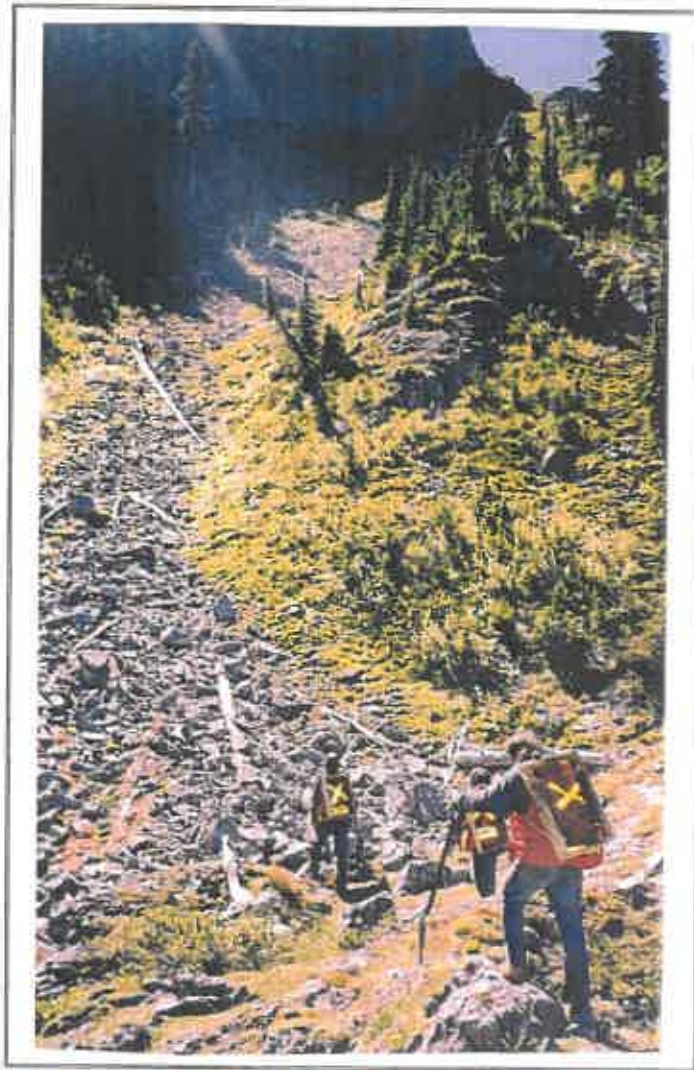


**FROM PLAIN TO PEAK:
RESULTS OF THE CHILLIWACK RIVER WATERSHED
ARCHAEOLOGICAL INVENTORY STUDY**



Stó:lō Nation

Bldg. #1 - 7201 Vedder Road, Chilliwack, B.C., Canada V2R 4G5

Tel. 604-858-3366

Fax 604-824-5326

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RESULTS OF THE CHILLIWACK RIVER WATERSHED
ARCHAEOLOGICAL INVENTORY STUDY**

Conducted under:

**Stó:lō Nation Heritage Investigation Permit 1997-021
B.C. Heritage Inspection Permit 1997-229**

Prepared for:

**Ministry of Forests
Chilliwack Forest District**

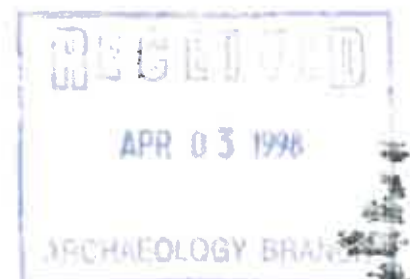
and

Forest Renewal B.C.

Prepared by:

**Stó:lō Nation
1-7201 Vedder Road
Chilliwack, B.C. V2R 4G5**

March 1998



CREDITS

PROJECT COORDINATOR	David Schaepe, M.A.
FIELD DIRECTOR	David Schaepe
REPORT AUTHOR	David Schaepe
FIELD ASSISTANT TRAINING	David Schaepe Sonny McHalsie
FIELD ASSISTANTS	Larry Commodore, Soowahlie First Nation Dave Hobbs, Ministry of Forests Dean Jones, Shxw'ow'hamel First Nation Riley Lewis, Skway First Nation
REPORT EDITING	Keith Carlson, M.A. Dave Hobbs Sonny McHalsie. Heather Myles, B.A. Clarence Pennier Kevin Washbrook, M.A.
REPORT DRAFTING	Lecanna Rhodes
REPORT PRODUCTION	David Schaepe Laurette Watts
STEERING COMMITTEE MEMBERS	Doug Glaum, Archaeology Branch Dave Hobbs Sonny McHalsie Gordon Mohs Heather Myles David Schaepe

SUMMARY

This report presents the results of the Chilliwack River Watershed Archaeological Inventory Study. This study was funded through Forest Renewal British Columbia and conducted by Stó:lō Nation under contract with the Ministry of Forests, Chilliwack Forest District. As a pilot project, this study provided a proving ground for archaeological inventory study methods and objectives potentially applicable to other portions of the Stó:lō Traditional Territory/Chilliwack Forest District overlap. Issues surrounding the management of cultural heritage resources in the study area, specifically, and throughout British Columbia, in general, provided the impetus for conducting this study.

The primary objectives of this study were to:

- gather information on the types and distribution (vertical and horizontal) of cultural heritage sites within the Chilliwack River Watershed study area
- improve the present understanding of cultural occupation and use of the study area
- aid in providing a representative cultural heritage site database for the study area from which an effective resource management program may be developed
- develop a long-term plan for conducting archaeological inventories throughout the Stó:lō Traditional Territory/Chilliwack Forest District overlap

A total of 23 previously unidentified cultural heritage (i.e., archaeological, historic and material traditional use) sites were recorded during this study. One previously recorded site was revisited and considerably increased in extent. Sites were found to be distributed over the entire vertical as well as horizontal range of the Chilliwack River Watershed. Data from these sites were used to assess the effectiveness of the archaeological site predictive model for the Chilliwack Forest District. A number of weaknesses, primarily resultant from insufficient data, were identified as a result of this analysis. Recommendations were made toward increasing the effectiveness of this model.

It was concluded that the objectives and methods applied in this study were appropriate and provided data which is both immediately relevant and functional to cultural resource management in the study area, and elsewhere. This pilot project was successful in fulfilling its objectives and provided a field tested foundation upon which an Archaeological Inventory Study 5-Year Plan for the Stó:lō Traditional Territory/Chilliwack Forest District overlap was proposed. It was additionally recommended that mitigation measures for five specific sites – identified during this study as requiring immediate management attention – be developed and implemented.

ACKNOWLEDGEMENTS

On behalf of Stó:lō Nation, I would, first and foremost, like to thank Larry Commodore, Riley Lewis and Dean Jones -- the best field assistants I could have ever hoped to work with. The ability of these gentlemen to deal with adverse conditions, work hard, learn quickly, provide cultural advise, and maintain good humor, combined with their interest in archaeology and cultural heritage issues played a significant role of this success of this study.

In addition, I would like to acknowledge the input provided by members of the steering committee, particularly Doug Glaum (Archaeology Branch), towards developing research objectives and methods, and reporting standards for this study. Bob Meirendorf (North Cascades National Park Archaeologist) is thanked for sharing his professional insight into practical survey methods and the archaeology of the upper Chilliwack River. The members of the Chilliwack Archives and Marie Weeden were particularly helpful in providing historical information. Doug Wilson and Rick Jessom (B.C. Parks) were very helpful in providing background information on Chilliwack Lake Provincial Park and reviewing my park-use permit application. I thank Barb Rimmer (Archaeology Branch) for reviewing and processing the site forms from this project. Joyce Johnson of the U.B.C. Museum of Anthropology provided collections information pertinent to DgRi-1. Our gratitude goes to Gene Macinnes and Dave Hobbs of the Chilliwack Forest District for helping provide the opportunity to conduct this study and for providing logistic, field and editorial support. Lastly, I would particularly like to thank all those Stó:lō Elders, or otherwise, who continue to maintain the oral history, language and traditions of the people.

Stó:lō Nation is solely responsible for the content of this report. The ideas and opinions expressed in this report are those of the author and Stó:lō Nation. Any shortcomings, oversights, errors or omissions in this report are the responsibility of Stó:lō Nation.

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1.0 INTRODUCTION

1.1 Cultural Resource Management and Archaeological Inventory Studies

This report presents the results of the *Chilliwack River Watershed Archaeological Inventory Study*, a Forest Renewal British Columbia (FRBC) funded project conducted by Stó:lō Nation on behalf of the Ministry of Forests, Chilliwack Forest District overlap. Archaeological fieldwork for this study was carried out under Stó:lō Nation Heritage Investigation Permit No. 1997-020, B.C. Heritage Inspection Permit No. 1997-229 and B.C. Provincial Park Use Permit No. LM9710103, issued to Stó:lō Nation archaeologist David Schaepe. Three Stó:lō community members – Larry Commodore (Soowahlie First Nation), Dean Jones (Shxw'ow'hamel First Nation) and Riley Lewis (Skway First Nation) -- were hired and trained to conduct the fieldwork involved in this study. Preliminary training took place between August 5th and 9th 1997. Continued training and fieldwork for this study were carried out from August 13th to September 26th, and November 26th to December 8th, 1997. This project, carried out within the Chilliwack River Watershed study area (Figure 1), was conducted as a pilot study for future archaeological inventorying of the Stó:lō Traditional Territory/Chilliwack Forest District.

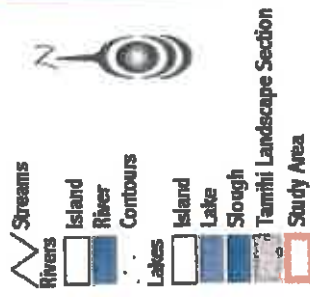
The rationale for this inventory study stems from provincial legislation governing the treatment of archaeological resources in British Columbia. Currently, both the *Heritage Conservation Act* (1996) and Sections 10, 17, 26, 51 and 63 of the *Forest Practices Code of British Columbia Act* (1994) protect archaeological sites in British Columbia from disturbance, intentional or otherwise. Section 26 of the *Forest Practices Code* specifically necessitates the assessment of potential impact(s) to archaeological sites related to proposed ground altering forestry developments. While the United States Forest Service has had 32 years -- since the passing of Section 106 of the *National Historic Preservation Act of 1966* -- to develop protocol for conducting archaeological compliance work, the development of methodology for administering such legislation in British Columbia is in its comparative infancy -- though maturing quickly.

The B.C. Ministry of Forests, as with private logging companies throughout the province, have been working at developing effective and efficient ways of integrating archaeological impact assessments (AIAs) into their development plans. Archaeological site predictive models combined with archaeological overview assessments (AOAs) are procedures which, of late, have been used to identify archaeological site potential over specified tracts of land. Archaeological site potential ratings of high, medium and low are generally determined for the land base under appraisal, which then determines the breakdown and nature of required archaeological assessment per proposed cut block. Archaeological assessments may range from AIAs of proposed cut blocks in high potential areas, to archaeological field reconnaissances (AFRs) of medium potential areas and no required work for entirely low potential areas identified by the overview assessment. The scope of each type of survey -- AIA and AFR -- are defined by the Archaeology Branch in the

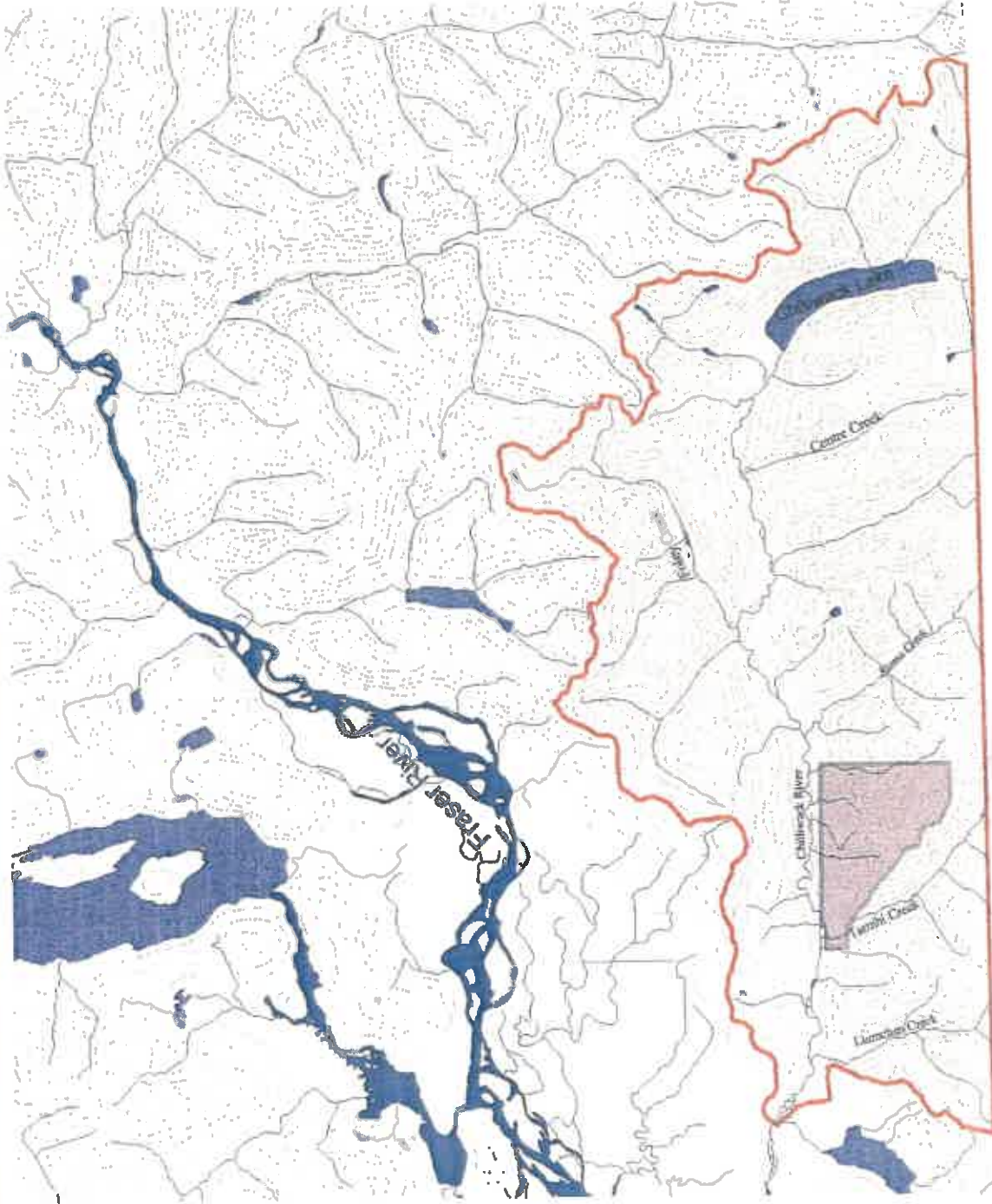


Figure 1

CHILLIWACK RIVER WATERSHED A.I.S. STUDY AREA



UTM Projection
Datum NAD83
Zone 10
1:300,000 scale
Archaeologist Dave Sothage
GIS Technician, Leanne Rhodes
Stc:10 Nation A.R. & T Dept.



20 Kilometers



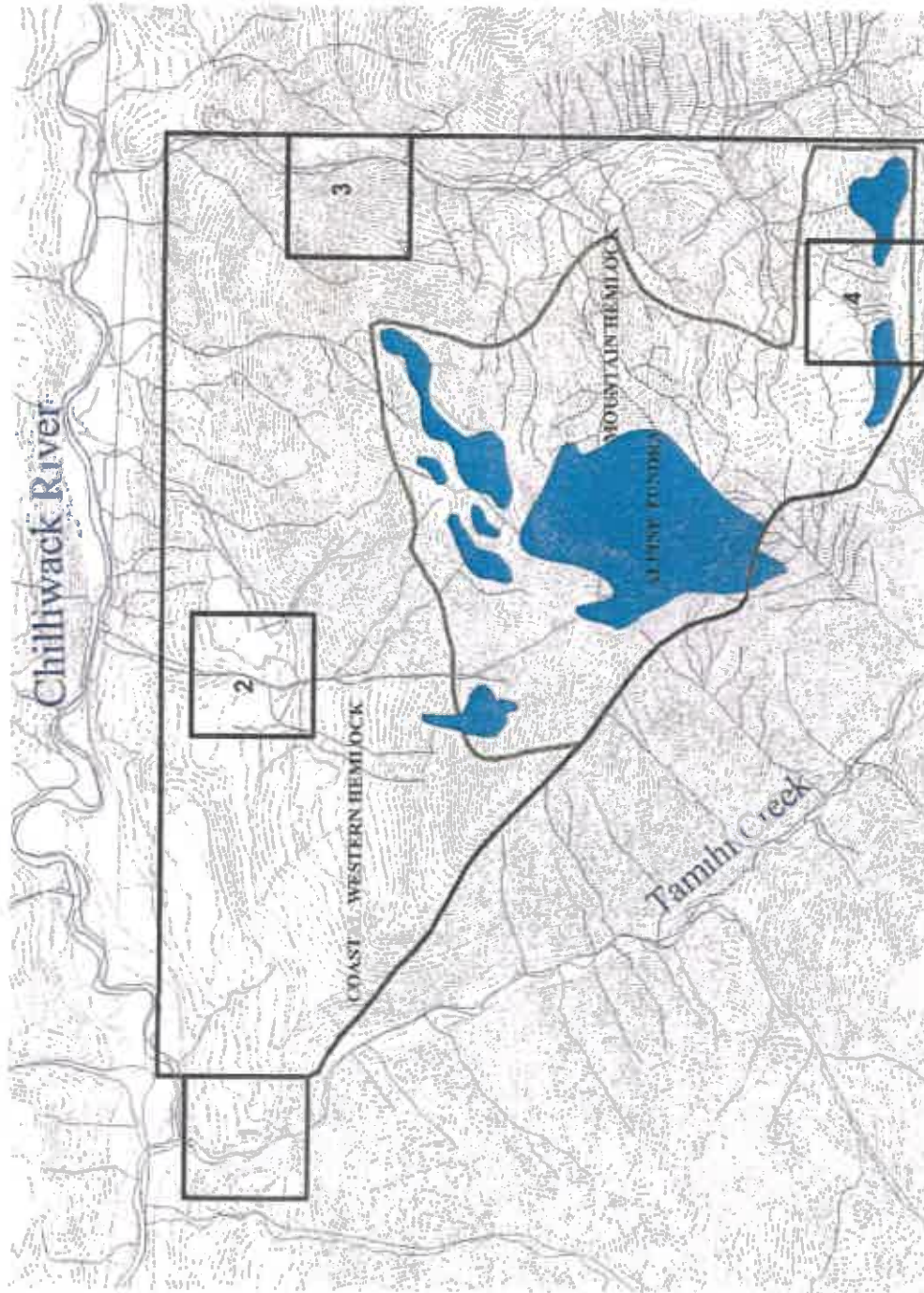


Figure 2 TAMIHI LANDSCAPE SECTION

- Units
 - Roads
 - Rivers
 - Streams
 - Contours
 - Tamihiri Landscape Section
- Biogeoclimatic Zones
- MOUNTAIN HEMLOCK
 - COASTAL WESTERN HEMLOCK
 - ALPINE TUNDRA



UTM Projection
Datum NAD83
Zone 10
Scale 1:55,000
Archaeologist Dave Schaepe
GIS Technician Leeanna Rhodes
Stó:ló Nation A. R. & T. Dept.



4 Kilometers





**Plate 1. Overview of Tamihi Mountain, view southward from Ryder Upland.
(Photo: D. Schaepe)**



**Plate 2. Overview of Welsch and Foley Peaks, looking NE from the valley bottom.
(Photo: D. Schaepe)**



**Figure 5. Overview of Foley Creek drainage from Foley Lake, view to NE.
(Photo: D. Schaepe)**



Figure 6. Subalpine parkland in Tamihi Landscape Section, Unit 4, view to E with Spencer Peak in the background and Dean Jones in the foreground. (photo: D.Schaepe)



Figure 7 Alpine lake, with Riley Lewis standing on glacial moraine. (photo: D. Schaepe)

British Columbia Archaeological Impact Assessment Guidelines (1996). Often, as a form of safeguard or ground truthing, an arbitrary percentage of cut blocks in low potential areas is randomly selected for assessment. Recently, these types of studies have been applied to the 5-year development plans of a number of forest districts throughout the province (e.g., Millennia 1996, 1997).

While such studies have been effective at streamlining the compliance related archaeological impact assessment process, the data bases currently being used in the areal modeling of archaeological site potential are generally less than ideal. For instance, only 0.15 % of the land area in the Chilliwack Forest District has presently undergone archaeological survey (Equinox 1997:4). Most of the archaeological research that has been conducted in this district has focused on the lowlands of the Fraser River Valley. Very little is presently known about archaeological site distributions outside the Fraser River basin, including such major watersheds as the Chilliwack River, Lillooet River/Harrison Lake, the Skagit River, the Chehalis River, and the Coquihalla River. Even less is known about site locations in the uplands of *any* of these areas. As a result, modelling/AOA studies for such poorly field inspected areas are limited in nature to the *intuitive* level — based on personal experience, understanding and generalized site location/potential patterns. In order to develop more accurate (i.e., effective) archaeological site predictive models and overview assessments which reflect the nuances of archaeological site locations in specific areas, the available database of archaeological site locations in such areas needs to be augmented. This *need* has been acknowledged by archaeological consultants involved in conducting overview studies. In their recent AOA of the Chilliwack Forest District, Millennia Research states that:

The sophistication of a predictive model is dependant on the quantity and quality of available data. For most parts of the province, we do not know enough about site distributions to successfully employ complex statistical models. However, simple non-mathematical modelling often can be effective for identifying particularly sensitive areas, allowing further investigation prior to land-altering development. Subsequent sampling and in field "ground truthing" is required to test the hypotheses used to create the model, and to provide both positive and negative data that can help refine it.... From a resource management perspective, it may be precisely those sites that are not predicted by a model that has the greatest scientific significance (1996:7-8).

In regard to the Chilliwack Forest District, it was further stated that:

...until a more complete archaeological inventory has been compiled, a simple non-mathematical model... would be most effective (1996:9).

Thus, *archaeological inventory studies* (AISs) have been lately implemented throughout the province as a mechanism for addressing existing gaps in archaeological data. Unlike AIAs and AFRs, AISs have not been defined by the Archaeology Branch. However, as the word 'inventory' implies, AISs primarily serve to identify the types, quantity and distribution of archaeological sites in a given area. Because AISs often deal with large tracts of land, like watersheds, it is generally only possible to survey a portion or sample of the overall study area. If information is gathered in a *representative* manner, it may be

used as an indicator of site types, locations and so on throughout the larger area. Of primary importance in the utility of AISs is their potential to increase our present understanding of past cultural occupation and resource use based on *ground proven* data. In summary, AISs serve to collect archaeological data through field survey which is useful in:

- reducing existing archaeological data gaps
- testing existing predictive models
- developing more accurate predictive models
- increasing our present level of archaeological understanding

Such results may be fed back into a resource management strategy. A program of effective and efficient management of archaeological resources can only be developed through the supplementation of our current level of archaeological knowledge. Collecting more data through in-field survey is the only way to foster such an advance in knowledge and, thus, resource management practices. Regardless of the development/use of predictive models, inventories result in the increase of *known* resources, the most valuable form of information in resource management.

1.2 Selection of a Study Area

The Chilliwack River Watershed (see Figures 1 and 2), located in SW British Columbia near the municipality of Chilliwack, was selected as the study area for this AIS (see 'Study Area' for further details). The Chilliwack River Watershed, as defined for this study, encompasses an area of 72,000 ha (roughly the size of Greater Vancouver) and includes the entire Canadian portion of the watershed from Vedder Crossing -- where the Chilliwack River empties into the Fraser River Valley -- to the international boundary at the south end of Chilliwack Lake. The river flows a distance of 50 km between these points. The Columbia Valley, which lies to the south of Vedder Crossing and includes Cultus Lake and Sweltzer Creek, was excluded from the study area as deserving separate archaeological inspection. The Chilliwack River Watershed was selected based on three factors: (1) areal prioritization by Stó:lō Nation; (2) existing archaeological and ethnographic data; and (3) proposed forestry development plans. This watershed represents an area with substantial forestry development potential -- including a number of presently active timber sale areas -- while at the same time is deficient in archaeological information, and is considered to be an area of priority for archaeological study to the Stó:lō (Mohs 1991).

1.3 Study Objectives

The specific objectives of the Chilliwack River Watershed AIS were to:

- gather information on the types and spatial distribution (vertical and horizontal) of cultural heritage sites within the Chilliwack River Watershed study area
- improve the present understanding of cultural occupation and use of the Chilliwack River Watershed
- aid in providing a representative cultural heritage site database for the Chilliwack River Watershed from which an effective resource management program can be developed -- with specific regard to forest development planning
- develop a long-term plan for conducting archaeological inventory studies throughout and representative of the Stó:lō Traditional Territory/Chilliwack Forest District overlap

Archaeological resources -- material remains of past human activities -- are the focus of this study. On a broader level, *cultural heritage resources* -- objects, sites, or locations of a traditional societal practice that are of historical, cultural, or archaeological significance to the province or an aboriginal and/or non-aboriginal community (Ministry of Small Business, Tourism and Culture and Ministry of Forests, Protocol Agreement on the Management of Cultural Heritage Resource 1996) -- were also taken into consideration, and documented if encountered. Traditional use sites with *material* remains¹, such as recent bark-stripped trees, are one type of cultural heritage resource identified in the course of this study. Because this class of sites are factors for consideration in cultural resource management, they were recorded if identified.

1.4 Site Classification

The site classification system developed for and utilized in this study is somewhat unique and requires explicit definition. Table 1 depicts the breakdown and definition of the three classes of sites -- archaeological, traditional use and historic -- applied in the recording of sites during this study and in the following analyses.

Cultural Affiliation	Aboriginal		Non-Aboriginal	Indeterminate
Site Age*	> 50 years	< 50 years	> 50 years	
Site Class	Archaeological	Traditional Use	Historic	

* of youngest site component

¹ Traditional use sites with material remains comprise only a small portion of known or possible traditional use site types. Thus, it must be emphasized that this study is not a traditional use study and does not address traditional use concerns.

This classification system is based on two variables:

- site cultural affiliation
- site age

This classification established clear definitions of site classes which are otherwise somewhat ambiguous. Utilizing this system allows for the effective distinction of aboriginal and non-aboriginal sites. This simple distinction is useful in analyzing site data, particularly as it applies to endeavors beyond the scope of this study, such as settlement pattern studies. As well, this system allows for the documentation of a continuum of aboriginal site types through time up to the present, reflecting continued aboriginal use of the land in areas where both *archaeological* and *ethnoarchaeological* data can be collected (at least in regards to this study). The division between these two types of data is determined by site age, which was arbitrarily set at 50 years old. This age boundary is consistent with that established for historic sites, and was based on existing regulations in the United States where only those sites over 50 years old are considered to be *historic* in nature.

This system establishes guidelines for determining site classes and provides only minimal *temporal* definition within each class. Sites within each class, particularly archaeological sites, should be temporally defined by cultural phases or periods, appropriate to the particular region in which they are located. For example, a 4000 year old archaeological site in the upper Fraser River Valley would be classified as an *Eayem Phase* site (Borden 1975). Alternately, an 80 year old site of aboriginal origin in the same region should be considered an *Historic Period/Phase* archaeological site, rather than an 'historic site'. The temporal association of historic sites (i.e., non-aboriginal origin) should be identified by similar reference to a period or phase system — such as early, middle or late historic periods, or something of this sort.

While this site classification system may be somewhat unique, it remains governed by the provincial definitions of 'archaeological' and 'cultural heritage' resources, and the necessity for the identification of material remains. As such, this classification system ultimately *does not effect* what falls into this resource category. It simply provides a mechanism for organizing archaeological resource data, or material cultural heritage data, once collected.

Some types of archaeological sites common to the Chilliwack River Valley vicinity include:

- lithic scatters (i.e., stone tools and flakes)
- cultural depressions (e.g., pithouses, cache pits)
- culturally modified trees (e.g., bark-stripped trees, aboriginally logged trees)
- rock art (i.e., pictographs and petroglyphs)
- cultural mounds and cairns

As mentioned above, this study is aimed entirely at identifying cultural heritage resources with associated *physical remains*. As such, the limitations in documenting cultural use of the study area must be stated. Physical, i.e., material, remains of human activities are variable in quantity, type and durability. Many human activities, such as walking or plant gathering, often leave no physical evidence. Many materials, such as wood, antler and bone, used in past aboriginal activities are subject to rapid decomposition in the local climate, which can effectively erase any evidence of their existence. Activities such as hunting may leave few material traces. In the study area, only the most durable materials (e.g., stone) and features (pits, hearths) tend to remain as indicators of past cultural activity. Thus, the picture created through archaeological investigations portrays only a portion of the overall pattern of cultural occupation, land and resource use. Lack of physical evidence does not equate to lack of use or occupation of an area. In terms of resource management, however, it is the *existing* material remains which are subject to potential impact and which represent the focus of attention.

As much of the Stó:lō Traditional Territory/Chilliwack Forest District overlap is subject to rapid development, archaeological resources are becoming increasingly threatened, if not actually impacted. As a pilot project, this study provides a foundation for pursuing large scale archaeological inventorying and for providing information which will assist with land and resource management planning throughout this area and throughout the province.

2.0 METHODS

Archaeological Inventory Studies are a fairly new class of archaeological inspection in the Province of British Columbia. Methodologies applicable to such studies are widely variable. While a body of literature (Bush 1997; Krakker et al. 1983; Lightfoot 1986; Nance 1979; 1983, 1994; Nance and Ball 1986; Peacock 1996; Schott 1989) exists comparing the effectiveness and utility of regional survey methods, little comparative information is known of these methods as they apply to the forested environments and landscapes specific to British Columbia. As one of the first of such inventories to be conducted in B.C., this study provides the opportunity to implement and evaluate a selected survey/sampling methodology. Results from this study, in terms of its efficiency and effectiveness, may be used as a comparative basis for developing and refining future inventory study strategies. As more inventory studies are likely to be undertaken throughout B.C. in the near future, the Chilliwack River Watershed Archaeological Inventory Study may make a significant contribution to their success.

The research plan developed for the Chilliwack River Watershed Heritage Inventory Study is cultural resource management motivated, with a focus on forestry developments, and is based on the shared needs of the Ministry of Forests and Stó:lō Nation. These needs entail identifying areas of actual and potential development/cultural heritage resource conflicts throughout the Chilliwack River Watershed. Research was divided into three stages: (1) background research and planning and field assistant training; (2) field survey; and (3) analysis/reporting. Each of these stages are described below.

2.1 Stage I - Background Research and Planning

Stage I entailed reviewing available archaeological, ethnographic, geomorphological, paleoenvironmental, historic, and other information relevant to this study. The primary goal of this background research was to provide a foundation for the development of a suitable research strategy. The primary goal of any implemented inventory strategy was to provide a *representative* inspection of the Chilliwack River Watershed. Two primary methodological options exist for such field survey -- probabilistic and non-probabilistic. Briefly, probabilistic approaches are statistical in nature and require the random selection of survey areas, or quadrats. Such studies provide data on site density and the chances, i.e., statistical probability, that sites will be located in any given area. Non-probabilistic approaches are judgemental in nature and provide information about site locations and so on which may be processed in an intuitive, non-statistical way. Either approach can provide meaningful data on archaeological site distribution patterns useful in resource management. However, the implementation of these approaches requires very different field considerations. An essential aspect of strategizing, then, included identifying local conditions which acted to constrain the range of potentially usable inventory methods. Such constraints include:

- road access

- time
- cost
- access restrictions (private property, military zones)
- dense forest cover (reduces horizontal visibility)
- dense ground cover and underbrush (reduces ground visibility)
- weather (snow at varying elevations between October - June)
- treacherous terrain (steep slopes/cliffs)

While time and cost are ubiquitous constraints, road access (or lack there-of) is highly variable within the study area. Unimproved logging roads, where they exist, provide the only means of access to the vast majority of the watershed area. In many areas, randomly selected quadrats would have been inordinately difficult to access, causing excessive expenditures of time and money. As a result, judgemental selection of survey quadrats, coincident with road access, was the only plausible strategy throughout much of the Chilliwack River Watershed. Access considerations, as such, comprised the primary limiting factor in the selection of an appropriate, practical and effective research methodology.

Thus, a non-probabilistic, judgemental inventory strategy, considered to be most suitable to this study area, was adopted. A guiding objective was developed which aimed at assessing archaeological site distributions:

- horizontally along the entire stretch of the Chilliwack River basin
- vertically between the valley bottom and watershed divide

It was felt that by addressing these two basic distributional issues, an overall picture of cultural occupation and use in the study area could be gained. Because of the overwhelming land area of the study area, it was necessary to develop a representational sampling strategy which could meet these objectives. A two part sampling strategy was adopted. Portions of the study area were isolated as: (1) a *landscape section*; and (2) a number of *spot check* areas. The *landscape section* of the watershed was selected based upon a number of factors, including its:

- representativeness of the biogeoclimatic zone profile of the watershed as a whole
- inclusion of aquatic (rivers, lakes, wetlands, primary -, secondary -, and tertiary streams, etc.) and landform (river/stream/lake terraces, montane sideslopes, montane benches, glacial eskers, etc.) features critical to GIS modelling of archaeological/heritage site locations
- vehicular accessibility
- amount of restricted property (private, provincial, or otherwise) reducing potential survey coverage
- amount of previously surveyed area



Figure 3

Spot Check

Locations 1 - 4

- Spot Check Location
- Lake
- Road
- Contours
- Stream & River



UTM Projection
Datum NAD83
Zone 10
Scale 1:50,000
Archaeologist Dave Schraepe
GIS Technician Lesanna Rhodes
Stó:lō Nation A.R. & T. Dept.

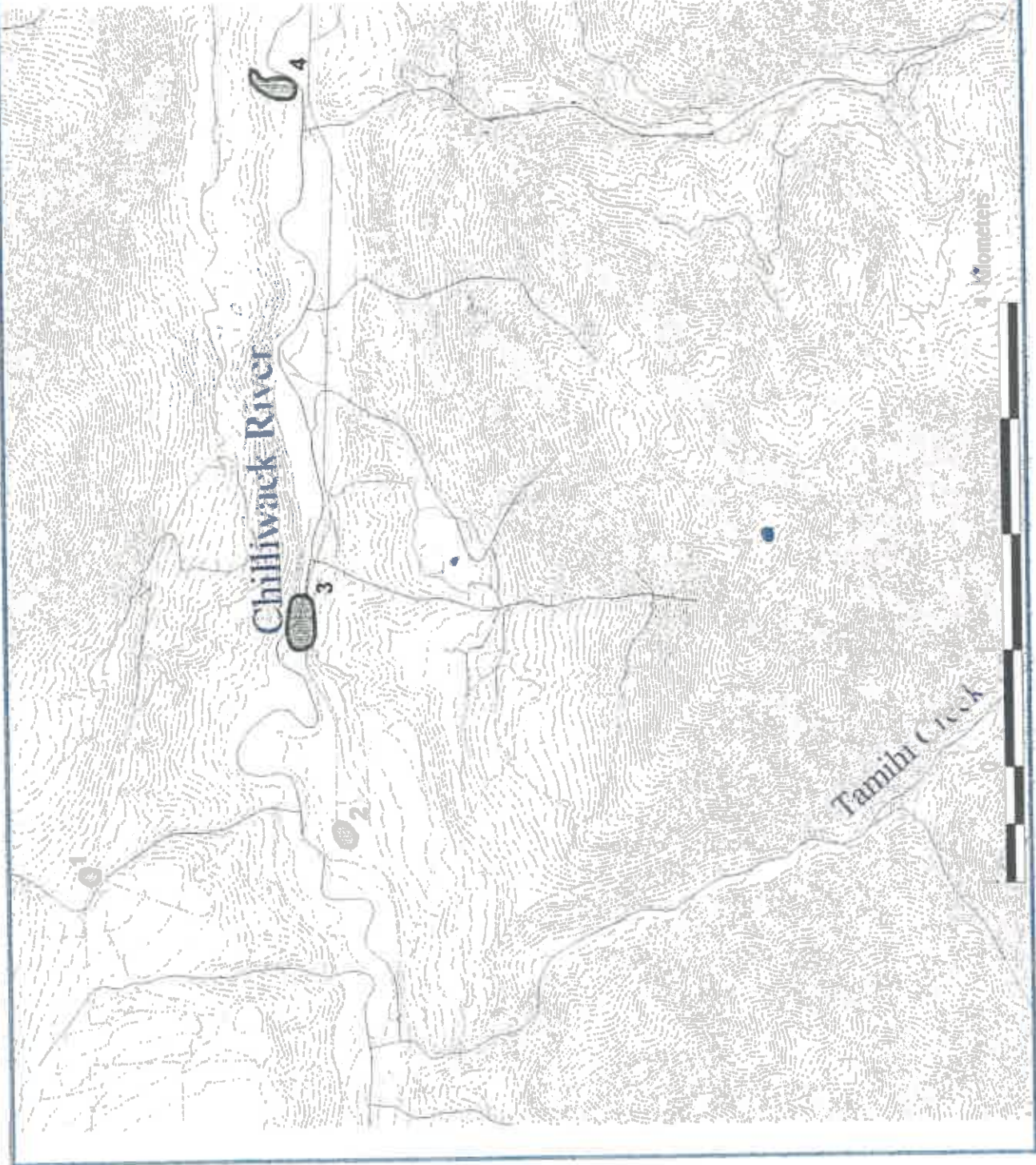




Figure 4

Spot Check

Locations 5 - 8

- Spot Check Location
- Lake
- Road
- Contours
- Stream & River



UTM Projection
Datum NAD83
Zone 10
Scale 1:50,000
Archaeologist Dave Schaepe
GIS Technician Leeanne Rhodes
St6:16 Nation A.R. & T. Dept.

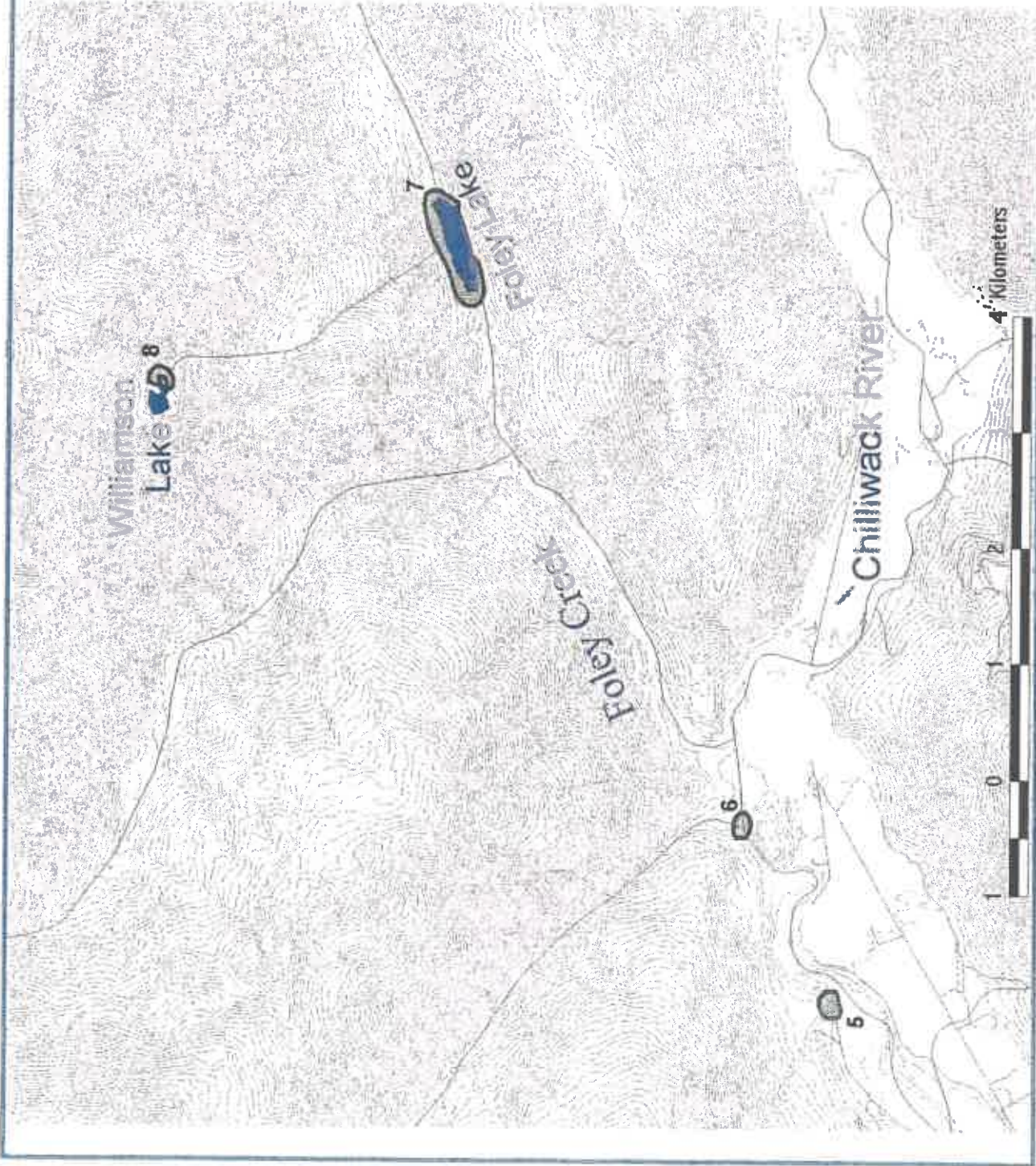




Figure 5 Spot Check Location 9

- Spot Check Location
- Lake
- Road
- Contours
- Stream & River

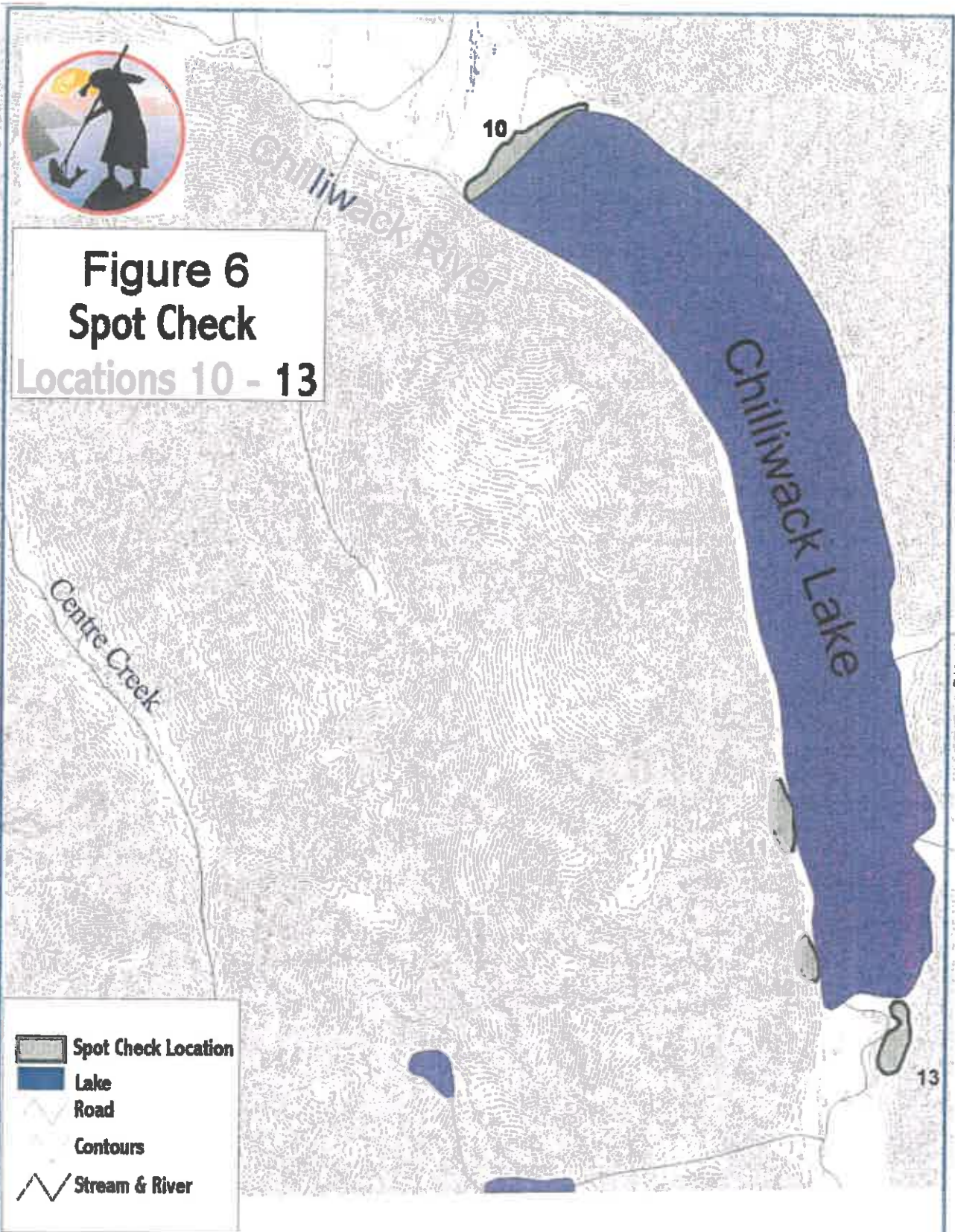


UTM Projection
Datum NAD83
Zone 10
Scale 1:50,000
Archaeologist Dava Schaepe
GIS Technician Leeanna Rhodes
Stó:ló Nation A.R. & T. Dept.





Figure 6
Spot Check
Locations 10 - 13



 Spot Check Location
 Lake
 Road
 Contours
 Stream & River



Zone 10
Datum NAD83
UTM Projection
Scale 1:50,000
Archaeologist Dave Schaepe
GIS Technician Leeanna Rhodes
Stó:lō Nation A.R. & T. Dept.

- amount of available archaeological information
- amount of available ethnographic information
- existing data gap considerations (per Equinox 1997)

An approximate 3400 ha portion of Tamihi Mountain² was selected as the landscape section (Figures 1 and 2). Once the *Tamihi Landscape Section* (TLS) was defined, four, north-south oriented 100 ha square units – 1000 m by 1000 m – were judgementally positioned within this area (Figure 2). These units (#s 1-4), totalling 400 ha in area, comprised 12% of the Tamihi Landscape Section. This sample focused primarily on the watershed's forested Coastal Western Hemlock (60% of the TLS area) and Mountain Hemlock (32% of the TLS area) biogeoclimatic zones. A small portion of Alpine Tundra (8% of the TLS area) was also incorporated into this sample (Unit #4). The relative proportions of the sampled biogeoclimatic zones were roughly proportional to the distribution of these zones within the TLS and the watershed, as a whole. Thus, the TLS was roughly stratified by biogeoclimatic zone. Other considerations in the placement of Units 1-4 included providing an elevational cross-section of the TLS, as directed by the limiting factors listed above (e.g., accessibility). Archaeological survey was performed within the selected units. The primary objective of the TLS survey was to assess archaeological site distributions across a representative, vertical cross-section of the study area.

In addition, the survey of judgementally selected *spot check* locations (Figures 3-6) -- relatively small sized areas throughout the Chilliwack River Watershed -- was conducted as a means of supplementing information derived from the landscape section survey, and assessing the distribution of archaeological sites along the valley bottom. Using this approach, landform and aquatic features, and ethnographically indicated areas of specific interest not incorporated in the landscape section survey were able to be inspected. A total of 13 separate spot check areas were surveyed. The majority of spot check areas were located in the valley bottom. One alpine cirque lake was inspected.

Prior to field implementation, this research design was discussed with and approved by a steering committee composed of members from Stó:lō Nation, the Ministry of Forests, and the Archaeology Branch (see Credits).

2.2 Stage II - Field Survey

Approximately 550 ha were surveyed as part of Stage II of this study. Stage II involved conducting field survey according to the strategy developed in Stage I. Developed field survey methodology was directed by and conformed to Section 3.5.1 (Inventory) of the *British Columbia Archaeological Impact Assessment Guidelines* (1996) and the 'Minimum

² Identified as 'Mount McGuire' on associated NTS maps. The Halq'eméylem name 'Tamihi' is used instead as what is considered to be a more traditional and appropriate name for this mountain, given its inclusion in numerous Stó:lō oral historical accounts.

Standards for Archaeological Impact Assessments and Reconnaissance' recommendations of the *Chilliwack Forest District Archaeological Overview Assessment* (Millennia 1996). A survey crew of four to five people performed pedestrian (i.e., walking) traverses throughout areas selected for field inspection. Individuals were typically spaced no more than 30 m apart. Surveyed areas were visually inspected for the presence of all forms of cultural heritage resources, with specific regard to archaeological remains. Shovel testing (i.e., sub-surface probing) was conducted to look for buried archaeological remains. A combination of judgemental and systematic shovel testing strategies was implemented, as described below.

In relation to sub-surface testing, terrain and ground cover factors such as extreme steepness (>100% slope), rock escarpments, extremely dense/compact alpine ground cover, and dense forest windthrow made *systematic* shovel testing unfeasible as a means of locating sites. Shovel tests implemented for this purpose were therefore performed judgementally. In lieu of a systematic approach, an attempt was made to conduct intensive sub-surface testing -- at 30-50 m intervals along survey transects -- where possible. In locations thought to have high site potential, shovel tests were placed no more than 10 m apart. Shovel tests typically measured 0.35 m in diameter and 0.35 m in depth (or were excavated until sterile C horizon/glacial till deposits were encountered). Backdirt from all shovel tests were screened through 1/4" (6 mm) square, wire mesh screens.

Upon locating archaeological remains, visual surface inspection and *systematic* shovel testing were used to *define the site boundaries*. Shovel tests (as dimensionally described above) were typically placed at 5 m intervals along an arbitrarily established perpendicular grid (generally N-S oriented) set around the initial positive test. The site boundary was established after two negative shovel tests were successively dug in each shovel test transect. The established boundary completely encompassed all positive tests.

Identified archaeological sites, with the exception of culturally modified trees (CMTs), were not permanently marked, flagged or otherwise identified in the field. CMTs which were labelled with aluminum tags tied with waxed string around the trunk. Identified sites, including the location of all positive shovel tests, were mapped using an appropriate scale. Generally, surface artifacts were described, photographed and/or illustrated, mapped, and left in situ. Artifacts found in shovel tests were generally described, photographed and/or illustrated, placed in marked plastic bags, and replaced in the ground in the corresponding test. Protocol for the handling and processing of identified artifacts was developed in consultation with Stó:lō Nation's Cultural Advisor. In a number of instances, artifacts were collected due either to their significance, representativeness of the lithic material types in the study area, or location in an exposed/disturbed area where they were likely to be 'looted'. In cases where artifacts were collected, they were delivered to and stored at the Stó:lō Nation repository. Cultural material located more than an arbitrarily established distance of 50 m apart were generally considered to represent separate archaeological sites. Identified sites were recorded using the format provided in the *British Columbia Archaeological Site Inventory Form Guide* (1994). Identified culturally modified trees were recorded to Level II standards as outlined in *Culturally Modified Trees of British*



Figure 7

SURVEY MAP

T.L.S. UNIT 1

- Unit Boundary
- Traverse
- Shovel Tested Area
- Tree Plantation
- Road
- Stream
- Contour



UTM Projection
Datum NAD83
Zone 10
Scale 1:7,500
Archaeologist Dave Schnepf
GIS Technician Leeanna Rhodes
Stó:lë Nation A. R. & T. Dept.

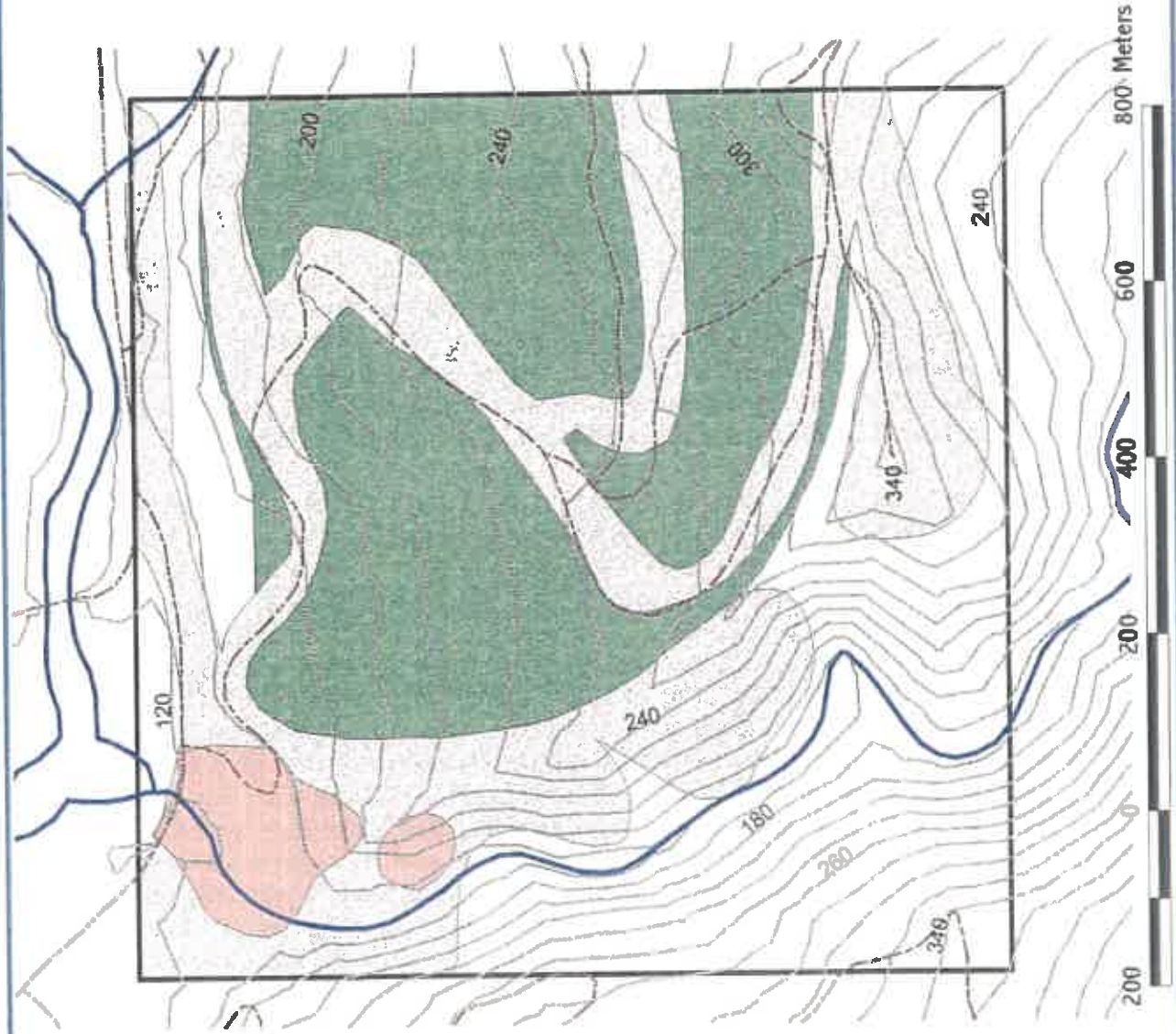




Figure 8

SURVEY MAP

T.L.S. UNIT 2

- Unit Boundary
- Traverse
- Shovel Tested Area
- Tree Plantation
- Road
- Stream
- Contour



UTM Projection
Datum NAD83
Zone 10
Scale 1:7,500
Archaeologist Dave Schaepe
GIS Technician Leeanne Rhodes
Sto:ib Nation A. R. & T. Dept.

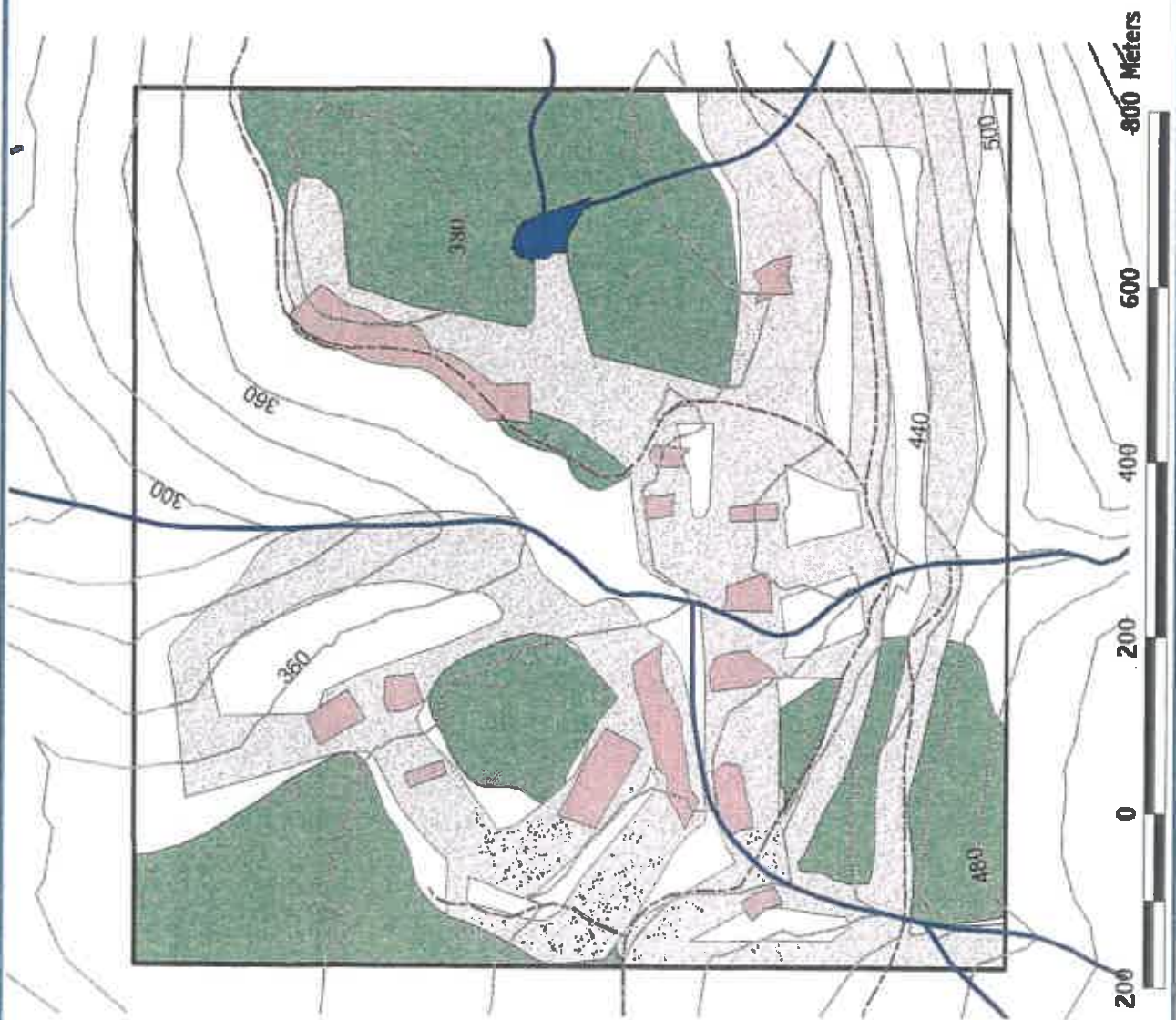




Figure 9

SURVEY MAP

T.L.S. UNIT 3

- Unit Boundary
- Traverse
- Shovel Tested Area
- Tree Plantation
- Road
- Stream
- Contour



UTM Projection
Datum NAD83
Zone 10
Scale 1:7,500
Archaeologist Dave Schaepe
GIS Technician Leeanina Rhodes
Storib Nation A. R. & T. Dept.

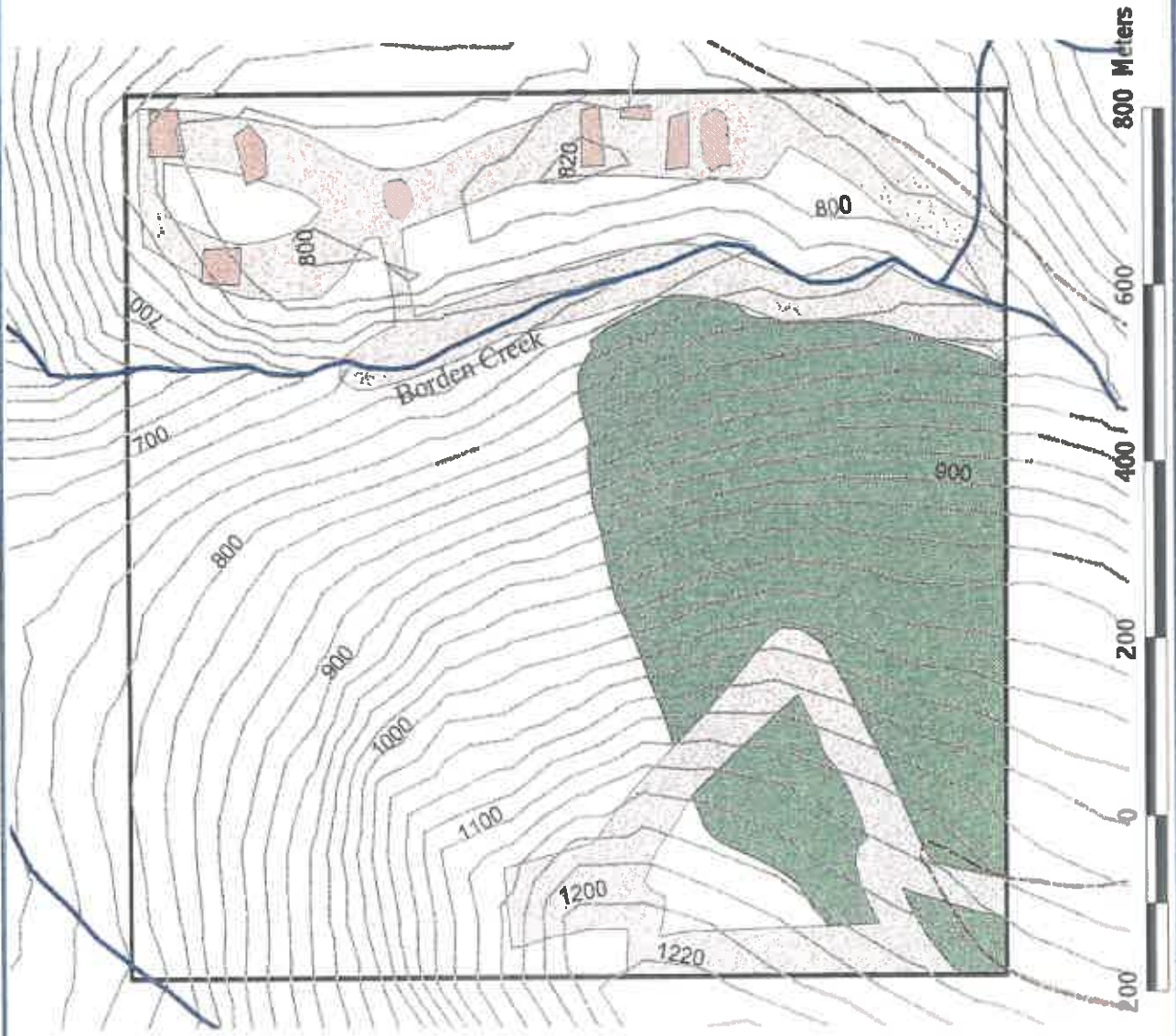
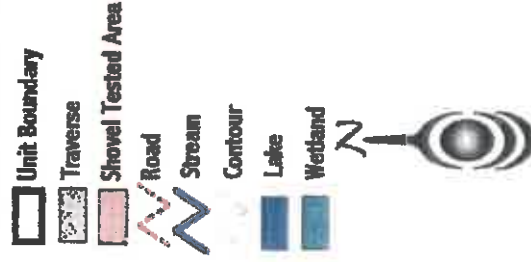




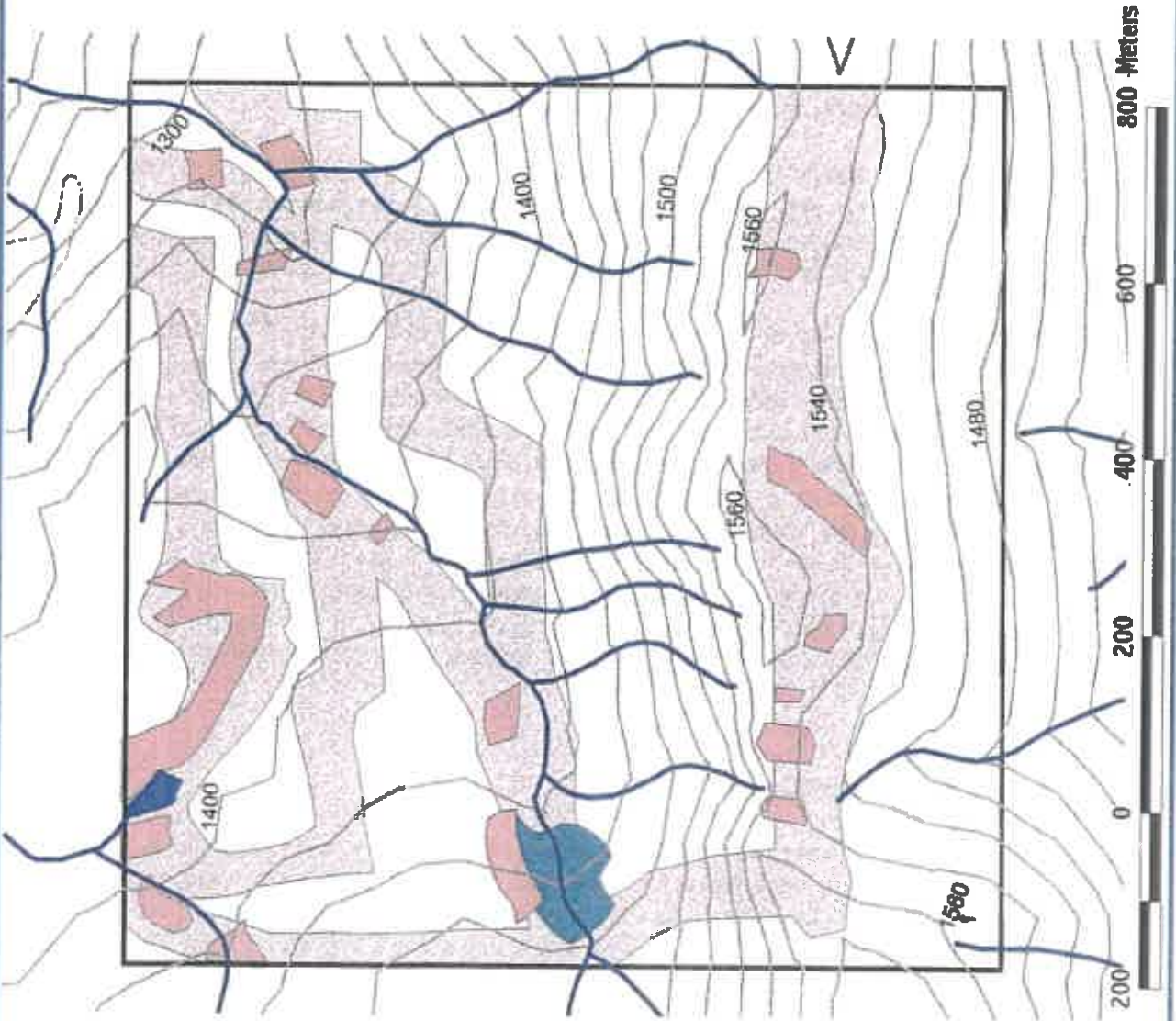
Figure 10

SURVEY MAP

T.L.S. UNIT 4



UTM Projection
Datum NAD83
Zone 10
Scale 1:7,500
Archaeologist Dave Schaepe
GIS Technician Leeanna Rhodes
Sto:ib Nation A. R. & T. Dept.



Columbia (Stryd 1997). Selected culturally modified trees were dated using the 'increment core method' outlined by Stryd (1997:97-107). Site significance (scientific and ethnic) assessments were based on the guidelines presented in the *British Columbia Archaeological Impact Assessment Guidelines* (1996).

It was the initial intention that survey coverage be approximately consistent across sampled units, representing no less than 75% of each unit area. In practice, however, it was found that unit coverage varied relative to a number of factors, primarily:

- terrain steepness (safety considerations), and
- forest cover density (recent tree plantations precluded survey)

Of the four surveyed TLS units, Unit 3 received the least amount of areal coverage largely due to the steepness of the terrain in this area — a large portion of which exceeded 120% slope — and the excessive risk involved in traversing such areas. As well, portions of Units 1, 2 and 3 were not traversed due to the presence of recent tree plantations (10-20 years old) which made these areas generally impassible.

Crew, traverse, shovel test and site locations were maintained using 1:10,000 scale topographical maps and 1:20,000 aerial photographs, in conjunction with a compass, altimeter and hip-chain. This method of navigation and orienteering was found to work effectively, particularly in areas with significant relief and notable landforms and drainages.

Figures 7-10 depict survey traverse routes and shovel tested areas for TLS Units 1-4. The *spot check* location maps (see Figures 3-6) can also be viewed as survey coverage maps, as each depicted location underwent complete visual inspection. Due to their small size, identifying shovel test locations within the *spot check* areas was considered to be too sensitive to maintaining site location confidentiality. Shovel test locations are depicted on the site maps included in provincial site inventory forms for the sites identified in *spot check* locations. No shovel testing was conducted in *spot check* locations 11-13 — old growth forest — as survey was focused entirely on CMT identification. In addition, no shovel testing was conducted (i.e., was unnecessary) in *spot check* locations 1, 2, and 3. As such, specific *spot check* area survey maps are not included in this report. Lastly, no shovel tests were conducted in *spot check* location 9, as this area was too wet for subsurface testing.

2.3 Analysis and Reporting

The Archaeology Branch is currently working at developing provincial standards for AIS analysis and report requirements. The basic format for this report was devised in consultation with Doug Glaum, Archaeology Branch Project Officer, and is presented in Appendix I. Copies of this report will be distributed to the Chilliwack Forest District, the Archaeology Branch, the B.C. Parks Fraser Valley District and involved Stó:lë First Nations.

3.0 STUDY AREA

3.1 Natural Setting

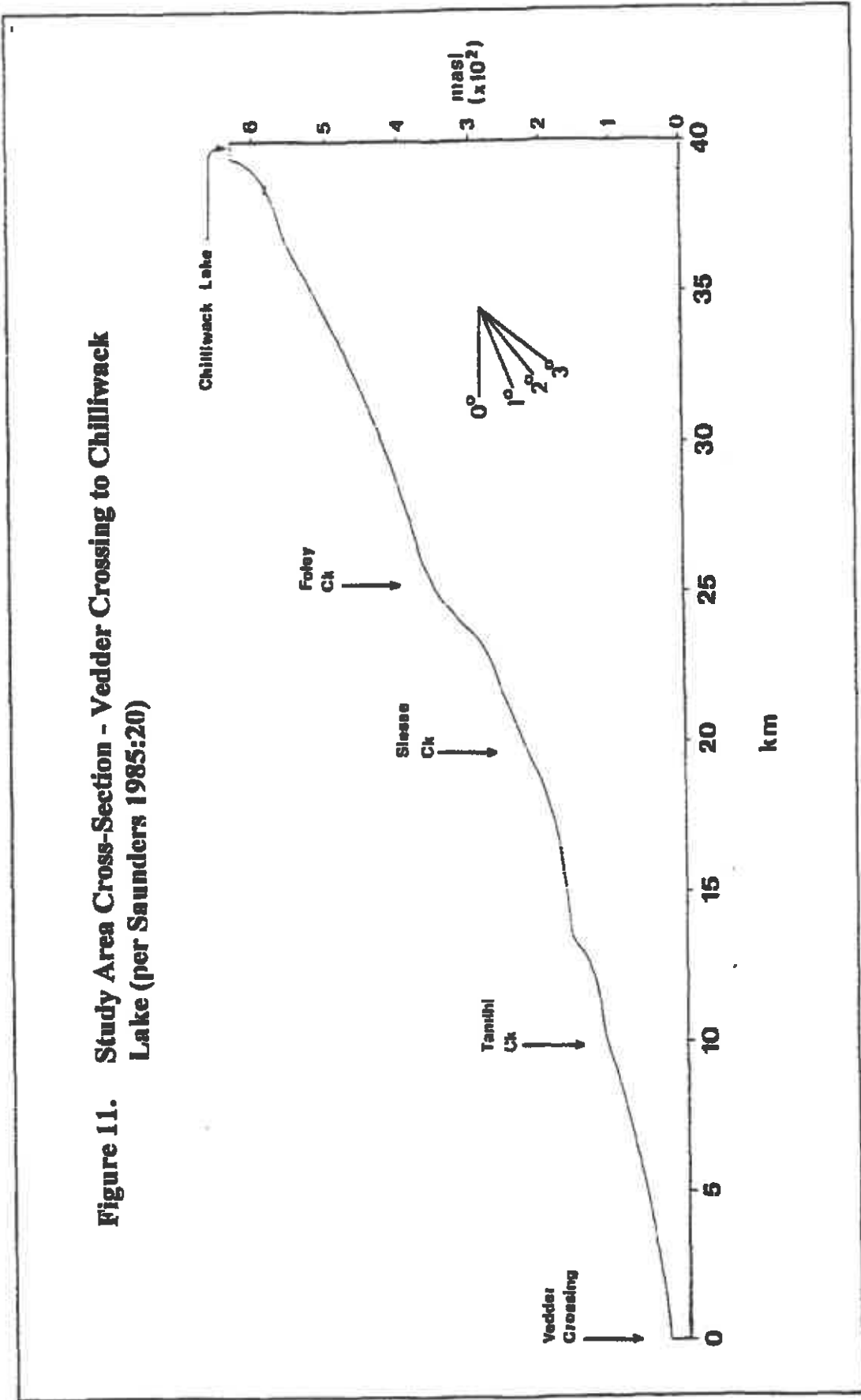
The Chilliwack River Watershed (see Figure 1) is located in the Northwestern Cascade Ranges ecoregion of the Coast and Mountains ecoregion. Physiographically, this area lies in the Skagit Range of the northern Cascade Mountains. The Georgia Depression which divides the Cascade and Coast mountain ranges (Pojar and Mackinnon 1994:13) lies at the edge of the study area, west of Vedder Crossing.

The Chilliwack Valley, from the foot of Chilliwack Lake to Vedder Crossing, is oriented generally east-west. The 'upper' Chilliwack River and Chilliwack Lake, alternately, are oriented north-south. This is a significant aspect of the valley morphology in that Chilliwack Lake, particularly its foot, has the only truly open southern exposure in the valley. Chilliwack Lake receives direct sunlight year-round, while the rest of the valley bottom remains partly shaded during the winter months.

The Chilliwack River is on average roughly 50 m wide, expanding towards the mouth and constricting towards the headwaters. West of the valley opening at Vedder Crossing, the Chilliwack River -- prior to its ca. 1890s diversion into the Vedder River/Canal system -- quietly emptied into the Fraser River via a number of slough channels. East of Vedder Crossing, there are a number of constricted stretches of turbulent water which run through bedrock escarpments and outcrops. Dynamic course movement has historically described that portion of the river below Allison Pool. Such hydrologic activity is powered by significant gravity flow. In the 40 km between the foot of Chilliwack Lake (~640 meters above sea level) and Vedder Crossing (~40 meters above sea level), the river falls 600 m in elevation (Figure 11). Fed by eight major tributaries, seasonal fluctuations in the river's water level are significant. High water levels occur during the spring freshet and the fall rainy season.

Surrounding the Chilliwack River, the peaks of the Skagit Range commonly rise above the treeline. Peak elevations range from 1800 meters above sea level (mASL) in the vicinity of Vedder Crossing to 3400 mASL near Chilliwack Lake. These mountains rise steeply from the valley bottom. The vertical rise from the valley bottom to the watershed divide averages roughly 2000 m. Terrain in this area is extremely rugged, with montane slopes commonly ranging between 90-110%. While montane mid-slopes are characteristically steep, plateaus commonly occur in the high, alpine country. Thus, the distribution of level ground is largely divided between the top and bottom of the valley. The surrounding mountainsides are deeply dissected by steeply channeled drainages which are more numerous and evenly distributed along the south than north side of the valley. Most of these drainages emanate from hanging valleys, contributing to the steepness of their channel gradients. Small pocket glaciers and numerous cirque lakes exist throughout the high elevation, alpine tundra areas of the watershed. Numerous exposed bedrock peaks -- such as Cheam, Slesse, Border, and Foley peaks -- punctuate the watershed skyline.

Figure 11. Study Area Cross-Section - Vedder Crossing to Chilliwack Lake
Lake (per Saunders 1985:20)



The Chilliwack River Watershed is comprised of three elevationally distributed biogeoclimatic zones (Mackinnon, Pojar and Coupe 1992:12-13; Ministry of Forests 1994):

- Coastal Western Hemlock (CWH)
- Mountain Hemlock (MH)
- Alpine Tundra (AT)

The lowland and basal montane slopes, below roughly 1200 mASL, are comprised of the Coastal Western Hemlock biogeoclimatic zone. Forest cover in this zone is largely composed of:

- western hemlock (*Tsuga heterophylla*)
- grand fir (*Abies grandis*)
- western red cedar (*Thuja plicata*)
- Douglas fir (*Pseudotsuga menziesii*)

A number of the understory shrub species common to this zone include:

- thimbleberry (*Rubus parviflorus*)
- black huckleberry (*Vaccinium membranaceum*)
- devils' club (*Oplopanax horridus*)
- highbush cranberry (*Viburnum edule*)
- Sitka mountain-ash (*Sorbus sitchensis*)
- salmonberry (*Rubus spectabilis*)
- oval-leaved blueberry (*Vaccinium ovalifolium*)
- Sitka alder (*Alnus crispa* ssp. *sinuta*)
- red elderberry (*Sambucus racemosa* ssp. *pubens*)

A number of the understory herb species common to this zone are:

- lady fern (*Athyrium filix-femina*)
- clasping twisted stalk (*Streptopus amplexifolius*)
- stinging nettle (*Urtica dioica*)
- bracken fern (*Pteridium aquilinum*)
- sword fern (*Polystichum muritum*)
- false lily-of-the-valley (*Maianthemum dilatatum*)
- queen's cup (*Clintonia uniflora*)
- indian hellbore (*Veratrum viride*)

A number of tubers, including wild carrot (*Lomatium* spp.), tiger lily (*Lilium columbianum*) and wild onions (*Allium* spp.) are also widespread throughout this zone. Mammals common to the CWH zone include: black bear (*Ursus americanus*), black-tailed deer (*Odocoileus* sp.), elk (*Cervus elaphus*), wolf (*Canis lupus*), and cougar (*Felis concolor*) are large mammalian species which were once common in this zone. Elk and wolf have historically been hunted to extinction or near extinction in this watershed. The range of these animals generally extends between the CWH and the MH biogeoclimatic zones. During fall migrations, deer and elk sometimes pass through the AT. Smaller game include beaver (*Castor canadensis*), porcupine (*Erethizon dorsatum*), marten (*Martes americana*) and muskrat (*Ondatra zibethica*).

The Mountain Hemlock biogeoclimatic zone is primarily located at elevations between 1200 and 1600 mASL. Forest cover in this zone is comprised of:

- mountain hemlock (*Tsuga mertensiana*)
- subalpine fir (*Abies lasiocarpa*)
- pacific silver fir (*Abies amabilis*)
- red cedar (*Thuja plicata*)
- yellow cedar (*Chamaecyparis nootkatensis*)
- pacific yew (*Taxus brevifolia*)

Though there are differences, many plant and animal species found in the CWH zone are also found here. Specific to MH are occurrences of subalpine parkland complexes. These open, partially treed meadow complexes offer very productive areas for plant and animal resources.

The Alpine Tundra biogeoclimatic zone is widespread at elevations above 1600. This zone lies above the treeline. The floral and faunal species common to these high elevations varies from the adjoining lowland areas, offering a wide variety of additional resources. Grizzly bear (*Ursus actos spp. horribilis*) and mountain goat (*Antilocapra americana*) ranges are generally restricted to this zone. Currently, like elk and wolves, grizzly bear may be only rarely found in the Chilliwack Valley. Marmots (*Marmota flaviventris*) frequent talus slopes and alpine lakes and meadows. Berry species, which are numerous and abundant, include:

- dwarf blueberry (*Vaccinium caespitosum*)
- salmonberry (*Rubus spectabilis*)
- oval-leaved blueberry (*Vaccinium ovalifolium*)
- black gooseberry (*Ribes lacustre*)
- black huckleberry (*Vaccinium membranaceum*)
- thimbleberry (*Rubus parviflorus*)
- wild strawberry (*Fragaria virginiana*)

Importantly, alpine berry species ripen at a different time of the year -- the early fall -- than their lower elevation counterparts, providing variation in the scheduling of their collection.

The Chilliwack River, itself, is home to abundant salmon stocks comprised of spring, sockeye, coho, pink and chum salmon (*Oncorhynchus* spp.). Such seasonally migratory salmon, as well as trout and a variety of other fish species, provide excellent year-round fishing. Combined, numerous fish, plant and animal resources -- usable as food and materials -- are available in large quantities in various portions of the Chilliwack River Valley. More complete inventories of traditionally available flora and fauna in the study area is presented in *Traditional and Current Resource and Land Use in the Chilliwack Territory* (SFU 1994) and *Upper Stó:lō Ethnobotany* (Stó:lō Sitel Curriculum 1982).

3.2 Geology and Geomorphology

Understanding human occupation in any area is largely dependant on understanding the geology and geomorphology particular to that region. Geology provides information on

the location of usable lithic (i.e., stone) and mineral resources. Geomorphology provides data on how the landscape has changed through time and how it has come to assume its present form. Such information is integral to realizing where people could have lived in relation to changing landscapes through time. Identification of significant landforms of glacial or post-glacial age is important to the identification of inhabitable/usable areas within the watershed. The oldest landforms, those undisturbed by glacial or post-glacial activities, are characterized by stability and often are sought as areas which possess great potential for cultural occupation. Identification of such landforms tied directly into the selection of survey areas for this study. 'Seeing' the landscape, and its potential for human occupation, through time is an important element of archaeological site potential rating and, thus, affects resource management.

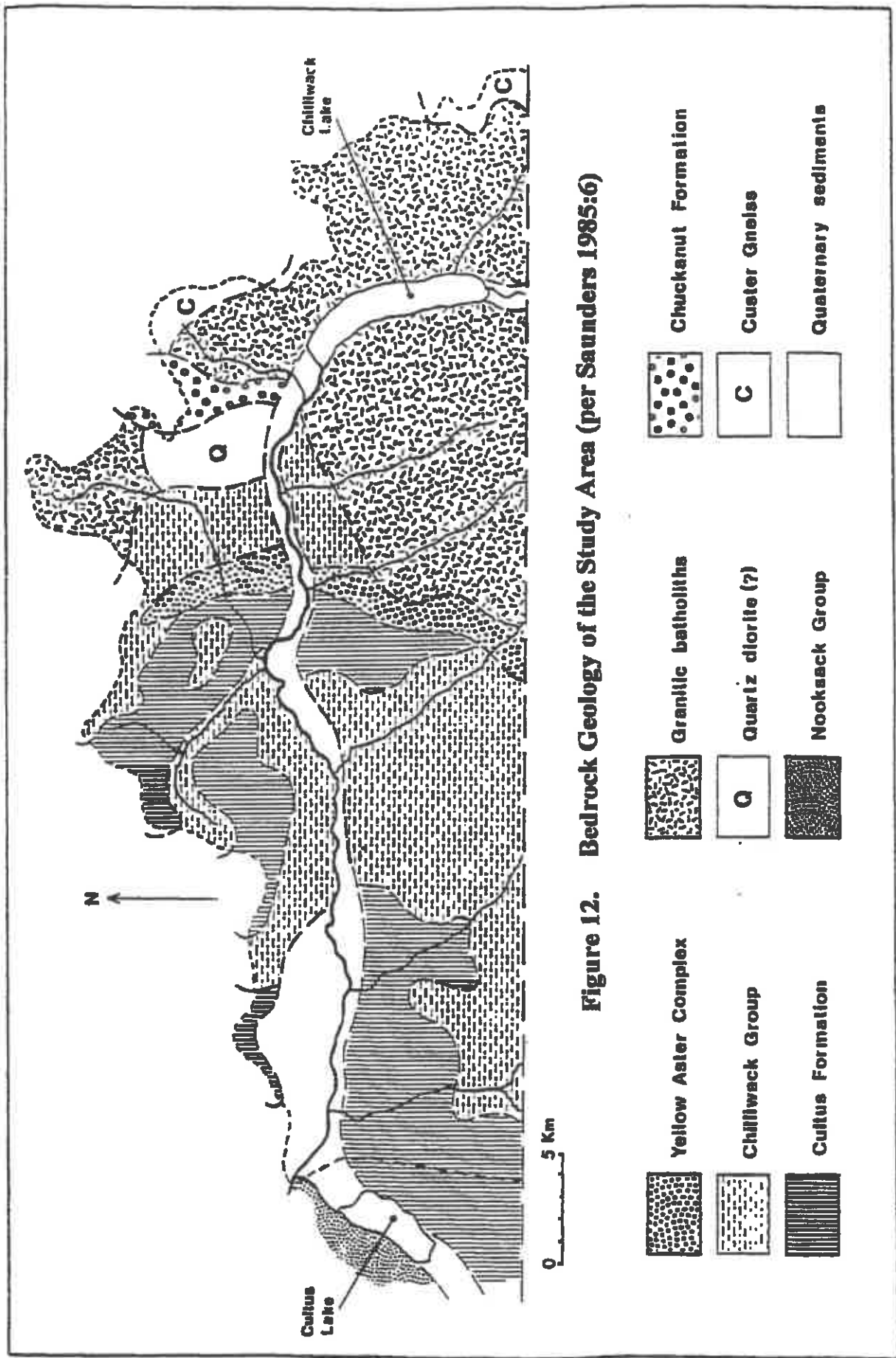
The late quaternary geology and geomorphology of the Chilliwack River Valley is presented in detail by Saunders (1985) and Munshaw (1975). The topography in this vicinity is largely characterized by glacially modified landforms of Quaternary age, resultant from the Fraser Glaciation (26,000-11,000 years B.P.) (Armstrong 1981). Bedrock geology within the Chilliwack River Watershed was mapped by Monger (1970) and is depicted in Figure 12 (adapted from Saunders 1985:6). Three major 'formations' make up the majority of the watershed area (Saunders 1985:5, 7):

- the Cultus Formation - pelites with siltstones, sandstones and breccias of Triassic and Jurassic age
- the Chilliwack Group - metamorphosed pelite and sandstone, with minor conglomerate, pyroclastic rocks, basic volcanic greenstone and limestone of late Paleozoic age
- Chilliwack and Mount Barr Batholiths - granodiorite rock of mid-Tertiary age

Beyond, though in close proximity to, the study area are a number of bedrock outcrops of lithic material previously utilized for tool-use by aboriginal people throughout the upper Fraser River Valley and surrounding areas. These include:

- Hozomeen chert outcrops in the upper Skagit River Valley/Ross Lake area (Mierendorf 1993)
- glassy volcanic (i.e., Mt. Rahm obsidian) outcrops in the Silver Creek Watershed (Mierendorf 1997)
- at least one quartz crystal outcrop near Lucky Four Glacier on the north side of Foley Peak, in the Cheam Range (personal communication, Kevin Washbrook, Stó:lō Nation Anthropologist, 1997)

Surficially, the study area is mainly comprised of post-glacial Salish, Fraser Drift and Late Fraser Drift sediments (Armstrong 1981:2-3; Saunders 1985:113-117). Numerous processes, including alluvial, glaciolacustrine, and colluvial are responsible for the deposition of these sediments (Levson, Gerath, Meldrum, and Monahan 1996; Saunders 1985). Modern and paraglacial Salish alluvium predominates throughout the lower half



of the valley bottom, west of Slesse Creek. A number of Late Fraser Drift kame terraces occur along the south side of the Chilliwack River throughout this area. Late Fraser Drift outwash/deltaic deposits predominate in the upper half of the valley bottom, between Chilliwack Lake and Slesse Creek.

In regards to surficial features, a number of post-glacier landforms occur throughout the valley bottom (see Figure 1 for reference to locations). These partly consist of numerous alluvial fans at the mouths of tributary drainages. As mentioned above, a number of terraces occur below Slesse Creek. The more significant of these terraces, or benches, include 'Tamihi Bench' (just east of Tamihi Creek), the 'Upper Bench' (a portion of which is located above Tamihi Bench), an unnamed bench near Borden Creek (just west of Slesse Creek), and a second unnamed bench which extends 18 km from Slesse Creek to Chilliwack Lake. Chilliwack lake, itself, is retained by a large, flat surfaced, glacio-recessional moraine.

Significant changes to the study area landscape have occurred since the end of the Fraser Glaciation some 11,000 years ago. During the recessional phase, as the Fraser Valley and Chilliwack Valley glaciers separated, meltwater lakes filled the intervening portions of the valley. Nearly 12,000 years ago, one such lake extended from near Vedder Crossing to Slesse Creek at a water level gauged to have been between 300-430 mASL (Saunders 1985:122). As the ice blockage at Vedder Crossing melted, this lake is thought to have drained – as the newly formed Chilliwack River – into the Fraser Valley. A number of high terraces, once associated with this lake, remain in the vicinity of Slesse Creek. Post-glacially, meltwater saturation of unconsolidated sideslope sediments appears to have caused numerous landslides, particularly downstream of Slesse Creek. Some of these slides temporarily dammed the Chilliwack River, resulting in the formation of temporary lakes. One such lake, caused by the landslide which formed Tamihi Bench, was determined to extend upstream of this bench halfway to Slesse Creek, at a level of 165 mASL (Saunders 1985:126-127). The scope of natural landscape alteration in the study area diminished with decreasing glacial activity. By mid-Holocene, approximately 5000 years ago, the landscape is considered to have stabilized to resemble its present form and rate of geomorphic change (ibid.).

4.0 BACKGROUND

4.1 Previous Archaeological Research

Prior to this study, extremely little archaeological work had been conducted within the Chilliwack River Watershed (i.e., that portion of which comprises the study area). In total, *thirteen* archaeological sites had been recorded within the entirety of this area, nearly all (85%) of which are located in the lower quarter of the river basin. The majority of existing information comes from cursory inspections of the lower portion of the watershed, near Vedder Crossing by Duff (1949) and the National Museum of Canada in 1963 (Kidd 1969). In 1968, Fladmark inspected a small portion of the foot of Chilliwack Lake, recording site DgRi-1. As of 1997, archaeological impact assessments of four forestry cut blocks, totaling roughly 150 ha, were carried out within the watershed (Golder Associates 1996, 1997). In addition, Antiquus Archaeological Consultants Ltd. (1994) conducted an impact assessment of a 30 ha property in the river basin. Also in 1994, Millennia Research surveyed and documented the historic Mt. Slesse Crash Site (1994). With the exception of the Mt. Slesse survey -- which focused on the plane crash site -- *all* of these archaeological surveys were conducted within the Coastal Western Hemlock biogeoclimatic Zone, i.e., the lower montane slopes and river basin. Neither the higher elevation Mountain Hemlock nor Alpine Tundra zones had been inspected at all. Archaeological overviews which discuss archaeology in the Chilliwack River Watershed include Mohs (1991), Myles (1995) and Millennia (1996, 1997). It can be stated that, at the start of this project, an insignificant amount of archaeological work had taken place in the Chilliwack River Watershed, the archaeological site content of which was virtually unknown.

A portion of the Chilliwack River Watershed lies outside the defined study area, in North Cascades National Park in northern Washington. Park archaeologist Robert Mierendorf has collected and reported on significant data from this, (Mierendorf 1997) as well as surrounding areas, such as the Skagit River and Ross Lake (Mierendorf 1993). Within the park confines, Mierendorf has identified archaeological sites and raw material sources in a variety of locations, including ridge crests, passes, cirque basins, and upper montane areas. These data may be relevant to the patterning of archaeological sites in the study area.

Much more archaeological data are available from the adjacent upper Fraser River Valley, than for the study area itself. Archaeological work in this area has been conducted since the 1960s. Significant data pertaining to the last 5000 years of cultural occupation of the upper Fraser River valley are available from the Scowitz site (Bernick 1992; Blake 1995, Blake et al. 1993; Matson 1994), the Maurer site (LeClair 1976, Schaepe 1998), and the Xá:ytem (previously called 'Hatzic Rock') site (Mason 1994). Data from a ca. 9000 year old occupation has been recovered from the Milliken site (Borden 1975), near Yale, B.C. Archaeological research within the surrounding Fraser Canyon and Lower Fraser River/Fraser Delta areas has resulted in the development of cultural chronologies for these two areas -- somewhat to the exclusion of the upper Fraser River Valley and vicinity. Borden's (1975) Fraser Canyon cultural sequence presented in Table 2 is generally applied to the study area.

Years BP	Climatic phases	Cultural phases
1000	Late post-glacial	Salmo
		Emery
2000		Skamnel
3000		Baldwin
4000	Hypothermal	
8000		Bayan
8000		
7000		Mazama
9000	Early post-glacial	Millan
10,000	Bumas	
11,000		Pasta
12,000	Everson interstadial	

Table 2. Cultural and Climatic Phases of the Fraser Canyon (per Haley 1996:54)

4.2 Previous Ethnographic Research

Comparatively, ethnographic information concerning settlement locations and land/resource use in the Chilliwack River Watershed far outweighs the available archaeological data. A number of ethnographers have documented traditional aboriginal activities and knowledge pertaining to this area (e.g., Boas 1894; Duff 1952; Harris 1994; Hill-Tout 1903; Lerman 1952; Smith 1950; Wells 1987; Wilson 1865). Smith (1950), Duff (1952) and Wells (1987) provide very informative maps which depict the locations of village sites, and associated aboriginal names, retained in local oral histories. Oliver Wells' map *Indian Territory 1858* (1966) depicts the locations of traditionally known village sites, as well as trails, and available fish and mammalian resources in the Chilliwack River valley. Lerman (1950/51, 1952) and Wells (1970) collected a number of stories, myths and legends which relate directly to this area. A brief summary of pertinent First Nations is provided below.

4.3 First Nations

The *Ts'élxweyeqw* (commonly referred to as the 'Chilliwack') traditionally occupied, and continue to occupy, portions of the Chilliwack River Valley. The *Ts'élxweyeqw* are one of a number of groups of people who are collectively called *Stó:l̓*. The *Stó:l̓* -- or *river people* -- speak a dialect of the Coast Salish language family known as *Halq'eméylem*. *Stó:l̓* traditional territory -- which encompasses the entire Fraser River Watershed from the headwaters of Harrison and Pitt lakes to the north, the Nooksack and Chilliwack river drainages to the south, the Coquihalla River to the east and the Fraser River delta to the west -- is referred to in *Halq'eméylem* as *sólh téméxcw*: "our land" or "our world." *Stó:l̓* oral tradition states the occupation of this area since 'the beginning of the world.' While part of the larger *Stó:l̓* group, the *Ts'élxweyeqw* had a number of unique traditional customs. Smith's *Ethnography of the North Cascades* (1987) provides a thorough overview of *Ts'élxweyeqw* culture.

At the time of European contact in the early-19th century, the *Ts'élxweyeqw* people primarily occupied the lower portion of the Chilliwack Valley, near Vedder Crossing -- enjoying a way of life which encompassed, spiritually and physically, both the river and the mountains. So close was their connection to the land that *Ts'élxweyeqw* refers both to the people and the river on which they lived. In an interview with Wells (1987:160) *Stó:l̓* Elder Albert Louie explains the meaning of this word:

As far as you can go with a canoe - you can't go no further. Ch'eláxcw, Indians called it. You come there, and you can't go any further, and you're right in ch'eláxcw, you see. It's what they call "far as your canoe can go" and they call that *Ts'elxwzi:qw*. Then the white people have Chilliwack.

The *Ts'élxweyeqw* practiced a semi-permanent lifestyle utilizing two types of quasi-permanent habitations -- pithouses *and* plankhouses. Villages comprised of circular, semi-subterranean pithouses, insulated from the cold, were occupied during the winter months -- the principal ceremonial season -- while plankhouse villages were occupied during the summer months. Duff (1952:85) describes *Ts'élxweyeqw* villages as having fairly small populations, comprised of a number of extended families. "It seems probable that their villages never included more than 50 people, or half a dozen houses" (Keller 1976:117). The *Ts'élxweyeqw* appear to have moved frequently. As resources in surrounding areas were used up, villages were moved to new locations (Duff 1952:85). Villages "were just drifting like. They might stay in one place for a few years and then move to another" (interview with *Stó:l̓* Elders Mr. and Mrs. Lorenzetto, Duff 1950: Notebook #7). Temporary lodges -- often made of woven reed mats -- were constructed and used at seasonal hunting and fishing camps.

Fishing, hunting and gathering formed the basis of *Ts'élxweyeqw* subsistence. Fishing, which was practiced year-round, was deeply connected with the migratory patterns of the abundant, locally available anadromous (e.g., salmon) species. Fish meat was cured, primarily by smoking, and stored for the winter months. Deer, mountain goat and bear

meat, and various roots (e.g., camas, bracken fern, and tiger lily) and berries (e.g., huckleberries, strawberries, salmon berries, selal berries, blueberries, cranberries, and saskatoon berries) also comprised significant plant resources which were collected, processed and stored for the winter. Hunting and collecting activities were practiced throughout all areas of the landscape, from the valley bottom to the high elevation parkland and alpine environments.

Forest resources, particularly the western red cedar, figured prominently into Ts'élxweyeqw technology. Capable woodworkers, the Ts'élxweyeqw fashioned nearly all parts of the cedar -- its roots, bark and trunk -- into a vast number of usable items such as basketry, mats, nets, clothing, cordage, bowls, spoons, storage boxes, canoes, house planks, house posts, fishing and hunting equipment, and ceremonial items (e.g., masks, poles). Other tree species, stone, bone and antler materials were also used as tools and implements in a wide variety of ways.

Trade with neighboring groups was facilitated by a network of mountaintop and riverside trails. Numerous trails provided access to the Nooksack and Skagit River valleys, to the south and east, and the up- and down-river sections of the Fraser River. Mountain ridgetop complexes were heavily traveled and, by reducing the risk of exposure to raiding, often preferred to the lowland routes along the Fraser River (SFU 1994:3). Waterways, in addition to overland routes, were frequently exploited. Canoes, crafted through an elaborate manufacturing process (Wells 1987:197-200), were used as an efficient means of water travel and transportation. While the small, shovel-nose canoe was most commonly used for navigating relatively narrow sloughs and waterways of the area, a variety of canoe types including specialized forms such as large freight canoes (Wells 1987:37) were used for various purposes. Such transportation and travel linkages were the foundation of trade with the Ts'élxweyeqws' Interior and Coastal neighbors. A more complete summary of known trails is provided by Myles (1995:66-71).

Socially, kinship and marriage provided the foundation of Ts'élxweyeqw community, and provided the primary basis for determining familial and community ties, as well as social standing. As with all Stó:lō, traditional Ts'élxweyeqw social structure and cultural practices were severely impacted by small-pox epidemics and general economic upheaval associated with the arrival of the Europeans. A detailed discussion of the effects of European influence and the development of contemporary Stó:lō lifeways is presented by Carlson (1997).

While the Ts'élxweyeqw occupied the lower Chilliwack River Valley at the time of European contact, their oral history tells of their westward migration from the upper end of the valley. The earliest village of the Ts'élxweyeqw people was located at Chilliwack Lake, as related by Elder Bob Joe:

The main headquarters of the Chilliwack Tribe was up at Chilliwack Lake, Sxóchaqel. Well, as time went on, they kept a-moving down, that is the headquarters of these four [the brothers Wililéq, Th'eláchiyatel, Yexwéylem and

Siyámches] that governed the tribe of Indians. They used the Chilliwack River down as far as the stone house, Lákewey. Qwemíłts, that's Chilliwack Mountain (Wells 1987:53-55).

Bob Joe provides a more complete rendition of the Ts'élxweyeqw migration in the legend "History of a People" (Lerman 1950/51:268-269).

Over what period of time this migration occurred represents a point of contention among anthropologists. Duff (1952) postulates that the Ts'élxweyeqw emergence onto the Fraser River Valley occurred after contact with Europeans and the establishment of Hudson's Bay Company's Fort Langley trading post in 1827. Smith (1950) provides some evidence to support this theory, indicating that the Ts'élxweyeqw may have displaced a Nooksack speaking people from this location. Alternately, based on archaeological evidence, Mohs (1990:15) argues that the stretch of the Chilliwack River which previously existed between Vedder Crossing and the Fraser River was occupied by the Ts'élxweyeqw for a long period of time prior to European contact. Bob Joe's oral testimony (above) appears to support this position. Regardless, the Ts'élxweyeqw peoples' extended occupation and use of the study area is certain. As Bob Joe states, "we have lived here since time immemorial, thousands of years" (Wells 1987:15).

4.4 European Activity

The history of contact between Europeans and the Stó:lō is presented in detail by Carlson (1997). Briefly presented below are some of the more significant episodes of such contact which specifically involve the Ts'élxweyeqw people. Simon Fraser and his 'voyageurs' -- on June 30, 1808 -- were the first Europeans to travel through Ts'élxweyeqw territory (Lamb 1960:102). Contact with white people languished after this episode until 1827, and the establishment of Fort Langley in the lower Fraser River Valley. In December 1828, Hudson's Bay Company clerk Francois Annance journeyed into the Chilliwack River Valley. Entries from this journey, the first by a white man, are recorded in the Fort Langley Journal. In 1858-1859, the British Boundary Commission party, led by Charles Wilson, established a temporary camp at the south end of Chilliwack Lake (west of the inlet) as they surveyed and established the international boundary in that area (Orchard 1983:2; Wells 1987:17, 76-77; Wilson 1866, 1970). Miners participating in the Fraser River gold rush of 1958 occasionally utilized the 'Whatcom Trail', likely an aboriginal route, which accessed the Skagit via the Chilliwack River Valley (Jeffcott 1949:66). It was not until the 1860s-early 1870s that significant European colonization of the Chilliwack River Valley vicinity began to occur.

By 1870, the Ts'élxweyeqw primarily lived on reserves established near Vedder Crossing (Wells 1987:19). By the late 1880s, a number of white settlers had established ranches and homesteads in the Chilliwack River Valley. However, the pace of development in the Chilliwack Valley was much slower than in the area beyond Vedder Crossing. As of 1920, travel within the valley was still restricted to trails and wagon roads. Significant

land alteration did not occur until the late 1920s with the advent of commercial logging in the study area. Between the mid-1920s and 1928, Campbell River Timber ran an extensive railroad logging operation along 12 miles of track laid between Vedder Crossing and Tamihi Mountain (McCombs and Chittenden 1990:82, 88-92). In the 1930s, railroad track, roads or both allowed access to much of the valley bottom. During this time, the majority of old growth forest in the valley bottom and mid- to lower-montane slopes was harvested. An enormous volume of timber was removed. Large logging camps were established at 'Tolmie Flats' (i.e., Tamihi Bench) and 'Bowdenville', on the north side of the Chilliwack River, opposite Slesse Creek (ibid.).

Gold, silver and copper was mined in the Chilliwack River Valley from the 1910s to the 1960s. A number of lode mines, such as the Red Mountain Mine on Border Peak, were established in the high country throughout the valley. Placer dredging, alternately, concentrated on the lower reaches of the river between Vedder Crossing and Tamihi Creek (Keith Carlson, Stó:lō Nation historian, pers. comm., 1997). River dredging activity ceased with the advent of fisheries habitat legislation in the 1960s.

Presently, a paved road now extends all the way to the north end of Chilliwack Lake. The south end of the lake is accessible by a gravel road. Significant residential developments on the north side of the river have expanded eastward, past Tamihi Creek. A number of provincial correctional facilities are located between Slesse and Center Creeks. Recreational activities such as hunting and fishing -- though common to the Chilliwack Valley since the 1920s -- as well as hiking and camping, has significantly increased over the past two decades with the establishment of numerous Forest Service recreation sites and provincial parks. Unimproved roads traverse many of the mountainsides. Logging continues to be the focus of resource extraction within the Chilliwack River Watershed.

4.5 Study Area Integrity

Considering the extent of natural and historic cultural modification to the study area landscape, a brief assessment of the overall integrity, in relation to archaeological survey, is informative. The effects of commercial logging in the study area are noteworthy. Historic logging developments, specifically, in the Chilliwack River Valley have affected modern archaeological survey in two major ways:

- removal of significant portions of the old growth forest has greatly reduced the possibility of locating CMTs, and thus accurately portraying CMT distributions, throughout the study area
- developments, such as rail- and roadways, have possibly impacted or completely destroyed archaeological sites once located on river terraces in the valley bottom

Other developments, such as residential and commercial structures, have also likely impacted archaeological sites through time. The extent of such impact, however, is primarily limited to the valley bottom in the western quarter of the study area. Natural events, particularly landslides and the meandering river course itself, have also likely consumed a number of archaeological sites. Ts'élkweyeqw oral history identifies at least two village sites and a burial area that were covered by landslides (Myles 1995:20, 26, 28-29). Such processes have reduced the number of *existing* archaeological sites from the total number that once populated the study area, thus affecting the present distribution of identifiable sites.

Dividing the study area into three zones -- valley bottom, montane and subalpine/alpine -- the relative archaeological integrity of each can be summarized. The *valley bottom zone*, with the greatest amount of ground disturbance, has suffered the greatest loss of integrity in relation to the present capacity to identify *all* the archaeological sites that were once located there. The *montane zone* of the study area has primarily been affected by the loss of CMT identification potential due to historic logging practices. The *subalpine/alpine zone* has suffered the least amount of land-alteration. Only fairly recently have roads or cut-blocks been developed in high elevation, subalpine areas and are thus, few in number. Alpine recreational activities, primarily hiking, camping, and hunting, do cause impacts to this area. However, these are restricted in extent compared to the overall degree impact to lower portions of the valley. Thus, the subalpine/alpine zone has retained the highest degree of integrity. Such assessments must be considered in relation to potentially identifiable archaeological site distributions.

5.0 RESULTS

This section presents the findings of the fieldwork performed for this study as well as data for all recorded sites (archaeological, historic and traditional use) in the study area. Site types and components are identified and described. Site scientific and ethnic significance ratings are determined. Site locations are summarized. Site distribution analyses are presented. Data from newly recorded sites are used to evaluate the existing site predictive model for the Chilliwack Forest District.

5.1 Newly Recorded Sites

A total of 550 ha of land area were surveyed within the Chilliwack River Watershed. As a result of this survey, 24 cultural heritage sites were identified and recorded. These include:

- Archaeological Sites (n=14)
- Historic Archaeological Sites (n=6)
- Traditional Use Sites (n=4)

All of these sites, with the exception of one (DgRi-1), were previously unrecorded. DgRi-1 was revisited and surveyed resulting in the documentation of a number of previously unrecorded features and the significant expansion of the site boundaries. In addition, two of the identified archaeological sites (DgRi-1 and DgRk-11) have historic components associated with them. A traditional use component is associated with archaeological site DgRl-26. Data for these sites are presented in the following section.

5.2 Site Data - All Recorded Sites in the Study Area

Site number and site type data for *all* of the recorded archaeological, historic and traditional use sites (includes only those traditional use sites recorded during this study) -- both newly and previously recorded -- within the study area are respectively presented in sections 5.3, 5.4 and 5.5. Type classifications used in the description of identified cultural heritage sites are based primarily on the system developed by the Archaeology Branch (1989). A 'site type' is a general description of the component categories, such as housepits, cultural materials or subsistence features, which comprise that site. Sites comprised solely of CMTs are classified as *forest utilization* sites, per Stryd (1997). Otherwise, CMTs are classified under the general heading 'cultural material' in multi-component sites. The 'Site Elements' category provides a general description of features (e.g., housepit or mounds) and/or artifacts (e.g., lithics) associated with each component. Historic and traditional use site components/elements are separately identified in both the 'Site Type' and 'Site Elements' columns. Site location maps and British Columbia Archaeological Site Inventory Forms and Traditional Use Site Inventory Forms for each of the newly recorded

sites are included in Appendices V and VI, respectively (*Appendix VI is not to be made publicly available -- exempt from the Freedom of Information Act*).

5.3 Archaeological Sites

The term 'archaeological site', as applied within this study, describes sites of aboriginal origin, at least one component of which is greater than 50 years old. As such, a total of 25 archaeological sites, including those previously identified, have been recorded within the study area. Table 3 presents the Borden site numbers and types of each of these sites.

Borden Number	Site Name	Site Type	Site Elements
DgRi-1 †	Sxóchaqel	habitations, cultural material, subsistence feature (also contains historic component, see Sect. 5.3)	housepits*, lithics, cache pit**
DgRi-2	--	cultural material	lithics
DgRj-2 †	--	cultural material	lithics
DgRj-3	--	cultural material, subsistence feature	lithics, roasting pit (possible)
DgRj-4	--	forest utilization	bark-stripped trees
DgRj-5	--	cultural material, forest utilization (also contains historic component, see Sect. 5.3)	lithics, kindling collection and bark-stripped trees
DgRk-1 †	--	cultural material	lithics
DgRk-5	--	cultural material, subsistence feature	lithics, hearth
DgRk-8	Ts'élxweyeqw	habitations, earthwork/burial, cultural material	housepits, earthen mound, lithics
DgRk-9	--	earthworks/burials, cultural material	burial mounds; lithics
DgRk-10	--	habitations, subsistence feature, cultural material	housepits, cache pit, lithics
DgRk-11	Iy'oythel	cultural material feature (also contains historic component, see Sect. 5.3)	lithics
DgRk-12	--	earthwork/burial	burial mound (probable)
DgRl-9 †*	Pirie	habitation	housepit
DgRl-10 †	Blow	habitation, cultural material	housepit, lithics
DgRl-11 †	--	cultural material	lithics
DgRl-17 †	Suwa'le (?)	habitation	housepit
DgRl-18 †	Xe'las (?)	habitation	housepit
DgRl-19 †	Layu'mas (?)	habitations	housepits
DgRl-20 †	T'apt'o'p	habitations	housepits

Borden Number	Site Name	Site Type	Site Elements
DgRI-23 †	Salmon Ridge Site	habitation, earthwork/burial	housepit, burial mound
DgRI-24 †	Centennial Trail Mound Site	earthworks/burial	burial mounds
DgRI-25	--	forest utilization	bark-stripped tree
DgRI-26	T'amiyehó:y	habitation, cultural material, forest utilization feature (also contains traditional use component, see Sect. 5.4)	housepit (probable), lithics, bark-stripped trees
DgRI-27	--	forest utilization	bark-stripped trees

† previously recorded site.
 †† previously recorded/no positive evidence of site.
 * all 'housepit' descriptors represent circular depressions generally b/w 4-7 m in diameter.
 ** all 'cache pit' descriptors represent circular depressions generally b/w 1-2 m in diameter.

Five types of components make up the archaeological sites listed in Table 3. These include, in order of frequency:

- cultural material
- habitations
- earthworks/burials
- forest utilization
- subsistence features

Archaeological site component frequencies are graphically depicted in Figure 13, below.

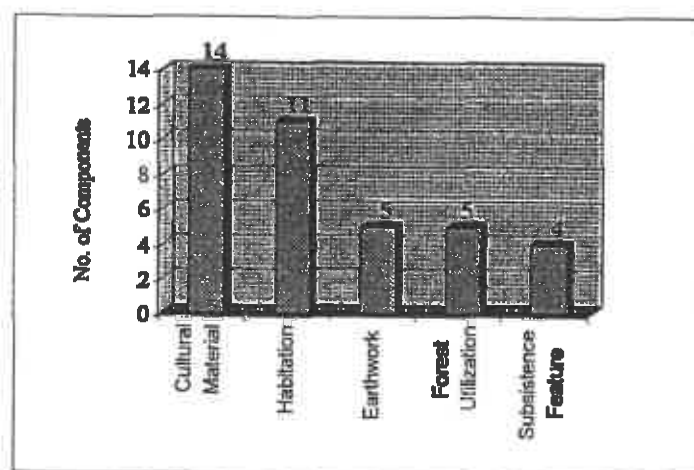


Figure 13. Frequency of archaeological site component types in the study area.

Details (including quantitative data) of each type of component per the *archaeological sites/components* presently identified within the study area are presented in the following sections. Because some sites contain more than one component, the number of components listed below is greater than the number of individual archaeological sites.

5.3.1 Cultural Material Components (n=14)

Cultural material is the broadest ranging component heading used in this classification system. Cultural material is also the most common type of component found throughout the study area, associated with 14 archaeological sites. *Cultural material*, as defined by the Archaeology Branch, refers to "cultural or natural materials occurring as a by-product of human activity" (ibid.). Lithic tools and debris comprise the sole type of cultural material identified and recorded during this survey. Readily available data from the artifacts (lithics) located at the ten sites recorded during this study, are presented in Appendix IIa.

5.3.2 Habitation Components (n=11)

A total of 11 habitation components have presently been identified. A *habitation* is defined as "a physical feature of cultural or natural origin utilized on a temporary or permanent basis for shelter or other significant social or ceremonial activity" (Archaeology Branch 1989:16). Data for habitation features, available only from those sites recorded during this study, are presented in Appendix IIb.

5.3.3 Earthwork/Burial Components (n= 5)

Five earthwork/burial components have been recorded in the study area. The Archaeology Branch defines *earthwork* as "a special purpose cultural feature... manifested in earth mounding or other modifications of earth surfaces" (1989:16). *Burials* (i.e., human interments) are combined with this category due to the close association of these earthworks with such remains. Available data for earthwork/burial (i.e., mound) features from three of these are presented in Appendix IIc.

5.3.4 Forest Utilization Components (n=5)

Forest utilization sites/components are comprised of CMTs. A *CMT* is defined as "a tree that has been altered by native people as part of their traditional use of the forest" (Stryd 1997:7). The most common types of CMTs identified in coastal portions of British Columbia are bark-stripped and aboriginally logged CMTs. Bark-stripped CMTs are indicative of bark-procurement activity, while aboriginally logged CMTs (e.g., stumps, planked logs, sectioned logs) represent wood procurement activities. A total of 17 bark-

stripped CMTs, located within five archaeological site components, were identified and recorded. Data from each of these features are presented in Appendix II d.

5.3.5 Subsistence Feature Components (n=4)

A total of four subsistence feature components have been identified. The Archaeology Branch defines *subsistence features* as "cultural feature(s) related to the collection, processing, or storage of food" (1989:18). Data for each of the subsistence features comprising these components, all recorded during this study, are presented in Appendix II e.

5.4 Historic Sites

A total of seven historic sites have been recorded in the study area. As previously defined, the descriptor 'historic site' applies to all sites of *non-aboriginal or otherwise indeterminate* cultural origin known or believed to be at least 50 years old. A total of seven historic sites have been recorded within the study area. In addition, three archaeological sites (DgRi-1, DgRj-5 and DgRk-11) contain historic components. Table 4 presents the Borden site numbers and types of each of these sites and site components.

Borden Number	Site Name	Site Type	Site Elements
DgRk-2	--	subsistence feature, cultural material	hearth, clear glass canning jars, wire
DgRk-3	--	subsistence feature	hearth
DgRk-4	--	subsistence feature	log construction (animal -- possibly bear -- trap)
DgRk-6	--	forest utilization **	blazed and incised trees
DgRk-7	--	transportation/ industrial**	railroad trestle foundation posts
DgRi-3	--	forest utilization	undercut tree (probably non-native)
DgRi-1*	--	habitations**, cultural material**	structure pads, chimney remains, lookout trees, power-line trees w/attached insulators, tin cans, clear glass shards, metal refuse
DgRj-1 †	Mt. Slesse Plane Crash Site	burial, cultural material	human remains, rock cairn, misc. plane wreckage
DgRj-5*	--	forest utilization	stump, sectioned log
DgRk-11*	--	transportation/ industrial (?)**	log foundation (railroad or road)

† previously recorded site.
 * historic component of archaeological site.
 ** definite Eurocanadian association.

Six types of components make up the historic sites listed in Table 4. These include, in order of frequency:

- cultural material
- subsistence features
- forest utilization
- transportation
- habitations
- burial

Historic site component frequencies are graphically depicted in Figure 14, below.

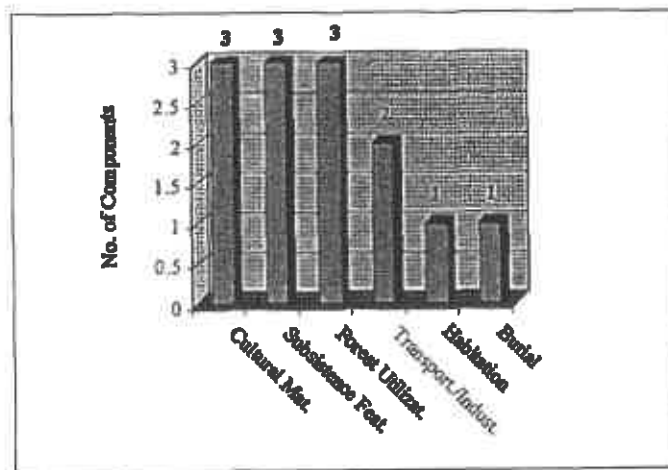


Figure 14. Frequency of historic site component types in the study area.

Only one historic site had been previously recorded in the study area. Details (i.e., quantitative data) of each type of component per all recorded *historic sites* presented in the following sections. Because some sites contain multiple components, the number of components listed below exceeds the number of individual historic sites.

5.4.1 Cultural Material Components (n=3)

Cultural material, in a variety of forms, was identified in three recorded historic components — one of these in archeological site DgRi-1. Such materials were comprised of machine cut, wire nails, tin cans and can fragments, clear glass shards, clear glass canning jars, wire, and miscellaneous metal debris and refuse (see Appendix IIIa). The majority of this material appears to be from the time period between 1920 to 1950.

5.4.2 Subsistence Feature Components (n=3)

A total of three historic subsistence components -- two hearths and one animal trap -- were identified and recorded. Both hearths consisted of roughly 0.8 m diameter concentrations of fire-cracked and thermally altered rock, visible on the ground surface though heavily overgrown by moss and ground cover. The remains of what was identified as a collapsed bear trap (Dean Jones, Stó:lō archaeological assistant, pers. comm., 1997), was located on a subalpine ridgetop. This feature consists of: six @ 1.60-1.70 m long by 0.15-0.20 m diameter log sections with ax-cut ends; one @ 0.50 m long by 0.10 m diameter, notched log with ax-cut ends; five machine-cut wire nails (rusty); string fragment. This feature is positioned within a cluster of four trees, grown within 1.0-1.5 m of each other. Three of the trees have nails in their trunks, generally 1.6 m above ground. Nails are also located in the bases (0.31 and 0.71 m above ground) of two of the trees. A string fragment is tied to one of the nails. The logs have collapsed between the surrounding trees, to which they appear to have been attached, when intact. It was not possible to determine the original form of this feature from the present state of the remains.

5.4.3 Forest Utilization Components (n=3)

Three historic logging components, including one component of archaeological site DhRj-5, were identified. Out of the literally thousands of historic, commercially logged stumps located within the study area, the features comprising these components -- a sectioned log, two blazed and inscribed trees and an undercut tree -- were considered to be unique representations of historic forest utilization practices. Data from these CMTs are presented in Appendix IIIb.

5.4.4 Transportation/Industrial Components (n=2)

While *transportation/industrial* features are not formally defined by the Archaeology Branch, such features relate to the industrial (e.g., commercial logging) use of railways, roads, trails, waterways and other corridors of travel. Some examples include trestles, bridges, tunnels, roadhouses, garages, shipwrecks, docks and vessels (Archaeology Branch 1989:20). Data for the two identified transportation/industrial features are presented below.

DgRk-7 is comprised of the remains of a logging-railroad trestle. Decomposed remains of this trestle were found in a generally linear scatter across the bottom of the drainage that it once spanned. The drainage is roughly 15 m deep (at the center) by 40 m wide, with steeply sloping banks (60-70%). The identifiable portion of the railbed leading to the drainage edge runs sideslope across a 45-50% slope, 300 m above the valley bottom. The railbed intersects the drainage at a right angle, leading directly off the bank-edge.

The following materials (standing posts, iron spikes, milled timbers, wire cable), located within the drainage, comprise the remains of this feature:

- Standing Post #1 -- 0.34 m diameter, 2.75 m height, drainage mid-bank (E)
- Standing Post #2 -- 0.34 m diameter, 7.50 m height, drainage bottom
- Standing Post #3 -- 0.36 m diameter, 3.34 m height, drainage mid-bank (W)
- Standing Post #4 -- 0.31 m diameter, 3.14 m height, drainage mid-bank (W)
- Wire-Cable (wound) -- 0.03 m diameter, anchored to ground at drainage edge (E)
- numerous milled timber fragments -- roughly 8" by 4", scattered across the drainage
- numerous iron spikes -- 20+ cm length, located in a number of the posts and timbers

No rails were located at the site, likely due to post-operational salvaging activities.

The identified remains of this railroad trestle are associated with commercial logging on Mount McGuire between 1932-1933 (Chittenden and McCombs 1990:90). Chittenden and McCombs indicate that B & K Logging harvested on Mt. McGuire during this period of time, and that "...The area was not the typical flat valley bottom usually logged by logging railroads. It was part of a sidehill and a total of seven switchbacks were used to traverse the mountain side. Logging equipment included a steam powered Unit, steam cold deckers and loaders. The rail equipment included two Climax locomotives and a number of skeleton cars" (Chittenden and McCombs 1990:89-90). A map depicting the location of the railroad on Mt. McGuire is additionally presented by Chittenden and McCombs (1990:82). Railroad spikes located along the sidesloping access road in the vicinity of the site provide additional evidence of the logging railway -- likely the basis of the existing road.

The second historic transportation component, located at archaeological site DgRk-11, is comprised of a log footing/foundation which is likely associated with the logging railroad constructed in the Chilliwack River valley bottom ca. 1928 (Chittenden and McCombs 1990:82, 89). This feature appears as a log deck, constructed on top of a large bedrock outcrop at the very edge of the Chilliwack River. There is no evidence of a footing or rail-/roadbed on the opposite river bank, indicative of a bridge. Thus, the feature appears to be a footing for a (railway) embankment built through this narrow, relatively steep-sided stretch of the river. The feature is comprised of:

- a log foundation, five courses high, 15 m long and 5 m wide -- set 5 m into the terrace and extending 10 m onto the rock outcrop
- foundation logs 15.0 m long by 0.45-0.55 m in diameter, with 5.0 m long (similar diameter) perpendicular cross pieces at either end and in the center of the foundation
- shallow, axe-cut saddle notches at the foundation corners and center

- a log top-deck, comprising the top course, five logs wide
- western red cedar logs

5.4.5 Habitation Component (n=1)

One historic habitation component, associated with archaeological site DgRi-1, has been recorded. Data from the historic structural features identified at this site are presented in Appendix IIIc.

5.4.6 Burial Component (n=1)

The Slesse Plane Crash site (DgRi-1) represents the only recorded historic burial site/component in the study area. *Burial* sites, or 'human remains' as they are referred to in the Archaeology Site Recording Guide, are defined as "the interment of other disposition of human remains" (Archaeology Branch 1989:17). Details about this site are presented in the site form obtainable from the Archaeology Branch.

5.5 Traditional Use Sites with Material Remains

Table 5 presents site number and type data for the traditional use sites with material remains -- sites of aboriginal association less than 50 years old -- encountered and recorded *during this study*. Included in this list and the following discussion are data from the traditional use component identified at DgRi-26.

Stó:lō Nation Trad. Use Site Number	Site Name	Site Type	Site Elements
AIS-9	--	forest utilization	bark-stripped trees
AIS-11	--	forest utilization	bark-stripped trees
AIS-18	--	forest utilization	bark-stripped tree
AIS-23	--	forest utilization	bark-stripped tree
AIS-8*	--	forest utilization	bark-stripped tree

* traditional use component of DgRi-26 (T'amiyehó:y).

The traditional use sites with material remains recorded *during this study* are entirely composed of forest utilization components (n=5). Data from the CMTs recorded at these traditional use sites/components are presented in Appendix IV.

5.6 Site Significance Determinations

Sites within the study area were assessed with regard to two types of significance -- *scientific* and *ethnic*. Scientific significance was evaluated in specific relation to the study area, that is, ratings for variables used in determining site significance -- such as 'site rarity' -- reflect the present state of the study area data base, which is currently quite small. As such, it was determined that *all* the sites presently identified in the Chilliwack River Watershed have high scientific significance. All presently recorded sites have the potential to greatly increase current understanding of the cultural heritage resource content of the study area. As more sites are recorded and more information is added to the existing study area data base, scientific significance determinations for some of these sites may be reduced to lesser ratings -- particularly with regard to CMTs and historic sites.

As well, the Stó:l̓s people consider *all* archaeological and traditional use sites within their traditional territory -- which encompasses the study area -- as having high ethnic significance³.

5.7 Site Location Data

Again, in order to maintain easy comparability to and compatibility with the existing archaeological site predictive model, the established format (Millennia 1996) for describing site locations will be maintained and applied to the study area. Four arbitrary environmental zones were defined which encompass the entire vertical range of the local landscape. Per Millennia (1996:66-70), these include the:

- *Valley Bottom Zone* (VB) - the riparian/floodplain areas associated with the Chilliwack River and primary creek drainages throughout the watershed (lies primarily within the CWH biogeoclimatic zone); generally flat to moderately sloping; may be forested
- *Montane Zone* (M) - the forested, mid-range mountainside between the valley bottom and sub-alpine parklands (contains both CWH and MH biogeoclimatic zones); generally steeply sloping
- *Sub-Alpine Zone* (SA) - the mid-high elevation sub-alpine parkland complexes (lies entirely within the MH biogeoclimatic zone); varies from flat to steeply sloping
- *Alpine Zone* (A) - the high elevation alpine tundra (AT biogeoclimatic zone) areas situated above the tree-line; varies from flat to steeply sloping

³ The Stó:l̓s community is solely capable of making 'ethnic significance' determinations for sites in Stó:l̓s Traditional Territory -- as applied in this case.

More detailed descriptions of these zones are provided in *Millennia* (ibid.). A number of additional environmental variables are included in the description of site locations (*Millennia* 1996:72-73). These include:

- slope
- landform
- distance to water (meters to the nearest water source -- stream, lake, wetland, and so on)
- presence of old growth forest

In addition to the above, *aspect* and *elevation* (mASL) are considered to be potentially important quantifiable variables and are included in the following site location summary. Table 6 presents site location data for each of the recorded cultural heritage sites in the Chilliwack River Watershed.

Site No.	EZ	BGZ	Landform	mASL	Max. Slope (%)	DTW (m)	Asp.	OGF (y/n)
Archaeological Sites								
DgRi-1 †	VB	CWH	lake terrace/ glacial moraine	635	3	0	SE	n
DgRi-2	VB	CWH	terrace (lake outlet)	620	5	10	SE	n
DgRj-2 †	VB	CWH	extinct river terrace	350	0	~350	--	n
DgRj-3	A	AT	lake terrace/ glacial moraine	1640	5	25	SSE	n
DgRj-4	VB	CWH	sideslope	360	80	15	NNW	y
DgRj-5	VB	CWH	lake terrace/ outwash fan	555	5	10	NE	y
DgRk-1 †	VB	CWH	river bank/terrace	160	NI	50	S	n
DgRk-5	SA	MH	ridgetop saddle	1520	5	250	S	n
DgRk-8	VB	CWH	river terrace	290	2	15	SE	n
DgRk-9	VB	CWH	river terrace	160	3	10	SE	n
DgRk-10	VB	CWH	river terrace	180	3	10	NE	n
DgRk-11	VB	CWH	sideslope	180	35	10	NE	n
DgRk-12	VB	CWH	bench (2 nd -ary)	170	0	200	--	n
DgRi-9 †	M	CWH	NI	~200	NI	NI	NI	NI
DgRi-10 †	M	CWH	NI	122	NI	~200	NI	NI
DgRi-11 †	VB	CWH	floodplain (?)	~40	NI	~50	NI	n
DgRi-17 †	VB	CWH	creek terrace (?)	~50	NI	NI	NI	NI

Site No.	EZ	BGZ	Landform	mASL	Max. Slope (%)	DTW (m)	Asp.	OGF (y/n)	
DgRI-18 †	VB	CWH	river terrace (?)	~40	NI	~50	NI	NI	
DgRI-19 †	VB	CWH	river terrace	~45	NI	~15	NI	NI	
DgRI-20 †	VB	CWH	river terrace	~65	NI	~15	NI	NI	
DgRI-23 †	M	CWH	ridgetop	130	NI	~650 (?)	NI	n	
DgRI-24 †	VB	CWH	2 nd -ary river terrace	~140	0	~50	—	n	
DgRI-25	M	CWH	sideslope bench	220	20	125	S	y	
DgRI-26	VB	CWH	creek terrace	110	5	10	NNE	y	
DgRI-27	VB	CWH	sideslope	140	90	50	SW	y	
Historic Sites									
DgRj-1 †	A	AT	various landforms	1075-2315	n/a	n/a	n/a	n	
DgRk-2	SA	MH	stream terrace	1326	0	10	—	y	
DgRk-3	SA	MH	wetland bench	1380	5	70	SSW	y	
DgRk-4	SA	MH	ridgetop	1420	10	120	N	y	
DgRk-6	M	CWH	montane bench	423	50	10	S	n	
DgRk-7	M	CWH	montane creek drainage	440	0	50	N	n	
DgRi-3	VB	CWH	river terrace	625	0	15	—	y	
Traditional Use Sites									
AIS-9	M	CWH	ridgetop	322	0	350	—	n	
AIS-11	M	CWH	sideslope	360	50	400	N	n	
AIS-18	M	CWH	montane bench	420	10	10	S	n	
AIS-23	VB	CWH	lake terrace/ sideslope	635	20	50	E	y	
†	previously recorded site				EZ	Environmental Zone			
†*	previously recorded/no positive evidence of site				NI	no information available			
NI	no information available				Asp.	aspect			
BGZ	biogeoclimatic zone				OGF	old growth forest			
DTW	distance to water								

5.8 Site Distribution Analyses - Vertical Distributions

This section presents the results of a number of site distribution analyses conducted for three sets of data (based on *all* site types):

- previously recorded sites within the study area (n=13)
- sites recorded in the Tamihi Landscape Section representative sample (n=10)
- all the sites presently recorded with the study area (n=36)

The analyses in this section focus on the patterning of recorded archaeological, historic and traditional use site locations from the bottom to the top of the Chilliwack River

Watershed (i.e., their vertical distributions). Site locations are depicted in relation to three variables:

- biogeoclimatic zone -- CWH, MH, AT
- environmental zone -- VB, M, SA, A
- elevation (mASL) -- 0-500 m, 501-1000 m, 1001-1500 m, 1501-2000 m

These three variables were selected as key indicators of the patterning of site vertical distributions throughout the study area.

The pie graphs in Figures 15-17 (below) depict, separately, the relative proportions of the sites in the three data sets identified above, for these three variables. The objective of these analyses, besides providing insight into site distribution throughout the vertical extent of the study area, is to provide a basis for examining and evaluating the general effect(s) of this study on vertical site patterning in the study area.

5.8.1 Previously Recorded Site Distribution

Figure 15 presents the relative proportions of all previously recorded sites in the study area by the three variables defined above. These graphs depict a site distribution pattern characterized by predominately lowland site locations -- in the valley bottom, CWH biogeoclimatic zone below 500 mASL. This pattern, however, is largely reflective of the *sampling bias* governing previous archaeological investigations in the study area. A strong lowland focus governed most of this previous work, with the notable exception of the Mt. Slesse Plane Crash site survey covered a high elevation area (Millennia 1994). As such, the patterns depicted in Figure 15 comment more on survey focus than site distribution patterns.

5.8.2 Tamihi Landscape Section Site Distribution

Figure 16 presents data from the Tamihi Landscape Section -- the representative sample. The graphs in this figure differ markedly from those of the 'Previously Recorded Sites'. Given the difference in sampling strategies between these two data sets, significant differences in site distribution patterns are not surprising. All three graphs in this set depict a distribution of sites spread more widely and evenly across the vertical range of the land. In general, sites appear to be concentrated in two main areas:

- valley bottom and montane areas (CWH zone) below 500 mASL
- subalpine areas (primarily MH zone) between 1000-2000 mASL

5.8.3 Total Site Distribution

The 'Total Sites' set in Figure 17 presents site distribution patterns based on all available data for the study area. Though still affected by a persistent lowland bias (most of the 'spot check' areas comprised lowland locations), the effects of this study on site

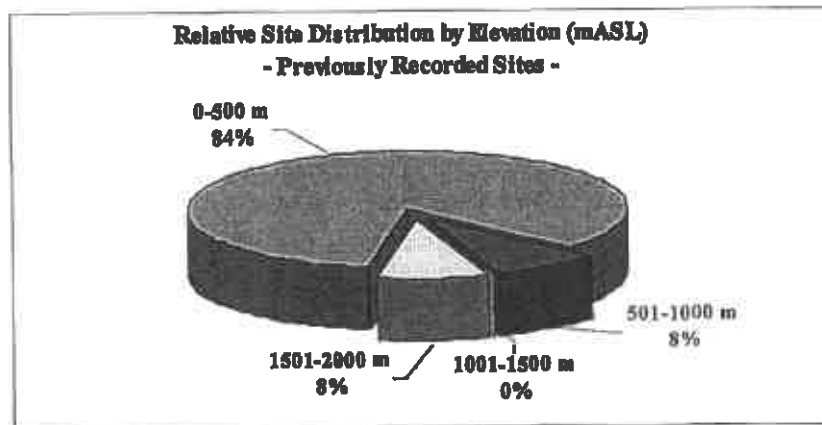
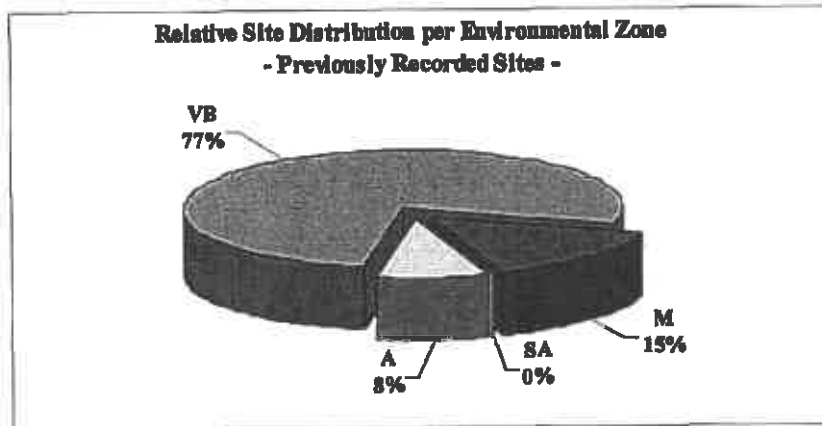
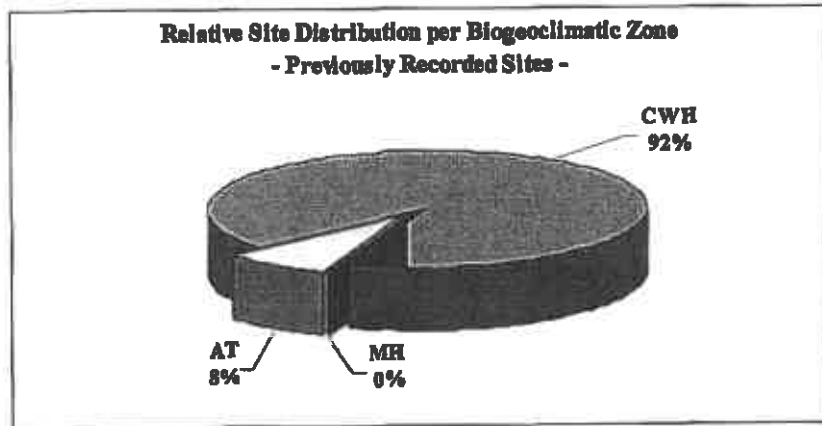


Figure 15. Pie graphs depicting the relative proportions of previously recorded sites in the study area by biogeoclimatic zone, environmental zone and elevation (mASL).

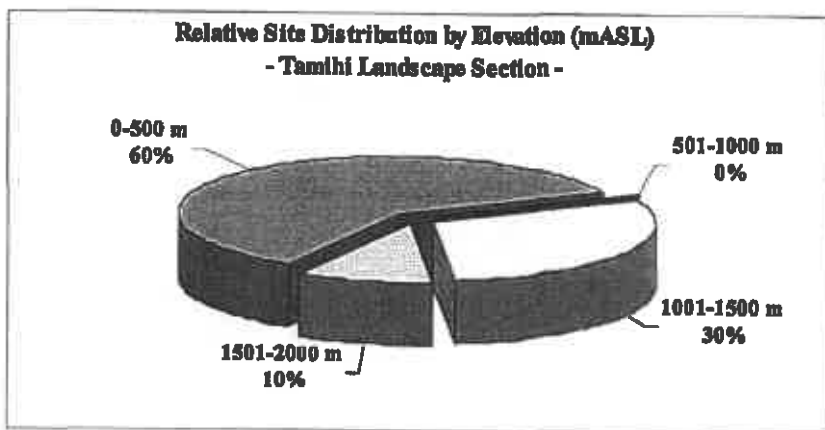
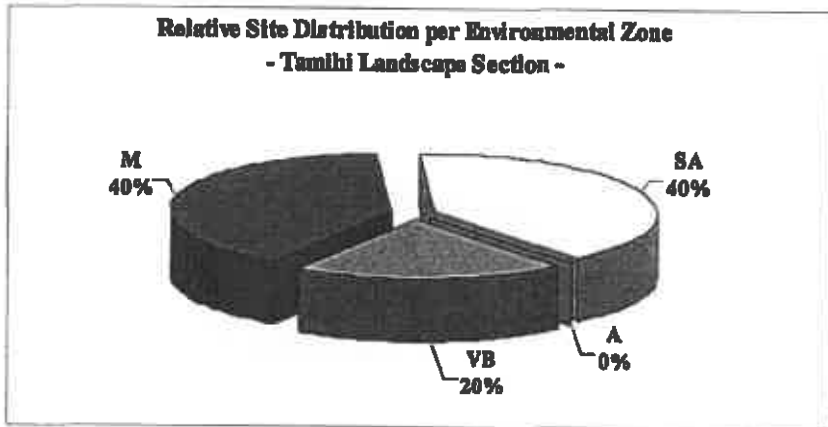
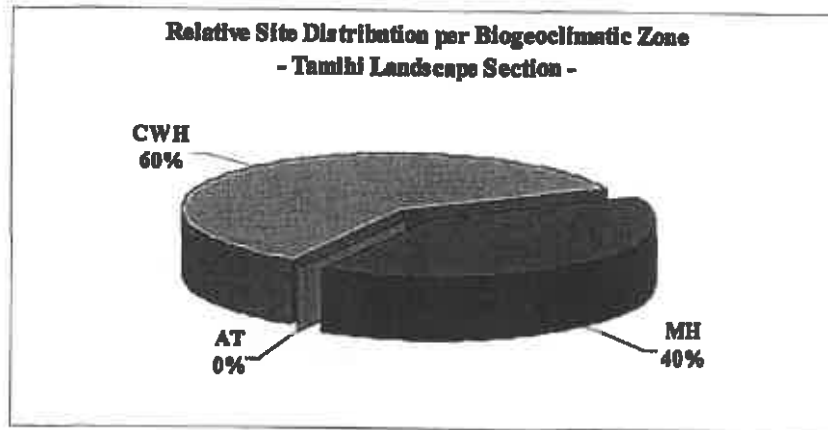


Figure 16. Pie graphs depicting the relative proportions of recorded sites in the Tamihi Landscape Section (i.e., representative sample) by biogeoclimatic zone, environmental zone and elevation (mASL).

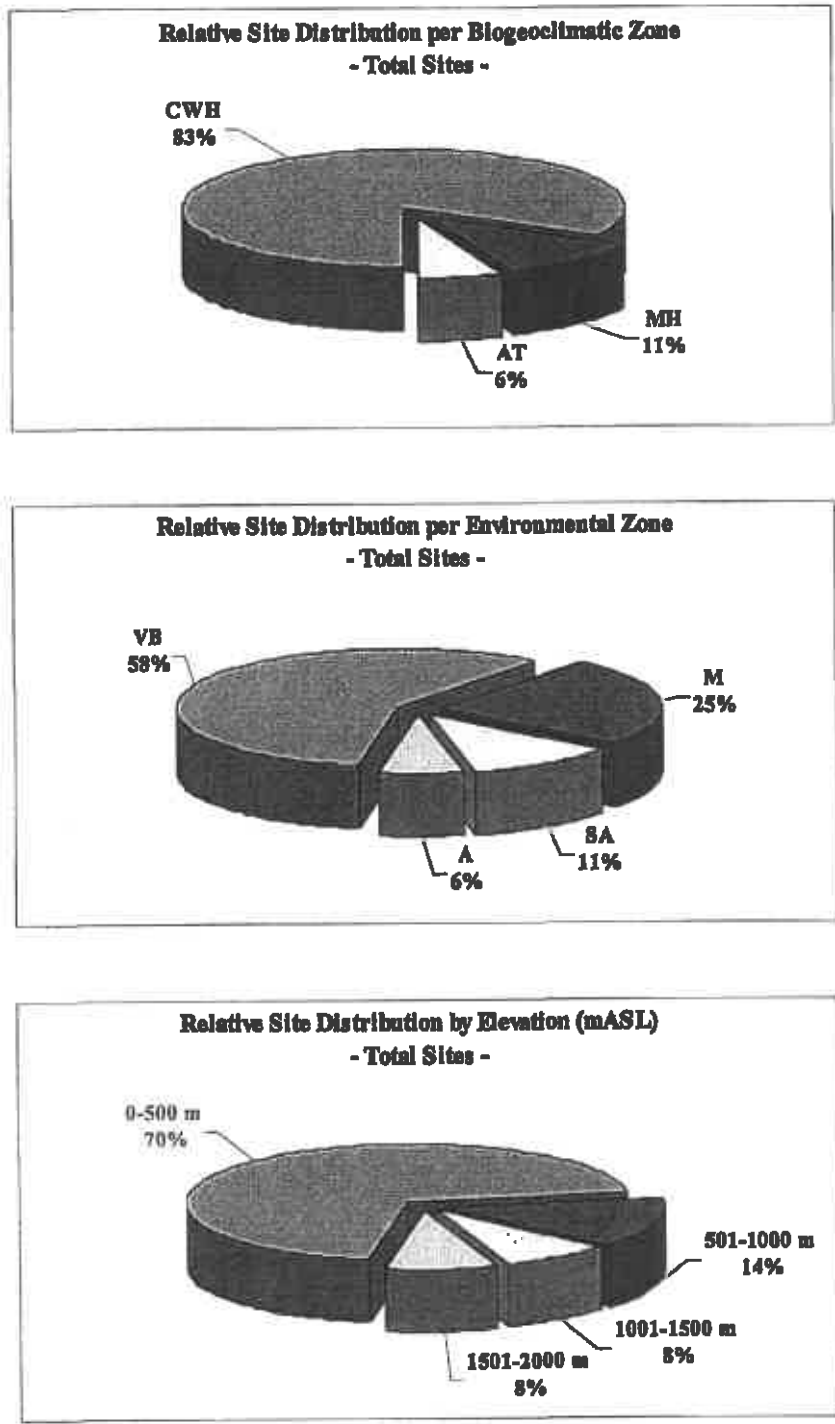


Figure 17. Pie graphs depicting the relative proportions of all recorded sites in the study area by biogeoclimatic zone, environmental zone and elevation (mASL).

distribution patterns in the study area are readily apparent in this figure. Significantly, sites are located in the full complement of the variables used to describe the study area. As compared to the 'Previously Recorded Sites' patterns (see Figure 15), larger proportions of sites are located in the montane, subalpine and alpine environmental zones, at elevations exceeding 500 mASL.

The location of *archaeological* sites in the subalpine and alpine environmental zones, above 1500 mASL is significant in that these are the *first* such sites to be identified in the study area, resulting in new site types (i.e. high elevation). The definite location of archaeological sites in the upper margins of the watershed has profound implications on the study of precontact settlement patterns in the study area, as well as the adjacent upper Fraser River Valley region. Discussion of settlement patterns is, however, beyond the scope of this study. In sum, while concentrated in the CWH zone/valley bottom below 500 mASL, archaeological, historic and bark-stripped tree traditional use sites are distributed throughout the *entire* vertical range of the Chilliwack River Watershed -- in all of the associated biogeoclimatic zones, environmental zones and elevations.

The noticable 'smoothing' effect of the relatively small representative sample (i.e., Tamihi Landscape Section) on site distribution patterns in the study area accentuates the extent of sampling bias presently affecting these patterns. Additional representative sampling is liable to continue 'smoothing' out the vertical site distribution patterns depicted in Figure 17, likely increasing the proportions of sites in the high elevation subalpine and alpine environmental zones (MH and AT biogeoclimatic zones) relative to those in the valley bottom.

Aside from the sampling bias, historic commercial logging is considered to be a significant and insurmountable factor affecting the relative proportion of sites, particularly *forest utilization sites*, in the montane environmental zone. The loss of old-growth forest throughout the majority of the study area frustrates any accurate measure of the number of forest utilization sites once located in these areas. Such activity has undoubtedly reduced the number of *existing* sites in the study area.

5.9 Site Distribution Analysis - Horizontal Distribution

Assessing the distribution of sites (archaeological, historic and traditional use) horizontally across the Chilliwack River Watershed (i.e., from one end of the study area to the other end of the study area) represents a second objective of this study. Figure 18 depicts the number of all recorded sites in the study area per consecutive 10 km intervals along the valley bottom.

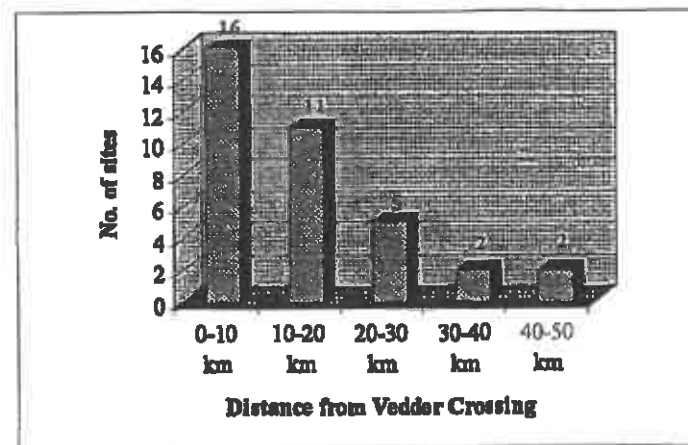


Figure 18. Bar graph showing the horizontal distribution of sites in the study area plotted at consecutive 10 km intervals along the valley bottom, eastward from Vedder Crossing.

Interval measurements start at Vedder Crossing (0 km) and increase eastward following the Chilliwack River to the study area boundary at the international boundary (~50 km). Interval locations are described as follows (see Figure 1):

- Interval One (0-10 km) - extends eastward just past the mouth of Tamihi Creek
- Interval Two (10-20 km) - continues to the east side of the mouth of Slesse Creek
- Interval Three (20-30 km) - continues to nearly half way between the mouths of Nesakwatch and Centre creeks
- Interval Four (30-40 km) - continues to just east of the foot of Chilliwack Lake
- Interval Five (40-50 km) - continues to the international boundary

Site locations were plotted along the valley bottom, perpendicular to their actual locations on the landscape. The distances between Vedder Crossing and each site plot were then measured to determine their horizontal positions within the study area.

While not depicted, results from this study added sites to Intervals Two, Three and Five, which were previously devoid of data. As such, this study has greatly enhanced the horizontal site distribution pattern in the study area, particularly in regards to Interval Two. However, the distribution of sites depicted above remains heavily influenced by survey bias and is presently more indicative of which portions of the study area have been surveyed than of any real site distribution pattern. A 'horizontally representative' survey of the study area is required to address this situation. Regardless, it can be conclusively

stated that sites are distributed throughout the *entire* horizontal extent of the Chilliwack River Watershed.

5.10 Site Predictive Model Testing

Data from the sites located within the study area can be immediately used to test the effectiveness of the archaeological site predictive models -- per Millennia 1996 and as revised in 1997 -- utilized within the Chilliwack Forest District. Because previously identified sites were incorporated into the design of the predictive model(s), only those sites identified as a result of this study were utilized in this test. Each of these sites, archaeological or otherwise, were 'scored' according to the 'site location models' developed by Millennia (1996:77, 1997:2-8). This was done to identify the potential rating assigned to each site by each predictive model. According to both models (designed for assessing forestry cut-blocks), 'high potential' locations require full scale archaeological impact assessment, 'moderate potential' require field reconnaissance level inspection, and 'low potential' locations require no inspection (i.e., no further work). Once determined, each model's effectiveness at site potential and assessment level rating could then, at a preliminary level, be assessed. Results of these evaluations are presented below.

5.10.1 The 1996 Model

The 1996 site location model scores and potential ratings (per Millennia 1996) for each newly identified site in the Chilliwack River Watershed study area are presented below in Table 7.

Table 7. Site potential scores and ratings for all newly recorded sites											
Site No.	S	LF	DTW	ES	EU	KnS	OG	SUB	AC	Tot.	Potential Rating
Archaeological Sites											
DgRi-2	3	1	2*	0	0	0	0	0	1	12	High
DgRj-3	3	0	2**	0	0	0	0	0	0	6	Low
DgRj-4	1	0	2*	0	0	0	2	0	1	5	Low
DgRj-5	3	1	2*	0	0	0	2	0	1	18	High
DgRk-5	3	0	0	0	0	0	0	1	0	3	Low
DgRk-8	3	1	2*	1	0	0	0	0	1	15	High
DgRk-9	3	1	2*	0	0	0	0	0	1	12	High
DgRk-10	3	1	2*	0	0	0	0	0	1	12	High
DgRk-11	1	0	2*	1	0	0	0	0	1	4	Low
DgRk-12	3	0	2*	0	0	0	0	0	1	9	Mod.
DgRl-25	2	0	2*	0	0	0	2	0	0	8	Mod.
DgRl-26	3	1	2*	1	0	0	2	0	1	21	High
DgRl-27	1	0	2*	0	0	0	2	0	0	4	Low
Historic Sites											
DgRk-2	3	1	1***	0	0	0	1	1	0	12	High
DgRk-3	3	0	2**	0	0	0	1	1	0	12	High
DgRk-4	3	0	2**	0	0	0	1	1	0	12	High

Site No.	S	LF	DTW	ES	EU	KnS	OG	SUB	AC	Tot.	Potential Rating
DgRk-6	1	0	1***	0	0	0	0	0	0	1	Low
DgRk-7	3	0	2**	0	0	0	0	0	0	6	Low
DgRi-3	3	1	2*	0	0	0	1	0	1	15	High
Traditional Use Sites											
AIS-9	3	0	2*	0	0	0	0	0	0	6	Low
AIS-11	1	0	2*	0	0	0	0	0	0	2	Low
AIS-18	3	0	1***	0	0	0	0	0	0	3	Low
AIS-23	2	0	2*	0	0	0	1	0	0	6	Low
Abbreviations											
S	slope		LF	landform		DTW	distance to water		ES	known ethnographic site	
EU	ethnographic use		KnS	known arch. site		ES	known ethnographic site		AC	access	
OG	old growth		SUB	subalpine		AC	access		*	L1 lake or S1 stream	
Tot.	total score		Mod.	moderate							
**	L2 or L3 lake, W1 wetland, or S2-S3 stream										
***	L4 lake, W2-W5 wetland, S4-S5 stream										

These data presented above are interpreted in the following series of pie graphs (Figure 19) which depict the proportions of potential ratings per site class (archaeological, historic, traditional use and combined/total categories). These potential rating proportions -- relative to the sites identified during this study -- are indicative of the effectiveness of this model at predicting site locations in the study area.

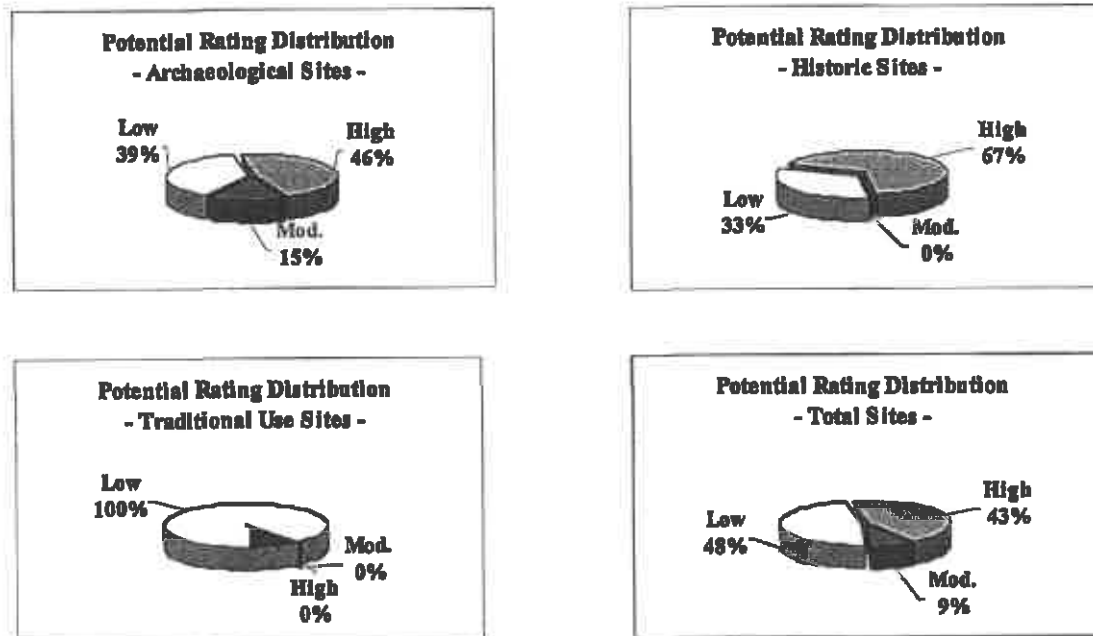


Figure 19. Pie charts depicting the relative proportions of the 1996 site predictive model potential ratings for archaeological, historic, traditional use (CMT) and total site categories of sites recorded during this study.

The pie charts in Figure 19 consistently associate a high percentage (> 33%) of recorded sites of all types with low site potential determinations. Most strikingly, *all* of the traditional use CMT sites -- although few in number -- fell within low potential rated areas. Not all identified sites, particularly those resultant from a representative sampling strategy which inspects all ranges of site potential areas, are expected to fall within high site potential locations. However, the percentage of sites occurring in low potential areas should be relatively small -- reflecting the low site density expected in such areas. Determining *what* represents an acceptable percentage of sites in low potential locations has yet to be worked out.

Considering all sites combined (i.e., total sites), this analysis indicates a near even split between sites located in high and low potential areas. The large proportion (48%) of sites located in low potential areas indicates that the site predictive model currently being used in the Chilliwack Forest District (including the study area) lacks effectiveness in determining accurate site potential ratings for *some* site classes and/or types. CMTs -- associated with archaeological, historic and traditional use site -- comprise 64% of the site types given low potential ratings. While the model provided high potential ratings for the historic subalpine sites, it provided low potential ratings for both high elevation *archaeological* sites (DgRj-3, DgRg-5).

5.10.2 The 1997 Model

The revised 1997 site location model scores and potential ratings (per Millennia 1996) for each newly identified site in the Chilliwack River Watershed study area are presented below in Table 8.

Site No.	S	LF	DTW	ES	EU	KnS	OG	SUB	AC	Tot.	Potential Rating
Archaeological Sites											
DgRi-2	3	1	2*	0	1	0	0	0	1	15	High
DgRj-3	3	0	2**	0	1	0	0	0	0	9	Mod.
DgRj-4	1	0	2*	0	1	0	2	0	1	6	Low
DgRj-5	3	1	2*	0	1	0	2	0	1	21	High
DgRk-5	3	0	0	0	1	0	0	1	0	6	Low
DgRk-8	3	1	2*	1	1	0	0	0	1	18	High
DgRk-9	3	1	2*	0	1	0	0	0	1	15	High
DgRk-10	3	1	2*	0	1	0	0	0	1	15	High
DgRk-11	1	0	2*	1	1	0	0	0	1	5	Low
DgRk-12	3	0	2*	0	1	0	0	0	1	12	High
DgRi-25	2	0	2*	0	1	0	2	0	0	10	Mod.
DgRi-26	3	1	2*	1	1	0	2	0	1	24	High
DgRi-27	1	0	2*	0	1	0	2	0	0	5	Low
Historic Sites											
DgRk-2	3	1	1***	0	1	0	1	1	0	15	High

Site No.	S	LF	DTW	ES	EU	KnS	OG	SUB	AC	Tot.	Potential Rating
DgRk-3	3	0	2**	0	1	0	1	1	0	15	High
DgRk-4	3	0	2**	0	1	0	1	1	0	15	High
DgRk-6	1	0	1***	0	1	0	0	0	0	2	Low
DgRk-7	3	0	2**	0	1	0	0	0	0	9	Mod.
DgRi-3	3	1	2*	0	1	0	1	0	1	18	High
Traditional Use Sites											
AIS-9	3	0	2*	0	1	0	0	0	0	9	Mod.
AIS-11	1	0	2*	0	1	0	0	0	0	3	Low
AIS-18	3	0	1***	0	1	0	0	0	0	6	Low
AIS-23	2	0	2*	0	1	0	1	0	0	8	Mod.
Abbreviations											
S	slope		LF	landform		DTW	distance to water		ES	known ethnographic site	
EU	ethnographic use		KnS	known arch. site		ES	known ethnographic site		AC	access	
OG	old growth		SUB	subalpine		AC	access		*	L1 lake or S1 stream	
Tot.	total score		Mod.	moderate							
**	L2 or L3 lake, W1 wetland, or S2-S3 stream										
***	L4 lake, W2-W5 wetland, S4-S5 stream										

Again, these data are interpreted in the following series of pie graphs (Figure 20) which depict the proportions of potential ratings per site class (archaeological, historic, traditional use and combined/total categories).

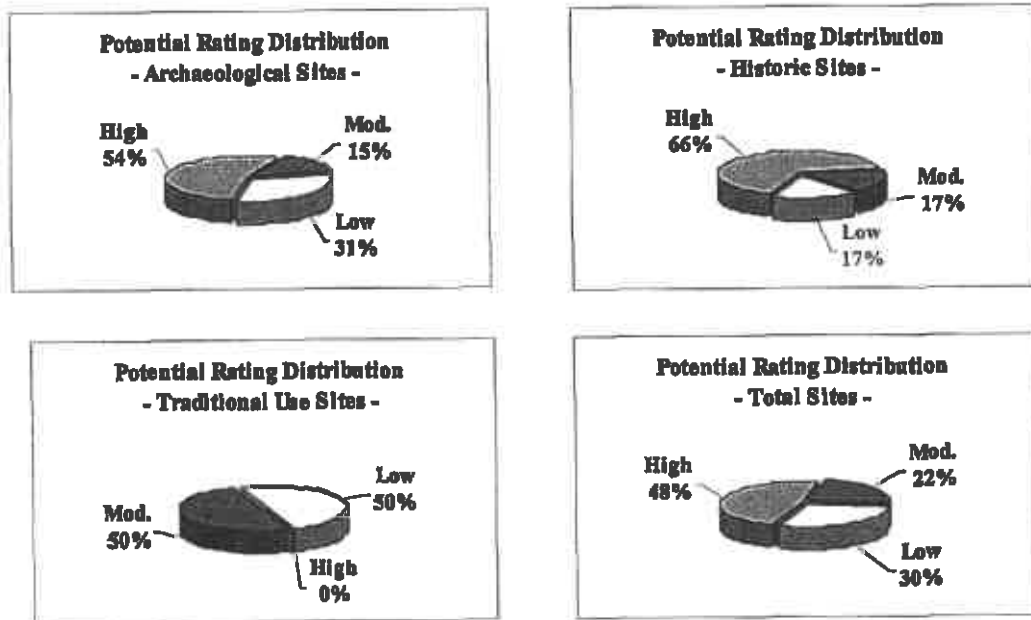


Figure 20. Pie charts depicting the relative proportions of the 1997 site predictive model potential ratings for archaeological, historic, traditional use (CMT) and total site categories of sites recorded during this study.

While somewhat more effective at predicting cultural heritage site locations than the 1996 model, the 1997 model still derives low potential determinations for a relatively high percentage of archaeological and traditional use sites. The primary difference between the 1996 and 1997 site location models -- as applicable to this analysis -- is the scoring of '1' for the 'ethnographic use' variable for *all* sites. This revision resulted in changes to a total of five potential rating determinations -- all of these being 'upgrades' to higher levels of site potential. Eighty percent of these changes were upgrades from low to moderate potential, with the greatest effect on traditional use CMT sites. Common among the sites which continue to be classified as 'low potential' are low slope ratings, indicative of high slope percentages in the site area. Generally, the percentages of sites -- namely archaeological and historic -- classified as 'high potential' have increased as a result of the revisions made to the 1996 model. CMTs, of historic and archaeological nature, and traditional use CMTs continue to comprise the majority of sites in the 'low potential' class. As stated previously, such oversight is largely a result of Additional data from such sites would likely

5.11 Predictive Model Effectiveness

A number of sources for error potentially affecting the Chilliwack Forest District site location model(s) were identified while conducting the above analyses. Subjectivity in determining scores for the 'landform' and 'accessibility' variables may cause variations in the outcome of these potential ratings, if replicated. Criteria for assessing 'accessibility' were particularly vague in dealing with the forest utilization traditional use sites (should access be judged relative to existing roadways?). The utility of continuing to use 'ethnographic use' as a meaningful variable, more or less a *constant* rather than a variable, should be reconsidered. The availability of 'ethnographic use' data, as well, is inconsistent and cannot be applied equally to all areas. Another factor affecting the accuracy of this, and likely *all* site potential models, is the discrepancy between *mapped* data -- such as slope, forest cover and stream classifications included in the terrestrial resources inventory map (TRIM) database -- and *actual* field data. Thus, aside from the variable/scoring system of the predictive models themselves, the accuracy of available TRIM data may be a significant source of error and variability affecting the accuracy and application of such models in areal potential rating.

Areas where the predictive model(s) seem to be least effective -- CMTs and sites on steep slopes -- coincide with site types for which little data exists in the study area, as well as throughout the Chilliwack Forest District/Stó:lō Traditional Territory overlap. Because models, in general, are constrained by data quality and availability, it is not expected that this model would effectively predict site locations in 'data poor' areas and for 'data poor' site types. As such, the capabilities of the existing site predictive model reflect the archaeological sampling bias' -- identified in the distribution analyses -- generally affecting the study area and its vicinity. Continuing to input data resultant from representative sampling, with specific regard to decreasing the data gap for CMTs, high elevation archaeological sites and sites on steep slopes, is recommended as a means of

increasing this predictive model's accuracy and effectiveness. Because CMTs (particularly those in traditional use sites) appear to be falling beyond the parameters of most other site types, it seems reasonable to develop a separate predictive model specifically addressing this category of site. Material traditional use sites, in general, may best be dealt with separate from an 'archaeological model'. More thought about the treatment of such sites is required.

Based on the results of these analyses, it is apparent that the 1997 site predictive model, while more effective than its predecessor, remains weak in certain areas which could use additional consideration. Such reconsideration is a natural element in the cycle of predictive model development, testing and revision, the goal of which is to increase the model's accuracy. The results of the above analyses emphasize the importance and practicality of conducting AISs as a means of ground truthing such models. Repeating such analyses utilizing more data -- larger numbers of sites -- will also help verify the results presented above.

6.0 EVALUATION OF RESEARCH

As a pilot AIS, this study tested the application of field survey, data collection and analytic methods, governed by particular sets of research objectives and field constraints. Two aspects of this study -- the suitability of the applied survey strategy and inventory methods, and the extent to which the results addressed the research objectives -- are evaluated with the intention of providing feedback for conducting future AISs in the Stó:lō Traditional Territory/Chilliwack Forest District overlap, and/or similar environments.

6.1 Suitability of Inventory Strategy and Methods

The research strategy and field methods applied in the Chilliwack River Watershed Archaeological Inventory Study were selected from a number of possibilities. Evaluation of the suitability of the applied strategy and methods may provide useful feedback for the formulation of other AISs in the Stó:lō Traditional Territory/Chilliwack Forest District overlap, and in similar environments around the province.

The research design employed in this study resulted in the collection of data which successfully addressed questions concerning cultural heritage site distributions in the Chilliwack River Watershed. A *judgemental*, as opposed to random (probabilistic), sampling strategy selected and applied indetermining areas to be surveyed. The data collected within the judgementally determined, *representative* survey design, as applied to the Tamihi Landscape Section, proved to be suitable for and effective in conducting analyses of the vertical distribution of sites. The data collected within the judgemental, non-representative *spot check* surveys was effectively applied in assessing the horizontal distribution of sites. This sampling strategy was a cost-, time- and labor-effective response to the set of constraining factors governing field survey in the study area.

The applied survey methods are, likewise, considered to have been appropriate to the study area conditions. However, a number of 'obstacles' could not be overcome during the implementation of field survey methods. These include the effects of:

1. relatively recent tree plantations and young age-class forest stands (< 30 years old) in survey areas
2. steep, hazardous terrain
3. impenetrable ground cover in some sub-alpine and alpine meadows

Factor 1 -- related to recent logging activity and/or forest fire events -- limited the extent of surveyed areas in Units 1, 2 and 3 of the Tamihi Landscape Section due to excessively dense brush. Unfortunately, these conditions exist in direct association with logging road access, the *only* type of vehicular access to most of the study area back-country. Factor 2 -- typical of much of the study area -- limited survey in TLS Unit 4 and, particularly, Unit 3. As a result, the actual sample of the mid-montane, CWH/MH biogeoclimatic transition

zone (i.e., Unit 3) was less representative than originally planned. Factor 3 reduced the capacity to shovel test a number of meadows located in the alpine portions of Unit 4 and limited the inspection of these areas to a visual level.

While these factors constrained the extent of field survey, the representative nature of the survey design is considered to have remained relatively intact. These constraints most obviously affected TLS, Unit 3, which received less thorough survey coverage than the other units, and in which no sites were identified. As a result, some degree of uncertainty remains about the types and relative proportion(s) of sites expected in areas represented by Unit 3. It remains the general impression that this portion of the landscape has the lowest comparative site density. Overall confidence in the results of this study is considered to be fairly high.

Although generally successful in this study, the applied strategy and methods may not suit other studies. Strategies and methods for future inventory studies must be tailored to the conditional constraints and research objectives of each individual case.

6.2 Assessment of Research Objectives and Results

The objectives of assessing cultural heritage site distributions -- both horizontally and vertically -- throughout the study area, provided a framework for the implementation of this study. *Site distribution*, as a principal focus of cultural resource management, provides the logical focus for AIS investigations. As defined, three classes of sites -- archaeological, historic and traditional use-with *material remains* -- were included in this study. The inclusion of these site classes is critical to providing an assessment of the *complete range* of physical cultural heritage resource site locations and distributions with which cultural resource managers *must* be concerned. These site classes should be systematically included in all AISs.

Analysis of data collected during this study provided insight into the distribution of cultural heritage sites in an area previously deficient in archaeological data and adversely affected by sampling bias. These results addressed the stated research objectives in two significant ways, providing insight into:

- the effects of the sampling bias' on site distributions
- site distribution patterns reflective of *actual* site locations rather than sampling bias

The results of this study effectively addressed the stated research objectives, to a preliminary degree. The scope of this study, though expansive, was insufficient to overcome the entire data gap for the study area. While reduced from its previous extent, the data gap for the study area remains quite large. Additional inventory work is required to completely compensate for the effects of the data gap on cultural heritage site patterning in the the Chilliwack River Watershed, as throughout the rest of the Stó:lō Traditional Territory/Chilliwack Forest District overlap.

7.0 CONCLUSION AND RECOMMENDATIONS

7.1 Conclusions

The Chilliwack River Watershed Archaeological Inventory Study has added significantly to the understanding of the cultural occupation and utilization of the Chilliwack River Watershed. In summary, this study:

- significantly increased the amount of area of the Chilliwack River Watershed which has undergone archaeological/cultural heritage survey -- a total of 550 ha were inspected during this study
- identified 19 previously unrecorded archaeological sites -- nearly doubling the number of known archaeological sites in the study area
- identified four previously unrecorded traditional use sites (with material remains)
- identified six previously unrecorded historic sites
- significantly expanded the boundaries of one previously recorded archaeological site
- identified and documented archaeological, traditional use (with material remains) and historic sites throughout the entire horizontal range of the study area from Vedder Crossing to the international boundary south of Chilliwack Lake
- identified and documented archaeological, traditional use and historic sites throughout the entire vertical range of the watershed, including subalpine and alpine environmental zones -- never before subject to archaeological inspection
- added to the development of a representatively sampled area of the study area as well as the Stó:l̓ Traditional Territory/Chilliwack Forest District overlap area by addressing the existing data gap (i.e., deficiencies in the existing proportions of surveyed area) and helping to compensate for the effects of sampling bias in creating a more accurate picture of cultural resource distributions
- identified weaknesses in the existing Chilliwack Forest District archaeological site predictive model which should be addressed in light of evidence resultant from this study
- suggested ways to revise and increase the accuracy and effectiveness of the existing Chilliwack Forest District archaeological site predictive model

The increase in understanding of cultural heritage (i.e., archaeological, historic and traditional use) site types and locations in the study area resultant from this study has enhanced the present ability/capability to manage such resources within this area. Significantly, the research design of this study incorporated traditional knowledge obtained through interviews with Elders, as well as ethnographic information pertaining to the Chilliwack River Watershed. Presently, information derivative of traditional use and

ethnographic information is not systematically incorporated into the Chilliwack Forest District archaeological overview assessment/site predictive model (as is true for most of the existing B.C. forest district overviews/models). Such information provided a very effective guide for selecting many of the *spot check* locations investigated in this study, which resulted in a very high 'area assessed:site location' ratio (nearly 100% success rate). The addition of such information may, likewise, add significantly to the ability of the Chilliwack Forest District site predictive model to more effectively define areas of archaeological/cultural heritage site potential. Increasing the general accuracy and effectiveness of this model will increase the ability to effectively manage the cultural heritage resources which it addresses. Inputting data collected from continued archaeological inventorying of the Stó:lō Traditional Territory/Chilliwack Forest District overlap area comprises the most effective means of testing and correcting this model. Perhaps more importantly, this study has significantly increased the number of *known* site locations in the Stó:lō Traditional Territory/Chilliwack Forest District overlap. For the cultural resource manager, more valuable than being able to predict site locations is actually knowing where sites exist.

7.2 Recommendations - Archaeological Inventory Study 5-Year Plan

The success and immediate utility of this archaeological inventory study – perhaps more accurately termed a *cultural resource inventory study* due to its inclusion of all classes of material remains – has demonstrated the practicality of conducting future AISs within the the Stó:lō Traditional Territory/Chilliwack Forest District overlap area. As part of this study, other portions of the overlap area were identified as high priority locations for conducting future AISs. These include:

- Sumas Mountain
- Vedder Mountain
- Chilliwack Mountain
- Norrish Creek Watershed
- Chehalis River Watershed
- Harrison Lake/River Watershed
- Fraser River Canyon (Spuzzum to Hope)
- Coquihalla River Watershed (Mt. Henning to Hope)
- Silverhope Creek/Skagit River Watershed (north of the international boundary)

It is proposed that a 5-Year Plan, comprised of AISs of areas selected from this list, be implemented. This 5-Year Plan focuses on the large scale representative sampling of the entire Stó:lō Traditional Territory/Chilliwack Forest District overlap area. Study areas representing an even (i.e., *representative*) distribution of this area may be strategically selected based on the current forest and cultural resource management needs of both the

Chilliwack Forest District and the Stó:l̓6 people. A preliminary 5-Year Plan outline follows:

- Year 1 - AIS of Study Area A (e.g., N portion of overlap area - to be selected)
- Year 2 - AIS of Study Area B (e.g., NE portion of overlap area - to be selected)
- Year 3 - AIS of Study Area C (e.g., SE portion of overlap area - to be selected)
- Year 4 - AIS of Study Area D (e.g., SW portion of overlap area - to be selected)
- Year 5 - AIS of Study Area E (e.g., 'supplemental' portion(s) of overlap area - to be selected) / Final analysis and collation of data collected during Years 1-4

Based on the accomplishments of the present AIS, an estimated 2700 ha could be inspected over the course of the 5-Year Plan, *doubling* the land area presently surveyed in the Chilliwack Forest District (Equinox 1997:12). As well, this amount of surveyed area would reduce the present 'minimum additional survey requirements' for the Chilliwack Forest District by nearly 20% (ibid.). Information representatively collected from inventoried study areas could be analyzed both individually and collectively to shed light on cultural resource distribution patterns throughout the overlap area. Such data would continue to mitigate the effects of the present sampling biases on these distribution patterns. Data would be accrued which would:

- allow the development of more accurate and effective site predictive models -- either for the entire overlap area or on a watershed by watershed basis (if need be)
- increase the number of known site locations.

The cost of implementing the proposed 5-Year Plan is estimated to be considerably *less* than the maximum provincial fine for impacting even *one* archaeological site.

Continuing a program of AISs within the Stó:l̓6 Traditional Territory/Chilliwack Forest District overlap area is strongly recommended as a now *tested* and *proven* method of collecting cultural resource data and increasing the effectiveness of existing cultural resource management practices.

7.3 Mitigation Measures for Impacted Sites

During the course of this AIS, a number of archaeological sites were identified which have suffered and continue to suffer various extents of adverse impact from human activities. These sites include:

- DgRi-1
- DgRj-3
- DgRk-8
- DgRk-11
- DgRl-26

It is strongly recommended that the agencies -- the Ministry of Forests and the Ministry of Environment, Lands and Parks -- presently responsible for the management of the areas in which these sites are located devise mitigation measures, in direct consultation with Stó:lō Nation, for these sites.

Please be advised that Stó:lō Nation's participation in this project does not constitute consultation between the Province of British Columbia and Stó:lō Nation. Nothing in this report is intended to define or affect the exercise or scope of, or justify any infringement of any Stó:lō aboriginal rights or title, nor shall anything in this report be interpreted as affecting the legal relationship between these parties.

Notwithstanding that this report may be produced in court by the Stó:lō Nation and only the Stó:lō Nation, this report, and negotiations leading up to it, and information shared as a result of it, are without prejudice to any legal positions that have been taken or may be taken by either of the parties in any court proceedings, process or otherwise or any treaty or other negotiations, and shall not be construed as an admission of fact or liability in any such proceedings, process or negotiations.

The sharing of any information in this report shall not be construed as concurrence with provincial policies.

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APPENDIX I

CHILLIWACK RIVER WATERSHED ARCHAEOLOGICAL INVENTORY STUDY - INVENTORY REPORT GUIDELINES -

Introduction

The introduction should include:

- the proponent's name(s) and general nature of the project,
- the objective(s) and scope of the inventory,
- the persons conducting the inventory and the kinds of professional expertise involved,
- the dates and duration of the study, and
- the organizational format of the report.

Study Area

This section should contain a brief description of the project area. Emphasis should be placed on relating the project area to the natural and cultural environments. Description of the project area should include:

- biophysical features such as physiography, drainage, fauna, and flora,
- a discussion of past and present ecological conditions that bear upon human settlement and land use,
- past and present land use practices,
- the condition of the land, particularly the extent of alteration from agricultural activity, forest harvesting, or other intensive land uses, and
- weather conditions and patterns, particularly as they relate to or affect the conduct and scheduling of fieldwork.

Methodology

The basic research plan and the precise methods and equipment used to implement the plan should be outlined in this section. Methodological discussion should include:

- a thorough account of the sampling design, particularly sample selection and size, including the influence of confounding factors,

- a rationale underlying any stratification of the project area according to the archaeological potential, and the level of survey intensity in these strata,
- the number of surveyors, the manner in which they were deployed over the survey area including distance intervals and direction of travel, and the amount of time spent surveying any one area,
- location of areas exempt from survey,
- where and how often subsurface testing was employed, the particular practices used including test frequency, interval spacing and test dimensions, and an appropriately scaled map depicting shovel tested areas,
- site recording practices, and
- sources consulted in designing the site inventory strategy.

Resource Inventory

This section should contain results of the archaeological site inventory including:

- maps showing areas surveyed, and indicating the level of survey intensity,
- maps showing all recorded archaeological sites in relation to the study area (in accordance with the information sharing agreement established between Stó:lō Nation and the Ministry of Forests),
- the number of archaeological sites recorded and an indication of the total generally anticipated in the study area,
- a brief narrative or tabular description of each site including present condition and use, relevant distinguishing features, and its general relationship to the regional environment and cultural setting,
- a summary (qualitative and/or quantitative) of all cultural material or features observed or collected,
- an interpretation of the archaeological resource inventory possibly including observed spatial patterning of sites in the project area, temporal, functional and contextual characteristics, and comparisons with other local or regional resources,
- an explanation of negative results, such as where and why archaeological sites were absent in areas suspected of having moderate to high resource potential, and
- any further predictions concerning potential variability, density, distribution and importance in the project area.

Evaluation of Research

This section should contain a critical evaluation of the inventory study. The discussion should address:

- the accuracy of overview predictions regarding archaeological resource density, distribution, variety and significance in the project area,
- the suitability of the inventory strategy and site survey techniques employed, and the level of confidence that can be placed on the survey results,
- the relationship between the results and the stated objectives of the inventory study, including problem-oriented research objectives if applicable, and
- appropriate research goals, objectives or opportunities for subsequent archaeological studies in the project area.

References Cited

A comprehensive list of all literary sources cited in the report such as publications, documents and records should be presented in this section. The reference list should include names and dates of all personal communications.

Appendices

A variety of items should be appended to the report, including:

- appropriate tables, charts, graphs, maps, photos and other supportive materials,
- a list of all recorded archaeological sites, referenced by their appropriate "Borden" number,
- confidential archaeological site location and access exempt from provincial and national 'freedom of information' laws, and intended for exclusion from public disclosure.

APPENDIX II

ARCHAEOLOGICAL SITE DATA TABLES:

- (a) Cultural Material Data
- (b) Habitation Feature Data
- (c) Earthwork Feature Data
- (d) Forest Utilization Feature Data
- (e) Subsistence Feature Data

(a) Cultural Material Data:

DgRi-1 - Artifact Data -							
Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	0-8	core frag.	basalt (fine)	1.8	1.7	1.5	
	0-8	flake frag. (debitage)	basalt (coarse)	1.9	1.5	0.3	
	0-8	flake frag. (debitage)	quartzite	1.6	1.3	0.4	
	0-8	core frag.	basalt	1.8	1.5	1.2	
	20-30	flake (debitage)	basalt	2.7	1.8	1.7	
2	30	shatter (debitage)	meta-sediment	2.0	1.0	0.7	
3	35	core fragment	meta-sediment	3.5	2.7	1.2	
7	11	flake, (debitage)	meta-sediment	2.8	2.8	1.0	cortex on platform
	30	flake (debitage)	meta-sediment	2.0	1.6	0.5	
8	48	core fragment	chert, blue-gray	2.7	2.9	0.3	possible utilized margin; poch-marked dorsal surface (heated)
10	25	flake, proximal fragment, (debitage)	meta-sediment	2.2	2.0	0.3	softhammer flake
	30	flake, distal fragment (debitage)	misc. meta-morphic	2.8	5.2	0.3	possible retouched margin
11	56	unifacially retouched flake, proximal fragment	basalt	3.7	3.3	0.7	one retouched margin

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
12	10	flake, proximal fragment (debitage)	misc. igneous	1.4	1.4	0.2	
13	20	flake (debitage)	dark grayish andesite (?)	2.4	2.1	0.2	likely softhammer flake
--	surface (lake shore)	projectile point, triangular, corner-notched	basalt, fine	2.5	2.3	0.5	Collected, Cat. No. DgRi-1-1
--	surface (lake shore)	projectile point, triangular, side-notched	basalt, fine	1.7	1.2	0.2	Collected, Cat. No. DgRi-1-2
--	surface (lake shore)	core fragment	andesite	6.3	5.9	2.7	Collected, Cat. No. DgRi-1-3
--	surface (lake shore)	flake, proximal fragment (debitage)	chalcedony	1.4	2.0	0.4	Collected, Cat. No. DgRi-1-4
--	surface (lake shore)	flake, medial fragment (debitage)	chert(?)/meta-sediment	1.7	2.9	0.5	Collected, Cat. No. DgRi-1-5
--	surface (lake shore)	flake, medial fragment (debitage)	chert, gray-black mottled	1.9	1.6	0.3	Collected, Cat. No. DgRi-1-6

DgRi-2 - Artifact Data -							
Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	10-20	flake (debitage)	chert	4.2	3.3	0.4	blue-gray color
		flake (debitage)	misc. igneous	4.5	2.5	0.6	
		core shatter	obsidian	1.6	1.2	0.9	Mt. Rahm obsidian (local); plastic-like cortex
		core shatter	chert	0.6	0.7	0.4	grayish white color
		flakes/fragments (x5)	chert	<1.0	<1.0	<0.1	grayish chert with white inclusions; only two complete flakes
1	20-35	core shatter	obsidian	2.0	1.1	1.0	Mt. Rahm obsidian (local); collected (Cat.# Ch-T-22-1)
		flake fragments (x4)	white-gray chert	~ 1.0	~ 1.0	0.1-0.3	
		flake (debitage)	grayish chert	4.3	2.5	0.5	

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	20-35	flake fragment	grayish chert	2.5	1.7	0.4	Proximal fragment
		flake fragment	obsidian	1.1	0.7	0.3	Mt. Rahm obsidian
		flake fragment	chert	2.2	0.7	0.7	gray-black w/white specks; poss. Mt. Rahm obsidian
		core fragment	gray chert	2.2	2.2	1.4	
1	35-45	flake (debitage)	dark gray chert	1.5	3.7	0.5	
		flake fragments (x5)	chalcedony (x2), chert (x3)	1.0-2.0	1.0-2.0	0.2-0.5	thin, likely billet flake fragments
		misc. flake fragments	misc.	0.5-1.0	0.5-1.0	≤0.2	mostly medial fragments
		core shatter (x5)	chert (x3), misc. (x2)	1.3-2.5	0.7-1.2	0.4-0.6	
1	45	poss. biface medial frag.	obsidian	0.7	1.4	0.3	Mt. Rahm obsidian (local); collected (cat. #Ch-T-22-2)
1	45-50	flake (debitage)	chalcedony	2.1	1.3	0.2	
		flake frags. (x2)	chert	1.0-1.2	1.0-1.5	0.1-0.2	blue-gray color
		flake frags. (x3)	chert	<1.0	<1.0	<0.1	one pressure flake proximal fragment
		core shatter (x2)	obsidian, chert	<1.5	<1.5	0.5-1.0	Mt. Rahm obsidian (local)
2	17	flake fragment	chalcedony	1.0	1.0	0.2	medial fragment
3	24	blade-like flake fragment	obsidian	1.5	0.7	<0.1	likely Oregon-source obsidian; collected (cat. #Ch-T-22-3)

Note: Mt. Rahm obsidian identifications were made based on descriptions provided by North Cascades National Park Archaeologist Robert Mierendorf and similarities to comparative specimens (retained by Robert Mierendorf).

DgRj-3 - Artifact Data -							
Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
*	?	flake, proximal fragment (debitage)	basalt, fine grained	1.8	2.2	0.4	late reduction stage flake; collected (Art. # Ch-T-12-1)

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
*	?	utilized flake	basalt, fine grained	7.5	4.0	1.5	early reduction stage flake, one utilized margin; collected (Art. # Ch-T-12-2)
* located in rodent hole backdirt pile (i.e., subsurface deposit)							

**DgRj-5
- Artifact Data -**

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
--	surface	unifacially edge-modified flake	basalt	4.2	3.8	1.3	Cat. # Ch-T-20-1 - collected
--	surface	unifacially edge-modified flake	basalt	4.2	3.3	1.6	Cat. # Ch-T-20-2 - collected
--	surface	flake (debitage)	basalt	5.0	4.0	1.0	Cat. # Ch-T-20-3 - collected
--	surface	core fragment	basalt	4.0	3.0	1.5	Cat. # Ch-T-20-4 - collected
--	surface	flake (debitage)	basalt	3.5	2.0	1.5	Cat. # Ch-T-20-5 - collected

**DgRk-5
- Artifact Data -**

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	<20 cm	flake (possibly utilized)	metasediment	5.2	2.8	1.2	apparent residue (organic?) on both faces; collected (Cat. #Ch-T-4-1)
2	<20 cm	flake, distal fragment (debitage)	metasediment	4.0	3.0	0.5	collected (Cat. # Ch-T-4-2)

**DgRk-8
- Artifact Data -**

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	2	flake (retouched, utilized margins)	metasediment	5.8	2.8	0.5	pot-lid fract. due to forest fire exposure; collected (#Ch-T-13-1)
	2	flake (debitage)	basalt	3.8	2.5	1.0	

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
2	~7	flake (debitage)	metasediment	--	--	--	poss. lithic; dimensions not recorded
3	~10	flake (debitage)	metasediment	4.5	3.0	0.5	
4	5-10	thermally altered rock	not determined	--	--	--	pebble-sized rocks; likely assoc. with housepit midden
5	< 34	core (exhausted)	chert, black	6.3	3.5	2.0	collected (#Ch-T-13-2)
6	< 45	flakes (x3) (debitage)	metasediment, coarse	--	--	--	various sizes
	45	flakes (x3)	chert, red*	--	--	--	various sizes;
7	9	flake, fragment (utilized margin)	basalt, fine grained	4.0	3.5	0.4	
8	20	flake (debitage)	basalt	2.5	2.0	0.7	
	24	core fragment	chert, red*	2.5	2.5	1.5	
	42	flake (debitage)	chert, red*	6.5	3.5	0.7	
motor cycle trail tread**	surface	flake, distal fragment (debitage)	chert, black	3.2	3.3	0.6	collected (#Ch-T-13-4)
		Flake, medial fragment (debitage)	chert, black	2.0	3.2	0.5	collected (#Ch-T-13-5)

* possibly *Allenby Chert* from the Similkameen River drainage (per Robert Mierendorf, North Cascades National Park Archaeologist, pers. com., 1997)

** 20 m @ 265° from Feature #5

DgRk-9
- Artifact Data -

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	8	core	basalt	9.0	7.0	4.5	--
2	13	flake (debitage)	basalt	4.7	3.0	1.0	--

DgRk-10
- Artifact Data -

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	14	core	metasediment	8.2	6.5	6.0	--
	20	thermally altered rock	unidentified	--	--	--	pebble-sized fragment

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	24	flake fragment (debitage)	chert (red)*	--	--	--	no measurements available
		flake fragment (debitage)	metasediment	2.7	1.7	0.6	--
		flake, utilized margin	metasediment	4.5	2.4	0.6	--
2	43	flake (debitage)	metasediment	3.6	4.0	0.4	--
3	21	flake (debitage)	basalt	10.0	4.8	1.5	early-stage reduction flake
4	38-44	--	charcoal (lens)	--	--	--	possible cultural assoc.

* possibly *Allenby Chert* from the Similkameen River drainage (per Robert Mierendorf, North Cascades National Park Archaeologist, pers. com., 1997)

DgRk-11 - Artifact Data -							
Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	26	flake (debitage)	basalt	2.5	2.0	0.4	--
		flake (debitage)	basalt	3.7	2.3	0.9	--
2	7	spall	basalt	4.5	3.4	0.8	--
3	6	flake (debitage)	metasediment	3.4	2.1	1.2	--
--	surface	core fragment	chert, red*	3.5	2.7	1.5	Lithic #1 on site map
--	surface	flake fragment, proximal (poss. tool)	metasediment	4.0	4.0	1.5	Lithic #2 on site map; possible utilized margin
--	surface	spall (tool)	metasediment	7.5	6.5	1.5	Lithic #3 on site map; utilized margin
--	surface	flake (tool)	chert, red*	3.5	3.5	1.5	Lithic #4 on site map; located in root throw; utilized margin

* possibly *Allenby Chert* from the Similkameen River drainage (per Robert Mierendorf, North Cascades National Park Archaeologist, pers. com., 1997)

DgRI-26 - Artifact Data -							
Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
1	~ 10-20	flake fragment, unifacially modified margin	basalt	4.0	5.0	1.0	possibly utilized; located in association with thermally altered rock

Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
--	eroding out of creek-bank exposure	pecked pebble fragment, grooved	basalt	7.0	4.5	4.5	Lithic #1 on site map, likely fish-net sinker, the pecked groove is 5.0 cm long by 1.5 cm wide by ~0.4 cm deep around one edge of the pebble (collected - #Ch-T-8-1)
--	eroding out of cut-bank exposure	flake, unifacially modified margins	basalt	7.0	4.0	1.5	Lithic #2 on site map (collected - #Ch-T-8-2)

(b) Habitation Feature Data:

DgRi -1 - Habitation Feature Data -					
Feature No.	Type	Max. Length (m)	Max. Width (m)	Max. Depth (m)	Comments
7	circular depression	6.90	--	1.33	probable housepit; NE side of feature impacted by F6; rim slumped inward
9	circular depression	6.52	--	0.92	housepit; impacted by campground trail at terrace edge; rim slumped inward; rim height = 25 cm; 0.80 m diameter hemlock tree grown on feature rim
10	circular depression	3.40	--	0.56	rim remnant on SE side
11	circular (roughly) depression	7.37	--	0.75	probable housepit; badly impacted by campground trail which runs directly thru feature; partial rim remnant; difficult to gauge dimensions accurately
<p>Note: Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges. Depth measurements represent the vertical distance from feature rim crest to feature base (center). * Diameter measurement for circular features</p>					

DgRk-8 - Habitation Feature Data -				
Feature No.	Type	Max. Diameter (m)	Max. Depth (m)	Comments
1	circular depression	5.3	0.66	slight rim; distinct depression at river's edge / Centennial Trail
2	circular depression	7.0	0.90	slight rim; distinct depression
3	circular depression	6.8	1.00	slight rim; distinct depression

Feature No.	Type	Max. Diameter (m)	Max. Depth (m)	Comments
4	circular depression	6.0	0.38	slight rim; distinct depression
5	circular depression	5.1	0.97	slight rim; distinct depression
6	circular depression	4.6	0.85	slight rim; somewhat indistinct depression
7	circular depression	5.5	0.77	slight rim
8	'circular' depression	4.0	0.70	impacted by road, partially covered by road bank; appears to have been circular; probably of cultural origin
9	'circular' depression	3.4	0.43	impacted by road, partially covered by road bank; appears to have been circular; probably of cultural origin
10	rectangular depression	14.0 (L) 7.1 (W)	0.90	possibly cultural; may be a sink hole; somewhat indistinct
11	circular depression	7.5	1.40	probably of cultural origin; slight rim
12	circular depression	7.2	0.84	slight rim

Note:
Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges.
Depth measurements represent the vertical distance from feature rim crest to feature base (center).
* Height above ground

DgRk-10 - Habitation Feature Data -					
Feature No.	Type	L* (m)	W (m)	Depth (m)	Comments
1	cultural depression, oblong	7.00	4.70	0.62	structural feature, probable housepit; rim appears to have been pushed/eroded into depression -- possibly causing the oblong shape; long-axis oriented at 300°
2	cultural depression, circular	3.10	--	0.35	probable cache pit; ~ 20 cm rim height; lg./old cedar stump (159 cm diameter) grown on rim
3	cultural depression, circular	5.23	--	0.79	structural feature, probable housepit; ~ 25 cm rim height; N portion of feature eroded away (recreational use related); ~ 80 yr. old hemlock growing on rim
4	probable cultural depression, circular (?)	~ 5.00	--	indet.	at extreme edge of terrace; appears to be the remnant rim of an eroded-away feature (housepit); lg./old cedar stump (126 cm diameter) grown on rim remnant; ~ 40 cm rim height

Feature No.	Type	L* (m)	W (m)	Depth (m)	Comments
5	cultural depression, oblong	4.69	4.16	0.63	possible structural feature (housepit?); rim (~ 40 cm height) only on S side; may be of historic origin (disturbance)

Note:
 * Diameter measurement of circular features
 Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges.
 Depth measurements represent the vertical distance from feature rim crest to feature base (center).

DgRI-26 - Habitation Feature Data -						
Feature No.	Type	Max. Length (m)	Max. Width (m)	Max. Depth (m)	Comments	
1	circular depression	~7.0	--	1.4	probable housepit; rim height = 0.25 m; W half of feature badly impacted by old roadway	

Note:
 * Diameter measurement of circular features
 Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges.
 Depth measurements represent the vertical distance from feature rim crest to feature base (center).

(c) Earthwork Feature Data:

DgRk-8 - Mound Feature Data -						
Feat. No.	Base Shape	Ht. (m)	L* (m)	W (m)	Orient. †	Comments
13	circular	1.0	2.8	--	--	small mound, conical profile

* represents diameter measurement of circular features
 † represents orientation of long-axis

DgRk-9 - Mound Feature Data -						
Feat. No.	Base Shape	Ht. (m)	L* (m)	W (m)	Orient. †	Comments
1	oblong	3.10	7.50	6.70	20°	largest mound of site; compact, clay matrix; conical profile; lg. cottonwood tree growing on mound side
2	oblong	0.32	3.40	2.10	350°	possible mound; likely subject to erosional deflation
3	circular	0.34	0.65	--	--	small mound; clay matrix
4	circular	0.85	2.54	--	--	medium sized mound; conical profile; three nursing trees

Feat. No.	Base Shape	Ht. (m)	L* (m)	W (m)	Orient. †	Comments
5	circular	2.17	6.5	--	--	large mound; conical profile; clay matrix
6	circular	0.72	3.18	--	--	--
7	circular	0.46	2.38	--	--	--
8	circular	1.40	3.40	--	--	Features 8 and 9 may form a single elongated mound with a 'sunken' connection b/w the two mound high points, Feat. 9 appears to be disturbed
9	circular	0.96	3.66	--	--	
10	circular	0.91	4.93	--	--	--
11	circular	0.58	3.51	--	--	--
12	circular	0.35	3.40	--	--	--
13	circular	0.70	3.44	--	--	--
14	oblong	0.60	6.30	4.50	30°	--
15	oblong	0.28	3.51	2.1	273°	possible eroded mound with a pavement of cobbles/deflated cairn presently exposed on ground surface; close to river's edge -- in active flood zone
16	circular	0.95	4.97	--	--	small mound at river's edge; river is actively eroding the mound
17	circular	0.67	3.50	--	--	--
18	circular	1.60	4.41	--	--	Feat.s 18-20 are located along the N. edge of dirt access road; possibly road construction related, and may not be burial mounds; Feat. 18 has slight pit in front of it and lacks any accumulation of duff/moss -- slightly less compact than other feats.
19	circular	1.31	4.66	--	--	
20	circular	0.81	3.24	--	--	
21	circular	0.36	2.64	--	--	--

* represents diameter measurement of circular features
† represents orientation of long-axis

DhRk-12 - Mound Data -						
Feat. No.	Base Shape	Height (m)	Diam. (m)	Width (m)	Orient. †	Comments
1	circular	2.1	9.3	N/A	N/A	tan, pebble/cobble-free, sand matrix; 'rounded' profile; lg. (1.8 m diameter) cedar stump on mound top

† represents orientation of long-axis for non-circular features

(d) Forest Utilization Feature Data:

DgRj-4 - CMT Data -														
CMT		Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Class	Notes
No.	F													
1	-	BS	T	wrc	0.49	no base	7.0	0.25	0.05	up	80	indet.	Yes	-
2	-	BS	T	wrc	0.82	no base	11.0	0.11	0.20	up	20	indet.	indet.	-
3	-	BS	T	wrc	0.62	no base	10.0	0.24	0.09	up	40	indet.	indet.	-

Abbreviations					
SP	Species	L	Length	BS	Bark-strip
DBH	Diameter at Breast	W	Width	T	Tapered Bark-strip Scar
	Height	D	Depth	wrc	western red cedar
HAG	Height Above Ground	TM	Tool Marks	F	feature number
		indet.	Indeterminate		

DgRj-5 - CMT Data -														
CMT		Type	Class	SP	DBH* (m)	HAG* (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Class	Notes
No.	F													
1	-	M	P	Df	1.19	0.45	0.98	1.00	0.20	N/A	flat	axe	N/A	squarish scar, pitch present
2	-	M	K	wrc	2.38	no base	1.17	0.55	0.19	N/A	flat	axe	N/A	-
3	-	M	K	wrc	2.49	no base	0.79	0.15	0.14	N/A	flat	axe	N/A	cut marks & beaver gnawed base
5	-	BS	T	wrc	0.50	N/A	1.44	0.22	0.10	up	40	axe	ind.	unsuccess. bark-strip attempt
6	-	BS	T	wrc	0.55	N/A	3.80	0.22	0.11	up	40	axe	Ind.	-

Abbreviations					
F	Feature	L	Length	MdS	Log Medial Section
SP	Species	W	Width	N	Notch
Df	Douglas fir	D	Depth	BS	Bark-strip
wrc	western red cedar	TM	Tool Marks	T	Tapered Bark-Strip Scar
DBH	Diameter at Breast	CC	Cross-cut Saw	M	Misc. Culturally Modified Tree
	Height	AL	Aboriginal Logging Feat.	K	Kindling Collection Tree
HAG	Height Above Ground	Bs	Log Butt Section	P	Pitch Collection Tree
		MS	Missing Section	ind.	Indeterminate

DgRI-25 - CMT Data -														
CMT No.	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes	
1	BS	T	wrc	0.29	no base	3.0	0.29	0.06	up	20	-	Y	rotted scar crust at base	
Abbreviations														
SP	Species				L	Length				BS	Bark-strip			
DBH	Diameter at Breast				W	Width				T	Tapered Bark-strip Scar			
	Height				D	Depth				wrc	western red cedar			
HAG	Height Above Ground				TM	Tool Marks								

DgRI-26 - CMT Data -														
CMT No.	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes	
1	BS	T	wrc	0.37	1.38	4.5	0.30	no lobes	N/A	flat	knife (at base)	indet.	modern CMT, traditional use site	
2	BS	T	wrc	1.34	no base	9.5	0.40	0.25	up	120	indet.	yes	-	
3	BS	R	wrc	0.63	no base	1.58	0.23	0.09	N/A	flat	metal knife	indet.	TMs at top of scar	
Abbreviations														
SP	Species				L	Length				BS	Bark-strip			
DBH	Diameter at Breast				W	Width				T	Tapered Bark-strip Scar			
	Height				D	Depth				R	Rectangular Bark-strip Scar			
HAG	Height Above Ground				TM	Tool Marks				wrc	western red cedar			

DgRI-27 - CMT Data -														
CMT No.	F	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes
1	-	BS	T	wrc	0.74	no base	6.0	0.38	0.15	up	80	indet.	indet.	-
2	-	BS	T	wrc	0.62	no base	4.7	0.16	.08	up	80	indet.	indet.	-
3	-	BS	T	wrc	2.65	0.33	10.0	0.13	0.34	up	80	indet.	indet.	probable CMT
4	-	BS	- see notes	wrc	0.42	0.34	0.52	0.18	0.04	up	75	hatchet	indet.	remnant base of failed bark-strip attempt

CMT		Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes	
No.	F														
5	1	BS	T	wrc	1.29	no base	11.0	0.04	0.29	up	75	indet.	indet.	-	
	2	Ch	-	"	"	0.59	0.03	0.18	0.03	up	75	hatchet	indet.	chopped base of abandoned bark-strip attempt	
Abbreviations															
SP	Species					L	Length					BS	Bark-strip		
DBH	Diameter at Breast					W	Width					T	Tapered Bark-strip Scar		
	Height					D	Depth					wrc	western red cedar		
HAG	Height Above Ground					TM	Tool Marks					F	Feature No.		
						indet.	Indeterminate					Ch	Chopped		

(e) Subsistence Feature Data:

DgRi-1 - Subsistence Feature Data -						
Feature No.	Type	Max. Length (m)	Max. Width (m)	Max. Depth (m)	Comments	
12	circular depression	2.10	--	0.35	possible cache pit; rim height = 0.20 m	
<p>Note: * Diameter measurement of circular features Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges. Depth measurements represent the vertical distance from feature rim crest to feature base (center).</p>						

DgRj-3 - Subsistence Feature Data -						
Feature No.	Type	Max. Length (m)	Max. Width (m)	Max. Depth (m)	Comments	
1	circular depression	3.24	--	0.41	possible roasting pit; slight rim; subsurface charcoal lenses located in shovel tests around feature	
<p>Note: * Diameter measurement of circular features Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges. Depth measurements represent the vertical distance from feature rim crest to feature base (center).</p>						

DgRk-5 - Subsistence Feature Data -					
Feature No.	Type	Max. Length* (m)	Max. Width (m)	Max. Depth (m)	Comments
1	circular depression, hearth	0.9	--	--	contains fire-cracked and thermally-altered rock, charcoal, ash; burnt earth basin

Note:

* Diameter measurement of circular features

Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges.

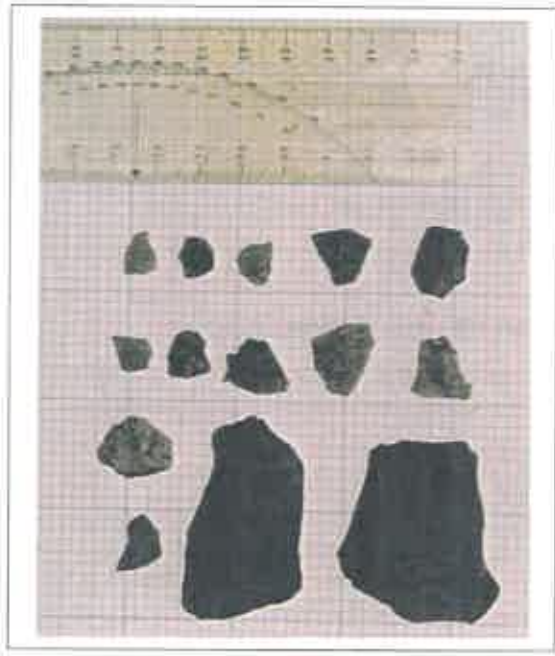
DgRk-10 - Subsistence Feature Data -						
Feature No.	Type	L* (m)	W (m)	Depth (m)	Comments	
2	cultural depression, circular	3.10	--	0.35	probable cache pit; ~ 20 cm rim height; lg./old cedar stump (159 cm diameter) grown on rim	

Note:

* Diameter measurement of circular features

Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges.

Depth measurements represent the vertical distance from feature rim crest to feature base (center).



DgRi-2 - miscellaneous lithics.



DgRj-3 - utilized flake.



DgRk-8 - miscellaneous lithics.



DgRl-26 - grooved (pecked) pebble
(possible net-sinker).



DgRi-1 - Habitation feature (possible pithouse) with Larry Commodore; note large tree growing on rim. (Photo: D.Schaepe)



DgRk-12 - Subsistence feature (possible cache pit) with Sonny McHalsie in depression and Larry Commodore on rim. (Photo: D. Schaepe)



DgRj-3 - Subsistence feature (possible roasting pit) with Riley Lewis standing in the depression. (Photo: D.Schaepe)



DgRk-5 - Subsistence feature, exposed hearth comprised of FCR cluster; note the blackened, ashy sediment associated with the FCR. (Photo: D. Schaepe)



DgRj-4 - Bark-stripped cedar tree, with Riley Lewis. (Photo: D. Schaepe)

APPENDIX III

HISTORIC SITE DATA TABLES:

- (a) Cultural Material Data
- (b) Forest Utilization Feature Data
- (c) Habitation Feature Data

(a) Cultural Material Data

DgRi-1 - Artifact Data -							
Shovel Test No.	Depth (cm BS)	Artifact Type	Material Type	L (cm)	W (cm)	Th (cm)	Comments
4	0-20	historic debris	--	--	--	--	metal motor parts, tin can fragments, clear glass, 1960s motor oil cans
5	0-33	historic debris	--	--	--	--	"
6	surface	historic debris	--	--	--	--	tin can fragments (1950s?)
9	0-20	historic debris	--	--	--	--	metal scraps

(b) Forest Utilization Feature Data

DgRi-3 - CMT Data -													
CMT No.	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	TM	Slope (%)	TM	Scar Count	Notes
1	HL(?)	U	wrc	1.57	1.33	0.33	0.31	0.25	N/A	flat	axe	N/A	Probable 'undercut' (see explanation below)
Abbreviations													
SP	Species					L	Length			wrc	western red cedar		
DBH	Diameter at Breast Height					W	Width			HL	Historic Euro-Canadian Logging		
HAG	Height Above Ground					D	Depth			U	Undercut		

DgRj-5 - CMT Data -														
CMT No.	Type	Class	SP	DBH* (m)	HAG** (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar-Crust	Notes	
4	1	AL	Bs	wrc	1.07	N/A	7.2	N/A	N/A	N/A	40	CC	N/A	--
	2	"	MS	"	1.15	N/A	6.6	N/A	N/A	N/A	"	N/A	"	--
	3	"	MdS	"	1.15	N/A	12.3	N/A	N/A	N/A	"	CC	"	--
	4	"	N	"	N/A	At prox. end of log	0.25	0.46	0.05	Top	"	CC, axe	"	--
	5	"	N	"	N/A	5.47	0.70	0.66	0.10	Top	"	CC, axe	"	--

Abbreviations					
F	Feature	L	Length	MdS	Log Medial Section
SP	Species	W	Width	N	Notch
Df	Douglas fir	D	Depth	BS	Bark-strip
wrc	western red cedar	TM	Tool Marks	T	Tapered Bark-Strip Scar
DBH	Diameter at Breast	CC	Cross-cut Saw	M	Misc. Culturally Modified Tree
DBH	Height	AL	Aboriginal Logging Feat.	K	Kindling Collection Tree
HAG	Height Above Ground	Bs	Log Butt Section	P	Pitch Collection Tree
		MS	Missing Section	ind.	Indeterminate

* 'DBH' represents 'diameter' measurement for aboriginal logging features	** 'HAG' represents 'distance from proximal end of log' for the location of logging features
---------------------------------------------------------------------------	----------------------------------------------------------------------------------------------

Site DgRk-6 - CMT Data -														
CMT No.	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar-Crust	Notes	
1	B/E	--	wrc	0.81	1.58	0.26	0.10 (min)	0.15	up	3	axe, knife	N/A	axe-cut blaze; blaze surface knife engaged with 'BT'	
2	B/E	--	wrc	0.91	1.12	0.47	0.23 (min)	0.16	dn	3	axe, knife	N/A	axe-cut blaze; blaze surface knife engaged with 'BT 12'	

Abbreviations					
SP	Species	L	Length	BS	Bark-strip
DBH	Diameter at Breast	W	Width	T	Tapered Bark-strip Scar
	Height	D	Depth	B/E	Blazed/Engraved
HAG	Height Above Ground	TM	Tool Marks	wrc	western red cedar

(c) Habitation Feature Data

DgRi -1					
- Habitation Feature Data -					
Feature No.	Type	Max. Length* (m)	Max. Width (m)	Max. Depth (m)	Comments
1	rectangular depression	6.00	4.00	0.45	historic structure pad; dug into slight slope at rear of pad and raised w/fill in front to form a level surface on sloping ground
2	rectangular depression	6.30	6.50	0.38	"
3	rectangular depression	5.90	3.53	0.41	"
4	squarish depression	2.52	2.50	0.36	historic; probable privy hole
5	rectangular depression	7.80	3.60	0.17	historic structure pad; dug into slope
6	rectangular depression	6.00	4.00	0.45	collapsed chimney remains and cement walkway remnants; likely the 'Lindeman Lodge' itself
8	rectangular depression	7.50	4.50	0.59	historic structure pad; dug into slope as per Feat. #1; campground trail runs along the feature's SE edge
<p>Note: Diameter measurements represent distance between feature rim crests, if present, otherwise between feature edges. Depth measurements represent the vertical distance from feature rim crest to feature base (center). * Diameter measurement for circular features</p>					



DgRk-6 - Blazed/Inscribed tree.



**DgRk-11 - Transportation/Industrial feature;
log foundation of a possible bridge or railway.**



**DgRi-1 - Habitation feature; historic structure pad with chimney debris.
(Photos: D.Schaepe)**

APPENDIX IV

TRADITIONAL USE SITE DATA TABLES:

(a) Forest Utilization Feature Data

(a) Forest Utilization Feature Data:

AIS-9 - CMT Data -													
CMT No.	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes
1	BS	T	wrc	0.27	1.06	3.4	0.20	0.02	up	85	knife	indet.	TMs at base of scar
2	BS	T	wrc	0.25	0.46	4.0	0.23	0.03	up	85	knife	indet.	TMs at base of scar
3	BS	T	wrc	0.22	0.42	3.1	0.26	0.04	up	85	knife	indet.	TMs at base of scar

Abbreviations

SP	Species	L	Length	BS	Bark-strip
DBH	Diameter at Breast	W	Width	T	Tapered Bark-strip Scar
HAG	Height Above Ground	D	Depth	wrc	western red cedar
		TM	Tool Marks		

AIS-11 - CMT Data -													
CMT No.	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes
1	BS	T	wrc	0.40	0.21	10.0	0.56	0.05	side	35	hatchet	indet.	TMs at base of scar
2	BS	T	wrc	0.33	1.22	7.0	0.41	0.03	side	35	hatchet	indet.	TMs at base of scar
3	BS	T	wrc	0.35	0.60	9.0	0.39	0.05	side	45	knife	indet.	TMs at base of scar
4	BS	T	wrc	0.37	0.72	9.0	0.31	0.04	up	45	knife	indet.	TMs at base of scar
5	BS	T	wrc	0.58	0.80	10.0	0.55	0.04	down	45	knife	indet.	TMs at base of scar
6	BS	T	wrc	0.38	0.60	5.0	0.15	0.04	up	45	knife	indet.	TMs at base of scar
7	BS	T	wrc	0.23	0.48	5.0	0.20	0.03	up	50	knife	indet.	TMs at base of scar
8	BS	T	wrc	0.27	0.59	8.0	0.17	0.04	up	45	knife	indet.	TMs at base of scar
9	BS	T	wrc	0.25	0.46	5.0	0.22	0.03	up	45	knife	indet.	TMs at base of scar
10	BS	T	wrc	0.26	0.53	5.0	0.24	0.02	side	45	knife	indet.	TMs at base of scar
11	BS	T	wrc	0.62	1.23	5.0	0.28	0.04	side	45	knife	indet.	TMs at base of scar

CMT No.	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes
12	BS	T	wrc	0.61	0.47	8.0	0.23	0.06	up	45	knife	indet.	TMs at base of scar
13	BS	T	wrc	0.32	0.93	9.0	0.22	0.03	up	50	knife	indet.	TMs at base of scar
14	BS	R	wrc	0.26	0.77	1.5	0.15	0.03	side	15	knife	indet.	TMs at base of scar

Abbreviations

SP	Species	L	Length	BS	Bark-strip
DBH	Diameter at Breast	W	Width	T	Tapered Bark-strip Scar
	Height	D	Depth	R	Rectangular
HAG	Height Above Ground	TM	Tool Marks	wrc	western red cedar
		indet.	Indeterminate		

**AIS-18
- CMT Data -**

CMT No.	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes
1	BS	T	wrc	0.41	1.19	5.0	0.29	0.03	up	5	knife; hatchet	indet.	TMs at base of scar

Abbreviations

SP	Species	L	Length	BS	Bark-strip
DBH	Diameter at Breast	W	Width	T	Tapered Bark-strip Scar
	Height	D	Depth	wrc	western red cedar
HAG	Height Above Ground	TM	Tool Marks	indet.	Indeterminate

**AIS-23
- CMT Data -**

CMT No.	F	Type	Class	SP	DBH (m)	HAG (m)	L (m)	W (m)	D (m)	Side	Slope (%)	TM	Scar Crust	Notes
1	1	BS	T	wrc	2.42	1.31	4.7	0.53	0.06	up	10	axe	not accessible	old growth trees
	2	BS	T	"	"	3.00	5.0	0.34	0.04	up	"	axe	"	
	3	BS	T	"	"	2.55	3.0	0.30	0.06	up	"	axe	"	

Abbreviations

SP	Species	L	Length	BS	Bark-strip
DBH	Diameter at Breast	W	Width	T	Tapered Bark-strip Scar
	Height	D	Depth	R	Rectangular
HAG	Height Above Ground	TM	Tool Marks	wrc	western red cedar



AIS-11 - Rectangular, bark-stripped tree with Larry Commodore. (Photo: D. Schaepe)