte Division.
F, Kamloops Division.
G, Shuswap Lake Division.
G', Arrow Lake Band.
●, Villages.
+, Former villages.

Dotted area, territory recently occupied by the Chilcotin. Area at head of Fraser River, enclosed by broken double lines, temporarily occupied by the Sekanai.

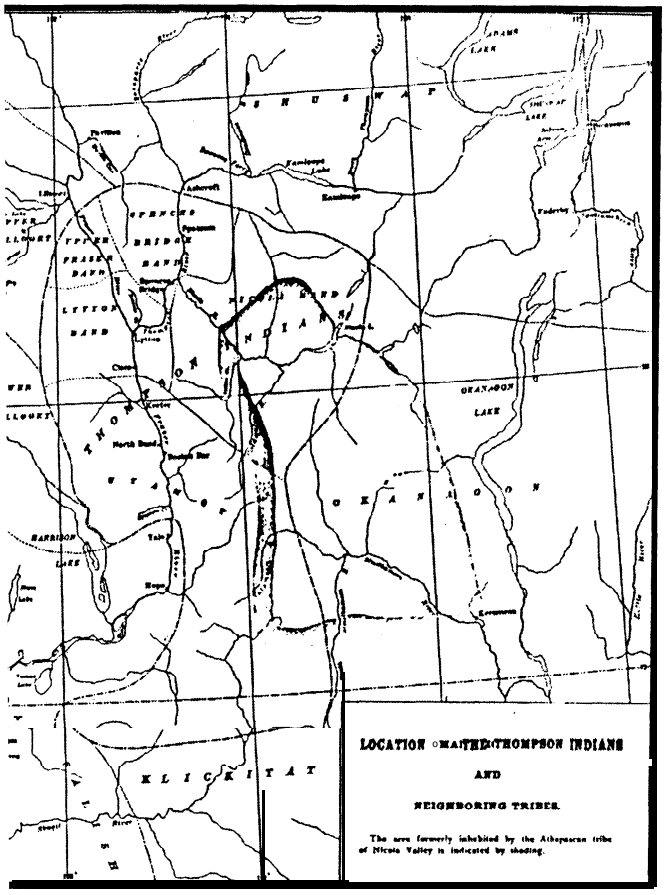
Teit (1909: 450)



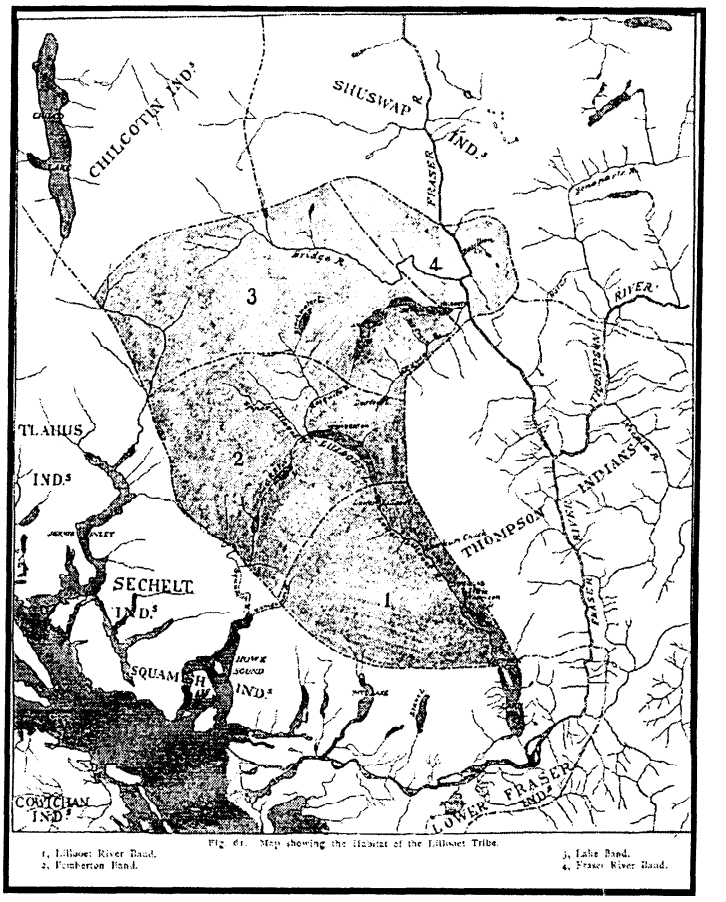
Teit (1900: 166)

Figure 2. Traditional territories.

nd Thompson Traditional Territories as mapped by James Teit



t (1900: 166)



Teit (1906: 201)

TRAIL #	NAME	NTS MAP	LOCATION NOTES	SOURCE
LFD-19	French Bar Creek	O018,O028,O029	from base of 97 to base of 98	some on r
LFD-20	Lost Lake to Lindsey Creek	J086,J087		BRVEDS
LFD-21	Slok Hill to Lee Creek	J090,J100,I081		
LFD-22	Slok Hill To Leon Creek	J100,I091		
LFD-23	Rough Creek area	I052,I062	6.5 Km plus a 2.5 Km spur	old roads
LFD-24	Peanut Lake Trail	I061,I062,I072	see trail log. Hiked June 26/97	range
LFD-25	Fountain Creek South	1062	several trails from end of road	valley resi
LFD-26	Cinquefoil Creek	1062		lower sect
LFD-27	Cinquefoil to Cairn Peak	1062		
LFD-28	Chilhil Pature to Fraser River	I061		
LFD-29	Leon Creek nr. Hogback Mt.	J100		sect. on ra
LFD-30	Second Creek	0010		
LFD-31	French Mountain	0018		
LFD-32	French Bar Creek to Fraser	0029		~A/P,range
LFD-33	Nine Mile Ridge	O008,O018,O019	beautiful alpine rolling ridge	-range, A/
LFD-34	South McGillivray	I052		
LFD-35	Middle McGillivray	I052		
LFD-36	North McGillivray	I052		
LFD-37	Murray Peak	I053	first 1 km is 2wd access road	
LFD-38	Yalakom River	O008,O017,O018	paralleling road	range
LFD-39	Cerise Creek	JO38	well used, access to Joffre icefields	
LFD-40	Casper Creek	JO39		
LFD-41	Cayoosh Loop	JO48	increasing use, well used in winter	
LFD-42	Vesuvianite Lake	unknown	logging to 1 km from lake	
LFO-43	Stukolait Lake	unknown	good terrain to Stukolait, difficult to 34	
LFD-44	Antimony to Vesuvianite	unknown	looks steep, look at route north to Nesbitt Crk	
LFD-45	Devils Lake	1041		
LFD-46	Top of Cayoosh Creek	JO48		
LFD-47	North Stein River - Valley	J020,J029,J030	parks responsibility	
LFD-48	North Stein River - Ridge	J020,J029,J030	parks responsibility	
LFD-49	Upper Stein Valley Trails	JO1 9,J020	within Upper Stein Wilderness Area	
LFD-50	Stein River to Blowdown Creek	J040,I031	parks responsibility	
LFD-51	Ponderosa Creek	1031	within Lower Stein Wilderness Area	
LFD-52	Meadow Lake	I031	within Lower Stein Wilderness Area	

AP	LOCATION NOTES	SOURCE	COMMENTS	X REF
028,0029	from base of 97 to base of 98	some on range		50
37		BRVEDS		55
00,1081			continues to top of Slok Hill	80
01			joins 80 south of Slok Hill	82
2	6.5 Km plus a 2.5 Km spur	old roads on range	range trail, location questionable	84
2,1072	see trail log. Hiked June 26/97	range		85
	several trails from end of road	valley resident	through gate adj to creek, lower 1/2 uses rd	86
		lower sect. on A/P	located before farm on mud road	92
				93
			possible link to 35	94
		sect. on range		95
				96
			difficult access	97
		~A/P,range,~topo	can also be hiked 1 way to Schraeder Lk	98
018,0019	beautiful alpine rolling ridge	-range, A/P	hiked 07/08, see trail log	99
				102
				103
				104
	first 1 km is 2wd access road			106
017,0018	paralleling road	range		114
	well used, access to Joffre icefields			115
				116
	increasing use, well used in winter			117
n	logging to 1 km from lake			118
n	good terrain to Stukolait, difficult to 34		logging to within 2 km of lake	119
n	looks steep, look at route north to Nesbitt Crk			120
				121
			formerly numbered duplicate of #1 15	122
29,J030	parks responsibility			124
29,J030	parks responsibility			125
20	within Upper Stein Wilderness Area			126
1	parks responsibility			127
	within Lower Stein Wilderness Area			128
	within Lower Stein Wilderness Area			129

TRAIL #	NAME	NTS MAP	LOCATION NOTES	SOURCE
LFD-53	Cottonwood Creek	1031	parks responsibility	
LFD-54	Laluwissin Creek Trails	I052,I053	travel cost incl3 round trips to area.	
LFD-55	Mt. Brew	1061	W. side of Fraser, up unnamed creek	
LFD-56	Rusty Creek	1072	low rec value (A. Crane)	
LFD-57	North Fork Rusty Creek	1072	leaves from behind R. Frederick's house	A. Crane
LFD-58	Rose Barn Trail	1071 ,I072	see trail report	A.Crane
LFD-59	Jewel Bridge to Spruce Lake	JO96	east end continues to Tyaughton Lake - #191	range, rec,
LFD-60	Spruce Lake Network	J096,O006	very well used trails	range, topo
LFD-61	Spruce Lake to Trigger Lake	0005	well used trail	range, rec
LFD-62	Trigger Lake to Taylor Pass	0005	see trail report, obscure at Trigger TH	rec
LFD-63	Warner Pass Trail	0005	Scouts trail crew work 1997, see trail report	range, rec,
LFD-64	Deer Pass Trail	0005	well used trail	rec, A/P
LFD-65	Lizard Creek	O005,O015	hiked to halfway point	rec
LFD-66	Lizard Creek to Spruce Lake	O005,O015		range, rec
LFD-67	Tyaughton Creek Trail	0006	well used trail	A/P, rec
LFD-68	Tyaughton Crk to Trail Ridge	0015		rec
LFD-69	Tyaughton Crk to Elbow Pass	0015		range, rec
LFD-70	Tyaughton Crk to Relay Creek	O015,O016	indistinct path, some bogginess	rec
LFD-71	Slok Creek	J100,I091	links with 80 SE of Slok Hill	
LFD-72	Leon Creek	1091 ,P001		range
LFD-73	Trimble to Leon Range Trails	O010,P001	network of range trails parallel to Fraser	range, A/P
LFD-74	Pavillion Crk to Pavillion Mtn	I082,I092		
LFD-75	Carson Mountain	1092		
LFD-76	Pavillion Creek East	1092	proceeds eastward from 156	
LFD-77	North of French Bar Range Tr.	0029	two trails running parallel to Fraser	A/P
LFD-78	Red Hill Pass	0015		
LFD-79	Schraeder Lake	0029	heavily wooded	topo
LFD-80	French Bar - Davey Jones	0018		topo, A/P
LFD-81	Gott Peak	J039,J040	follows old cart path parallel to road	range, A/P
LFD-82	S.Cottonwood Creek Fork	J040,I031	does not appear on airphoto	rec,
LFD-83	Molybdenite Creek	I041,I051	suitable for mountain biking	range, A/P
LFD-84	Texas Creek Alpine Loop	1031 ,I041	on forest cover maps as well	Rec File 46
LFD-85	Sunshine Mountain Trail	JO77		Bralorne Hi
LFD-86	Hogback Trail	J100,O010		Rec File 45

P	LOCATION NOTES	SOURCE	COMMENTS	X REF
	parks responsibility			130
3	travel cost incl3 round trips to area.		was 105&107-113,grouped b/c uncertain loc.	131
	W. side of Fraser, up unnamed creek			132
	low rec value (A. Crane)		do with 134	133
	leaves from behind R. Frederick's house	A. Crane	do with 133	134
)	see trail report	A.Crane	established trail to red rocks on ridge	135
	east end continues to Tyaughton Lake • #191	range, rec,		136
)6	very well used trails	range, topo, rec	see note 1	137
	well used trail	range, rec	see note 1	138
	see trail report, obscure at Trigger TH	rec	see note 1, route only after Taylor Meadows	139
	Scouts trail crew work 1997, see trail report	range, rec, pers. obs.	see note 1	140
	well used trail	rec, A/P	see note 1	141
15	hiked to halfway point	rec	see note 1	142
15		range, rec	see note 1	143
	well used trail	A/P, rec	see note 1	144
		rec	see note 1	145
		range, rec	see note 1	146
16	indistinct path, some bogginess	rec	see note 1	147
	links with 80 SE of Slok Hill			153
		range		354
)1	network of range trails parallel to Fraser	range, A/P	bunchgrass	155
				156
				157
	proceeds eastward from 156			158
	two trails running parallel to Fraser	A/P	open bunchgrass country	159
			travel to/from trail uncertain and not added	164
	heavily wooded	topo		165
		topo, A/P		166
)	follows old cart path parallel to road	range, A/P	Parks responsibility,mostly alpine	168
	does not appear on airphoto	rec,		169
	suitable for mountain biking	range, A/P	road only, not part of trails to be maintained	170
	on forest cover maps as well	Rec File 4646, rec	12km, 12 hours return total	171
		Bralorne Hist. trails		173
3		Rec File 4546		174

TRAIL #	NAME	NTS MAP	LOCATION NOTES	SOUR
LFD-87	Fun Day Lake	*JO59*	MoF Trail Crew	Dalton
LFD-88	Spruce to Taylor Creek	J096,O006	old cart path, s fork @ w end certain	File 45
LFD-89	Tyaughton to Taylor Creek	J096,O006		topo, A
LFD-90	Bonanza Creek to Mud Creek	O006,O007		topo, A
LFD-91	Wade Creek	J058,J059	location very uncertain	A. Cran
LFD-92	Cardtable Mountain	O006,O015,O016	maybe just a route	topo, re
LFD-93	Tyaughton Crk Ridge Trail	0006	good mountain bike potential	A/P
LFD-94	Beaverdam Creek	O008,O009	first part road	range,
LFD-95	Yalakom Mountain	O008,O009	old road first part	rec
LFD-96	Swan Lake	0028	traces on A/P?	A/P, top
LFD-97	Quartz Mountain South	0017	in Williams Lake Forest District	topo
LFD-98	Quartz Mountain North	0017	in Williams Lake Forest District	topo
LFD-99	Big Bar Creek	O020,O030	open bunchgrass terrain	A/P
LFD-100	Lake in West Kwoiek			helicopt
LFD-101	Fractal Mountain Bike Trail	JO70	very steep in places, joins with old roads	L. Knigt
LFD-102	Leckie Falls Spur	JO96	joins 136 at campsite clearing	pers. ob
LFD-103	Upper Texas Creek Valley	I041		rec
LFD-104	Camel Hill	I071	old forestry lookouts	FDP
LFD-105	Gibbs Creek	1072	route only further up	FDP, ra
LFD-106	West Side River Trail	I071,I081	old pack trail up Fraser	BC Outc
LFD-107	Marble Canyon Demo Forest	I082		demo fo
LFD-108	Mud Lakes to Relay Creek	O016,O017	22 km in Williams Lake Forest District	topo,rar
LFD-109	Rose Barn Side Spur	1072	trail seen leading into ESSF	pers. ob
LFD-110	Gibbs Creek to Sallus Creek	1072		A. Cran
LFD-111	Nesbitt Creek		likely just a route	topo inte
LFD-112	Raven Flats Creek	J020,J030	parks responsibility	most on
LFD-113	Intlpam Ridge Trail	1042		L. Knigh
LFD-114	Phair Lake Trails	1061	fire access road to alpine	L. Knigh
LFD-115	Fountain Ridge South	I051,I052,I061		topo inte
LFD-116	Chilhil Trail	1061	old cabin at top	L. Knigh
LFD-117	Fountain Ridge East	1061		L. Knigh
LFD-118	Fountain Ridge West	I061		L. Knigh
LFD-119	Leckie Creek	JO96		FDP
LFD-120	West Applespring Creek	JO90		FDP

OCATION NOTES	SOURCE	COMMENTS	X REF
MoF Trail Crew	Dalton McArthur, LFD	See trail log. Hiked June 13, 1997.	175
ld cart path, s fork @ w end certain	File 4561, rec, range, top	see note 1	188
	topo, A/P	see note 1	189
	topo, A/P, range, rec	old road	190
ocation very uncerta in	A. Crane	trail to alpine, past old fire	192
naybe just a route	topo, rec, File4561	hiking time includes hike to start of trail	194
ood mountain bike potential	A/P	old road on A/P	196
rst part road	range, rec		198
ld road first part	rec		199
'aces on A/P?	A/P, topo	hiking time includes hike to start of trail	200
Williams Lake Forest District	topo	maybe just a route	201
Williams Lake Forest District	topo	maybe just a route	202
pen bunchgrass terrain	A/P	barely visible on A/P	203
	helicopter reconnaissance	route only, unlogged valley	205
ery steep in places, joins with old roads	L. Knight	intermediate-advanced mtn biking trails	206
oins 136 at campsite clearing	pers. obs.	no travel time when done with 136	207
	rec	may refer to 171?	208
ld forestry lookouts	F D P	may be just a route	211
oute only further up	FDP, range	old logging roads/paths	212
ld pack trail up Fraser	BC Outdoors-Nov'82	one way with pickup	213
	demo forest	demonstration forest trails	214
2 km in Williams Lake Forest District	topo,range		215
rail seen leading into ESSF	pers. obs.	distance and route unknown	216
	A. Crane	very steep old road/path	217
kely just a route	topo interpretation	connects Stein to Kwoiek, parks responsibility	218
arks responsibili ty	most on FDP	see note 1	219
	L. Knight	old wide horse trail	220
re access road to alpine	L. Knight	also known as Pig Trail (lower)	221
	topo interpretation	route along ridge - may continue	222
ld cabin at top	L. Knight	route or path up ridge	223
	L. Knight		224
	L. Knight	from golf course to halfway up ridge	225
	F D P	possibly just a route	228
	FDP		231

TRAIL #	NAME	NTS MAP	LOCATION NOTES	SOURCE
LFD-121	Skwaha Lake	1043		FDP
LFD-122	Diamond S - Pavillion Mtn	1092	good adv mountain biking,explore on bike	L. Knight
LFD-123	Haylmore Creek Trail	J049,J058	very steep at Duffey Lake side	British Colu
LFD-124	Mission Ridge	J079,J080		FDP, Britis
LFD-125	Junction Creek	JO99		FDP
LFD-126	Mount Duncan	J100		FDP
LFD-127	Tepee Mtn to Relay Mtn	O015,O016		FDP
LFD-128	Deer Pass to Lizard Lake	0005	route only in alpine	pers. obs
LFD-129	Deer Pass to Lizard Creek	0005	route only in alpine	pers. obs,
LFD-130	Deer Pass to Spruce Lake	0005	route only in alpine	L. Pletzer,
LFD-131	Taseko Valley	unknown	see trail report	pers. obs.
LFD-132	Machute Ridge Route	JO70	see trail report for #27, see note 1	pers. obs.
LFD-133	Copper Moraine Route	JO70	see trail report for #27, see note 1	pers. obs.
LFD-134	Upper Spider Creek	JO70	see trail report for #27, see note 1	pers. obs.
LFD-135	Deer Pass to Warner Pass		see trail report	pers. obs.
LFD-136	Yalakom Mountain North			FDP
LFD-137	Clear Range Route			pers. obs.
LFD-138	Cresta Trails	JO69	possible connection to Seton Ridge Area	pers. obs.
LFD-139	Camel Bend Trail	1071	starts at 20km from Bridge River	L. Knight
LFD-140	Sallus Creek	I072,I082		FDP
LFD-141	French Bar to Pony Valley	0018		FDP
LFD-142	Kwotlenemo	1061		

KEY

see report - Lillooet Forest District Trails Atlas

route - non developed trail

range route - livestock route, often along former trails

personal observation - Lillooet FD trail inventory crew

Bralorne Historic Trails/Bralorne Trails - Bralorne Historic Society brochure

BRVEDS - Bridge River Valley Economic Development Society trail inventory

range - MOF district range inventory maps

rec - MOF district recreation inventory

FDP - Forest Development Plan

A/P - airphoto

P	LOCATION NOTES	SOURCE	COMMENTS	X REF
	good adv mountain biking,explore on bike	FDP	in Skwaha Ecological Reserve	232
		L. Knight	start at 5 km up Pavillion Mountain Road	233
8	very steep at Duffey Lake side	British Columbia Backroa	parks/Squamish F.D. responsibility	234
0		FDP, British Columbia Ba	roughly along ridge line east of Mission Pass	235
		FDP	possibly a range route	237
		FDP	includes hike up 45	238
16		FDP	incl. hike back via 147	242
	route only in alpine	pers. obs	see note 1	244
	route only in alpine	pers. obs, L. Pletzer	see note 1	245
	route only in alpine	L. Pletzer, Scouts	see note 1	246
	see trail report	pers. obs.	in Chilcotin Forest District, see note 1	247
	see trail report for #27, see note 1	pers. obs.	begins at guide camp	248
	see trail report for #27, see note 1	pers. obs.	begins at guide camp	249
	see trail report for #27, see note 1	pers. obs.	begins at peak at start of Machute Ridge	250
	see trail report	pers. obs.	see note 1	251
		FDP		252
		pers. obs.	see note 1	253
	possible connection to Seton Ridge Area	pers. obs.	may extend further to ridgetops	317
	starts at 20km from Bridge River	L. Knight	mountain biking trail	318
		FDP		319
		FDP		320
			see report	74

iety brochure
ty trail inventory

Appendix 4. Variables used in analysis

Variable	Description	Unit of measure
TYPE	Type of data (site, "on-site survey, or random grid)	Nominal
SITES	Distance to nearest known site or neighbouring site, in the case of sites	Metres
TIMBERLINE	Distance to nearest timberline	Metres
ECOTONE	Distance [illegible] ronmental zone boundary	Metres
ESKER	Distance to nearest esker	Metres
GLACIER	Distance to glacier	Metres
FALL	Distance to waterfall	Metres
RAPID	Distance to rapids	Metres
WETLARGE	Distance to large wetlands (>5 ha)	Metres
WETSMALL	Distance to small wetlands (<5 ha)	Metres
BIGROAD	Distance to major road	Metres
ROAD	Distance to minor road	Metres
TRAIL_NR	Distance to trail	Metres
TRAIL_ID	Trail identifier number	Metres
TRAILNEWNR	Distance to additional trail info from MoF	Metres
TRAILNEWID	Trail identifier number	Metres
WETLRG_ID	Large wetland or not large wetland	Nominal
WETSML_ID	Small wetland or not small wetland	Nominal
SURVEYTYPE	Intensive or non-intensive archaeological survey	Nominal
SURVEYOR	Individual or company	NIA
PERMIT	BC archaeology branch permit "umber	N/A
ECOSECTION	Ecosection	Nominal
ZONE	Biogeoclimatic zone	Nominal
SUBZONE	Biogeoclimatic subzone	Nominal
VARIANT	Biogeoclimatic subzone variant	Nominal
CW_PERC	Redcedar percent stems in stand	Percent
CW_AGE	Redcedar age class	Ordinal class
CW_HGHT	Redcedar height class	Ordinal class
CW_CLOSE	Redcedar canopy closure	Percent
CW_ID	Redcedar presence	Nominal
YC_PERC	Yellow cedar percent stems in stand	Percent
YC_AGE	Yellow cedar age class	Ordinal class
YC_HGHT	Yellow cedar height class	Ordinal class
YC_CLOSE	Yellow cedar canopy closure	Percent
YC_ID	Yellow cedar presence	Nominal
PA_PERC	Whitebark pine cedar percent stems in stand	Percent
PA_AGE	Whitebark pine cedar age class	Ordinal class
PA_HGHT	Whitebark pine cedar height class	Ordinal class
PA_CLOSE	Whitebark pine cedar canopy closure	Percent
PA_ID	Whitebark pine cedar presence	Nominal
PY_PERC	Ponderosa pine cedar percent stems in stand	Percent
PY_AGE	Ponderosa pine cedar age class	Ordinal class
PY_HGHT	Ponderosa pine cedar height class	Ordinal class
PY_CLOSE	Ponderosa pine cedar canopy closure	Percent
PY_ID	Ponderosa pine cedar presence	Nominal
PL_PERC	Lodgepole pine cedar percent stems in stand	Percent
PL_AGE	Lodgepole pine cedar age class	Ordinal class
PL_HGHT	Lodgepole pine cedar height class	Ordinal class
PL_CLOSE	Lodgepole pine cedar canopy closure	Percent
PL_ID	Lodgepole pine cedar presence	Nominal
ASPECT	Slope direction facing	118 circle portion
SLOPE	Steepness of Slope	Degrees, later reduced to classes

LAKE	Distance to nearest lake	Metres
LKLGSAL	Distance to nearest lake with salmon	Metres
LKMEDNOF	Distance to medium size lake (100ha>1000 ha)	Metres
LKMEDFSH	Distance to medium size lake (100ha>1000 ha) with fish	Metres
LKSMNOF	Distance to small lake with no fish (5ha >100ha)	Metres
LKSMFSH	Distance to small lake with fish (5ha >100ha)	Metres
LKSMSAL	Distance to small lake with salmon (5ha >100ha)	Metres
LKVSNOF	Distance to very small lake with no fish (<5ha)	Metres
LKVSFSH	Distance to very small lake with fish (<5ha)	Metres
LKVSSAL	Distance to very small lake with salmon (<5ha)	Metres
STRMOTH	Distance to single-line definite stream with no fish	Metres
SPWNFSH	Distance to channel with spawning beds	Metres
SPWNSAL	Distance to channel with salmon spawning beds	Metres
STRMFSH	Distance to definite stream containing fish	Metres
STRMSAL	Distance to definite stream containing salmon	Metres
NEARWATER	Distance to water of any type, excluding wetlands	Metres
NEARFISH	Distance to fish-bearing water body	Metres
NEARSALMON	Distance to salmon-bearing water body	Metres
NEARRIVER	Distance to double-line river	Metres
NEARLAKE	Distance to lake	Metres
NRRIVFSH	Distance to double-line river with fish	Metres
NRLKFSH	Distance to lake with fish	Metres
NRRIVSAL	Distance to river with salmon	Metres
NRLKSAL	Distance to lake with salmon	Metres
DEER	Deer habitat capability class	Ordinal
WRSHEEP	Winter Range bighorn sheep capability class	Ordinal
SHEEP	Bighorn sheep capability class	Ordinal
BIRCH	Birch presence	Nominal
EP_PERCENT	Birch percent of stems in stand	Percent
EP_AGECLAS	Birch age class	Ordinal
EP_HGTCLAS	Birch height class	Ordinal
EP_CRNCLOS	Birch crown closure	Percent
OPNRNG	Open range or not open range	Nominal
OR	Distance to open range	Metres
WB	Distance to whitebark pine stand boundary	Metres
LITHIC	Lithic scatter site type	Nominal
QUARRY	Lithic quarry site type	Nominal
HOUSEPIT	Housepit site type	Nominal
CAVE	Cave site type	Nominal
HABITAT	Habitation (other than housepit) site type	Nominal
3SUBSIST	Subsistence feature (other than below) site type	Nominal
CACHE	Cache pit site type	Nominal
ROAST	Roasting pit site type	Nominal
HUNT	Hunting feature site type	Nominal
FISH	Fishing feature site type	Nominal
TRAIL	Trail site type	Nominal
BURIAL	Human burial or remains site type	Nominal
ROCKART	Petroglyph or pictograph site type	Nominal
CMT	Culturally modified tree site tye	Nominal
HISTORIC	Post-contact remains site type	Nominal
OTHER	Other site type	Nominal
RIDGETOP	Distance to flat locations on top of ridge or on or near peak or prominence	Metres
RDGTERR	Flat location on top of ridge or on or near peak or prominence or terrace edge	Nominal
SLPRDG	Distance to ridge top	Metres

ETHNEAR	Distance to boundary between language groups (Teit mapping)	Metres
ETHNEAR_ID	Language groups at or near location	Nominal
ETHNO_ID	Language group at location	Nominal
FISH-CONF	Distance to confluence of fish streams	Metres
SALM_CONF	Distance to confluence of salmon streams	Metres
IND_RES	Distance to Indian Reserve Boundary	Metres
IR_AREA1	Area of Indian Reserve	Square metres
IR_ID	In or out of Indian Reserve	Nominal

[1] Bold names indicated by Lillooet Forest District as primary contact, Other listed names were identified as contacts by Forest District or during the project. Some of the people whose names appeared on original contact list supplied by Forest District no longer worked for the bands, First Nations, or Tribal Councils. Their names appear in brackets as original correspondence was addressed to them.