An Archaeological Overview Assessment

Of

Coldwater and Spius

Landscape Units

Merritt Timber Supply Area, Cascade Forest District

Esh-Kn-Am
Cultural Resources
Management Services

Credits

Manager	Brenda Aljam, BSc, P.AG Manager, Esh-kn-am CRMS
Project Manager	Mary M. Sandy, B.A. Staff Archaeologist/Anthropologist
Senior GIS Technician	Rebecca Shackelly, CTEC
Senior Researcher	Bernice Garcia, RISC
Researcher	Vince Wilson, RISC
Asst Researcher	Matilda Abbott
Report Authors	Mary M. Sandy Amanda Watson, B.A. Melissa Blain, B.A. Rebecca Shackelly
Field Crew	Amanda Watson Randy Jim, B.A. Mary Suchell, RISC Elizabeth Gilbert, N.R.T., RISC Deanne Eustache, N.R.T. Cyprian Bob Joselyn Dunstan, RISC

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Declaration

Management Summary

Esh-kn-am Cultural Resources Management Services (CRMS) was retained by Nicola-Similkameen Innovative Forestry Society through Forest Investment Account (FIA) funding to complete an Archaeological Overview Assessment (AOA) of the Coldwater and Spius Landscape Units within the Merritt Timber Supply Area (TSA) of the Cascade Forest District. The project began in October 2007 through March 2008 and July 2008 to completion in February 2009.

The project began with the creation of a GIS based AOA model that incorporated permanent habitation sites and fishing sites with temporary fishing and multiple gathering sites. Once the GIS draft model was produced, a testing strategy was ready to be developed. This was completed in year one.

Year two started with the development of the testing strategy. 30 test sites were settled on and were utilized in the field testing of the model produced. These were a mixture of computer generated randomly selected 36^2 hectare plots and plots taken from forestry referrals in accessible areas chosen by the computer or in areas poorly represented in the random selection. Field testing occurred between July and November 2008.

The model was revised from the previous year following the Kvanne gain formula expectations for moderate and highly efficient models. During this time, the land mass selected for potential was reduced to 12% with a loss of site capture of 1 site located outside expected locations. The final score is .88 kv.

It is recommended that the TUS data for the three Bands be thrown over the top of the map to evaluate whether the highest density camping areas were captured. TUS areas will be much bigger than the model as use on the land is quite broad, though camps are usually more restrictive in their locations. Limited TUS data was available for this landscape unit.

It is also recommended that geological layers and palaeo climatology layers, when available, be applied to increase the capability of the model to model permanent sites over a range of time based on time layering rather than the currently used basis of today's landscape.

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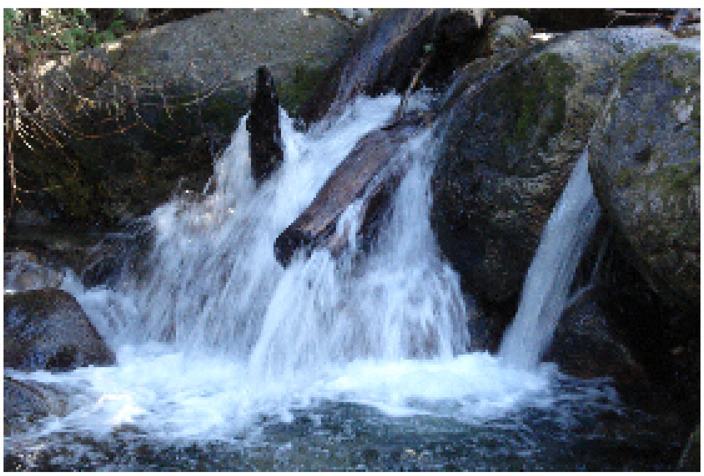
1.0 Introduction

Esh-kn-am Cultural Resources Management Services (CRMS) was retained by Nicola-Similkameen Innovative Forestry Society through Forest Investment Account (FIA) funding to complete an Archaeological Overview Assessment of the Coldwater and Spius Landscape Units within the Merritt Timber Supply Area (TSA) of the Cascade Forest District. The project was conducted from July 2008 to February 2009. Archaeological resources for this report are defined as provincially recorded, newly found, and known archaeological sites, historical sites, and heritage sites. The overview assessment is utilized as a planning tool for the earlier stages of development planning in the identification of procedures to avoid, reduce or otherwise mitigate impacts to heritage resources and as a starting point for assessment of large areas for study.

The purpose of the Archaeological Overview Assessment (AOA) is to identify potential archaeological values of the Nlaka'pamux of the Coldwater, Cook's Ferry, and Siska Bands in the Coldwater and Spius Landscape Units.

The AOA incorporates the identification and assessment of land use values by Band Elders and expert land users from the participating Bands. Previous TUS and archaeological data gathered over the last ten years is not available to the participating Bands to date and will be added at a later date, if forthcoming. Other sources of information are contained in the literature review completed by the Esh-kn-am CRMS research staff and archaeology staff. These consist of previous TUS documents generated by Esh-kn-am CRMS, ethnographic and ethnohistoric documents, the Remote Access to Archaeological Data (RAAD) at the B.C. Archaeology Branch website, and archaeological reports made available to Esh-kn-am CRMS.



Falls on Maka Creek. Photo by M. Suchell

Project Staff:

Esh-k-am CRM Services is a joint venture owned by four First Nation Bands. Esh-kn-am CRMS is staffed with members having numerous years of experience in Traditional Use/Environmental Knowledge Studies, GIS Land Management Analysis and Modeling, Ecological and Cultural Species Account development and Modeling, Ecological Restoration Modeling and Archaeological Inventories/Impact Assessments/Overview Assessments/Mitigations. All of the staff members but one belong to the Interior Salish peoples. Four project staff members are local Band members. Cultural knowledge of the study area by project staff is both personal and intimate and is also available through other Band members from the three Bands participating in this project and the Esh-kn-am CRM Services access database of gathered land use knowledge from Coldwater, Cook's Ferry and Siska Bands through recent Traditional Use Studies conducted by Esh-kn-am CRM Services. The project staff averages 9-10 years of experience in all of the above areas of experience.

The report begins with an overview of the study area that includes a description of the environment and other baseline data gathered through the literature review. This is followed by the methodology of the Archaeological Overview Assessment along with the results of the modelling. The final section of the AOA provides recommendations for future modelling and identifies gaps within this model.

1.1 Project Rationale

Archaeological Overview Assessments (AOA), contribute to the overall understanding of the history, utilization, and ecological knowledge of an area.

1.2 Scope and Objectives

The purpose of the Archaeological Overview Assessment (AOA) is to collect existing archaeological and historical data concerning the study area and previous AOA models within the study area and collect archaeological and historical literature. From the data gathered, a predictive model of the study area will be produced to identify locations of potential heritage and archaeological or paleontological resources not yet recorded.

2.0 Study Area

The Coldwater Land Unit and Spius Land Unit study areas are two of twelve (12) Landscape Units situated in the Merritt Timber Supply Area (TSA) of the Cascades Forest District within the Interior Plateau of the Nicola-Thompson Region of British Columbia (BC). The main urban center of the study area is Merritt, BC, located at the north central boundary of the Coldwater Landscape Unit (LU). The Coldwater LU study area extends from Merritt in the north to the Upper Coldwater River to the south, and from Edgar Creek in the west to Courtney Lake to the east. The boundary is formed along the height of land extending from the wide valley at the confluence of the Coldwater River and the Nicola River all the way south to the Coldwater confluence with the Coquihalla River.

The Spius LU extends from the western boundary of the Coldwater LU to Nooaitch Creek. The height of land above this creek forms the northern boundary of the study area, while Spius Creek and the height of land surrounding this creek form the southern boundary. The western boundary is anchored by Zakwaski Mountain, Mount Stoyoma, the height of land extending from Zakwaski Mountain to Spius Creek, and the height of land to the south of the creek. The eastern boundary of the Spius LU is located along the west boundary of the Coldwater LU, near Edgar Creek.

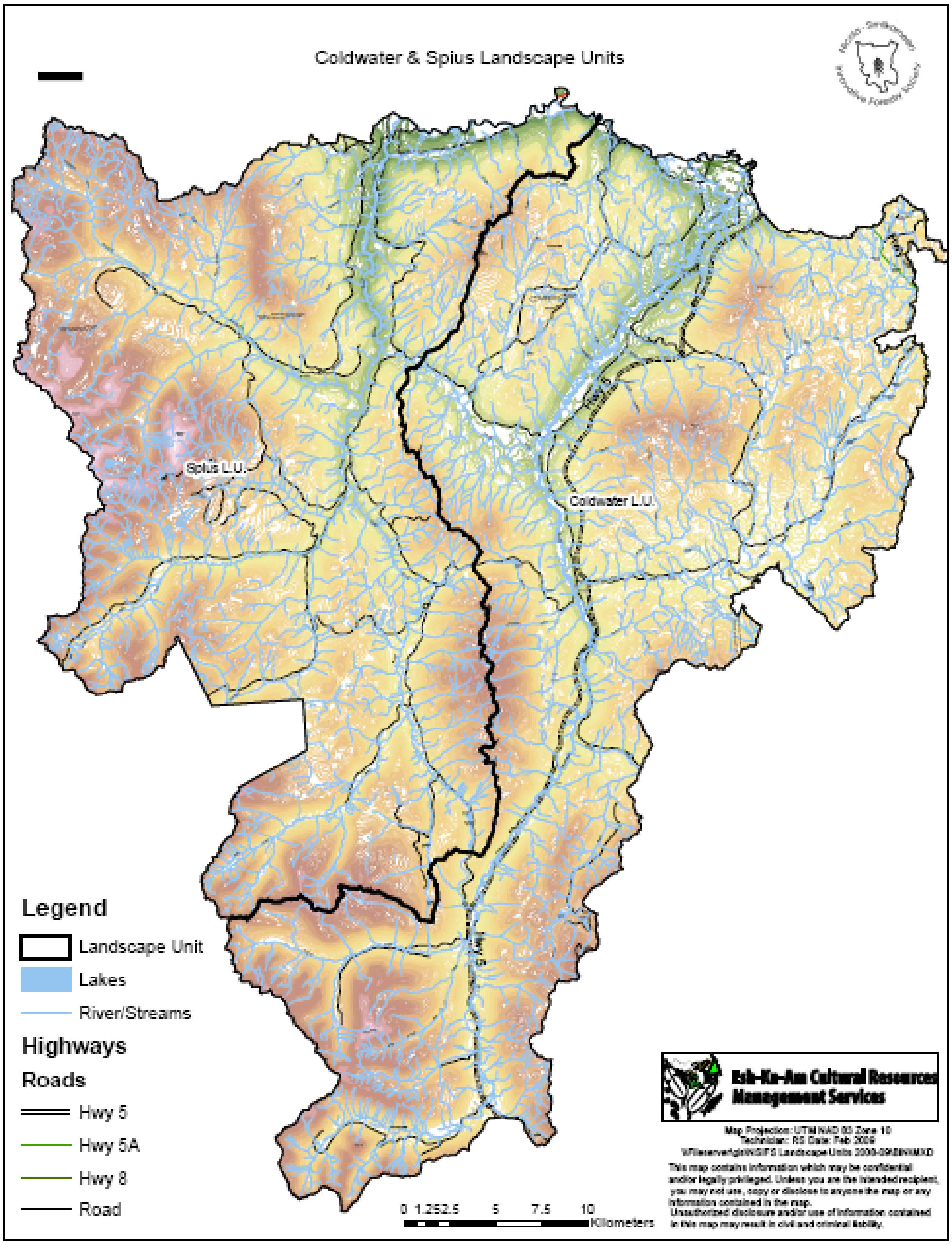
A number of mountains are located within the study area, including Stoyoma Mountain, one of the highest peaks on the north slope of the Cascade Mountains, at a height of 2282 m (Shewchuk 1998). Stoyoma Mountain is located within the central portion of the Spius LU, between Spius and Prospect Creeks. Mount McInnes, at 1685 m, is also located within the Spius LU (Mussio Ventures Ltd. 2007:13). July Mountain is situated in the southern portion of the Coldwater LU, south of Juliet Creek. Additionally, the north and west slopes of Shovelnose Mountain are located just inside the eastern boundary of the study area. To the north, the Coldwater LU encompasses Selish Mountain and Iron Mountain, at heights of 1737 m and 1693 m, respectively (Mussio Ventures Ltd. 2007:13).

Rivers within the Interior Plateau generally flow in broad or narrow, steep-walled valleys several hundreds of meters below the original plateau surface (Tribe 2005). The Coldwater River, for example, is surrounded by the lowlands that constitute the plateau surface. The Coldwater River originates in the North Cascades west of the Coquihalla Lakes (Shewchuk 1998). It converges with the Coquihalla River at the southern boundary of the study area and meanders north along the valley floor until it reaches its confluence with Nicola River, at the northern boundary of the Coldwater LU. Several broad, flat terraces surround the Coldwater River and exemplify the former level of the land, before the river cut down to its present level.

The U-shape of the Coldwater River valley resulted from glacial erosive action that took place during the Pleistocene Epoch, which ended approximately 10,000 years before present (BP). Consequently, slopes within the study area are typically relatively gentle, excluding ravines. Ravines are typically quite steep with cliffs and have resulted from fluvial action rather than glacial action. For example, Spius Creek, which flows north through the Spius LU, has cut a narrow canyon throughout the majority of its length (Shewchuk 1998).

Numerous lakes and streams dot the landscape that varies from wide glacial valleys to narrow alpine gorges. The ecology ranges from open bunchgrass grasslands with sagebrush and cactus covered desert in the Bunchgrass (BG) and Ponderosa Pine (PP) biogeoclimatic zones to the higher Engelmann Spruce – Subalpine Fir (ESSF) and Alpine (AT) zones, which are characterized by heavily forested areas of spruce, fir, and lodgepole pine, as well as treeless alpine meadows and rock outcrops.

Figure 1. Map of Study Area.


Coldwater & Spius Landscape Units
Spius L.U.
Coldwater L.U.
Legend
Landscape Unit
Lakes
River/Streams
Highways
Roads
Hwy 5
Hwy 5A
Hwy 8
Road
0 1.25 2.5 5 7.5 10
Kilometers
Esh-Kn-Am Cultural Resources Management Services
Technician: RS Date: Feb 2006
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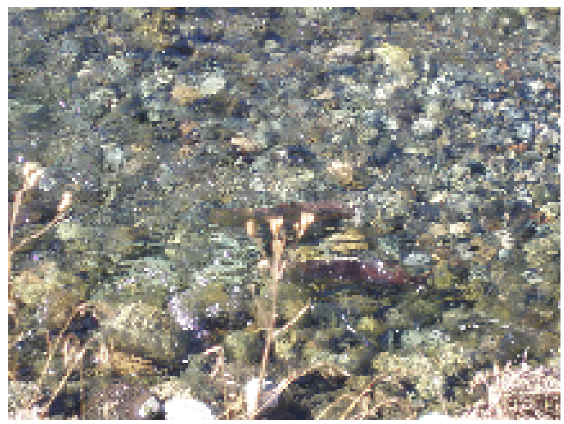
Map 2.

2.1 Biogeoclimatic Zones

The portion of the TSA covered by this study is a segment of the Interior Plateau of British Columbia, more specifically the Thompson Plateau. Numerous lakes and streams that dot a landscape varying from wide glacial valleys and rounded mountains to narrow alpine gorges characterize the Thompson Plateau. The ecology ranges from open grasslands with sagebrush and cactus in the Bunchgrass (BG) and Ponderosa Pine (PP) biogeoclimatic zones to the higher Engelmann Spruce – Subalpine Fir (ESSF) and Alpine (AT) zones characterized by spruce, fir and lodgepole pine heavily forested areas, treeless alpine meadows and rock outcrops. The Interior Plateau, as a whole, is home to the northern portion of the Cascade Mountain Range that extends south to the Sierra Nevada Range in California, USA. It is part of the Pacific Cordillera and is bounded by the rugged mountains of the wetter Coastal Range to the west and the Rocky Mountains to the east.

Frog. Photo by M. Suchell



Salmon in Spius Creek. Photo by M. Suchell

The **Bunchgrass** zone contains a rich diversity of ecosystems, a wide variety of plant and animal species, and an abundance of arable land. Located within the rain shadow of the Cascades, the Bunchgrass zone is an area of warm temperatures and minimal precipitation. This zone is present at lower elevations, particularly in the valley bottoms of the Nicola and Thompson rivers. Grasses dominate the vegetative cover of this zone; the most abundant being blue bunch wheatgrass. Drought-resistant shrubs, such as big sagebrush in lower elevations, as well as rabbit brush, can withstand the hot summers typical of the Bunchgrass zone. Although this zone is quite dry, marshes can also be found and are dominated by cattails and bulrushes. Cactus, bitterroot, and arrow-leaved balsamroot are common in drier parts of this zone, while trembling aspen, snowberry, and American vetch occur at upper elevations. Ponderosa pine and Douglas fir occasionally occur in draws and on coarse textured soils, although the dry climate restricts their growth. An array of wildlife, including mule deer and such endangered species as the badger, western rattlesnake, and burrowing owl, take advantage of the warm climate and diversity of food within the Bunchgrass zone. (Alldritt-McDowell and Coupe 1998, Scudder and Smith 1998)

The **Ponderosa Pine** zone occurs in the Nicola Valley and at elevations up to 900 to 1000 meters, which represents a large portion of the study area particularly along the slopes of the Nicola River valley. The Ponderosa Pine zone, a combination of bunchgrass and parkland forest, is the warmest and driest region next to the Bunchgrass zone. Ponderosa Pine is the dominant tree species, although Douglas fir is also usually well represented. Grassland vegetation includes blue bunch wheat grass, needle and thread grass, and rough fescue. Lichens and mosses also occur in the under story of these forests, as do arrow-leaved balsamroot, yarrow, and rosy pussy-toes. In the open grasslands, bitterroot is to be found. Shrubs include sagebrush, rabbit brush, and saskatoon. Frequent forest fires occur in this zone due to rapidly drained soils/sediments and hot summer temperatures. Black cottonwood, willows, and some birch, alder and aspen characterize wetter portions of this zone. Several distinct types of wetlands such as bogs, shallow open water or marshes have formed in basin areas with a high water table supporting tulles, mint, and rushes. The Ponderosa Pine zone also has habitat utilized by a large variety of species, such as coyote, mule deer, and black bear. (Sandy et al. 2007, Alldritt-McDowell 1998)

The **Interior Douglas-Fir** zone occurs between elevations of 500 meters to 1300 meters, in the valleys and along the rolling hills of the study area. Open forests of Ponderosa pine and Douglas fir characterize the lower elevations, whereas at higher elevations, this zone is wetter and forests are denser. Other tree species include western larch, white spruce, Engelmann spruce and Lodgepole pine. Bunchgrass occurs in dry grasslands at lower elevations of this zone and is the dominant understory vegetation. At higher elevations, understory vegetation includes pinegrass, kinnikinick, feather mosses, flattop spirea and shrubs, such as Oregon grape, soopalallie, saskatoon berry, red-osier dogwood and prickly rose. The Interior Douglas fir zone is prime winter habitat for ungulates, such as mule deer and white-tailed deer. (Egan 1998, Sandy et al. 2007)

The **Montane Spruce** zone occurs between 1250 and 1650 meter elevations and is a mostly forested region, yet contains numerous lakes, wetlands, and meadows. Roscoe Lake, at 1585 m, is located within this zone. The Montane Spruce zone is transitional between the Interior Douglas fir and Engelmann Spruce-Subalpine Fir zones and is evidenced by the presence of Douglas fir and Subalpine fir, as well as white hybrid spruce. This zone is characterized by a cool climate and cold winters with an abundance of snowfall. Common understory vegetation includes grouse berry, pinegrass, heart-leaved arnica, and feather mosses. Moose, black bear, and caribou inhabit the Montane Spruce zone. (Alldritt-McDowell and Lloyd 1999, Sandy et al. 2007)

The **Engelmann Spruce-Subalpine Fir** zone consists of mainly steep and rugged terrain and occurs at elevations above 1350 meters. This zone is usually characterized by dense stands of Engelmann spruce and Subalpine fir, although lodgepole pine stands are the dominate species. Additional species in the lower portion of the zone may include Douglas fir, grand fir, western larch, white pine, and Rocky Mountain maple. Higher in this zone, white-bark pine and alpine larch may be found. A dense forest understory containing several different shrubs such as saskatoon, white-flowered rhododendron, thimbleberry, grouse berry, black huckleberry and dwarf blueberry often characterizes the zone. In addition, Labrador tea and creeping juniper also occur. Open meadows in the upland valley bottoms are comprised of Indian hellebore, Sitka valerian, and foamflower, among other species of plants. Moose, black bear, grizzly bear, caribou, and mule deer can often be observed within the Engelmann Spruce-Subalpine Fir zone. (Alldritt-McDowell 1998, Sandy et al. 2007)

2.2 Paleoenvironment and Paleoecology

Paleoenvironment and paleoecology of a study area adds to the understanding of human settlement and activity pattern changes over time. With the changes in climate temperature and precipitation come the changes and migrations of botanical toxicology that sustain wildlife species and their sub-species. The paleoenvironment of the northern Cascade Mountain area, in which the study is located, there are four zones of climatic changes (Pellatt et al 2000). These zones are: Zone l, Late Glacial occurring >10,000 $^{\pm}$ 320 ^{14}C yrs Before Present (BP); Zone 2, Early Holocene xerothermic period occurring between 10,000 $^{\pm}$ 320 yrs BP and 6730 ^{14}C yr BP; Zone 3, Mid-Holocene occurring between 6730 to 3530 $^{\pm}$ 60 ^{14}C yr BP; and Zone 4, Late Holocene occurring at 3530 $^{\pm}$ 60 ^{14}C yr to PRESENT (Pellatt et al 2000).

Zone 1, the Late Glacial period, is characterized by cold temperatures and low density forests appearing from above the glaciers to the subalpine regions, the thinnest occurring at either ends of the spectrum of growth. Vegetation would have appeared as that of an open forest consisting primarily in Diploxylon pine mixed with low density spruce and fir types and a large quantity of understory (Pellatt et al 2000).

During the decay of the Cordilleran Ice Sheet toward the end of the Late Glacial Period, several ribbon-shaped glacial lakes developed within the valleys of the Interior Plateau of British Columbia. The first major lake to form in the Nicola basin was Glacial Lake Quilchena. This lake drained southward into Otter Creek near Aspen Grove. The subsequent lake to develop in this area was Lake Merritt, which was much larger than present-day Nicola Lake. Occupying the same basin, Lake Merritt extended from Swakum (approximately five (5) kilometers west of Merritt) and reached northeast into the Thompson Valley towards Kamloops. This lake formed when meltwater from the retreating glaciers of the Campbell Creek valley began to flow northward into the Thompson Valley (Shewchuk 1998).

Glacial Lake Thompson originally occupied the valley between Kamloops and Salmon Arm and was blocked to the west by a large mass of glacial ice. As the ice retreated, Glacial Lake Thompson grew significantly larger, extending from Kamloops west to Ashcroft, south to Spences Bridge, and southeast up the Nicola Valley (Johnson and Brennand 2004). Over time, Glacial Lake Thompson reduced in size dramatically and became known as Glacial Lake Deadman. This glacial lake occupied a smaller portion of the area encompassed by the previous glacial lake and also extended southeast into part of the Nicola Valley. Originally, water flow did not travel southwest from Spences Bridge through the Fraser Canyon as it does currently. Meltwater from retreating glaciers flowed north from Spences Bridge to Ashcroft and east to Kamloops. This “backwards” flow resulted from the occurrence of an ice dam just south of Spences Bridge. This ice dam eventually gave way around 9750 BP, during the Early Holocene (described below), opening up the present drainage route through the Fraser Canyon (Shewchuk 1998, Johnson and Brennand 2004).

Zone 2, the Early Holocene xerothermic period, was drier and warmer than the Late Glacial period in its beginning and progressively increased in precipitation just before the Mazama tephra deposition, which occurred approximately at 6600 BP (Alley 1976). Analysis of pollens indicates that this period contained open forests predominately of pine containing grasses and varieties of sage. From just before the Mazama deposits to the Early Holocene period, following precipitation marginally increased as evidenced by the presence of subalpine fir and Engelmann Spruce.

Zone 3, the Mid-Holocene period, referred to as the Hysithermal or mesothermic period by Hebda (1995), was a period of warm, wet conditions. These conditions were conducive to the growth of Engelmann spruce and white-barked pine that grew in abundance during this period causing closed forests. Temperatures fluctuated during this period from the warm temperatures of the Early Holocene to much cooler temperature evidence by a mini-glacial period around 5000 ^{14}C yr BP that occurred with the advancement of glaciers. By the end of the Mid-Holocene period, wet, warm conditions had returned with temperatures of up to 2 to 4 degrees less than the Early Holocene (Pellatt et al 2000).

Zone 4, the Late Holocene period, marks the beginning of current temperature and precipitation levels. This zone experienced widespread cooling evidenced by a neoglacial cooling from the Tiedemann, Peyto, and Robson glacial advances and by the cooling of the Kelowna Bog and the Fraser Canyon (Alley 1976; Mathewes and King, 1989; Pellatt and Mathewes, 1994; Hebda, 1995; Pellatt, 1996). Forests began containing western and mountain hemlock along with pine and Engelmann spruce. During this period, there was a lessening of spruce and white-barked pine that were at their optimum during the Mid-Holocene (Pellatt 2000). Hence, forest conditions shifted back to a more open, parkland forest (Pellatt 2000).

2.3 Geology

The Interior Plateau contains sedimentary and volcanic formations that developed between the Palaeozoic Era and Jurassic Period (from 650 million years ago (Ma) to 145 Ma), and is also composed of intruded granitic rocks (Tribe 2005). Ancient lava beds, coal deposits, and fossil beds in the vicinity of the town of Merritt, are evidence of the age of some of these rock formations (Shewchuk 1998). The preservation of these ancient formations suggests that glacial activity had only a moderate effect on a regional scale (Tribe 2005).

Marine deposition last took place within the southern plateau area in the Jurassic Period (208-145 Ma). Between the late Mesozoic Era (~145 Ma) and the Eocene Epoch (55 Ma), rivers incised over 100 meters below the original plateau surface. Tribe (2005) suggests that the Nicola Valley originated 55 to 65 million years ago during the Paleocene Epoch, or possibly as early as the Cretaceous Period (145 – 65 Ma). After this time, incision into the land ceased, and deposition of fluvial and lacustrine sediments in the valleys and lowlands began to occur by the middle of the Eocene (~45 Ma). During this time, volcanism was widespread throughout the area, overlaying these sediments with volcanic flows and breccias. Basalt flows of the Pliocene (5.3 – 1.6 Ma) and Pleistocene (1.6 Ma – 10,000 BP) are confined to the valleys near Merritt: Quilchena Valley, Nicola Valley, and the Coldwater River valley (Preto 1979, Read 1988, Tribe 2005).

The Nicola Group comprises the majority of the rocks located within the study area. These rocks are comprised of mostly dacite and andesite, as well as some rhyolite and basalt. Erdmer et al. (2002) suggest that the Nicola Group rock layer can be quite thin in many areas, at most a few kilometers thick, particularly near Bob Lake. Furthermore, Upper Triassic volcanic, sedimentary, and intrusive rocks of the Nicola Group are noted for having copper deposits (Preto 1979). The

Guichon Creek Batholith, an intrusion of plutonic rock dating to the late Triassic (~210 Ma), extends from Merritt north to Cache Creek. This formation consists of one of British Columbia's largest deposits of low grade copper, which is currently being mined by Highland Valley Copper (Shewchuk 1998, Erdmer et al. 2002).

The late Triassic Nicola Group is overlain by the dominantly clastic sedimentary rocks of the Ashcroft Formation in scattered small basins (Erdmer et al. 2002). The Ashcroft Formation contains fossils that are dated, at the youngest, to the Middle Jurassic Period (Callovian), approximately 165 to 161 million years ago. Underneath the Nicola Group and Ashcroft Formation, metaconglomerates occur and are comprised of rounded, fine-grained quartzite clasts of various colors, as well as granitic rock fragments (Moore 2000).

2.4 Archaeological Sequence

The following chart illustrates the regional archaeological constructs based on the work of Richards and Rousseau (1987), and summarizes the archaeology of the Interior Plateau of British Columbia (Sandy 2007).

Time Frame	Periods	Associated Sites	
12000 BP to 6800 BP	Early	Drynoch, 7530 BP, Spences Bridge Landel, 8400 BP, Oregon Jack Creek, Ashcroft Gore Creek, 8250 BP, Kamloops	
Time Frame	Period	Tradition	Phase
6800 to 3500 BP	Middle	Nesikep Tradition	
6000/5000 to 4400 BP	Middle		Lehman Phase
5500 to 4000/3500 BP	Middle		Lochnore Phase
Time Frame	Period	Tradition	Horizon
3500 to 150 BP	Late	Plateau Pithouse Tradition	
3500 to 2400 BP	Late		Shuswap Horizon
2400 to 1200 BP	Late		Plateau Horizon
1200 to 200 BP	Late		Kamloops Horizon
Time Frame	Period (1846 date established by Delgamuukw decision 1997)		
200 BP to 1846 AD	Proto-Historic		
1846 AD to Present	Post-Contact		

Table 1. Cultural History Sequence of the Interior Plateau. (Markey 2002)

2.5 Ethnography

The following is an overview of the ethnography of the Nlaka'pamux now residing on the Coldwater, Cook's Ferry, and Siska Band reserves within the Interior Plateau of British Columbia. This ethnography is based on the Plateau Pithouse Tradition that began approximately 4,000 years ago and extends to modern times.

2.5.1 First Nations within the Study Area.

The project area is within the interest areas of the Nlaka'pamux (Thompson). For purposes of this report, only the Nlaka'pamux ethnography of the 3 Bands contributing to this study will be addressed.

2.5.2 The Nlaka'pamux of Coldwater, Cook's Ferry, and Siska Bands.

The Hudson Bay Company traders knew the Nlaka'pamux as the "Couteau" or "Knife" Indians or, more frequently, the "Thompson" Indians, due to a segment of the people living along the Thompson River. At the time James Teit recorded his ethnographic study of the Nlaka'pamux in 1900, he reported there being two major divisions, the "Upper Thompson" and the "Lower Thompson". (Teit 1900:167)

The area of the Lower Thompson villages extends along the Fraser River from present day Yale to just below Siska, which is located south of Lytton. At the time of Teit's writing, there were 19 villages of the Lower Thompson, Boston Bar being the largest and most populous. The Lower Thompson people were more sedentary than their northern counterparts, choosing to occupy the same village sites generation after generation. (Teit 1900:169)

The Upper Thompson people were divided into four sub-divisions describing their geographic areas. These were:

1. The Lytton and vicinity people or "Nlaka'pamux proper" with fourteen (14) villages listed. (This is the group Siska Band belongs to).
2. The SLaxa'yux, the people along the Fraser River above Lytton with five (5) villages listed between north of Lytton and present day Lillooet.
3. The Nkamtci'nEmux ("people of the entrance"), from the name of the mouth of the Nicola River at its confluence with the Thompson River at Spences Bridge. They were also known as the Spences Bridge people, located along the Thompson River from below Spences Bridge to north of Ashcroft and the Shuswap territory. There are fifteen (15) villages listed for this division. (Cook's Ferry Band belongs to this group.)
4. The Cawa'xamux or Tcawa'xamux ("people of the creek", from the word for Nicola River meaning "creek"). This group extended along the Nicola River into the Nicola Valley north and south from there. There are fourteen (14) villages listed as being a part of this division, which included village sites on the east side of Nicola Lake (Teit 1900:169-170). (Cook's Ferry members also belong to this group along with the Coldwater Band.)

The population had greatly diminished by 1900 at the time of Teit's ethnography, however he recorded:

> "*The old people say that forty or fifty years ago, when travelling along Thompson River, the smoke of Indian camp fires was always in view. This will be better understood when it is noted that the course of Thompson River is very tortuous and that in many places one sees but a very short distance up or down the river."* (Teit 1900:175)

"The old Indians compare the number of people formerly living in the vicinity of Lytton to 'ants upon an ant-hill'." (Teit 1900:175)

The Nlaka'pamux are a diverse group of people living in a highly diverse geological and geographical territory that ranges from the Coast Mountains, through the Cascade Mountain Range to the dry, grassland plateaus of the British Columbia Interior Plateau. "…[This] vegetational diversity …is probably higher than for any other group of people in the north-western North America" (Turner et al 1990:294).

Within the Nlaka'pamux lands "…there was no wilderness" (Laforet and York 1998:34). The relationship between the Nlaka'pamux and the land is one of intimacy as is revealed through the Nlaka'pamux word for "the land" or "world", **tm*ix*^{w}**. Tm*ix*^{w} speaks of one's land or one's homeland, one's world, but with more meaning of personal relationship. There is no clear translation for this term in English. The concept is one of living in harmony and within nature as opposed to the western concept of living outside of nature. This philosophy drove a set of refined protocols, taboos, beliefs, and mores resulting in long-term resource management. For example: The Nlaka'pamux practised "the continual cultivation of the soil" and planned periodic burning that "enhanced the productivity of [harvesting] areas" (Turner et al 1990:28). These forms of management allowed for the continual harvesting of large amounts of plant products from the same favoured areas year after year.

2.5.3 The Nlaka'pamux Seasonal Round.

For the Nlaka'pamux, as for most Interior Salish, the year began with the first moon following the long, dormant sleep. This was usually around the new moon in the present calendar month of January. This is the time when the first stirring of life begins within the plants and the young are born to the hibernating wildlife. The Nlaka'pamux have been living in their earthen dwellings known as pit houses or keekwillies. These dwellings were built as subterranean homes excavated to approximately five (5) meters in depth. The structure was built utilizing four main posts with lateral poles connecting them on which additional poles were rested stretching from the central square to the outside of the ledge of the excavated area (Figure 1).

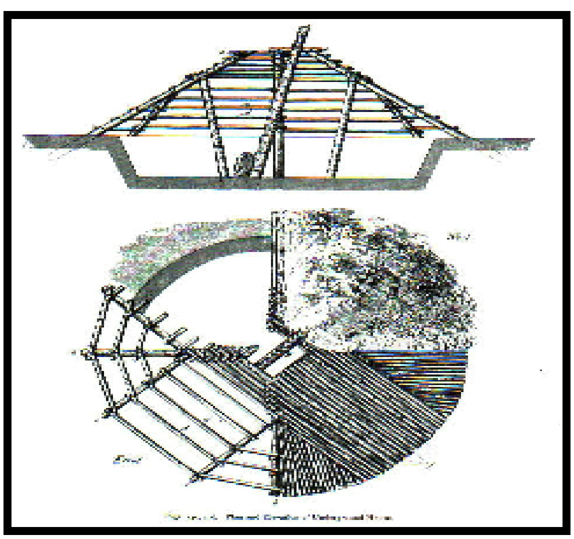


Figure 2. Illustration of a Pithouse. Teit (1900: 193)

A winter village varied in number of pit houses from one to four, "…each built to house as many as thirty (30) people, [and] located in low wind sheltered spots near water, firewood, and possibly winter fishing" (Wyatt 1998:192).

This was a time of year for stories to be told by the grandmothers and grandfathers, a time of celebration of the beginnings of new life, and a time of preparation for the upcoming spring activities. During this time, hunting, trapping, and ice fishing took place near the village and the cooking of stored vegetables, berries and fish from the last year's gatherings.

With the first sign of snow melt and warmth returning, the Nlaka'pamux came out of the winter villages and ventured to the favoured spring fishing lakes. Soon the young green sprouts and the first buds on the early root plants were present and ready for gathering. Lodging took the form of mat covered lodges in a conical or teepee shape or the larger lean to structure. See illustration below.

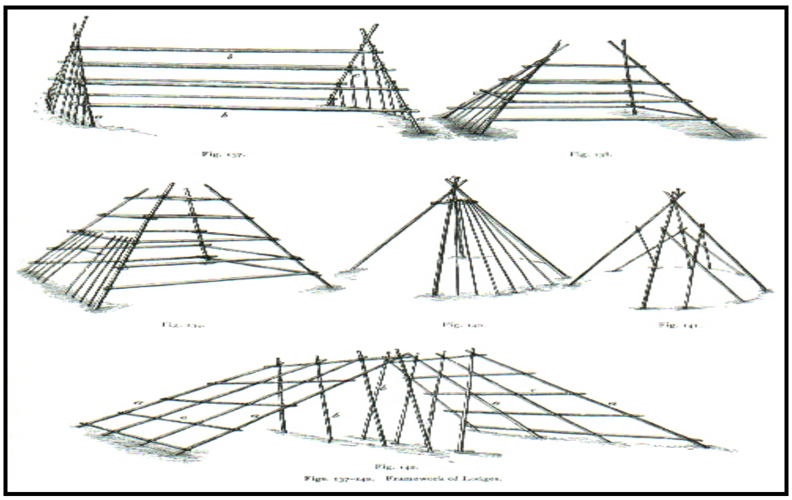


Figure 3. Mat Lodge Structures. Teit (1900: 197)

Gathered plants were either eaten right away or processed for later consumption during the winter months. Processing consisted of either drying the bulbs or plant parts, following gathering or cooking in earthen roasting pits, and later dried for storage. Many plants containing indigestible carbohydrate or insulin required cooking to produce edible fructose. According to a completed study plants foods are estimated to have contributed 50 percent or more of the caloric intake in the total diet (Hunn et al 1998).

Medicinal plants were also gathered during the spring and summer months usually in the higher elevations where they were said to contain greater medicinal properties. These plants were also closer to centers of spiritual power known to exist at these higher elevations and mountaintops.

Cambium was gathered in the spring from the Lodgepole and Ponderosa Pine, which made a sweet treat after the long winter. Another confection that was available in only a few locations in the territory is the crystallized sugar gathered from the needles and branches of a variety of Douglas Fir, known by the Nlaka'pamux as "sugar trees" (Turner 2004:21).

The traditional Nlaka'pamux lifestyle during the summer involved the pursuit of migrating salmon along the Fraser, Thompson, and Nicola rivers and their tributaries. Vast numbers of salmon were caught, subsequently wind-and-sun dried, and then stored or traded. The Nlaka'pamux fished primarily using spears, dip nets, hook and line (Figure 3) in shallow waters, drift nets in deeper waters, and fish weirs, although the technology used varied according to the community and locality. They also fished for trout, suckers and memit in the creeks and rivers when the waters were flowing fast and cold (Markey and Sandy 2003).

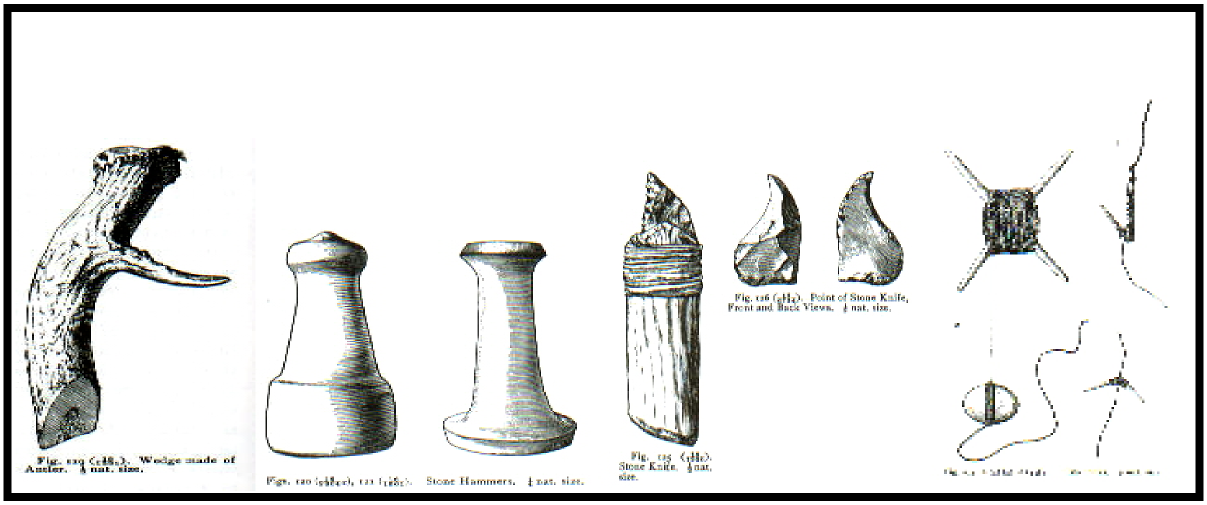


Figure 4. Various Tools and Materials. Teit (1900: 182,183,184,253)

Mid to late summer was the peak berry-picking season, when family groups headed to the higher elevations in search of huckleberries, soapberries (soopallilie), gooseberries, black berries, saskatoons, and thimbleberries, to name only a few. These gathering groups were predominately composed of the women within family groups accompanied by a small group of men. During berry picking, fresh water fishing and ungulate hunting was done by the men in the group. Summer was also a time of social gathering, trade, horse racing, marriage arrangements, naming, gaming, and socializing.

During the fall, organized hunting of mule deer, mountain goat, big horn sheep, elk, and more recently moose occurred along the forest edges, the alpine, and the subalpine. This formed the end of the annual round. Hunting utilized a variety of techniques, which involved communal drives with the use of long deer fences (as shown in Figure 4) or natural rock outcroppings and gorges forming an elongated "V" shape, corrals, traps or snares, and nets. Following the introduction of the more efficient bow and arrow and later rifles, hunting blinds utilizing semi-circular piled rock formations, deadfalls, and pitfalls (a type of excavated trap) became more prevalent. Dogs were also used when hunting and brought along when camping. The meat was dried, stored and/or traded. The hides were scraped, tanned, and smoked for clothing, technology, and a variety of other purposes (Markey and Sandy 2003).

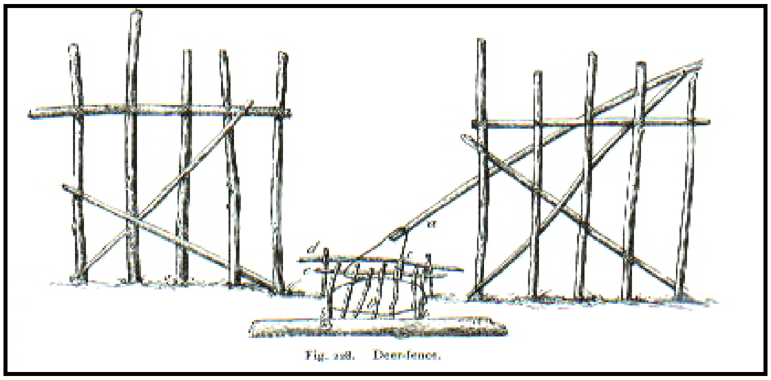


Figure 5. Deer Fence Teit (1900: 247)

In Nlaka'pamux society, ownership rights over the resource-producing areas were held in common by all (Teit 1900: 293). However, following interviews with Nlaka'pamux elders, it appears that family stewardship of resource areas did play a larger role (personal conversation with Adeline Washington 2004). The Nlaka'pamux seasonal round to store abundant but only seasonally available resources for winter consumption was regulated by family Elders who informed others where to gather, hunt, or fish. They had very detailed knowledge of which resources were ready to harvest and in which locations to gather (personal conversation with George Saddleman 2006). Harvesting areas rotated over the years to ensure the management of resources and the protection from depletion caused by over harvesting of desired plant and wildlife species within utilized areas.

3.0 Potential Activities within the Study Area

Over the whole of the study area, the Nlaka'pamux gathered a large variety of plants, hunted and trapped large and small game wildlife, and fished in the streams, rivers, and lakes. Wintering occurred predominately in the lowlands along the larger rivers, streams, and lakes, though during periods of warfare, winter villages were known to be located in isolated upland locations tucked away in small valleys easy to protect and often hard to detect. The more temporary camps of spring, summer, and fall often were situated along upland lakes and streams, except during those periods of time when the salmon runs occurred along the rivers. At these times, temporary base camps were set up along the higher benches along the rivers where cooler breezes occurred and some protection from mosquitoes came with the late afternoon winds.

Within the study area, there are few higher elevation base camps and, therefore, few roasting pits to be found. The types of plants gathered lacked the immediate need for roasting, as was the case in the Botanie, Venables, and Oregon Jack Valleys just across the Thompson River.

Hunting and trapping, along with root and berry gathering, as stated, occurred throughout the study area where large herds of deer and elk were present along with numerous small forbearing mammals and game birds. Hunting and trapping methods of the Nlaka'pamux left very little evidence. Predominately trails are all that is left behind, though these were also used for traveling from point to point. Deer drives were used, but infrequently. Blinds are found along slopes overlooking deer or elk travel corridors.

Fishing camps occurred along fish bearing streams, rivers, and lakes, usually in areas where plant gathering could also occur. Salmon fishing stations and camps are found along the Thompson and Nicola Rivers. Fish weirs were used in the Nicola River, at inlets to lakes, and strategic locations along some fish bearing streams.

4.0 Methodology

The basic research plan for the conducting of this project is as follows:

Completion of documentary research (Literature review and data search). The project staff accessed and collected existing literature, previous Traditional Use Studies from Band records and those conducted by Esh-kn-am CRMS, the study area data from the Esh-kn-am CRMS access database, the BC Archaeology Branch Registry, local museums, libraries, and other available sources to complete the literature review. The literature and data gathered comprised the cultural, archaeological, environmental, climatic, and geological information for the Coldwater and Spius Landscape Units (LU). This section was completed during the 2007-2008 portion of this project.

Completion of direct consultation where appropriate. The draft GIS model map was provided to the Band leadership for input from the Bands. If further consultation is required following this, further review will be completed and input included in the final draft model map. Interviews with Elders occurred when available.

Creation of a GIS overview model for Coldwater and Spius Landscape Units for testing. This comprised of analyzing the information gathered in the documentary research to create background for an AOA model. The AOA model layers were selected based on the background information gathered and ratings provided to each layer, and then the model was tested against known archaeological data from the RAAD to assess the success of the model. Available traditional use/environmental knowledge gathered in the document research was also applied as a layer of information for further testing of the model. Adjustments may be made at this stage for increased accuracy in predictability. The final step is the completion of the **Kvamme's gain statistic** test to assess the accuracy of the model before field assessment sampling. The decreasing of land formation polygons, exclusion of aspect, and the use of traditional use information for testing of the model, as opposed to inclusion of this layer in the draft model, make this model more accurate. The land formation polygon decreased size allows for smaller areas to be modelled. This allows for an increased accuracy, though LIDAR is more accurate than the DEM/TRIM VRI II.

Establish a field sample matrix for the gathering of additional field data in areas with little or no previous archaeological data or recorded sites and field testing of the draft GIS model. A grid was created over the landscape unit and followed up with a computer generated sampling matrix based on accessibility, little to no previous archaeological data, and 1% of the overall size in hectares of the Coldwater and Spius Landscape Units.

Conduct preliminary field reconnaissance. Test results were recorded on the Archaeological Overview Assessment Field Data Collection Forms as outlined in *Archaeological Overview Assessments as General Land Use Planning Tools-Provincial Standards and Guidelines.*

Analysis of field sampling and additional field data gathered. The results of the field sampling was compiled and assessed for updating the draft AOA model. The analysis provides the necessary changes to the layers within the model and to assess the limitations, shortcomings, observations of data gaps, and recommendations on further AOA models.

Update the GIS AOA model to incorporate additional input data from the field reconnaissance. The AOA model was updated to include the new field data gathered, and corrections, where and if necessary, were made to the model in accordance with the completed analysis of the field sampling. Another **Kvamme's gain statistic** test was completed to assess the final accuracy of the model.

Produce a final report. The final report was written as prescribed by the *Archaeological Overview Assessments as General Land Use Planning Tools-Provincial Standards and Guidelines.*

4.1 Modelling Methodology

A team made up of the staff archaeologist and the senior GIS technician met to discuss the project's key spatial layers and the applicable gathered data to be utilized for this projection. A working plan was implemented. The environmental data is the base layer data with the known archaeology sites from the Remote Access to Archaeological Data (RAAD) as a qualifier. The available TUS data was also utilized to assess the validity of capturing potential sites attached to activity centers such as root or berry gathering areas, hunting territories, or other cultural activity areas or sites.

Layers chosen for the prediction of sites within the study area are based on gathered information of types of terrain, slope, distance from potable water, and known trails that might contain base camps, trails, or temporary use camps. Aspect was not chosen as a layer of data, as is utilized in some predictive models, since within the study area, all terrain aspects are utilized dependent on the season of the year and species being sought or activity.

4.1.1 DATA ASSEMBLY.

The Spatial Analyst program was utilized for this model as it provides a way to represent and analyze geographic objects of the kind being utilized in this model. It divides the surface on which they are distributed into a matrix of identically sized squares. In this project the squares were 20 m in size. When you represent geographic objects as numbers in cells, you are working with a raster data model (also known as GRIDS). Polygons, points, and lines belong to vector data models. Spatial Analyst can estimate values for an entire surface from a limited number of sample points. This process is called interpolation, which lets you work with a small amount of data, or predict where the resources are likely to be found. The first step is to assign a risk or potential to each grid individually as done by the staff archaeologist.

Please note that this model is not intended to further research but rather to aid in "Cultural Resource Management" and to avoid the potential of high-risk archaeological areas from decreasing because of the likelihood of human activities encountering a site.

Data only shows the potential of "attractiveness" of an area to past human activities, it does not say *yes* there is a site here or *no* there isn't, but rather that these areas have more probability for sites to be found due to preservation or the nature of the activity leaving evidence. It must be remembered also that human activities can be erratic at times and outliers can and should occur.

ArcMap supports and provides analysis extension tools to create, analyze and extract information from surfaces. The team identified the map sheet sets needed for the study area and added the contour GRIDS.

Slope (Rating Scheme: 3, 2, 1)

The datasets of the area map contour points were merged to only include the boundaries of the study area.

A "TIN" was created from contour features in order to bring the slope polygons down to 20 m polygons. TINs are nets of triangular facets defined by nodes and edges that cover a surface. TINs are usually used to represent terrain surfaces, as the spot heights can be irregularly distributed to accommodate areas of high variability in the surface. A TIN Triangulation was required to create the contours into polygons.

After the TIN Triangulation was created, there were extra lines from the polygons and any unnecessary fields were removed. The interpolation of values was used to clean this up and then converted to 3D to better analyze the archaeological potential.

A calculation of the SLOPE was required to obtain the values of SLOPE by *degrees.* The values were then distributed evenly downwards into the scheme of potential with a color ramp scheme developed to represent the categories for each of the lowest to highest ratings.

Once these calculations were completed, the data was exported as a layer in order to add to the 3D Land Unit for analysis of archaeological potential.

The rating of the three SLOPE categories began as 5, 3, 1. However, it was found that this over-emphasized the slope in a topography dominated with gentle rises of up to 20% sloping. It was then decided to change the ratings to 3, 2, 1, which provided a more balanced approach.

Rating Scheme:

- 0-10% (3)
- 10-15 %(2)
- 15-20% (1)

Water Features (Rating Scheme: 1, 2, and 3)

The water feature layers were added from all the study area maps needed by using the VRI II trim data. The data was clipped to the landscape unit, but it was found that the layer did not include annual water bodies or intermittent water bodies, i.e.: intermittent streams, intermittent lakes, intermittent rivers, wetlands and swamps.

The water feature layers were then added from the data, classified as S1, S2, S3, S4, *Fish Bearing Streams*. Lakes of 1 hectare or larger were then added.

Buffers of 0-100 were added to S3 and S4 streams; 0-100m, 100-200m, and 200-300m to S2 streams; and 0-100m, 100-200m, 200-300m, and 300-400m to S1 streams. And buffers of 300m were added to lakes.

Elevation (Rating Scheme: 5)

Talus slopes and the higher river terraces were not caught with the buffering of the rivers and major streams alone, therefore, due to a lack of an appropriate geological layer in GIS, elevation was substituted. An elevation criterion of up to 800 m was used and given a rating of 5. This caught all but the highest elevation talus slopes in the upland areas near lakes and major streams, such as Guichon Creek that runs in an elevation of 900+ m above Mammett Lake.

After the first run of this layer, it was found that the study area contained a large number of S4 streams, and based on information from consultation with Nlaka'pamux elders and the available TUS data, it was formulated that S4 streams were less likely to contain areas of camping or fishing likely to leave notable evidence. Therefore, the S4 streams were eliminated, providing a smaller predictive model land base.

Once the data had been prepared for analysis, the layers needed to be imported into a single AOA Archaeological Potential unit to obtain an accurate potential rating.

To expedite the analysis process, as the datasets continued to grow through each step, the attribute tables were cleaned up and all non-essential fields were removed.

Note: Nil or low ratings indicate only very poor preservation or projected lack of human activity evidence due to the type of activities being conducted.

The model focused on two main site categories that are appropriate for the study area: semi-permanent habitation sites (villages and base camps) and fishing sites. Burial sites were incorporated into the modelling for habitation sites as they usually appear within 300 m of the villages on small knolls or along talus slopes. No CMTs were modelled for, as the study area predominately contains only historic CMTs on lodgepole pine trees that were bark stripped for cambium extraction. A few locations have post-1846 trail marking trees and a few knotted trees that appear along trails. Other than the few CMTs that appear along the trails, most CMTs are not at this time predictable due to lack of enough data.

5.0 Documentary Research and Consultation Results

The results of the documentary research and consultation results will be divided into two sections. The first will discuss the recorded archaeological sites from the RAAD that were documented, and the second will discuss the Preliminary Field Reconnaissance that was conducted to test the model in the field.

5.1 Background Documentary Research

5.1.1 Description of past uses.

See Section 2 for the documentary information gathered on land use.

5.1.2 Previously recorded archaeological sites summary and map.

DjRg-6 is a historic site located west of the Coquihalla Highway on a terrace above Coldwater River. This site (25 m x 22 m) consists of a log cabin and human burials. The site was discovered in 1985 by the Ministry of Highways while bulldozing a clearing for a septic field, which nearly destroyed the log cabin. Arcas Consulting Archeologists recorded the site, ensuring the graves were to be avoided during further work on the septic field. No other disturbances to the site have been noted.

DlRg-1 is a traditional use site located within the Silver Lake B.C. Forest Recreation Site, between two campsites and on a hillside. This site is comprised of a cluster of culturally modified trees within an area of 70 meters by 20 meters. The CMT's were recorded in 1997 and the condition of the site at that time was intact. Recreational use and/or an increase in the size of the forestry camp were noted to be potential future disturbances to the site.
DlRe-1 is a traditional use site located near the confluence of Howarth and Voght Creeks, on Crown land bordered by District Lots 776, 4569, 2393, 1892, and 4403. The site (250 m x 50 m) consists of four culturally modified trees that have rectangular scars and distinct tool marks. The CMT's are historic and were modified between 1961 and 1980, as obtained by increment bore samples. The location of the site is also where the Ministry of Transportation and Highways proposed to develop a gravel pit in 1999. The site was recorded in 1998 by I.R. Wilson Consultants Ltd. during the AIA for this project. Ultimately, the CMT's were destroyed by gravel pit operations.

EaRe-7 is a precontact site situated on the north bank of Godey Creek at the foot of a slope. This site (400 m x 360 m) consists of a surficial scatter of basalt flakes, as well as a fragment of a small biface. The site was recorded in 1977 by George Kirszenstein. It was noted that the site was disturbed, yet the cause of this disturbance is unknown.

EaRe-10 is a precontact site located on the terraces on either side of Godey Creek, at the southeastern corner of Coldwater IR #2. This site (250 m x 140 m) is comprised of a surficial lithic scatter. Parts of the site were destroyed in 1984 when the Merritt-Kamloops section of the Coquihalla Highway was constructed.

EaRe-23 is a precontact site situated on an alluvial fan on a terrace above Coldwater River in District Lot 581. This site (37 m x 13 m) consists of a low density surficial lithic scatter. It was recorded in 1996 by Arcas Consulting Archeologists during an AIA for a proposed subdivision. In 1996, the site was noted to have been partly disturbed by road construction. The present condition of the site is unknown.

EaRe-24 is a precontact site situated on the north bank of Coldwater River, in District Lot 166 at the southern limit of the town of Merritt. It is located at the base of a prominent hill between a runoff channel and the river. This site (50 m x 20 m) consists of a medium density surface lithic scatter, firebroken rock, faunal remains, and a cultural depression (function unassigned). Subsurface lithics, faunal remains, and firebroken rock are also located within the site. The site has been disturbed by ongoing erosion.

EaRe-25 is a precontact site located on a terrace south of Coldwater River, in District Lot 166 at the southern limit of the town of Merritt. This site is situated at the base of a prominent hill between two runoff channels. The site (24 m x 22 m) consists of a low density surface and subsurface lithic scatter, as well as surface and subsurface faunal remains. It has been slightly disturbed by cattle grazing, erosion, and deflation. When the site was recorded in 1996 by Golder Associates, it was noted that the site would be further disturbed due to residential development.

EaRe-26 is a precontact site located on a south bank of the Coldwater River, in District Lot 166 at the southern limit of the town of Merritt. The site is situated on a low knoll at the base of a prominent hill between two runoff channels. This site (25 m x 21 m) consists of a low density surface lithic scatter, as well as subsurface lithics. Testing took place in 1996 by Golder Associates. Two evaluative units (1 m x 1 m) revealed a unifacial flake, forty-five (45) basalt flakes, and a piece of basalt shatter. The site has been disturbed by erosion, cattle grazing, residential development, and road construction.

EaRe-27 is a precontact site located southwest of Merritt, on a broad terrace overlooking the Coldwater River. This site is comprised of a surface lithic scatter and was recorded in 1996 by Golder Associates. No disturbances to the site were reported at the time, and the present condition of the site is unknown.

EaRe-28 is a historic site located at the south end of a dry gully, on a broad terrace overlooking the Coldwater River. The site (40 m x 25 m) is a historic refuse dump which is believed to be related to the Middlesboro Colliery which operated in the area until 1960. This site was recorded by Golder Associates in 1996. It was noted to be in good condition, and no future impacts to the site were anticipated at that time.

EaRe-29 is a precontact site located at the north end of a broad terrace overlooking the Coldwater River. This site consists of a surficial lithic scatter and was recorded in 1996 by Golder Associates. No disturbances to the site were reported at the time, and the present condition of the site is unknown.

EaRe-30 is a precontact site located near the southern limit of the town of Merritt, in District Lot 166. It is situated on a steep hillside (Coldwater Hill) next to an abandoned coal mine site. This site is comprised of an isolated surface find consisting of a basalt biface. The artifact was left *in* *situ*, after being recorded by Golder Associates in 1996. The site has been severely disturbed by historic mining. Residential development was noted to cause future impacts to the site.

EaRf-3 is a precontact site situated on a low terrace above Coldwater River in Coldwater IR #1. This site consists of a cache pit and a cultural depression (function unassigned). This site was recorded in 1973; no disturbances to the site were noted. The site has not been revisited.

EaRf-4 is a precontact site located approximately 11.2 kilometers driving distance from Merritt, south along Coldwater Road. The site is situated on a terrace north of Coldwater River and consists of cache pit and housepit depressions. This site was recorded in 1973; no disturbances to the site were noted. The site has not been revisited.

EaRf-5 is a precontact site situated near the confluence of Spius Creek and Nicola River, on a talus slope approximately 50 meters before the gate to the Spius Valley Ranch. This site (20 m x 10 m) consists of cultural depressions (function unassigned). The site was recorded in 1997 by Itkus Heritage Consulting. No disturbances to the site were reported, but it was noted that widening of the road may impact the site.

EaRg-6 is a precontact site located near Spences Bridge, above the Ne'qamin Waterfall. This site consists of a pictograph on a rock facing a pool between the waterfalls of Waterfall Creek. An effort to locate the pictograph was made in 2000, yet was unsuccessful. Although the pictograph is no longer apparent on the rock, it is suggested that this location is the most likely.

RAAD maps indicating the locations of the above recorded sites are located in Appendix A.

5.2 Results of the Preliminary Field Reconnaissance

5.2.1 Survey Strategy.

The goal that was set for field-testing the model within the study area was 30 plots. Each plot was 36 square hectares in size. The method of selection chosen was a computer generated random selection with two criteria: 1) Must be on Crown Land and 2) Must have road access.

Following the computer selections, field crews under the supervision of field archaeologists and seasoned field crew supervisors completed surveys. Surveys were judgemental in that areas of the plots were tested for the potential shown on the model plot map. Some plots were completely surveyed; others were partially surveyed according to the potential and terrain found in the field.

Those plots where GPS survey lines could be taken were GPS'ed. Where GPS was not available, hand mapped survey routes were produced. Copies of these maps are attached in Appendix C.

In the Coldwater and Spius Landscape Units, no surveyed plots were in disagreement with the model or contained random finds not expected in the type of terrain.

5.2.2 Sites observed and recorded.

CW02-L1 is located approximately 16.0 kilometers linear distance west of the town of Merritt, 1.4 kilometers south of Highway 8, and 1.09 kilometers south of Nooaitch Indian Reserve 10, on the eastern terrace above Spius Creek. This site (205 m x 105 m) consists of a low density surficial scatter of basalt flakes and dacite shatter.

Dacite shatter at CW02-L1. Photo by R. Jim

6.0 Modelling Results

Following the completion of the model and before the field testing was completed, the *Kvamme's gain statistic* for the Coldwater and Spius Landscape Units model was $1- {}^{12\%}/_{99\%} = 0.88$. Following the completion of field testing of the model the statistic was the same.

In this study area, there are (fifteen) 15 recorded sites with an addition of one new site. Out of these, one previously recorded site was not captured within the potential. This site, DlRe-1, is a traditional use site containing four (4) culturally modified trees (CMT). Since this model did not attempt to predict CMT locations, this site was not caught. The lack of recorded sites in these landscapes may not give the full view of the model's ability to predict site locations. As more sites are recorded and the model tested against them, more confidence will be gained. However, the fact that the plot tests also confirmed the model, gives a good base for confidence.

Decreasing the polygon sizes to 20 m increments aided in finding some bench areas not noticeable with unmanipulated DEM or TRIM data. However, finer elevation and slope polygons would give more precise areas of potential. The use of geological layers, where available, is recommended to aide in offsetting the lack of LIDAR coverage. Only recently, we discovered that layers of geological data have been developed by a university, but were not available for use at the time of the completion of this study. Upon receipt of these layers, if an agreement can be completed for data sharing, these layers will be added to the model and tested for improvements.

7.0 Evaluation and Discussion

Gaps that were noted in the archaeological resource base are sites known through early literature on the Interior Plateau that are not recorded to date. Funding is the major hindrance to these sites being recorded and added to the resource base.

Gaps in spatial data noted are:

- No evenly available geographical, environmental, and geological information.
- Lack of LIDAR mapping throughout the Province.
- Lack of completed trail mapping.
- Lack of more TUS data. Once the data stored outside the availability of this company becomes available, this data can then be added to the testing of this model.

It is hard to put a number to how many more sites may be found within the Coldwater and Spius Landscape Units as they have a diverse landscape. There will be more sites found, most definitely, along the Coldwater River terraces and the Nicola River terraces as well. The higher terraces that have not been tested should yield new campsites and activity center sites (i.e. food preparation, hide preparation, or roasting areas). The lakes that dot the interior of the Land Unit will also yield new sites once tested and surveyed. With the addition of trail mapping, temporary sites will be found throughout the upland areas away from the rivers. Numerous high elevation valleys are contained in these landscapes where very little surveying or no surveying has ccurred and thus may yield some interesting sites. Again, more trail data will aid in finding these remote sites.

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APPENDIX A: RAAD SITE MAPS

APPENDIX B: LAND UNIT POTENTIAL MODEL MAP

APPENDIX C: PRELIMINARY FIELD RECONNAISSANCE MAPS

APPENDIX D: LIST OF CONTRACT DELIVERABLES

List of Contract Deliverables:

- Corrected site location data (shapefiles as sent to Archaeology Branch);
- Ground truthing (PFR) results documentation;
- Modeling results (spatial layers, maps and final report); and
- Forest Investment Account Schedule A "Certificate of Project Completion" technical section (Appendix I).